



Section A: Business Entity Information		
1. Business Name: Salus Scientific, LLC		
2. Organization Type (choose one): <input checked="" type="checkbox"/> For-profit <input type="checkbox"/> Non-profit	3. Business Type (choose one): <input type="checkbox"/> Corporation <input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Limited Partnership <input type="checkbox"/> Other:	
		<input checked="" type="checkbox"/> Limited Liability Company <input type="checkbox"/> General Partnership
4. Phone: 315-552-1344	5. Fax: 315-471-1154	6. Email: Nicole@salusscientific.com
7. Business Address: 333 West Washington Street, Suite 600		
8. City: Syracuse	9. State: NY	10. ZIP Code: 13202
11. Mailing Address (if different than Business Address):		
12. City:	13. State:	14. ZIP Code:
Section B: Primary Contact Information		
15. Name: Nicole Ruvo		16. Title: Chief Executive Officer
17. Phone: 315-552-1344	18. Fax: 315-471-1154	19. Email: Nicole@salusscientific.com
20. Mailing Address: 333 West Washington Street, Suite 600		
21. City: Syracuse	22. State: NY	23. ZIP Code: 13202
Section C: Proposed Manufacturing Facility Information		
24. Proposed Facility Name: Salus Scientific Manufacturing Facility		
25. Proposed Facility Address: 100 Oakdale Road		
26. City: Johnson City	27. State: <b>NY</b>	28. ZIP Code: 13790
29. County: Broome	30. Property Status (choose one): <input type="checkbox"/> Owned by the applicant <input checked="" type="checkbox"/> Leased by the applicant <input type="checkbox"/> Other: <b>If you checked "Other" above, describe the property status in the field provided.</b>	
31. Proposed Hours of Operation: Monday: 12AM to 12AM(24H)      Friday: 12AM to 12AM(24H) Tuesday: 12AM to 12AM(24H)      Saturday: 12AM to 12AM(24H) Wednesday: 12AM to 12AM(24H)      Sunday: 12AM to 12AM(24H) Thursday: 12AM to 12AM(24H)		
An additional entry is included below for applicants who are proposing to use more than one manufacturing facility (responsible for cultivation, harvesting, extraction or other processing, packaging and labeling).		



32. Proposed Facility Name:
33. Proposed Facility Address:
34. City: 35. State: NY 36. ZIP Code:
37. County: 38. Property Status (choose one):
39. Proposed Hours of Operation:
Section D: Proposed Dispensing Facility #1 Information
40. Proposed Facility Name: Salus Scientific Vestal Dispensary
41. Proposed Facility Address: University Plaza, 4700 Vestal Parkway
42. City: East Vestal 43. State: NY 44. ZIP Code: 13850
45. County: Broome 46. Property Status (choose one):
47. Proposed Hours of Operation:
Section E: Proposed Dispensing Facility #2 Information
48. Proposed Facility Name: Salus Scientific Evans Mills Dispensary
49. Proposed Facility Address: 26183 US Route 11
50. City: Evans Mills 51. State: NY 52. ZIP Code: 13637
53. County: Jefferson 54. Property Status (choose one):



55. Proposed Hours of Operation:
Monday: 9AM to 7PM Friday: 9AM to 7PM
Tuesday: 9AM to 7PM Saturday: 9AM to 7PM
Wednesday: 9AM to 7PM Sunday: 9AM to 7PM
Thursday: 9AM to 7PM

Section F: Proposed Dispensing Facility #3 Information

56. Proposed Facility Name: Salus Scientific Maspeth Dispensary

57. Proposed Facility Address: 56-15 58th Street, Unit 15A

58. City: Maspeth

59. State: NY

60. ZIP Code: 11378

61. County: Queens

62. Property Status (choose one):

- Owned by the applicant
Leased by the applicant
Other:

If you checked "Other" above, describe the property status in the field provided.

63. Proposed Hours of Operation:
Monday: 9AM to 7PM Friday: 9AM to 7PM
Tuesday: 9AM to 7PM Saturday: 9AM to 7PM
Wednesday: 9AM to 7PM Sunday: 9AM to 7PM
Thursday: 9AM to 7PM

Section G: Proposed Dispensing Facility #4 Information

64. Proposed Facility Name: Salus Scientific East Syracuse Dispensary

65. Proposed Facility Address: 6801 Kinne Street

66. City: East Syracuse

67. State: NY

68. ZIP Code: 13057

69. County: Onondaga

70. Property Status (choose one):

- Owned by the applicant
Leased by the applicant
Other:

If you checked "Other" above, describe the property status in the field provided.

71. Proposed Hours of Operation:
Monday: 9AM to 7PM Friday: 9AM to 7PM
Tuesday: 9AM to 7PM Saturday: 9AM to 7PM
Wednesday: 9AM to 7PM Sunday: 9AM to 7PM
Thursday: 9AM to 7PM



**Section H: Legal Disclosures**

72. Has the applicant, any controlling person of the applicant, any manager, any principal stakeholder, any sole proprietor applicant, any general partner of a partnership applicant, any officer or member of the board of directors of a corporate applicant, or corporate general partner had a prior discharge in bankruptcy or been found insolvent in any court action? Yes No

**If the answer to this question is “Yes,” a statement providing details of such bankruptcy or insolvency must be included with this application.**

73. Does any controlling person of the applicant, any manager, any principal stakeholder, any sole proprietor applicant, any general partner of a partnership applicant, any officer or member of the board of directors of a corporate applicant, or corporate general partner, or a combination of such persons collectively, maintain a ten percent interest or greater in any firm, association, foundation, trust, partnership, corporation or other entity, and such entity will or may provide goods, leases, or services to the registered organization, the value of which is or would be five hundred dollars or more within any one year?

OR

Does any entity maintain a ten percent interest or greater in the applicant, and such entity will or may provide goods, leases, or services to the registered organization, the value of which is or would be five hundred dollars or more within any one year?

Yes No

**If the answer to either of these questions is “Yes,” a statement with the name and address of the entity together with a description of the goods, leases, or services and the probable or anticipated cost to the registered organization, must be included with this application.**

74.

A. Is the applicant a corporate subsidiary or affiliate of another corporation? Yes No

**If the answer to this question is “Yes,” a statement setting forth the name and address of the parent or affiliate, the primary activities of the parent or affiliate, the interest in the applicant held by the parent or affiliate, and the extent to which the parent will be involved in the activities of the applicant, and responsible for the financial and contractual obligations of the subsidiary must be included with this application. The organizational and operational documents of the corporate subsidiary or affiliate must also be submitted, including but not limited to, as applicable: the certificate of incorporation, bylaws, articles of organization, partnership agreement, operating agreement, and all amendments thereto, and other applicable documents and agreements including in relation to the subsidiary or affiliate’s financial or contractual obligations with respect to the applicant.**

B. Is any owner, partner or member of the applicant not a natural person? Yes No

**If the answer to this question is “Yes,” a statement must be included with this application setting forth the name and address of the entity, the primary activities of the entity, the interest in the applicant held by the entity, and the extent to which the entity will be involved in the activities of the applicant, and responsible for the financial and contractual obligations of the applicant. The organizational and operational documents of the entity must also be submitted, including but not limited to, as applicable: the certificate of incorporation, bylaws, articles of organization, partnership agreement, operating agreement, and all amendments thereto, and other applicable documents and agreements including in relation to the entity’s financial or contractual obligations with respect to the applicant, and the identification of all those holding an interest or ownership in the entity and the percentage of interest or ownership held in the entity. If an interest or ownership in the entity is not held by a natural person, the information and documentation requested herein must be provided going back to the level of ownership by a natural person (Principal Stakeholder).**



75. Has construction, lease, rental, or purchase of the manufacturing facility been completed? [X]Yes [ ]No

If the answer to this question is "No," a statement indicating the anticipated source and application of the funds to be used in such purchase, lease, rental or construction, as well as anticipated date that construction, lease, rental or purchase will be completed must be included with this application.

76. Has construction, lease, rental, or purchase of the dispensing facilities been completed? [X]Yes [ ]No

If the answer to this question is "No," a statement indicating the anticipated source and application of the funds to be used in such purchase, lease, rental or construction, as well as anticipated date that construction, lease, rental or purchase will be completed must be included with this application.

Section I: Required Attachments

Applications received without the required attachments will not be eligible for consideration until the required attachments are received. All such attachments must be postmarked by the Deadline for Submission of Applications.

77. [X] The applicant has enclosed a non-refundable application fee in the amount of \$10,000.

Applications received without the \$10,000 application fee will not be considered.

78. [X] The applicant has enclosed a conditionally refundable registration fee in the amount of \$200,000.

Applications received without the \$200,000 registration fee will not be considered.

The \$200,000 registration fee will be refunded to applicants that are not selected as registered organizations.

79. [X] The applicant has attached all required statements from Section H: Legal Disclosures, if applicable.

80. [X] The applicant has attached identification of all real property, buildings, and facilities that will be used in manufacturing and dispensing activities, pursuant to PHL § 3365 and 10 NYCRR § 1004.5(b)(2), and labeled this attachment as "Attachment A."

81. [X] The applicant has attached identification of all equipment that will be used to carry out the manufacturing, processing, transportation, distributing, sale, and dispensing activities described in the application and operating plan, pursuant to PHL § 3365 and 10 NYCRR § 1004.5(b)(3), and labeled this attachment as "Attachment B."

82. [X] The applicant has attached copies of all applicable executed and proposed deeds, leases, and rental agreements or executed option contracts related to the organization's real property interests, showing that the applicant possesses or has the right to use sufficient land, buildings, other premises, and equipment, and contains the language required in 10 NYCRR § 1004.5(b)(9), if applicable, or, in the alternative, the applicant attached proof that it has posted a bond of not less than \$2,000,000, pursuant to PHL § 3365 and 10 NYCRR § 1004.5(b)(9), and labeled this attachment as "Attachment C."



83.  The applicant has attached an operating plan that includes a detailed description of the applicant's manufacturing processes, transporting, distributing, sale and dispensing policies or procedures, and contains the components set forth in 10 NYCRR § 1004.5(b)(4), and labeled the operating plan as "**Attachment D – Operating Plan**" with the information clearly labeled and divided into the following sections:
- Section 1 - Manufacturing (§ 1004.5(b)(4))
  - Section 2 - Transport and Distribution (§ 1004.5(b)(4))
  - Section 3 - Dispensing and Sale (§ 1004.5(b)(4))
  - Section 4 - Devices (§ 1004.5(b)(4)(i))
  - Section 5 - Security and Control (§ 1004.5(b)(4)(ii))
  - Section 6 - Standard Operating Procedure (§ 1004.5(b)(4)(iii))
  - Section 7 - Quality Assurance Plans (§ 1004.5(b)(4)(iv))
  - Section 8 - Returns, Complaints, Adverse Events and Recalls (§ 1004.5(b)(4)(v))
  - Section 9 - Product Quality Assurance (§ 1004.5(b)(4)(vi))
  - Section 10- Recordkeeping (§ 1004.5(b)(4)(vii))
84.  The applicant has attached copies of the organizational and operational documents of the applicant, pursuant to 10 NYCRR § 1004.5(b)(5), which must include the identification of all those holding an interest or ownership in the applicant and the percentage of interest or ownership held, and labeled this attachment as "**Attachment E.**"
85.  "**Appendix A: Affidavit for Board Members, Officers, Managers, Owners, Partners, Principal Stakeholders, Directors, and Members**" has been completed for each of the board members, officers, managers, owners, partners, principal stakeholders, directors, and any person or entity that is a member of the applicant setting forth the information required in PHL § 3365(1)(a)(iv) and 10 NYCRR § 1004.5(b)(6).
86.  The applicant has attached documentation that the applicant has entered into a labor peace agreement with a bona fide labor organization that is actively engaged in representing or attempting to represent the applicant's employees, pursuant to PHL § 3365(1)(a)(iii) and 10 NYCRR § 1004.5(b)(7), and labeled this attachment as "**Attachment F.**"
87.  The applicant has attached a financial statement setting forth all elements and details of any business transactions connected with the application, including but not limited to all agreements and contracts for consultation and/or arranging for the assistance in preparing the application, pursuant to 10 NYCRR § 1004.5(b)(10), and labeled this attachment as "**Attachment G.**"
88.  The applicant has completed "**Appendix B – Architectural Program**" and included the components set forth in 10 NYCRR § 1004.5(b)(11) and -(12).
89.  The applicant has attached the security plan of the applicant's proposed manufacturing and dispensing facilities indicating how the applicant will comply with the requirements of Article 33 of the Public Health Law, 10 NYCRR Part 1004, and any other applicable state or local law, rule, or regulation, and labeled this attachment as "**Attachment H.**"
90.  The applicant has attached the most recent financial statement of the applicant prepared in accordance with generally accepted accounting principles (GAAP) applied on a consistent basis and certified by an independent certified public accountant, in accordance with the requirements of 10 NYCRR § 1004.5(b)(16), and labeled this attachment as "**Attachment I.**"
91.  The applicant has attached a staffing plan for staff to be involved in activities related to the cultivation of marijuana, the manufacturing and/or dispensing of approved medical marijuana products, and/or staff with oversight responsibilities for such activities that includes the requirements set forth in 10 NYCRR § 1004.5(b)(18) of the regulations and labeled this attachment as "**Attachment J.**"



- 92. [X] The applicant has attached proof from the local internet service provider(s) that all of the applicant's manufacturing and dispensing facilities are located in an area with internet connectivity and labeled this attachment as "Attachment K."
93. [X] The applicant has attached a timeline demonstrating the estimated timeframe from growing marijuana to production of a final approved product, and labeled this attachment as "Attachment L."
94. [X] The applicant has attached a statement and/or documentation showing that the applicant is able to comply with all applicable state and local laws and regulations relating to the activities in which it intends to engage under the registration, pursuant to 10 NYCRR § 1004.5(b)(8), and labeled this attachment as "Attachment M."

Section J: Attestation and Signature

As the chief executive officer duly authorized by the board of a corporate applicant, or a general partner or owner of a proprietary applicant, I hereby authorize the release of any and all applicant information of a confidential or privileged nature to the Department and its agents. If granted a registration, I hereby agree to ensure the registered organization uses the Seed-to-Sale Solution approved by the Department to record the registered organization's permitted activities. I hereby certify that the information provided in this application, including in any statement or attachments submitted herewith, is truthful and accurate. I understand that any material omissions, material errors, false statements, misrepresentations, or failure to provide any requested information may result in the denial of the application or other action as may be allowed by law.

95. Signature:

[Handwritten signature of Nicole Ruvo]

96. Date Signed:

[Handwritten date: June 3, 2015]

97. Print Name: Nicole Ruvo

[Handwritten name: NICOLE RUVO]

The application must include a handwritten signature by the chief executive officer duly authorized by the board of a corporate applicant, or a general partner or owner of a proprietary applicant, and must be notarized.

Notary Name:

[Handwritten notary name: Joel Velez]

Notary Registration Number:

[Handwritten notary registration number: 01VE6255525]

Notary (Notary Must Affix Stamp or Seal)

[Handwritten notary signature]

Date: 06/03/2015

JOEL VELEZ
Notary Public, State of New York
Qualified Kings County
No. 01VE6255525
My Commission Expires 02-06-2016













**Legal Disclosure: Statement 74.B**

**REQUEST FOR EXEMPTION FROM FOIL  
Trade Secret (POL § 87(2)(d))  
NOT FOR DISTRIBUTION**

**Application Section 74.B:**  
Redacted pursuant to N.Y. Public Officers Law, Art. 6

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**STATE OF NEW YORK**  
**DEPARTMENT OF STATE**

I hereby certify that the annexed copy has been compared with the original document in the custody of the Secretary of State and that the same is true copy of said original.



WITNESS my hand and official seal of the  
Department of State, at the City of Albany, on  
May 08, 2015.

*Anthony Giardina*

Anthony Giardina  
Executive Deputy Secretary of State

**ARTICLES OF ORGANIZATION  
OF  
MNF Holdings, LLC**

Under Section 203 of the Limited Liability Company Law

THE UNDERSIGNED, being a natural person of at least eighteen (18) years of age, and acting as the organizer of the limited liability company hereby being formed under Section 203 of the Limited Liability Company Law of the State of New York certifies that:

**FIRST:** The name of the limited liability company is:

**MNF Holdings, LLC**

**SECOND:** The county, within this state, in which the office of the limited liability company is to be located is ONONDAGA.

**THIRD:** The Secretary of State is designated as agent of the limited liability company upon whom process against it may be served. The address within or without this state to which the Secretary of State shall mail a copy of any process against the limited liability company served upon him or her is:

Michael P. Falcone  
c/o The Pioneer Companies  
333 W Washington St, Suite 600  
Syracuse, NY 13202

**FOURTH:** The limited liability company is to be managed by: ONE OR MORE MANAGERS.

I certify that I have read the above statements, I am authorized to sign these Articles of Organization, that the above statements are true and correct to the best of my knowledge and belief and that my signature typed below constitutes my signature.

Gerald F. Stack, Esq., Authorized Person (signature)

\_\_\_\_\_  
Gerald F. Stack, Esq., ORGANIZER  
Hiscock & Barclay, LLP  
One Park Pl, 300 S State St  
Syracuse, NY 13202

**Filed by:**

Lauren A. Pistell  
Hiscock & Barclay, LLP  
One Park Pl, 300 S State St  
Syracuse, NY 13202

**FILED WITH THE NYS DEPARTMENT OF STATE ON: 05/08/2015**  
**FILE NUMBER: 150508010034; DOS ID: 4755563**

ONLINE FILING RECEIPT

ENTITY NAME: MNF HOLDINGS, LLC

DOCUMENT TYPE: ARTICLES OF ORGANIZATION (DOM. LLC)

COUNTY: ONON

FILED:05/08/2015 DURATION:\*\*\*\*\* CASH#:150508010034 FILE#:150508010034  
DOS ID:4755563

FILER:

LAUREN A. PISTELL  
HISCOCK & BARCLAY, LLP  
ONE PARK PL, 300 S STATE ST  
SYRACUSE, NY 13202

EXIST DATE

05/08/2015

ADDRESS FOR PROCESS:

MICHAEL P. FALCONE  
C/O THE PIONEER COMPANIES  
333 W WASHINGTON ST, SUITE 600  
SYRACUSE, NY 13202

REGISTERED AGENT:



The limited liability company is required to file a Biennial Statement with the Department of State every two years pursuant to Limited Liability Company Law Section 301. Notification that the Biennial Statement is due will only be made via email. Please go to [www.email.ebiennial.dos.ny.gov](http://www.email.ebiennial.dos.ny.gov) to provide an email address to receive an email notification when the Biennial Statement is due.

SERVICE COMPANY: \*\* NO SERVICE COMPANY \*\*  
SERVICE CODE: 00

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**Attachment A: Identification of Buildings, Property, and Facilities used for Manufacturing and Dispensing Pursuant to PHL § 3365 and 10 NYCRR § 1004.5(b)(2)**

1. Salus Scientific maintains one (1) manufacturing facility located at:

a. 100 Oakdale Road, Johnson City, New York 13790

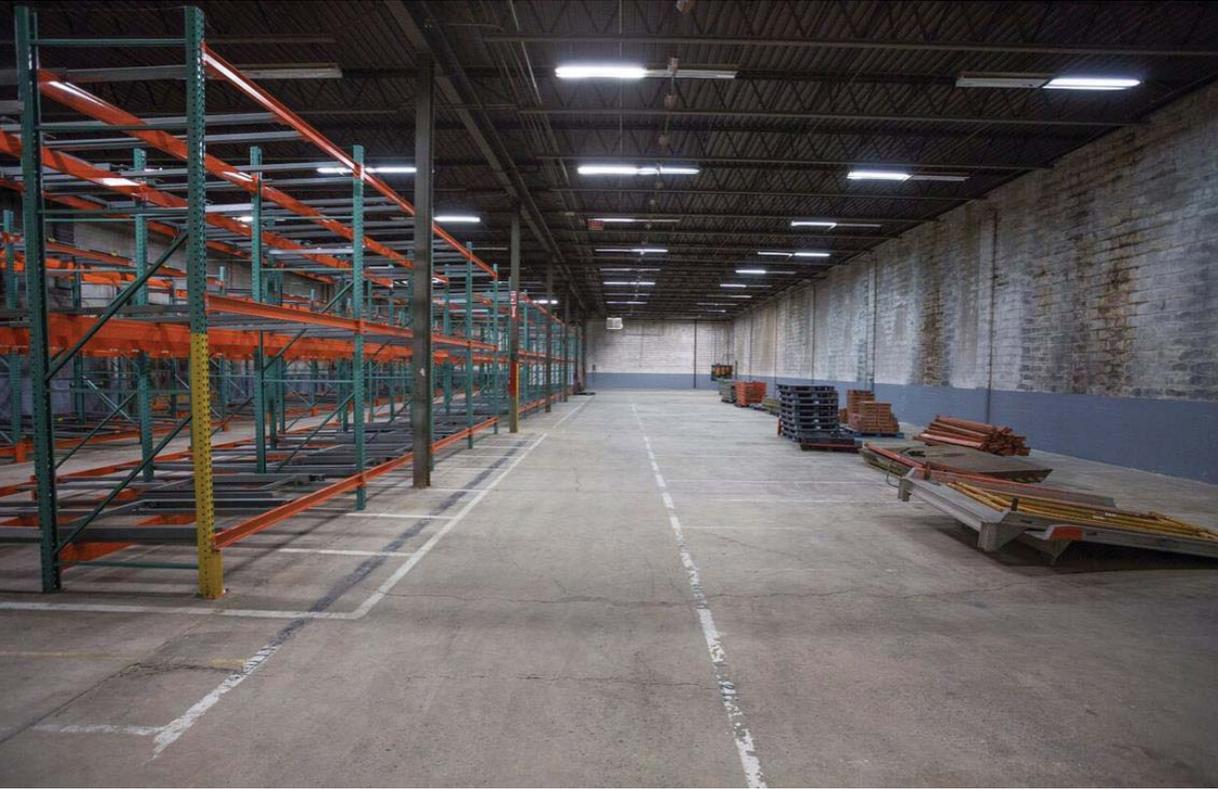
Located in western Broome County, the manufacturing facility is just off exit 70 on the Southern Tier Expressway, minutes from Binghamton, NY.



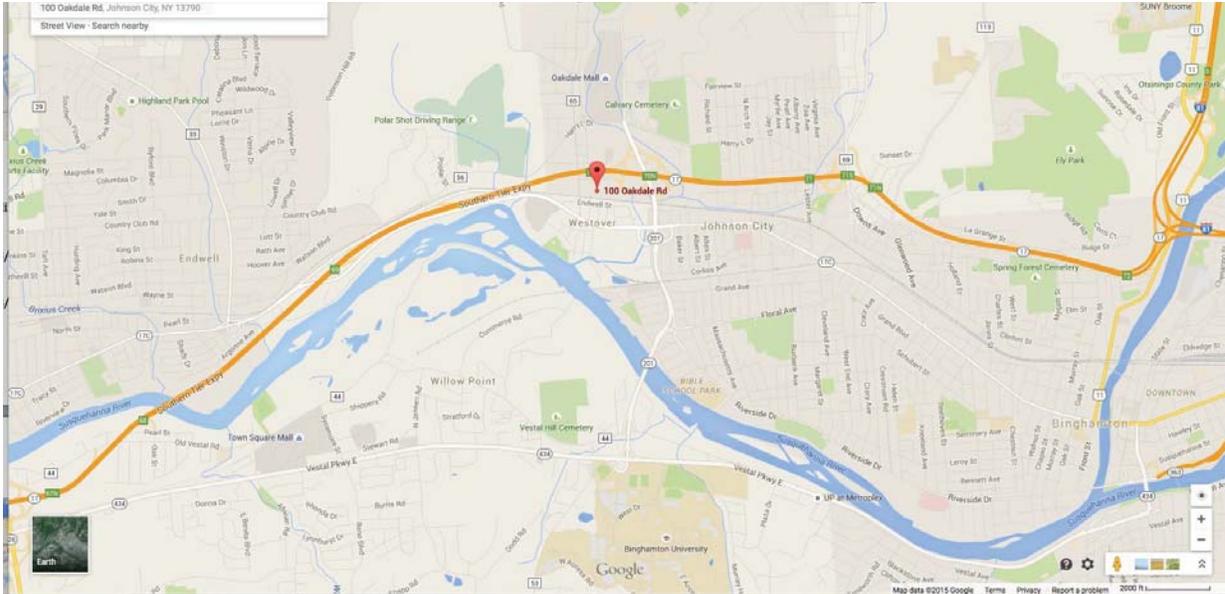
Street view of the manufacturing facility in Johnson City, NY.



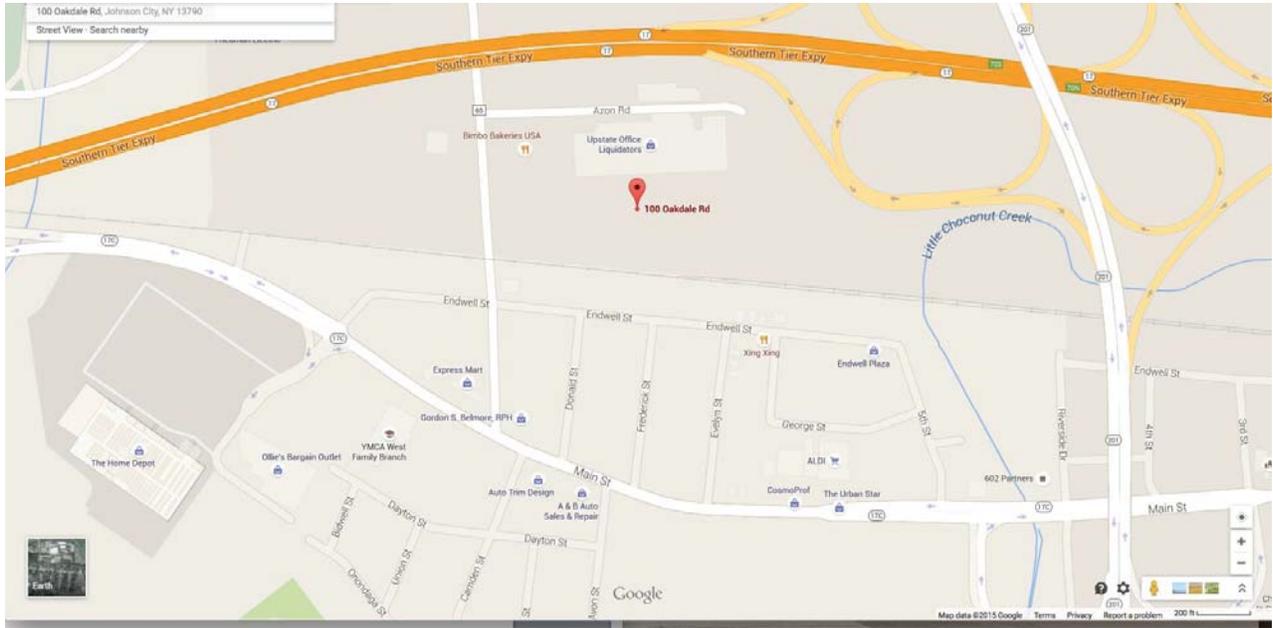
Wide view of the manufacturing facility in Johnson City, NY.



Interior view of the manufacturing facility in Johnson City, NY.



Aerial map showing the manufacturing facility in Johnson City, NY.



**Inset aerial showing the manufacturing facility in Johnson City, NY.**

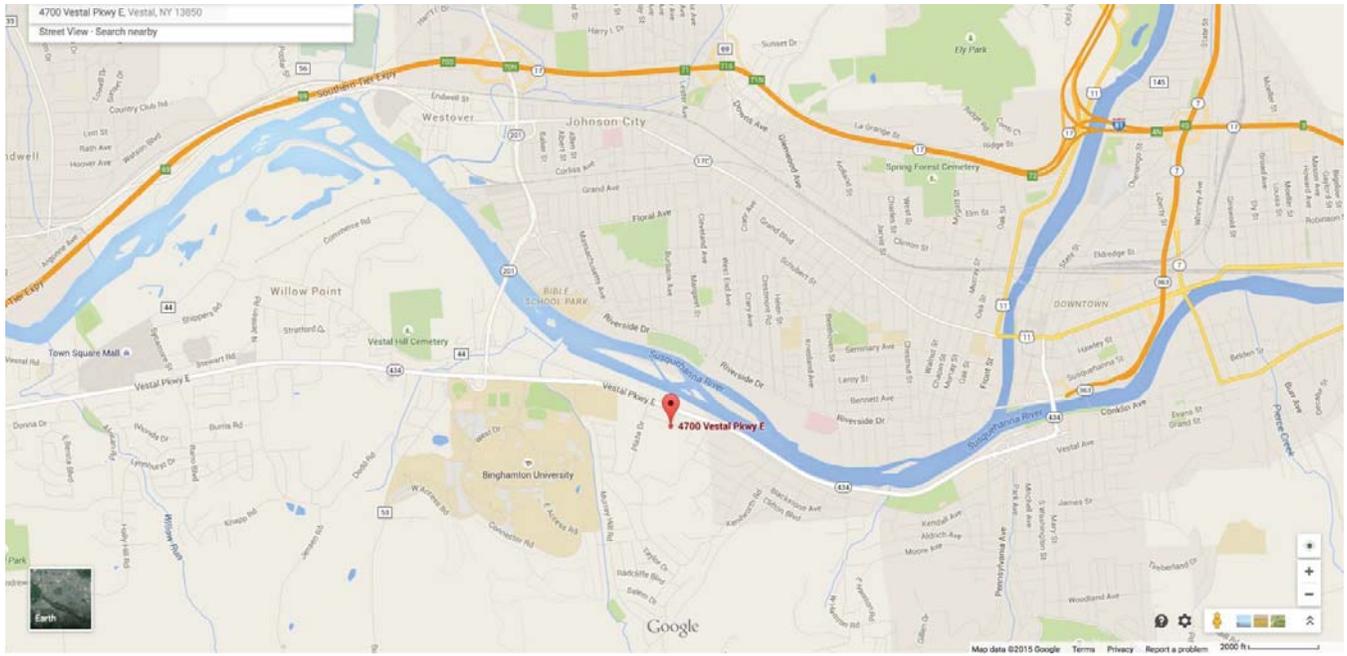
2. Salus Scientific maintains four (4) dispensing facilities. They are located at:

- a. 4700 Vestal Parkway East Vestal, New York 13850

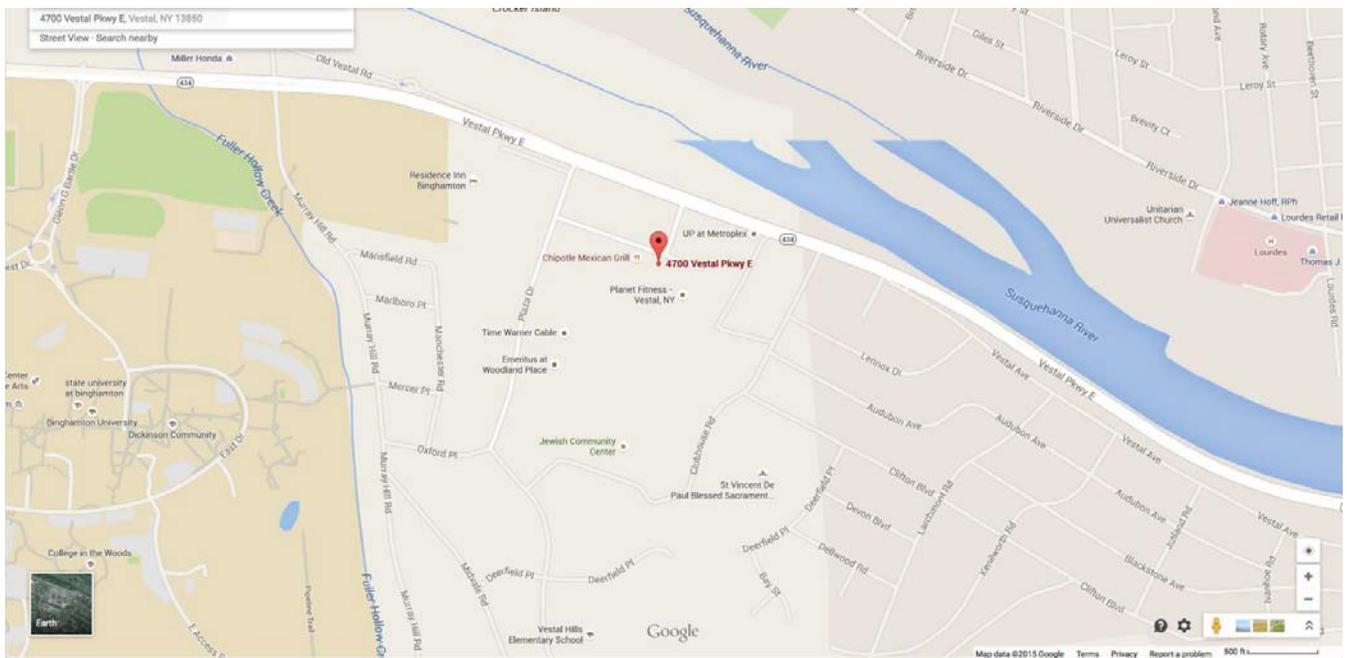
Located on the south border of Broome County, the dispensary will provide medical marijuana products to certified patients in the Binghamton Metropolitan Area. Situated in the University Plaza shopping center, the dispensary is easily accessible by certified patients and designated caregivers.



**Street view of University Plaza, location of the dispensing facility in Vestal, NY.**



Aerial map showing the dispensing facility in Vestal, NY.



Inset aerial map showing the dispensing facility in Vestal, NY.



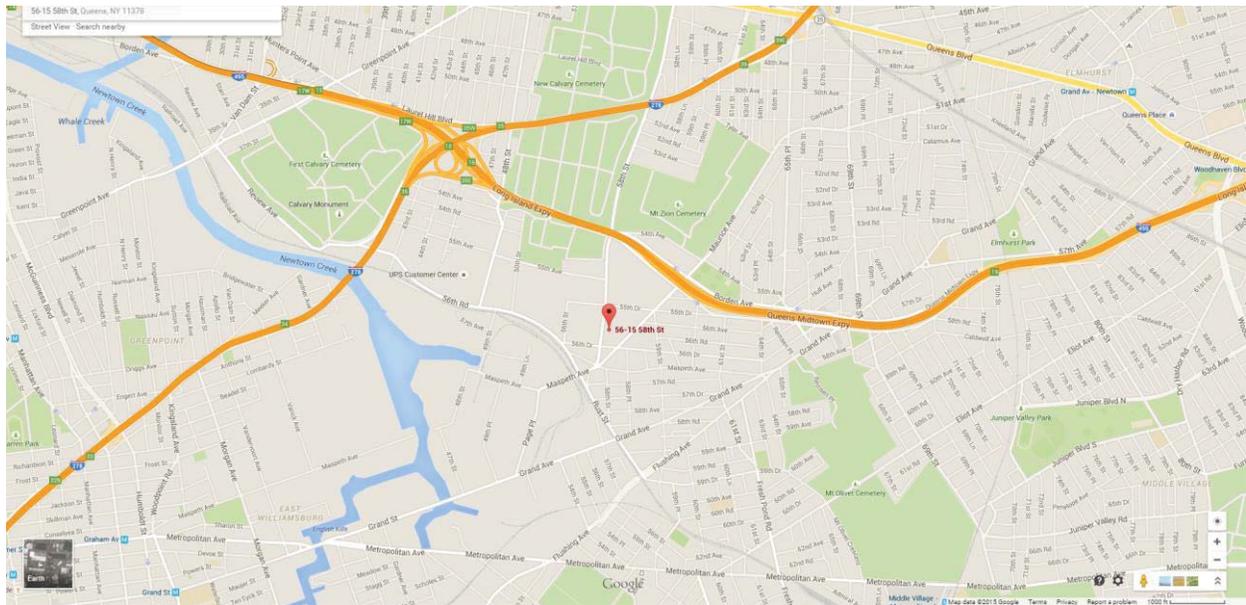
Aerial photographic map showing the dispensing facility in Vestal, NY.

b. 56-15 58<sup>th</sup> Street, (Maspeth) Queens, New York 11378

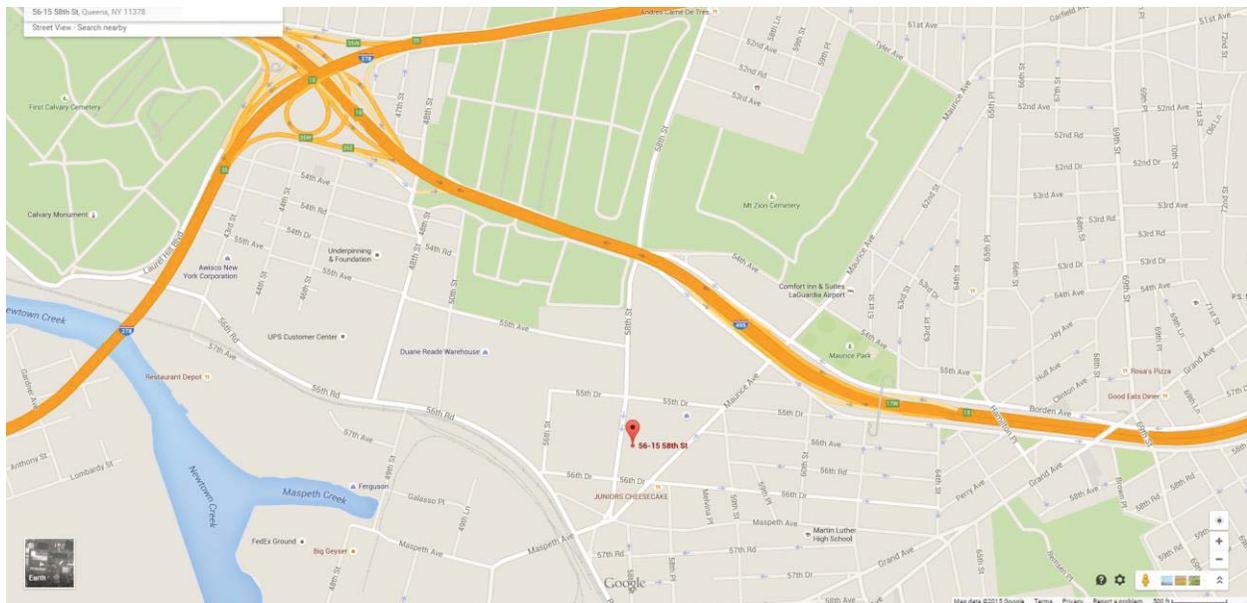
Located in western Queens County, the dispensary is situated in Maspeth’s industrial lowlands and is easily accessible from Interstate 495.



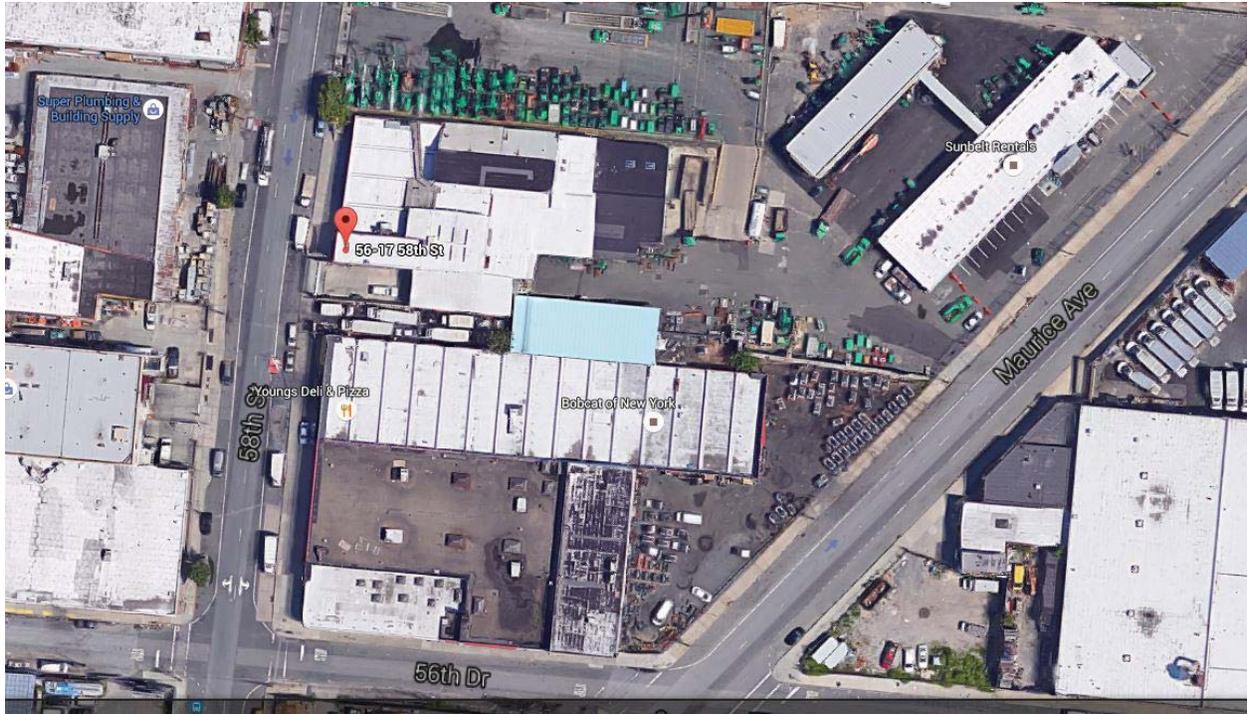
Street view of the dispensing facility in Queens, NY.



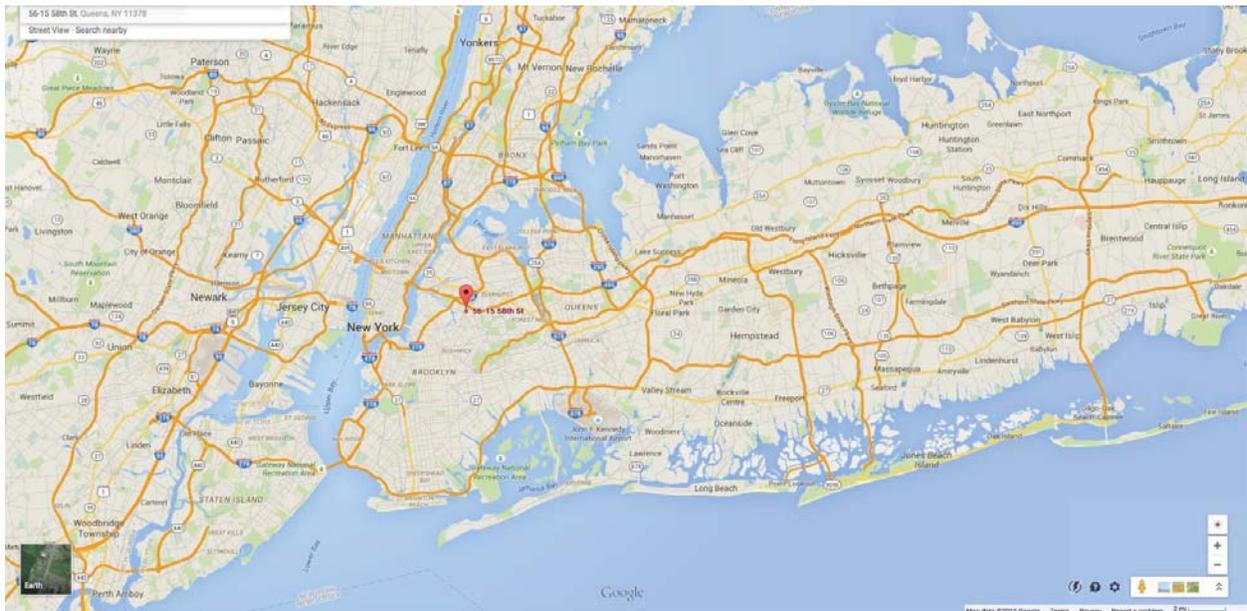
Aerial map showing the dispensing facility in Queens, NY.



Inset aerial map showing the dispensing facility in Queens, NY.



Aerial photographic map showing the dispensing facility in Queens, NY.



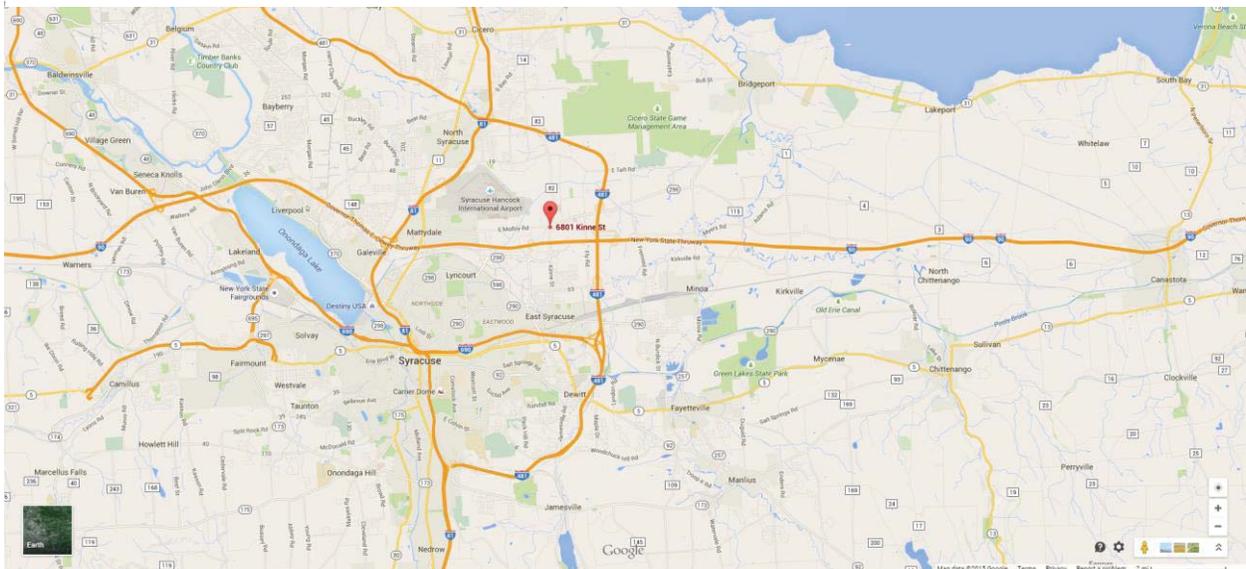
Regional map showing the dispensing facility in Queens, NY.

c. 6801 Kinne Street, East Syracuse, New York 13057

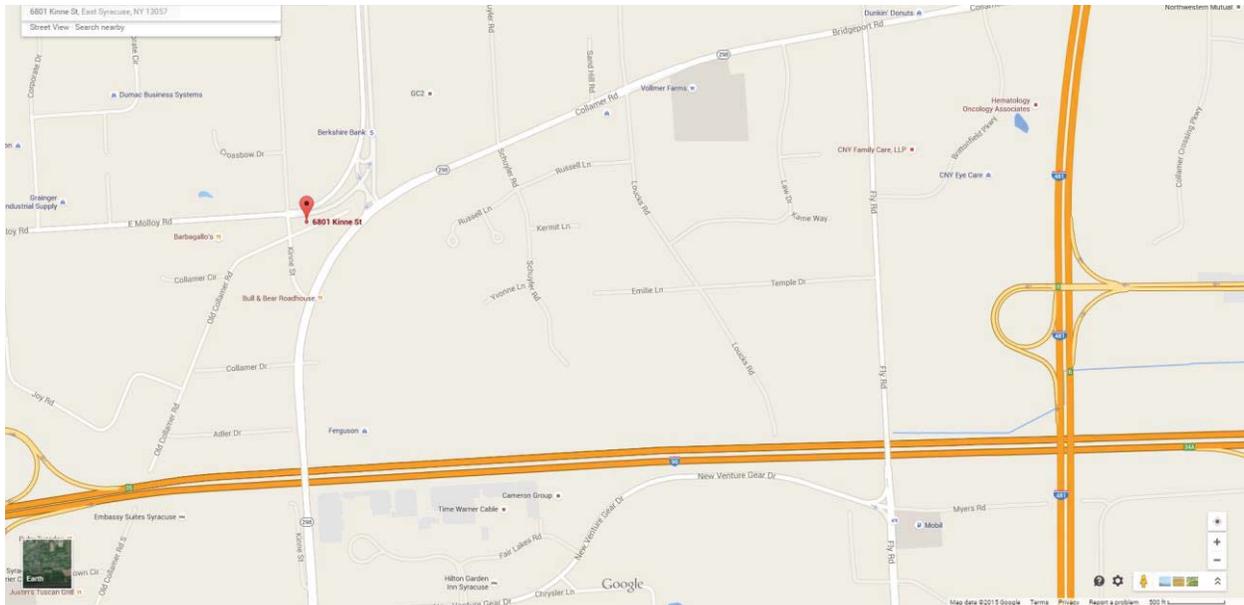
Located in a suburban area just outside of the City of Syracuse, the dispensary will provide medical marijuana products to certified patients in Onondaga County and the surrounding areas. The dispensary is easily accessible from Interstate 90 and Route 481.



Street view of the dispensing facility in East Syracuse, NY.



Aerial map showing the dispensing facility in East Syracuse, NY.



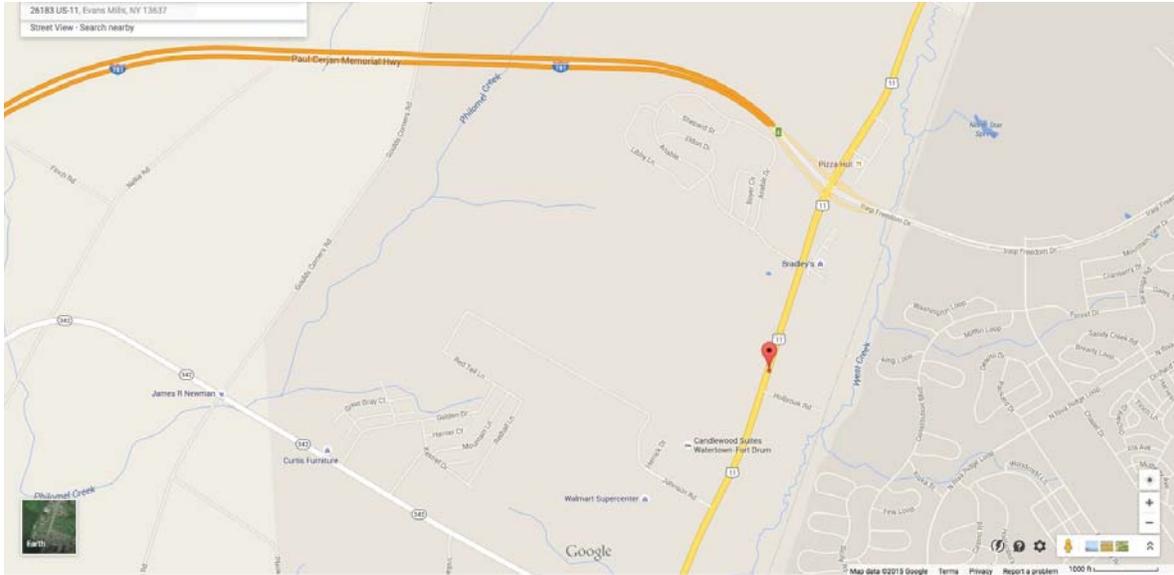
**Inset aerial map showing the dispensing facility in East Syracuse, NY.**

d. 26183 US Route 11, Evans Mills, New York 13637

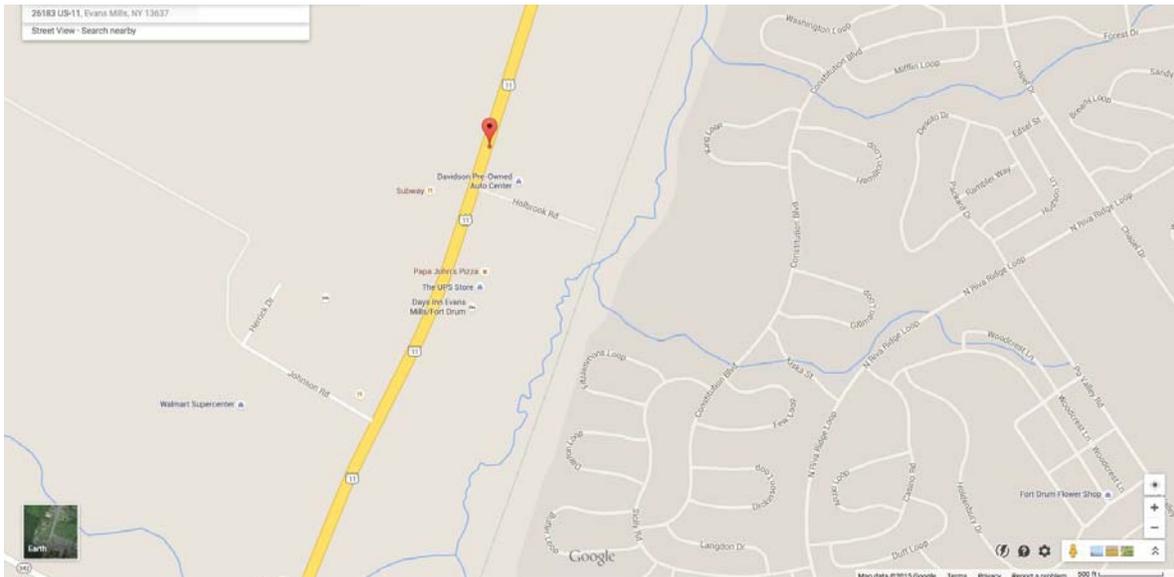
Located just northeast of Watertown, the dispensary in Evans Mills is easily accessible from Interstate 81. This dispensary will serve the certified patients and designated caregivers in Jefferson and neighboring Northern New York counties.



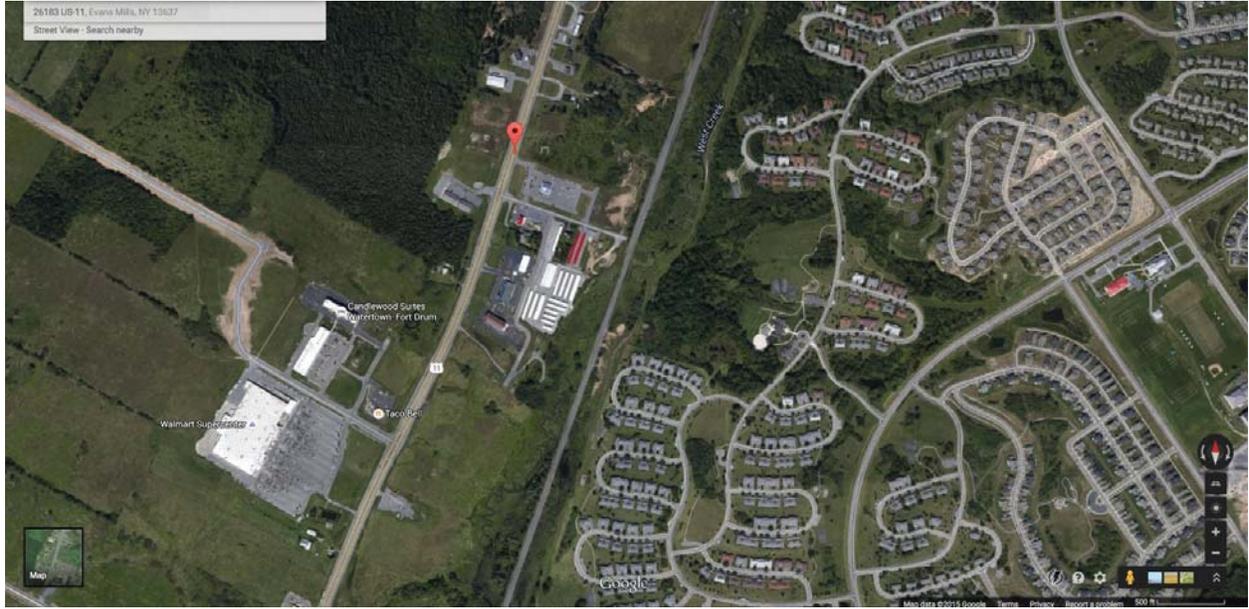
**Street view of the dispensing facility in Evans Mills, NY, prior to completion of construction in 2013.**



Aerial map showing the dispensing facility in Evans Mills, NY.



Inset aerial map showing the dispensing facility in Evans Mills, NY.



Aerial photographic map showing the dispensing facility in Evans Mills, NY.

## **Attachment B: Identification of All Equipment for Manufacturing, Processing, Transportation, Distributing, Sale, and Dispensing**

Salus Scientific will utilize state of the art equipment that will be maintained in optimal working order at all times. The following is a list that contains all of the equipment to be used in our facilities for manufacturing, processing, transportation, distribution, sale, and dispensing. Any additional equipment required for processes or products not yet approved for which Salus Scientific seeks prior written approval from the department will be included in any proposals submitted for approval.

- Vacuum pump
- Rotary evacuator for ethanol ext.
- Büchner funnel & flask
- Balance
- Soxhlet apparatus
- Heating mantle
- Separatory funnel
- CO2 extractor
- Lab coats
- Round bottom evaporating flask
- Miscellaneous glassware
- High speed mixer
- Water bath
- Hot plate (industrial)
- Precision syringe
- Water chiller
- Ethanol (certified organic, >99.5% pure)
- Freezer (-20° C)
- Production utensils (stainless steel)

- Tableting machine (e.g. Bosch Beta 6)
- Tableting tool
- Tablet counter and bottle filler
- Bottle labeler
- Bottle sealer
- Hammermill
- Wet granulator
- Tablet coater
- Air compressor
- Metal detector
- Friability tester
- Hardness tester
- Dissolution tester
- Stainless steel vessels, various sizes
- Consumable production equipment
- Liquid filling machine – small
- Blister packing machine
- Shrinkwrap machine
- Packaging machine
- Label printer
- Stainless steel tables
- Shelving units
- Sample containers
- Security boxes
- Heat sealer for bags
- Sampling utensils
- Liquid chromatograph (HPLC) and supplies
- Gas chromatography and supplies
- UV spectrometer and supplies

**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5])  
NOT FOR DISTRIBUTION**

- Thin layer chromatography and supplies
- Compound light microscope
- Stability chamber
- Nitrile gloves
- Fume hood
- Fire extinguishers
- Eye wash
- Locked storage cabinets
- Lab notebooks/documentation/printing
- PC and printer, IT system
- Waste bin
- Maintenance tools
- Fuel-efficient distribution vehicles with installed security boxes

**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5])  
NOT FOR DISTRIBUTION**

**Attachment C: Leases**

## **Proposed Manufacturing Facility**

**PROPOSAL TO LEASE PREMISES**

Salus Scientific, LLC ("Tenant")  
333 West Washington St  
Syracuse, NY 13202

Binghamton Giant Market, Inc ("Landlord")  
P.O. Box 895  
Vestal, NY 13851-0895

With offices at:  
2548 Vestal Parkway East  
Vestal, NY 13580

**Building Location**

100 Oakdale Road  
Johnson City, NY  
13790

**Building**

The building is a one-story masonry structure containing approximately 118,000 square feet of warehouse/distribution and a two-story office area located on approximately 6.3 acres.(Broome County Tax Map #143.45.1-16 (see attachment "A"))

Tenant shall occupy the entire building

**Use**

Tenant is in the business of growing, cultivating, extracting and manufacturing medical marijuana per regulations as approved and monitored by the New York State Department of Health to be sold in licensed dispensaries located in the State of New York. Tenant shall be responsible for acquiring all necessary municipal approvals.

Tenant shall not use the premises for any other use nor sublet any portion of the building without Landlords consent.

**Lease Term**



**Commencement of Lease Term**

Landlord understands that Tenant is in the process of applying for a license for the New York State Medical Marijuana Program and will not be notified by the NYS Department of Health until the end of July, 2015 Rent commencement will begin not more than 60 days from July 31, 2015.

**Annual Fixed Base Rent**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**Utilities**

Tenant shall be responsible for the cost of its own utilities. Tenant shall also be responsible for the installation, modification, maintenance and relocation and repair of any new electrical service to the building. Tenant shall be responsible not only for the cost of operating electric and other utilities, but also for the installation, modification, relocation, and repair of said utilities.

**Operating Expenses and Real Estate Taxes**

Tenant shall be responsible for the cost of its building operating expenses, real estate taxes, school taxes, common area, insurance and property maintenance.

**Tenant Improvements**

Landlord understands that the tenant shall be making substantial building improvements and shall work with the tenant in to mutually agree on what those improvements shall be.

**Purchase Option**

Tenant shall be granted an option to purchase the building at a mutually agreed upon to be determined price and timing of such purchase.

**Building Access**

Tenant shall have 24/7 access to its space. Landlord understands and agrees to the following lease clause as mandated by New York State Department of Health:

*The landlord acknowledges that its rights of reentry into the premises set forth in this lease do not confer on it the authority to manufacture and/or dispense on the premises medical marihuana in accordance with article 33 of the Public Health Law and agrees to provide the New York State Department of Health, Mayor Erastus Corning 2nd Tower, The Governor Nelson A. Rockefeller Empire State Plaza, Albany, N.Y. 12237, with notification by certified mail of its intent to reenter the premises or to initiate dispossess*

proceedings or that the lease is due to expire, at least 30 days prior to the date on which the landlord intends to exercise a right of reentry or to initiate such proceedings or at least 60 days before expiration of the lease."

Lessee agrees that they are accepting the Leased Premises including the existing land and improvements in "as is" condition

**Signage**

Tenant shall be granted the right to install its exterior signage on the exterior of the building as regulated by the New York State Department of Health and the municipal zoning code.

**Brokerage**

Landlord and tenant each acknowledge that neither party has engaged a real estate broker in this transaction.

**Good Faith Deposit**



**Contingency**

The parties' obligations under this agreement are contingent on Tenant obtaining registration as a Registered Organization by the New York State Department of Health to manufacture and dispense approved medical marijuana products in New York State. In the event this does not happen each party shall be relieved of any agreement between the parties with no recourse to the other. Should this proposal meet with your approval, please sign where indicated below and return a copy

In the event the New York State Department of Health is delayed in awarding a license past August 15, 2015, this LOI shall be null and void and non-binding between the parties.

Sincerely,  
Salus Scientific, LLC

A handwritten signature in blue ink, appearing to be 'Michael P. Falcone'.

Michael P. Falcone  
Chairman & Member

Agreed to and accepted this 4th day of June, 2015.

Gruber  
Name \_\_\_\_\_ Title \_\_\_\_\_  
V.P.



BCA

## **Proposed Dispensing Facility #1**

**PROPOSAL TO LEASE PREMISES**

Salus Scientific, LLC ("Tenant")  
333 West Washington St  
Syracuse, NY 13202

Newman Development Group, LLC ("Landlord")  
P.O. Box 678  
Vestal, NY, 13851

**Building Location**

University Plaza  
4700 Vestal Parkway  
East Vestal NY 13850

**Building**

Unit # \_\_\_\_\_

The building is a multi-tenant, one-story masonry and steel structure containing approximately 25,000 square feet. Tenant shall occupy approximately 2,989 square feet in line. (See attachment "A")

**Use**

Tenant is in the business of growing, cultivating, extracting and manufacturing medical marijuana per regulations as approved and monitored by the New York State Department of Health to be sold in licensed dispensaries located in the State of New York.

Tenant shall use location as a licensed medical marijuana dispensary as regulated by the New York State Department of Health. Tenant shall not use the premises for any other use nor sublet any portion of the building without Landlords consent.

**Lease Term**



**Commencement of Lease Term**

Landlord understands that Tenant is in the process of applying for a license for the New York State Medical Marijuana Program and will not be notified by the NYS Department of Health until the end of July. Rent commencement will begin not less than 60 days from notification date.

**Annual Fixed Base Rent**



Redacted pursuant to N.Y. Public Officers Law, Art. 6

**Operating Expenses, Common Area Maintenance, Utilities and Real Estate Taxes**

Tenant shall be responsible for the cost of its pro rata share of building operating expenses, real estate taxes, common area maintenance and insurance., which landlord estimates to be approximately \$6.13 per square foot.

**Tenant Improvements**

Landlord will provide tenant improvements of a vanilla box, storefront and HVAC.

**Building Access**

Tenant shall have 24/7 access to its space. Landlord understands and agrees to the following lease clause as mandated by New York State Department of Health:

*The landlord acknowledges that its rights of reentry into the premises set forth in this lease do not confer on it the authority to manufacture and/or dispense on the premises medical marijuana in accordance with article 33 of the Public Health Law and agrees to provide the New York State Department of Health, Mayor Erastus Corning 2nd Tower, The Governor Nelson A. Rockefeller Empire State Plaza, Albany, N.Y. 12237, with notification by certified mail of its intent to reenter the premises or to initiate dispossession proceedings or that the lease is due to expire, at least 30 days prior to the date on which the landlord intends to exercise a right of reentry or to initiate such proceedings or at least 60 days before expiration of the lease."*

During the Lease Term, Lessor shall make all necessary repairs to the roof and to the exterior of the Leased Premises and the Lessee shall at all times keep the interior of the Leased Premises, including the plumbing, doors, heating, lighting fixtures and equipment in first class condition and repair and shall surrender said Leased Premises at the end of the lease term in such broom clean condition

**Signage**

Tenant shall be granted the right to install its exterior signage on the exterior of the building as regulated by the New York State Department of Health and the municipal zoning code.

**Brokerage**

Landlord and tenant each acknowledge that neither party has engaged a real estate broker in this transaction.

**Contingency**

The parties' obligations under this agreement are contingent on Tenant obtaining registration as a Registered Organization by the New York State Department of Health to manufacture and dispense approved medical marijuana products in New York State. In the event this does not happen each party shall be relieved of any agreement between the parties with no recourse to the other. Should this proposal met with your approval, please sign where indicated below and return a copy

Sincerely,  
Salus Scientific, LLC

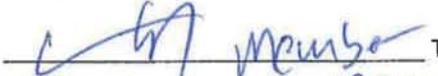


Michael P. Falcone  
Chairman & Member

Agreed to and accepted this 3rd day of June, 2015.

---

Name

 Member Title  
Marc Newman Member  
Newman Development Group LLC

Grand Name

No.	Professional	Date

**PROPOSED  
DEVELOPMENT  
METROPLEX**  
VESTAL, NY



P.O. Box 678  
Vestal, New York 13851  
Phone: (607) 750-0155

[www.newmandevelopment.com](http://www.newmandevelopment.com)

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Date	Scale	Sheet	Notes
MAY 29, 2015	1" = 60'-0"		

EBISHURA SUSHI BAR  
±4,000 SF

±20'-0"  
±100'-0"  
VACANT  
±2,000 SF

±30'-0"  
±100'-0"  
PROPOSED  
±2,989 SF

±30'-0"  
COST CUTTERS  
±1,500 SF  
VACANT  
±1,337 SF

MECH RM

JENNY CRAIG  
±2,000 SF

±1,523 SF  
PLAZA STOR  
±200 SF

Sheet No.

No.	Revision	Date

PROPOSED DEVELOPMENT  
METROPLEX  
VESTAL, NY



P.O. Box 678  
Vestal, New York 13851  
Phone: (607) 766-0135  
www.newmandevelopment.com

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DATE: MARCH 11, 2015  
SCALE: NOT TO SCALE  
SHEET:

## **Proposed Dispensing Facility #2**

**PROPOSAL TO LEASE PREMISES**

Salus Scientific, LLC ("Tenant")  
333 West Washington St  
Syracuse, NY 13202

Ferris Enterprises, Inc. ("Landlord")  
115 Sand Street  
Watertown, NY 13601

**Building Location**

26183 US Route 11  
Evans Mills, NY 13637

**Building**

Unit # \_\_\_\_\_

The building is a multi-tenant, one-story masonry and steel structure containing approximately 10,500 square feet. Tenant shall occupy approximately 2,200 square feet in line. (See attachment "A")

**Use**

Tenant is in the business of growing, cultivating, extracting and manufacturing medical marijuana per regulations as approved and monitored by the New York State Department of Health to be sold in licensed dispensaries located in the State of New York.

Tenant shall use location as a licensed medical marijuana dispensary as regulated by the New York State Department of Health. Tenant shall not use the premises for any other use nor sublet any portion of the building without Landlords consent.

**Lease Term**



**Commencement of Lease Term**

Landlord understands that Tenant is in the process of applying for a license for the New York State Medical Marijuana Program and will not be notified by the NYS Department of Health until the end of July. Rent commencement will begin not less than 60 days from notification date.

**Annual Fixed Base Rent**



Redacted pursuant to N.Y. Public Officers Law, Art. 6

**Operating Expenses, Common Area Maintenance, Utilities and Real Estate Taxes**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**Tenant Improvements**

Landlord will provide tenant improvements of a vanilla box, storefront and HVAC.

**Building Access**

Tenant shall have 24/7 access to its space. Landlord understands and agrees to the following lease clause as mandated by New York State Department of Health:

*The landlord acknowledges that its rights of reentry into the premises set forth in this lease do not confer on it the authority to manufacture and/or dispense on the premises medical marijuana in accordance with article 33 of the Public Health Law and agrees to provide the New York State Department of Health, Mayor Erastus Corning 2nd Tower, The Governor Nelson A. Rockefeller Empire State Plaza, Albany, N.Y. 12237, with notification by certified mail of its intent to reenter the premises or to initiate dispossess proceedings or that the lease is due to expire, at least 30 days prior to the date on which the landlord intends to exercise a right of reentry or to initiate such proceedings or at least 60 days before expiration of the lease."*

During the Lease Term, Lessor shall make all necessary repairs to the roof and to the exterior of the Leased Premises and the Lessee shall at all times keep the interior of the Leased Premises, including the plumbing, doors, heating, lighting fixtures and equipment in first class condition and repair and shall surrender said Leased Premises at the end of the lease term in such broom clean condition

**Signage**

Tenant shall be granted the right to install its exterior signage on the exterior of the building as regulated by the New York State Department of Health and the municipal zoning code.

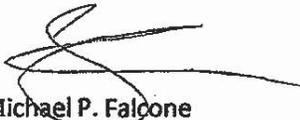
**Brokerage**

Landlord and tenant each acknowledge that Barton Feinberg of the Sutton Companies is the sole broker on the transaction and shall be paid by separate agreement by the Landlord.

**Contingency**

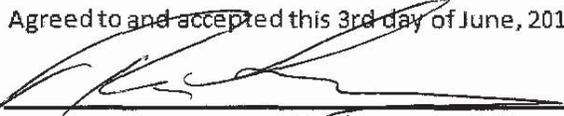
The parties' obligations under this agreement are contingent on Tenant obtaining registration as a Registered Organization by the New York State Department of Health to manufacture and dispense approved medical marijuana products in New York State. In the event this does not happen each party shall be relieved of any agreement between the parties with no recourse to the other. Should this proposal met with your approval, please sign where indicated below and return a copy.

Sincerely,  
Salus Scientific, LLC



Michael P. Faldone  
Chairman & Member

Agreed to and accepted this 3rd day of June, 2015.



Robert Fennis

Name

CEO / President

Title



## **Proposed Dispensing Facility #3**

## **PROPOSAL TO LEASE PREMISES**

Salus Scientific, LLC ("Tenant")  
333 West Washington Street  
Syracuse, NY 13202

Ciampa m4, LLP ("Landlord")  
241-02 Douglaston Parkway  
Douglaston, NY 11362

### **Building Location**

56-15 58<sup>th</sup> Street  
Unit 15A  
Maspeth, NY 11378

### **Building**

The building is a free standing, two-story masonry and wood structure containing approximately 15,000 square feet. Tenant shall occupy approximately 4,000 square feet on the ground floor and second floor of the building.

### **Use**

Tenant is in the business of growing, cultivating, extracting and manufacturing medical marijuana per regulations as approved and monitored by the New York State Department of Health to be sold in licensed dispensaries located in the State of New York.

Tenant shall use location as a licensed medical marijuana dispensary as regulated by the New York State Department of Health. Tenant shall not use the premises for any other use nor sublet any portion of the building without Landlords consent.

### **Lease Term**



### **Commencement of Lease Term**

Landlord understands that Tenant is in the process of applying for a license for the New York State Medical Marijuana Program and will not be notified by the NYS Department of Health until the end of July. Rent commencement will begin not less than 60 days from notification date.

Annual Fixed Base Rent

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Free Rent



Security Deposit



Operating Expenses, Utilities, Taxes



Tenant Improvements

Landlord will provide tenant improvements of a vanilla box and HVAC, in working order.

Parking

Tenant shall have exclusive use of the existing parking spaces on site.

Building Access

Tenant shall have 24/7 access to its space. Landlord understands and agrees to the following lease clause as mandated by New York State Department of Health:

*The landlord acknowledges that its rights of reentry into the premises set forth in this lease do not confer on it the authority to manufacture and/or dispense on the premises medical marihuana in accordance with article 33 of the Public Health Law and agrees to provide the New York State Department of Health, Mayor Erastus Corning 2nd Tower, The Governor Nelson A. Rockefeller Empire State Plaza, Albany, N.Y. 12237, with notification by certified mail of its intent to reenter the premises or to initiate dispossess proceedings or that the lease is due to expire, at least 30 days prior to the date on which the landlord intends to exercise a right of reentry or to initiate such proceedings or at least 60 days before expiration of the lease."*

During the Lease Term, Landlord shall make all necessary repairs to the parking areas, roof and to the exterior of the Leased Premises and the Tenant shall at all times keep the interior of the Leased Premises, including the plumbing, doors, heating, lighting fixtures and equipment in first class condition and repair and shall surrender said Leased Premises at the end of the lease term in such broom clean condition.

**Signage**

Tenant shall be granted the right to install its exterior signage on the exterior of the building as regulated by the New York State Department of Health and the municipal zoning code, subject to Landlord approval.

**Brokerage**

Landlord and Tenant each recognize and acknowledge that no broker has been used between the parties.

**Contingency**

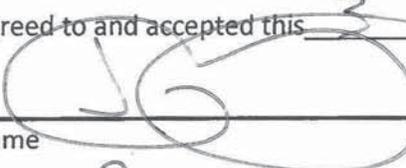
The parties' obligations under this agreement are contingent on Tenant obtaining registration as a Registered Organization by the New York State Department of Health to manufacture and dispense approved medical marijuana products in New York State. In the event this does not happen each party shall be relieved of any agreement between the parties with no recourse to the other. Should this proposal met with your approval, please sign where indicated below and return a copy.

Sincerely,  
Salus Scientific, LLC



Michael P. Falcone  
Chairman & Member

Agreed to and accepted this 3 day of June, 2015.

 - Joseph G. Ciampa.  
Name \_\_\_\_\_ Title \_\_\_\_\_

## **Proposed Dispensing Facility #4**

**PROPOSAL TO LEASE PREMISES**

Salus Scientific, LLC ("Tenant")  
333 West Washington St  
Syracuse, NY 13202

Oliva Holding LLC ("Landlord")  
P.O. Box 400  
East Syracuse NY 13057

**Building Location**

6801 Kinne St  
East Syracuse, NY 13057

**Building**

The building is a free standing, one-story masonry and wood structure containing approximately 2,000 square feet. Tenant shall occupy entire building. (See attachment "A")

The lot size is approximately .29 acres.

**Use**

Tenant is in the business of growing, cultivating, extracting and manufacturing medical marijuana per regulations as approved and monitored by the New York State Department of Health to be sold in licensed dispensaries located in the State of New York.

Tenant shall use location as a licensed medical marijuana dispensary as regulated by the New York State Department of Health. Tenant shall not use the premises for any other use nor sublet any portion of the building without Landlords consent.

**Lease Term**

[REDACTED]

**Commencement of Lease Term**

Landlord understands that Tenant is in the process of applying for a license for the New York State Medical Marijuana Program and will not be notified by the NYS Department of Health until the end of July. Rent commencement will begin not less than 60 days from notification date.

**Annual Fixed Base Rent**

[REDACTED]

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Operating Expenses, Utilities and Real Estate Taxes



Tenant Improvements

Landlord will provide tenant improvements of a vanilla box, storefront and HVAC. \* SEE ATTACHED

Parking

Tenant shall have exclusive use of the 30 existing parking spaces on site.

LANDLORD'S VANILLA SHELL  
SPECS.

STV  
MPP

Building Access

Tenant shall have 24/7 access to its space. Landlord understands and agrees to the following lease clause as mandated by New York State Department of Health:

*The landlord acknowledges that its rights of reentry into the premises set forth in this lease do not confer on it the authority to manufacture and/or dispense on the premises medical marijuana in accordance with article 33 of the Public Health Law and agrees to provide the New York State Department of Health, Mayor Erastus Corning 2nd Tower, The Governor Nelson A. Rockefeller Empire State Plaza, Albany, N.Y. 12237, with notification by certified mail of its intent to reenter the premises or to initiate dispossess proceedings or that the lease is due to expire, at least 30 days prior to the date on which the landlord intends to exercise a right of reentry or to initiate such proceedings or at least 60 days before expiration of the lease."*

During the Lease Term, Lessor shall make all necessary repairs to the roof and to the exterior of the Leased Premises and the Lessee shall at all times keep the interior of the Leased Premises, including the plumbing, doors, heating, lighting fixtures and equipment in first class condition and repair and shall surrender said Leased Premises at the end of the lease term in such broom clean condition

Signage

Tenant shall be granted the right to install its exterior signage on the exterior of the building as regulated by the New York State Department of Health and the municipal zoning code.

Brokerage

Landlord and tenant each recognize and acknowledge that Samuel Vulcano of Pyramid Brokerage is the sole broker and will be paid by Landlord pursuant to a separate agreement.

**Contingency**

The parties' obligations under this agreement are contingent on Tenant obtaining registration as a Registered Organization by the New York State Department of Health to manufacture and dispense approved medical marijuana products in New York State. In the event this does not happen each party shall be relieved of any agreement between the parties with no recourse to the other. Should this proposal met with your approval, please sign where indicated below and return a copy.

MPF

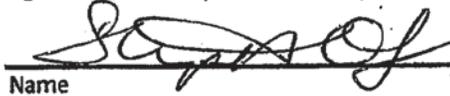
1

Sincerely,  
Salus Scientific, LLC



Michael P. Falcone  
Chairman & Member

Agreed to and accepted this 2<sup>nd</sup> day of June, 2015.

 OLIVA HOLDING, LLC  
Name

MEMBER Title

Redacted pursuant to N.Y. Public Officers Law, Art. 6

6801 KINNE – VANNILA SHELL SPECIFICATIONS

LANDLORD AT LANDLORD'S SOLE COST AND EXPENSE SHALL DELIVER THE LEASE PREMISES BUILDING AS A "VANILLA" SHELL WHICH WILL INCLUDE THE FOLLOWING:

- 1) HVAC AND DUCTING/VENTING
- 2) CEILING AND FLOURESCENT LIGHTING
- 3) SHEET ROCKED INTERIOR PERIMETER WALLS READY FOR PAINT
- 4) FLOORS READY FOR CARPET/VCT
- 5) ONE (1) HANDICAPPED BATHROOM
- 6) REPLACEMENT OF EXTERIOR WINDOWS
- 7) INSTALLATION OF 110 VOLT OUTLETS IN INTERIOR PERIMETER WALLS (ONE EVERY EIGHT FEET)

ALL OTHER LEASED PREMISES BUILDING IMPROVEMENTS SHALL BE AT TENANT'S SOLE COST AND EXPENSE.

Str

WDE  
6/3/15

## **Attachment D Section 1: Manufacturing (§ 1004.5(b)(4))**

### **1. Company Overview, Mission and Values**

Salus Scientific will use state-of-the-art technologies pioneered by key members of their team to cultivate and accurately formulate, package, and administer efficacious doses of therapeutic quantities of cannabinoids specific to Salus Scientific brands.

In compliance with 10 NYCRR §1004.6(b)(1) the following Standard Operating Procedures are submitted to the Department as evidence that Salus Scientific will be able to manufacture approved medical marijuana products, each with a consistent cannabinoid profile (the concentration of total tetrahydrocannabinol (THC) and total cannabidiol (CBD) will define the brand) and each able to pass the required quality control testing.

### **2. Hours of Operation**

In compliance with 10 NYCRR § 1004.5(b)(4)(viii), the proposed hours of operation for the manufacturing facility are as follows:

Due to perpetual harvesting, energy efficiency measures, multiple cycles and different preventative and beneficial treatments, the manufacturing facility will be operational 24 hours per day, with security onsite and functional at all times.

Employees will work in shifts, and will only have access to the facility during their shift.

Employee shifts will be implemented in phases, with one or two 8 hour shifts during initial operations, and a third added when the manufacturing facility is operating at full capacity.

Because Salus Scientific strives to hire employees from the local community whenever possible, the value of a perpetually operating manufacturing facility such as this one will provide substantial economic activity to the community of Johnson City and Broome County.

Due to the pace of the implementation of the New York's medical marijuana program and the requirement to create a sustainable, reliable supply of brands, Salus Scientific expects that state and local government will allow operations to function at all hours; however, should certain state or local regulations preclude such activities, Salus Scientific will yield to that regulatory oversight.

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### **3. Good Agricultural Practices**

In compliance with 10 NYCRR §1004.11(e)(1) Salus Scientific will use good agricultural practices (GAPs) and must conform to all applicable laws and rules of New York State. To fulfill the requirements of 10 NYCRR §1004.5(b)(18)(i), Daniel Harder PhD, Genetics and Cultivation Team Lead for Salus Scientific, has more than eight years experience in applying and implementing GAPs within a botanical garden and more than 15 years experience in using GAPs in international rare plant conservation and restoration projects. He is familiar with general principles and specific practices. Salus Scientific will adhere to and remain current in GAPs as it applies to the cultivation, propagation, harvesting, and handling medical marijuana. As the overriding principle of GAPs is to reduce food safety risk, Salus Scientific will apply these same standards and precautions to the cultivation of medical marijuana, keeping patient health and safety as its top priority.

In compliance with 10 NYCRR §1004.11 subsection (e) (3) the manufacturing facility will only use pesticides, fungicides, and herbicides that are approved by the New York State Department of Agriculture and Markets. No synthetic marijuana additives will be used in the production of any medical marijuana product pursuant to 10 NYCRR § 1004.11.

In compliance with 10 NYCRR §1004.11 subsection (f), production of any approved medical marijuana product will be in accordance with general sanitary conditions. Poisonous or toxic materials, including but not limited to insecticides, rodenticides, detergents, sanitizers, caustics, acids and related cleaning compounds are stored in a separate area from the marijuana and medical marijuana products in prominently and distinctly labeled containers, except that nothing herein precludes the convenient availability of detergents or sanitizers to areas where equipment, containers and utensils are washed and sanitized.

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

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#### **14. Products**

Salus Scientific is committed to serving the diverse needs of the medical marijuana patient community of New York. Patients may elect to incorporate medical marijuana treatment into their healthcare due to suffering from a variety of serious and debilitating illnesses. To meet the needs and preferences of all patients, Salus Scientific will produce such forms of medical marijuana products as approved by the department, in compliance with 10 NYCRR § 1004.11(c).

In compliance with 10 NYCRR § 1004.11(g), Salus Scientific will produce the following forms of approved medical marijuana products: liquid or oil preparations for metered oromucosal or sublingual administration or administration per tube; metered liquid or oil preparations for vaporization; and capsules for oral administration. No additional form of medical marijuana product will be produced at the Salus Scientific manufacturing facility unless it has been approved by the commissioner. Approved medical marijuana products will not be incorporated into edible food products unless approved by the commissioner. In compliance with 10 NYCRR § 1004.11(c)(3), no product will contain more than 10 milligrams of THC per dose.

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## **17. Packaging Protocol**

### **a. Overview**

This guideline is applicable to all packaging activities and describes the controls for packaging and labeling/printed components used in the packaging of medical marijuana in its finished dosage forms. In compliance with 10 NYCRR § 1004.11(h), the final form of all approved medical marijuana products offered by Salus Scientific will be packaged at the manufacturing site. The original seal will be kept intact and will not be broken except for quality testing at an approved laboratory, for adverse event investigations, by the Department, or by the certified patient or designated caregiver. In compliance with 10 NYCRR § 1004.11(i), Salus Scientific will package all approved medical marijuana products such that it is child-resistant, tamper-proof/tamper-evident, light-resistant, and in a resealable package that minimizes oxygen exposure.

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Salus Scientific will maintain records on cultivation, manufacturing, packaging and labeling, as required by Article 33 of New York State Public Health Law. Such records will be kept for a period of five (5) years and will be made available to the Department upon request.

**b. Testing**

Final medical marijuana and marijuana products will be tested for quality at the manufacturing facility prior to packaging. Salus Scientific will retain a subset of each lot of medical marijuana to allow for future testing. Each subset shall be properly stored in its original packaging with the seal intact. These subsets shall be retained for at least two (2) years past the expiration date. Upon request, samples for testing will be provided to the Department for the purpose of quality assurance or as part of an investigation of an adverse event.

**c. Labeling Policy**

Salus Scientific's facility uses a prescription printing and labeling program capable of generating a label compliant with the Department of Health Regulations. In compliance with 10 NYCRR §1004.11(k), each approved medical marijuana product will be affixed with a product label that has been approved by the Department prior to use. Each product label will be applied at the manufacturing facility, be easily readable, firmly affixed and will include:

- i. Salus Scientific's name, address and registration number;
- ii. the certifying practitioner's name;
- iii. the medical marijuana product form and brand designation;
- iv. the patient name and registry identification number and, if applicable, the designated caregiver;
- v. the single dose THC and CBD content for the product set forth in milligrams (mg);
- vi. the medical marijuana product lot unique identifier (lot number or bar code);
- vii. the quantity included in the package;
- viii. the date packaged;
- ix. the date of expiration of the product;

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- x. the proper storage conditions;
- xi. language stating:
  - 1. “Medical marijuana products must be kept in the original container in which they were dispensed and removed from the original container only when ready for use by the certified patient”;
  - 2. “Keep secured at all times”;
  - 3. “May not be resold or transferred to another person”;
  - 4. “This product might impair the ability to drive”;
  - 5. “KEEP THIS PRODUCT AWAY FROM CHILDREN (unless medical marijuana product is being given to the child under a practitioner’s care)”;
  - 6. “This product is for medicinal use only. Women should not consume during pregnancy or while breastfeeding except on the advice of the certifying practitioner, and in the case of breastfeeding mothers, including the infant’s pediatrician”;
  - 7. “This product has not been analyzed by the FDA. There is limited information on the side effects of using this product and there may be associated health risks.”
- xii. Mockup label

The following are examples of possible Salus Scientific labeling designs. These designs are preliminary, and will not be affixed to any medical marijuana products without Department approval.

**SALUS SCIENTIFIC**  
CBD DOMINANT | CBD / THC

**40MG CBD / 5MG THC PER DOSE**

8:1 RATIO  
30 GEL CAPSULE

INSTRUCTIONS: ONE CAPSULE PER DAY OR AS RECOMMENDED.  
DOSAGE: 40MG/CBD DOSE 5MG/THC DOSE  
PRODUCT: 30 GEL CAPSULE  
RATIO: HIGH CBD / LOW THC  
CANNABIS VARIETY: INDICA  
MOLD/MILDEW: PASS  
PESTICIDES: PASS  
SOLVENTS: PASS  
HEAVY METALS: PASS  
TOTAL CANNABINOIDS: 22.4%  
INGREDIENTS: CANNABIS, PURIFIED WATER, OLEIC, LINOLEIC, AND STEARIC FATTY ACID

KEEP THIS PRODUCT AWAY FROM CHILDREN  
KEEP SECURED AT ALL TIMES  
MAY NOT BE RESOLD OR TRANSFERRED TO ANOTHER PERSON  
THIS PRODUCT MIGHT IMPAIR THE ABILITY TO DRIVE  
STORE IN DARK PLACE

MANUFACTURED: 9/21/16  
USE BY: 2/21/18  
ONSET: 15MIN  
LASTS: 4H-6H

640509 040147

**SALUS SCIENTIFIC**  
CBD DOMINANT | CBD / THC

**40MG CBD / 5MG THC PER DOSE**

8:1 RATIO  
30 GEL CAPSULE

INSTRUCTIONS: ONE CAPSULE PER DAY OR AS RECOMMENDED.  
DOSAGE: 40MG/CBD DOSE 5MG/THC DOSE  
PRODUCT: 30 GEL CAPSULE  
RATIO: HIGH CBD / LOW THC  
CANNABIS VARIETY: SATIVA  
MOLD/MILDEW: PASS  
PESTICIDES: PASS  
SOLVENTS: PASS  
HEAVY METALS: PASS  
TOTAL CANNABINOIDS: 22.4%  
INGREDIENTS: CANNABIS, PURIFIED WATER, OLEIC, LINOLEIC, AND STEARIC FATTY ACID

KEEP THIS PRODUCT AWAY FROM CHILDREN  
KEEP SECURED AT ALL TIMES  
MAY NOT BE RESOLD OR TRANSFERRED TO ANOTHER PERSON  
THIS PRODUCT MIGHT IMPAIR THE ABILITY TO DRIVE  
STORE IN DARK PLACE

MANUFACTURED: 9/21/16  
USE BY: 2/21/18  
ONSET: 15MIN  
LASTS: 4H-6H

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**SALUS SCIENTIFIC**  
BALANCE | CBD / THC

**5MG CBD / 5MG THC PER DOSE**

1:1 RATIO  
30 PRESSED TABLET

INSTRUCTIONS: ONE CAPSULE PER DAY OR AS RECOMMENDED.  
DOSAGE: 5MG/CBD DOSE 5MG/THC DOSE  
PRODUCT: 30 PRESSED TABLET  
RATIO: BALANCE CBD/THC  
CANNABIS VARIETY: INDICA  
MOLD/MILDEW: PASS  
PESTICIDES: PASS  
SOLVENTS: PASS  
HEAVY METALS: PASS  
TOTAL CANNABINOIDS: 22.4%  
INGREDIENTS: CANNABIS, PURIFIED WATER, OLEIC, LINOLEIC, AND STEARIC FATTY ACID

KEEP THIS PRODUCT AWAY FROM CHILDREN  
KEEP SECURED AT ALL TIMES  
MAY NOT BE RESOLD OR TRANSFERRED TO ANOTHER PERSON  
THIS PRODUCT MIGHT IMPAIR THE ABILITY TO DRIVE  
STORE IN DARK PLACE

MANUFACTURED: 9/21/16  
USE BY: 2/21/18  
ONSET: 15MIN  
LASTS: 4H-6H

640509 040147

**SALUS SCIENTIFIC**  
BALANCE | CBD / THC

**5MG CBD / 5MG THC PER DOSE**

1:1 RATIO  
30 PRESSED TABLET

INSTRUCTIONS: ONE TABLET PER DAY OR AS RECOMMENDED.  
DOSAGE: 5MG/CBD DOSE 5MG/THC DOSE  
PRODUCT: PRESSED TABLET  
RATIO: BALANCE CBD/THC  
CANNABIS VARIETY: SATIVA  
MOLD/MILDEW: PASS  
PESTICIDES: PASS  
SOLVENTS: PASS  
HEAVY METALS: PASS  
TOTAL CANNABINOIDS: 22.4%  
INGREDIENTS: CANNABIS, PURIFIED WATER, OLEIC, LINOLEIC, AND STEARIC FATTY ACID

KEEP THIS PRODUCT AWAY FROM CHILDREN  
KEEP SECURED AT ALL TIMES  
MAY NOT BE RESOLD OR TRANSFERRED TO ANOTHER PERSON  
THIS PRODUCT MIGHT IMPAIR THE ABILITY TO DRIVE  
STORE IN DARK PLACE

MANUFACTURED: 9/21/16  
USE BY: 2/21/18  
ONSET: 15MIN  
LASTS: 4H-6H

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**SALUS SCIENTIFIC**  
THC DOMINANT | THC / CBD

**10MG THC / 1MG CBD PER DOSE**

10:1 RATIO  
30 STRIPS

INSTRUCTIONS: ONE CAPSULE PER DAY OR AS RECOMMENDED.  
DOSAGE: 10MG/THC DOSE 1MG/CBD DOSE  
PRODUCT: 30 STRIPS  
RATIO: HIGH THC / LOW CBD  
CANNABIS VARIETY: INDICA  
MOLD/MILDEW: PASS  
PESTICIDES: PASS  
SOLVENTS: PASS  
HEAVY METALS: PASS  
TOTAL CANNABINOIDS: 22.4%  
INGREDIENTS: CANNABIS, PURIFIED WATER, OLEIC, LINOLEIC, AND STEARIC FATTY ACID

KEEP THIS PRODUCT AWAY FROM CHILDREN  
KEEP SECURED AT ALL TIMES  
MAY NOT BE RESOLD OR TRANSFERRED TO ANOTHER PERSON  
THIS PRODUCT MIGHT IMPAIR THE ABILITY TO DRIVE  
STORE IN DARK PLACE

MANUFACTURED: 9/21/16  
USE BY: 2/21/18  
ONSET: 15MIN  
LASTS: 4H-6H

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**SALUS SCIENTIFIC**  
THC DOMINANT | THC / CBD

**10MG THC / 1MG CBD PER DOSE**

10:1 RATIO  
30 STRIPS

INSTRUCTIONS: ONE STRIP PER DAY OR AS RECOMMENDED.  
DOSAGE: 10MG/THC DOSE 1MG/CBD DOSE  
PRODUCT: 30 STRIPS  
RATIO: HIGH THC / LOW CBD  
CANNABIS VARIETY: SATIVA  
MOLD/MILDEW: PASS  
PESTICIDES: PASS  
SOLVENTS: PASS  
HEAVY METALS: PASS  
TOTAL CANNABINOIDS: 22.4%  
INGREDIENTS: CANNABIS, PURIFIED WATER, OLEIC, LINOLEIC, AND STEARIC FATTY ACID

KEEP THIS PRODUCT AWAY FROM CHILDREN  
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THIS PRODUCT MIGHT IMPAIR THE ABILITY TO DRIVE  
STORE IN DARK PLACE

MANUFACTURED: 9/21/16  
USE BY: 2/21/18  
ONSET: 15MIN  
LASTS: 4H-6H

640509 040147

**SALUS SCIENTIFIC**  
CBD / THCA / TURMERIC

**5MG THCA / 5MG CBD PER DOSE**

1:1 RATIO  
30 oz TINCTURE

INSTRUCTIONS: ONE CAPSULE PER DAY OR AS RECOMMENDED.  
DOSAGE: 5MG/THCA DOSE 5MG/CBD DOSE  
PRODUCT: 30 oz TINCTURE  
RATIO: BALANCE CBD/THCA  
CANNABIS VARIETY: INDICA  
MOLD/MILDEW: PASS  
PESTICIDES: PASS  
SOLVENTS: PASS  
HEAVY METALS: PASS  
TOTAL CANNABINOIDS: 22.4%  
INGREDIENTS: CANNABIS, PURIFIED WATER, OLEIC, LINOLEIC, TURMERIC, AND STEARIC FATTY ACID

KEEP THIS PRODUCT AWAY FROM CHILDREN  
KEEP SECURED AT ALL TIMES  
MAY NOT BE RESOLD OR TRANSFERRED TO ANOTHER PERSON  
THIS PRODUCT MIGHT IMPAIR THE ABILITY TO DRIVE  
STORE IN DARK PLACE

MANUFACTURED: 9/21/16  
USE BY: 2/21/18  
ONSET: 15MIN  
LASTS: 4H-6H

640509 040147

**SALUS SCIENTIFIC**  
CBD / THCA / HOPS

**5MG THCA / 5MG CBD PER DOSE**

1:1 RATIO  
30 oz TINCTURE

INSTRUCTIONS: ONE DROP PER DAY OR AS RECOMMENDED.  
DOSAGE: 5MG/THCA DOSE 5MG/CBD DOSE  
PRODUCT: 30 oz TINCTURE  
RATIO: BALANCE CBD/THCA  
CANNABIS VARIETY: SATIVA  
MOLD/MILDEW: PASS  
PESTICIDES: PASS  
SOLVENTS: PASS  
HEAVY METALS: PASS  
TOTAL CANNABINOIDS: 22.4%  
INGREDIENTS: CANNABIS, PURIFIED WATER, OLEIC, LINOLEIC, HOPS, AND STEARIC FATTY ACID

KEEP THIS PRODUCT AWAY FROM CHILDREN  
KEEP SECURED AT ALL TIMES  
MAY NOT BE RESOLD OR TRANSFERRED TO ANOTHER PERSON  
THIS PRODUCT MIGHT IMPAIR THE ABILITY TO DRIVE  
STORE IN DARK PLACE

MANUFACTURED: 9/21/16  
USE BY: 2/21/18  
ONSET: 15MIN  
LASTS: 4H-6H

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**SALUS SCIENTIFIC**  
CBD DOMINANT | HIGH CBD / LOW THC

**7.5MG CBD / 2.5MG THC PER DOSE**

2:1 RATIO  
VAPE

INSTRUCTIONS: 1 OR 2 PUFFS AS SUGGESTED BY A DOCTOR.  
DOSAGE: 7.5MG/CBD DOSE 2.5MG/THC DOSE  
PRODUCT: VAPE  
RATIO: HIGH CBD / LOW THC  
CANNABIS VARIETY: INDICA  
MOLD/MILDEW: PASS  
PESTICIDES: PASS  
SOLVENTS: PASS  
HEAVY METALS: PASS  
TOTAL CANNABINOIDS: 22.4%  
INGREDIENTS: CANNABIS OIL AND COCONUT OIL

KEEP THIS PRODUCT AWAY FROM CHILDREN  
KEEP SECURED AT ALL TIMES  
MAY NOT BE RESOLD OR TRANSFERRED TO ANOTHER PERSON  
THIS PRODUCT MIGHT IMPAIR THE ABILITY TO DRIVE  
STORE IN DARK PLACE

MANUFACTURED: 9/21/16  
USE BY: 2/21/18  
ONSET: 15MIN  
LASTS: 4H-6H

640509 040147

**SALUS SCIENTIFIC**  
CBD DOMINANT | HIGH CBD / LOW THC

**7.5MG CBD / 2.5MG THC PER DOSE**

2:1 RATIO  
VAPE

INSTRUCTIONS: 1 OR 2 PUFFS AS SUGGESTED BY A DOCTOR.  
DOSAGE: 7.5MG/CBD DOSE 2.5MG/THC DOSE  
PRODUCT: VAPE  
RATIO: HIGH CBD / LOW THC  
CANNABIS VARIETY: SATIVA  
MOLD/MILDEW: PASS  
PESTICIDES: PASS  
SOLVENTS: PASS  
HEAVY METALS: PASS  
TOTAL CANNABINOIDS: 22.4%  
INGREDIENTS: CANNABIS OIL AND COCONUT OIL

KEEP THIS PRODUCT AWAY FROM CHILDREN  
KEEP SECURED AT ALL TIMES  
MAY NOT BE RESOLD OR TRANSFERRED TO ANOTHER PERSON  
THIS PRODUCT MIGHT IMPAIR THE ABILITY TO DRIVE  
STORE IN DARK PLACE

MANUFACTURED: 9/21/16  
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LASTS: 4H-6H

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Salus Scientific's dispensing facility will place all medical marijuana and marijuana products in plain outer packaging when dispensing to patients and designated caregivers. All medical marijuana and marijuana products will be stored at the dispensing facility in a manner that prevents contamination and deterioration of the product and its packaging.

**d. Package Safety Insert**

In compliance with 10 NYCRR §1004.11(k), Salus Scientific will issue a Department-approved package safety insert with each product dispensed. Each safety insert will include:

- i. more detailed dosage directions and administration instructions;
- ii. a list of any excipients used;
- iii. the medical marijuana product form and brand designation;
- iv. a list of any contraindications;
- v. a warning of any potential allergens in the product;
- vi. a warning of any potential adverse effects or dangers associated with medical marijuana use, along with instructions for reporting adverse effects to the Department;
- vii. a warning about child care, operating heavy machinery, driving or making important decisions while under the influence of medical marijuana and marijuana products;
- viii. a warning on tolerance, dependence, withdrawal and substance abuse, along with how to recognize warning signs of problematic medical marijuana usage and how to obtain appropriate treatment;
- ix. instructions on how to properly dispose of excess, unwanted or contaminated medical marijuana and marijuana products in accordance with 10 NYCRR §1004.20;

**e. Product Stability**

In compliance with 10 NYCRR §1004.11(m) Salus Scientific products will be tested at an approved laboratory to demonstrate the stability of each approved medical marijuana product produced. In compliance with 10 NYCRR § 1004.11(m)(1), all Salus Scientific products will be stable for a minimum of 60 days under the specified storage conditions (light, temperature and humidity) when opened, and the stability and expiration date of

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the final distributed medical marijuana product shall be validated through testing at an approved laboratory.

Additionally, the shelf-life of unopened medical marijuana products (e.g., packages or vials) will be validated by ongoing stability testing according to a schedule determined by the department. An expiration date for each Salus Scientific product in its unopened state will be determined through stability testing at an approved laboratory, In compliance with 10 NYCRR §1004.11(m)(2).

The results of laboratory testing will determine Salus Scientific specifications regarding storage conditions. These specifications will address storage at the manufacturing facility once the package is sealed, during transport, at the dispensing facility, in the patient's home and for samples retained for future testing, in compliance with 10 NYCRR §1004.11(m)(3). These specifications will be used to inform Salus Scientific approved standard operating procedures regarding storage at dispensing facilities and the manufacturing facility, and will be incorporated into patient education materials on proper storage of medical marijuana products.

## **18. Storage**

### **a. Overview**

These standard operating procedures have been designed for the storage, labeling and shipping of high quality medicine, free of mold, disease, heavy metals and other contaminants. The storage of marijuana is presented in this manual to ensure consistency and standardization. In the case of herbal drugs, the storage method and primary curing of the plant preserves the ultimate properties of the active pharmaceutical ingredient. Therefore, an effective quality assurance system in the steps leading up to shipping is needed in order to guarantee reproducible quality.

Efficient operations require extensive understanding of the curing stage of plant production by each member of the cultivation team. These standard operating procedures are to enhance the consistency of medications by formulating an appropriate quality standard for storing marijuana. Specifically, it is critical that cured marijuana is:

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- i. Released on a lot-by-lot basis, with each lot being approved by the Quality Assurance Manager before sale.
- ii. Manufactured, packaged, labeled, tested and stored hygienically to minimize contamination.
- iii. Stored under proper conditions, which ensure the preservation of the therapeutic properties of the end product.
- iv. Shipped in a reliable, constant, and reproducible manner.
- v. Monitored in a way that reduces cultivation, processing, and storage errors.

**b. Storage Conditions**

Pursuant to New York Department of Health regulations, all marijuana product is be stored in accordance with the security directive in a manner that ensures its quality and non-diversion at all times. All environments that contain or may potentially contain marijuana are regularly sanitized in accordance with the sanitation protocol.

The ideal conditions for the storage of pre-processed marijuana depend on what method of processing is employed. Because mechanically processed marijuana must be fresh, it would not be harvested until it is ready for processing. When a hand-manicure is intended, storage of the preprocessed plants take place under the ideal conditions of the environmental drying and curing chamber between 10 and 16°C and 50% RH. Storage of post- mechanically processed marijuana occurs in the environmental drying and curing chamber between 10 and 16°C and 50% RH. Storage of post-processed hand-manicured product is weighed, packaged internally, labeled and stored in the secure products vault on-site. When the mechanically processed marijuana has completed the drying and curing phase, it is be weighed, processed, packaged internally, labeled and stored in the secure products vault on-site.

When marijuana is held at the ideal conditions (shown below), and is properly monitored for contaminants, marijuana flowers can be held stable for months to years where the decarboxylation and curing processes reach their end points. After which time, flavor and potency stabilize, and the marijuana may be sold or consumed. It is important to note that UV light degrades cannabinoids; so all storage must take place in periodic low-light or

constant-dark conditions. One (1) year of storage is recommended, however, 2 years is the maximum retention time for products without batch re-testing.

	Temperature	Humidity
<b>Ideal Conditions for Long- Term Storage</b>	<b>10°C-16°C</b>	<b>50%</b>

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## **20. Waste Disposal**

### **a. Overview**

In compliance with 10 NYCRR §1004.10(a)(7), Salus Scientific will dispose of unusable medical marijuana products that have failed laboratory testing or any marijuana used in the manufacturing process in accordance with the operating plan described below, presented here for the Department's approval. The Salus Scientific disposal policy is designed to balance public safety with the most environmentally friendly disposal methods for marijuana waste. The methods outlined here include protocols for securely storing marijuana waste, rendering marijuana waste non-recoverable, disposing of non-recoverable marijuana waste, and disposing of non-marijuana waste. Any changes to

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these protocols will be submitted to the Department of Public Health prior to implementation

**b. Marijuana waste**

The following will be considered marijuana waste:

- i. marijuana plant waste, including discarded immature and mature plants and seedlings
- ii. leaves and flowers used to create marijuana extracts
- iii. improperly stored, expired or damaged marijuana leaves and flowers
- iv. improperly stored, expired or damaged marijuana extracts and marijuana products
- v. In compliance with 10 NYCRR §1004.11(l)(1), any lot of marijuana product that does not meeting the minimum standards or specifications for safety
- vi. In compliance with 10 NYCRR §1004.11(l)(2), any lot not meeting the minimum standards or specifications for brand consistency
- vii. unusable medical marijuana products that have failed laboratory testing
- viii. In compliance with 10 NYCRR §1004.12(m), any approved medical marijuana product returned to a Salus Scientific dispensing facility
- ix. In compliance with 10 NYCRR §1004.10(c)(2)(ii), any marijuana or marijuana products that need to be destroyed in the event that a Salus Scientific facility must close, pursuant to the Salus Scientific closure plan

Marijuana waste will be considered psychoactive and will be treated as a threat to public safety should it be lost, stolen or diverted. As such, marijuana waste will be either securely stored or rendered unrecoverable at the moment it is generated or determined unusable as the result of laboratory testing.

**c. Temporary secure storage for marijuana waste**

In compliance with 10 NYCRR §1004.11(e)(6), the manufacturing facility will have a separate secure area for temporary storage of any medical marijuana or medical marijuana product that needs to be destroyed. The secure waste storage area will remain locked at all times and will be accessible to employees only with managerial approval. No marijuana waste will remain in the secure waste storage area for more than 24 hours before it is rendered non-recoverable.

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**d. Rendering marijuana waste unrecoverable**

The manufacturing facility will use the grinding method to render marijuana waste unrecoverable. This is the method most used by regulated medical marijuana facilities in other states. The grinding method effectively destroys the psychoactive as well as non-psychoactive molecules of marijuana and marijuana products, ensuring that marijuana waste is undesirable and does not create a nuisance for public safety officers. The grinding method uses an electric leaf mulcher machine to grind marijuana waste into mulch. The waste is then incorporated with other types of non-consumable solid waste so that the resulting mixture is at least fifty percent non-marijuana waste.

The Salus Scientific manufacturing facility will incorporate the following types of non-consumable solid waste:

- paper waste (cardboard, office paper, newspaper, etc.)
- organic food waste
- non-psychoactive plant waste, including root balls and mature stems
- yard waste

The machine used will be capable of grinding marijuana waste into fine mulch, with a motor capable of running for extended time periods when necessary. All regular employees and managerial staff will be instructed in the safe operation of this machine, including the use of safety goggles and gloves and performing regular safety checks with each use.

**i. Procedures**

1. Identify marijuana waste that has been tagged for disposal by accessing the list of marijuana waste in the inventory control system.
2. Obtain managerial approval and/or oversight to access the temporary secure storage area for marijuana waste.
3. Transfer marijuana waste from temporary secure storage to the waste storage area where the electric mulcher and non-consumable waste products are located.

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4. Remove marijuana waste from packaging, as necessary. Follow company procedures to tare the scale and weigh the marijuana waste products, and record the weight in the inventory control system.
5. Weigh out non-consumable waste in an amount equal to the weight recorded, plus an additional 5 percent.
6. Perform mulcher safety checks and put on protective safety goggles and gloves.
7. Follow manufacturer's directions to feed marijuana waste into the mulcher, taking care not to overload the machine.
8. Mix the mulched marijuana waste with the previously weighed non-consumable waste.
9. Dispose of the resulting non-recoverable marijuana waste in the designated container. This container shall be kept locked at all times, opened only to deposit and remove non-recoverable marijuana waste, and stored indoors at all times.
10. Note in electronic inventory control system that the marijuana waste products that have been rendered non-recoverable, the date and time that they were rendered non-recoverable, the employee who performed the procedure and the manager who approved or oversaw the procedure. Salus Scientific will maintain and make available a separate record of each such disposal indicating:
  - a. The date and time of disposal.
  - b. The manner of disposal.
  - c. The brand name and quantity of marijuana disposed of
  - d. The signatures of the persons disposing of the marijuana and any other persons present during the disposal.
11. Marijuana waste will be rendered non-recoverable a minimum of once daily, unless no marijuana waste has been generated or identified.

**e. Disposal of marijuana waste**

Marijuana waste that has been rendered non-recoverable will be disposed of along with other non-recyclable, non-hazardous solid waste, using the services of the local waste management company. Solid waste will be picked up a minimum of once weekly. An employee or manager will request the name and signature of the waste management

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employee responsible for pickup before unlocking the marijuana waste container for disposal.

**f. Non-marijuana waste**

Solid waste that is nonhazardous will be stored in bins or dumpsters for regular weekly trash pick-up, including the following types of waste:

- i. growing medium from marijuana cultivation– soil, seedling plugs, etc.
- ii. recyclable waste – plastics, metal, paper etc.
- iii. food and bathroom waste from employee break room and restrooms

**g. Hazardous waste**

Hazardous waste will be disposed of in compliance with all federal, state and local codes and statutes. When hazardous waste is generated in the manufacturing process, a manager will schedule a hazardous waste pick-up or drop-off with the local waste management company or landfill. The following items will be treated as hazardous waste:

- i. Chemical waste from the extraction process
- ii. fluorescent light bulbs and other mercury-containing bulbs
- iii. electronic waste

Electronic waste may be donated or disposed of at an e-recycle event, as available.

**h. Liquid Waste**

Liquid waste resulting from manufacturing processes will be disposed of in compliance with the requirements for discharge into surface water, groundwater and sewers.

**i. Dispensary waste**

Salus Scientific dispensaries will also use the most environmentally sound practices available so that minimal waste is generated. Any marijuana product that is identified as waste using the protocols listed in the Salus Scientific operating manual, including marijuana products returned to the dispensary by a patient, will be returned to the Salus Scientific manufacturing facility and disposed of in accordance with the protocols

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described herein. In compliance with 10 NYCRR §1004.12 (m), if an approved medical marijuana product is returned to a Salus Scientific dispensing facility, the dispensing facility will return the product to the manufacturing facility and it will be destroyed in accordance with the approved operating plan that is described above.

**j. Marijuana Extract Oil Waste**

In order to prevent any excess, undesired, recalled, obsolete, adulterated, misbranded or deteriorated marijuana extract product from making its way to non-patients or illicit markets, Salus Scientific will use an on-site via a Micro Auto Gasification unit to render non-recoverable any large quantity of marijuana extract oil or a large quantity of approved medical marijuana products that must be destroyed. Because this type of waste is incredibly potent, Salus Scientific will take the additional precaution of treating it as medical waste.

The Micro Auto Gasification unit does not emit an odor of marijuana as a result of the gasification process. It is currently in use by the Canadian military on navy ships and in hospital settings.



## 1. TECHNOLOGY DESCRIPTION

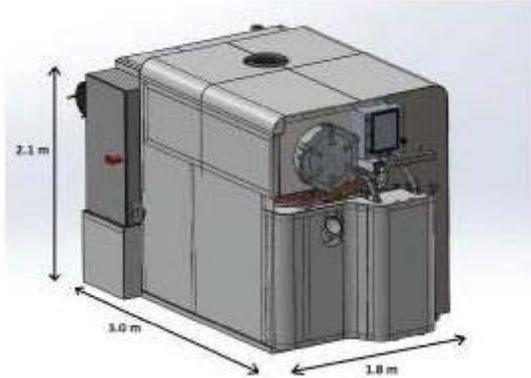
### 1.1. Process Overview

The Micro Auto Gasification System, or MAGS™, is intended to be the world's most compact, efficient and environmentally safe technology for the conversion of waste into thermal energy for use by the site where the waste is generated. MAGS can be used to eliminate all combustible waste produced by a ship, community or institution, while sterilizing the inorganic portion of the waste. Waste streams that can be easily treated by MAGS, without the need for segregation, include but are not limited to paper/cardboard, plastics, food, oily rags, oils and sludges.

MAGS uses patented technology, *Auto Gasification*, to thermally break down waste and transform it into a solid carbon material (bio-char) and a synthesis gas (syngas). The syngas becomes the main fuel source for MAGS, which eliminates the need for external energy sources and renders the appliance virtually self-sustainable. Put simply, MAGS gasifies - or "cooks" - waste, reducing it by more than 95 percent in volume to bio-char and a hot gas (syngas). The hot gas re-circulates through the appliance to maintain the elevated temperature needed to continue the gasification process, hence *Auto Gasification*.

MAGS is an energy generating device that is fuelled by waste, and as a result produces approximately 70 kW of thermal energy for use by the site where it is located. This thermal energy can be transferred to the site for a variety of applications such as hot water or space heating, consequently enabling cost savings for the end user. Bio-char sequesters carbon thereby reducing greenhouse gas emissions when compared to alternative methods such as landfilling and incineration. Moreover, bio-char has excellent water and nutrient retention properties when combined with soil as an additive. Because of the *Auto Gasification* process and bio-char's ability to sequester carbon, MAGS can prevent the release of up to two tonnes of CO<sub>2</sub> for every tonne of waste that it treats.

The MAGS technology is a simple appliance whose design incorporates many beneficial features. It is extremely compact, making it small enough to be installed in any utility room, inner-city building, or small compartments within a ship. It is fully automated, uses minimal utilities because it generates its own fuel, and can be monitored remotely, thus offering immediate assistance for troubleshooting if need be. Additionally, it is exceptionally safe and can be operated by anyone with little technical background and minimal training.



*Micro Auto Gasification System*

Salus Scientific manufacturing employees will maintain and make available a separate record of each disposal using the Micro Auto Gasification System, indicating:

- i. The date and time of disposal.
- ii. The manner of disposal.
- iii. The brand name and quantity of marijuana disposed of.
- iv. The signatures of the persons disposing of the marijuana and any other persons present during the disposal.

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## **24. Sanitation Program**

### **a. Overview**

The purpose and scope of this sanitation program is to ensure that Salus Scientific has a health and hygiene program in place that meets sanitation requirements for the premises, the health and hygiene of personnel pursuant to New York Department of Health Regulations. Salus Scientific's sanitation program is set out to describe:

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- i. Procedures for effectively cleaning the premises in which marijuana products are produced;
- ii. Procedures for effectively cleaning the equipment used in the production of marijuana products;
- iii. Procedures for handling any substance used in the production marijuana products; and
- iv. All requirements, with respect to the health, hygienic behavior and the clothing of the personnel who are involved in the production of marijuana, which are necessary to ensure that the production of marijuana is conducted in sanitary conditions.

**b. Pre-Operational Assessment (After Sanitation/Before Production Starts)**

Equipment and parts must be inspected again for cleanliness and damage and then reassembled using the instructions in the corresponding sanitation standard operating procedures (SSOP) by the Sanitation Manager. Sanitation and inspection completion must be recorded on the Sanitation Record Logbook.

**c. Facility Sanitation Program**

- i. Growing, Processing and Drying Rooms
  - a. Dry Sweeping of Floor Surfaces Procedures
    1. Dry Sweeping of Floor Surfaces Procedures
    2. Materials /Supplies: Room designated sweeper, dust mop, pan & brush
    3. Frequency: At the end of each workday
    4. Method:
      - i. Collect the cleaning Materials / Supplies for the procedure
      - ii. Sweep the floor toward the waste contained
      - iii. Avoid taking the dust mop off the floor and avoid shaking it in the area just cleaned.
      - iv. Pick up the gathered waste using a dust pan and brush, and dispose into the waste container;
      - v. Clean all cleaning equipment and return it to its proper location or discard as appropriate;

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- vi. Wash and disinfect hands with hand cleaning solution. Dry hands with paper towels.

b. Wet Mopping of Floor Surfaces Procedures

1. Materials /Supplies: Room designated roller/wringer bucket, detachable mop head, mop handle, DETSAN @ (1+50) and hazard/warning signs.
2. Frequency: At the end of each workday
3. Method:
  - i. Collect the Materials / Supplies required for the procedure;
  - ii. Perform Dry Sweeping Procedure listed above prior to wet mopping;
  - iii. Fill the mop bucket with clean water 1/2 full.
  - iv. Add ½ cup of DETSAN at 1+50
  - v. Install appropriate signage and barriers to maximize public safety during cleaning
  - vi. Place the mop head in the cleaning solution, agitate and wring out.
  - vii. Place one foot on the bucket projection and the other foot on the pedal (if using a roller bucket). Depress the pedal; pull the mop up vertically through the rollers. If using a wringer bucket: Place the mop in the drainer basket of the bucket, push down the lever handle and depress, wringing out excess solution. Return the lever handle to an upright position.
  - viii. Apply the damp mop to the floor surface, work in an area approximately one square meter using overlapping strokes.
  - ix. Rinse the mop head regularly and replace when necessary to avoid build up and reapplication of soil to the floor surface.
  - x. Change the cleaning solution when it becomes dirty (the floor condition determines how often the cleaning solution needs to be changed).
  - xi. Complete mopping, thoroughly agitate and wring out the mop.
  - xii. Empty the mop bucket down a designated drain by: If using a roller bucket, remove the mop and carefully tip the bucket to empty. If using a wringer bucket, remove the draining basket and carefully tip the bucket to empty.

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xiii. Clean all equipment used and return it to the proper location or discard as appropriate.

xiv. Wash and disinfect hands with hand cleaning solution. Dry hands with paper towels.

c. Wall Wipe-downs and Sanitation Procedures

1. Materials /Supplies: Room designated bucket, DETSAN @ (1+50), Cloth/disposable cloth/microfiber cloth or sponge-based mop dedicated to wall wipe-downs and hazard/warning signs.

2. Frequency: At the end of each week.

3. Method:

i. Collect the Materials/Supplies required for the procedure

ii. Wear personal protective equipment appropriate for the procedure

iii. Start by wiping from the top of the wall and running vertically down, working from top to bottom, do not zig-zag, making long clean strokes down the wall.

iv. Work from top to bottom overlapping strokes, re-wetting the mop head as necessary until walls have been covered with sanitizing solution.

v. Clean all equipment used and return it to the proper location or discard as appropriate.

vi. Wash and disinfect hands with hand cleaning solution. Dry hands with paper towels.

*\*Notes - Be sure to use a separate wipe-down solution for each area, making sure the wall wipe down cloth is adequately clean. If not, replace as necessary.*

d. Monitoring

The Sanitation Manager conducts a visual inspection of all equipment to make sure that it is being cleaned and sanitized properly after the completion of the task. The information must be recorded on the Sanitation Record Logbook

- ii. Processing Equipment
  - a. Responsibility: Sanitation Manager
  - b. Cleaning and Sanitation Procedures for Simple Equipment and Hand Tools
    - 1. Materials/Supplies: Brush, scrub, water hose, Isopropyl alcohol at 70%, VIROXIDE super @ (1+250), DETSAN detergent sanitizer @ (1+50), PPE (gloves, gown/apron, protective eyewear, mask)
    - 2. Frequency: Daily or after processing each batch or each time a propagation table is moved
    - 3. Method:
      - i. Collect the Materials/Supplies required for the task;
      - ii. Wear personal protective equipment;
      - iii. Remove gross build-up and discard in waste container.
      - iv. Do a rough manual cleaning with a brush and/or a scrub;
      - v. Observe equipment for missing part or parts/surfaces that are worn to the extent that debris accumulates and cause product contamination;
      - vi. Replace or repair parts/surfaces if possible;
      - vii. Chemically dissolve and remove soiled materials and resins from any equipment that comes in contact with plant resins with isopropyl alcohol;
      - viii. Pre-clean all surfaces/areas by applying DETSAN at 1+50 and leave to soak for 10 minutes;
      - ix. Ensure all surfaces are cleaned, especially any crevices or cracks;
      - x. *NOTE: When cleaning off marijuana resin from hand tools it is required to use isopropanol.*
      - xi. Scrub to remove all gross organic matter from surfaces;
      - xii. Rinse off all the cleaner, using warm, clean water;
      - xiii. Inspect the equipment to ensure there is no visible debris or greasy film. Re-clean if needed;
      - xiv. Sanitize by applying VIROXIDE at 1+250. Ensure all surfaces are sanitized, including the underside;
      - xv. Clean all equipment used and return to the designated storage area;
      - xvi. Remove personal protective equipment and dispose in waste container;

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xvii. Wash and disinfect hands with hand cleaning solution. Dry hands with paper towels.

4. Monitoring:

The Sanitation Manager conducts a visual inspection of all equipment to make sure that it is being cleaned and sanitized properly after the completion of the task. The information must be recorded on the Sanitation Record Logbook.

c. Cleaning and Sanitation Procedures for Harvesting Containers (Tubs)

i. Materials/Supplies: Brush, scrub, water hose, Isopropyl alcohol at 70%, VIROXIDE super @ (1+250), DETSAN detergent sanitizer @ (1+50), PPE (gloves, gown/apron, protective eyewear, mask)

ii. Frequency: Daily or after processing each batch or each time a propagation table is moved

iii. Method:

1. Collect the Materials/Supplies required for the task;
2. Wear personal protective equipment;
3. Remove gross build-up and discard in waste container.
4. Do a rough manual cleaning with a brush and/or a scrub, inside and outside of the container and lid;
5. Chemically dissolve and remove soiled materials and resins from any equipment that comes in contact with plant resins with isopropyl alcohol;
6. Pre-clean all surfaces/areas by applying DETSAN at 1+50 and leave to soak for 10 minutes;
7. Ensure all surfaces are cleaned;

*NOTE: When cleaning off marijuana resin from hand tools it is required to use isopropanol.*

8. Scrub to remove all gross organic matter from surfaces;
9. Rinse off all the cleaner, using warm, clean water;
10. Inspect to ensure there is no visible debris or greasy film. Re-clean if needed;

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11. Sanitize by applying VIROXIDE at 1+250. Ensure all surfaces are sanitized, including the underside;
12. Clean all equipment used and return to the designated storage area;
13. Remove personal protective equipment and dispose in waste container;
14. Wash and disinfect hands with hand cleaning solution. Dry hands with paper towels.

5. Monitoring:

The Sanitation Manager conducts a visual inspection of all equipment to make sure that it is being cleaned and sanitized properly after the completion of the task. The information must be recorded on the Sanitation Record Logbook.

iii. Cleaning Tools and Equipment Return

After using tools and equipment, Sanitation Manager ensures that tools and equipment are cleaned, sanitized and returned to their designated storage areas.

a. Cleaning Tools Storage Protocol

Store tools in a safe location. Assure they are clean and dry before returning tools to the storage space. Maintain clean and uncluttered storage areas. Storage areas are positioned to prevent contamination from areas where garbage is stored. Dispose of items that are beyond the expiration or “use by” dates. Store all items on shelves that are at least 6” above the floor to facilitate air circulation and proper cleaning.

**d. Personnel Health And Hygiene Program**

i. Health Program

Salus Scientific ensures that employees who are involved in the handling and processing of cultivating or collecting medicinal marijuana material comply with national and/or regional regulations on hygiene.

All of Salus Scientific’s personnel are protected from contact with toxic or potentially allergenic herbs by means of adequate protective clothing, including gloves.

ii. Health Status

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All of Salus Scientific's personnel known, or suspected, to be suffering from or to be a carrier of a disease or illness likely to be transmitted through marijuana product, is not be allowed to enter any harvest, production or processing area. Any persons suffering from diseases or symptoms of illness should immediately report to the management. A medical examination of personnel should be carried out if clinically indicated.

iii. Illness and Injuries

All of Salus Scientific's personnel with open wounds should be suspended from work or required to wear protective clothing and gloves until full recovery. Persons suffering from known airborne or food-borne communicable diseases, including dysentery and diarrhea, should be suspended from work in all areas of production and processing, in accordance with local and/or national regulations on hygiene.

Health conditions that should be reported to the management for consideration regarding medical examination and/or possible exclusion from handling of medicinal marijuana materials include: jaundice, diarrhea, vomiting, and fever, sore throat with fever, visibly infected lesions (boils, cuts, etc.) and discharges from the ear, nose or eye. Any personnel who have cuts or wounds and are permitted to continue working should cover their injuries with suitable waterproof dressings.

iv. Personal Cleanliness

Salus Scientific's personnel who handle medicinal plant materials maintains a high degree of personal cleanliness, and, where appropriate, wear suitable protective clothing and gloves, including head covering and footwear.

Salus Scientific's personnel always wash their hands at the start of handling activities, after using the facilities, and after handling medicinal marijuana materials or any contaminated material.

v. Personal behavior

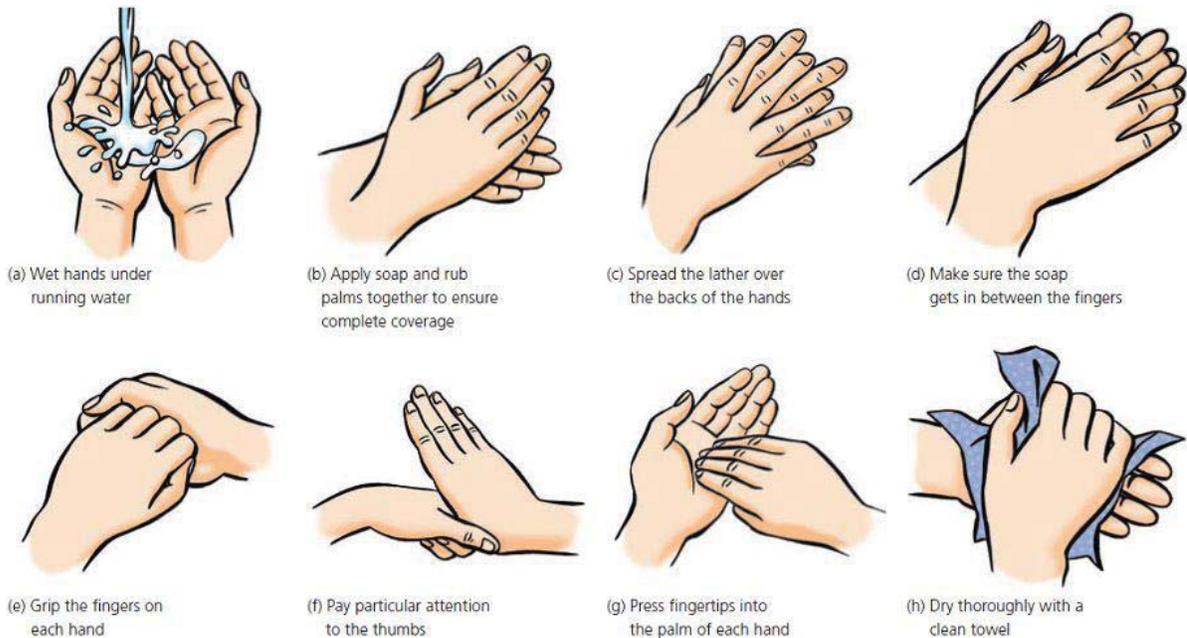
Smoking and eating is not permitted in Salus Scientific's processing areas. Personnel who handle medicinal marijuana materials should refrain from behaviors that could result in contamination of the materials (*e.g.*, spitting, sneezing or coughing over unprotected materials).

Personal effects such as jewelry, watches or other items should not be worn or brought into areas where medicinal plant materials are handled if they pose a threat to the safety or quality of the materials.

## e. Hygiene Program

### i. Hand Washing Procedures

1. Cleanliness is of the utmost importance to Salus Scientific.
2. Employees are required to adhere to the following Hand washing procedures.  
Hand washing is always performed using proper protocol.
3. Use potable water as hot as you can stand. Wet hands.
4. Apply soap to hands and lower forearms.
5. Scrub vigorously for 20 to 30 seconds; making sure to scrub back of hands, between fingers, at cuticles and fingernails.
6. Rinse.
7. Dry with disposable paper or other single-use towel.



*NOTE: Hand sanitizers are not a replacement for hand washing.*

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- ii. Hand Washing Frequency
  - 1. At beginning of shift.
  - 2. After using the facilities.
  - 3. After coughing, sneezing, using tissue or handkerchief, eating, drinking, or using tobacco on breaks.
  - 4. Before touching food.
  - 5. Between glove changes as needed.
  - 6. After touching hair or any body part except clean hands or arms.
  - 7. During production as often as necessary to prevent cross-contamination.
  - 8. After doing other activities that contaminate hands, such as handling trash or chemicals.

**f. Personnel General Gowning Requirements**

- i. All personnel entering processing or production areas are required to following gowning procedures upon their arrival to the production facility.
- ii. Personnel entering product processing, manufacturing, packaging or holding areas are gowned as appropriate to the operations, in order to protect the product from contamination. Additionally, where necessary, gowning and personal protection equipment is defined as appropriate to the process to protect the operator from the product.
- iii. Protective gear and garments are designed and implemented such that they do not pose a risk of contamination to the product.
- iv. Adequate gowning areas and supplies are in place, easily accessible and appropriate for the number of users to facilitate gowning procedures.
- v. Direct contact is avoided between the employees' hands and the product or product contact surfaces.
- vi. Documented procedures must be in place governing all gowning requirements, techniques, and training.
- vii. Gowning must be worn completely fastened at all times when in the propagation areas.



*Salus Scientific Gowning Protocol*

## **25. Closure Plan**

Salus Scientific understands that there are many challenges to operating a successful medical marijuana business. There is always the possibility of unforeseen circumstances having a significant impact on business operations. Our strong business plan and our company leaders are prepared for any challenge, and our mission to provide certified patients with the approved medical marijuana products they require motivates us to ensure that Salus Scientific remains a pioneer in the medical marijuana industry.

However, in the event that an unforeseen circumstance arises and results in the necessary closing or suspension of Salus Scientific operations, our closure plan will guarantee the closure process is performed in accordance to all the applicable rules and regulations of New York State. Some unforeseen circumstances may include a change in New York medical marijuana laws and regulations, an unfavorable economic climate, natural catastrophes which render any of our facilities inoperable, or a change in location of any of Salus Scientific's facilities. The following steps describe Salus Scientific's closure plan.

### **a. Notify the Department**

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- i. Before any closure procedures may commence, Salus Scientific will notify the department in writing at least 120 days prior the anticipated date of closure. The intent of closure letter to the department will be drafted by a professional legal team and signed by the appropriate Salus Scientific members.
- ii. In its contents, the intent of closure letter will explain in detail to the department the nature of the circumstances resulting in the necessary closure, the address and location of all affected facilities, whether certified patients will be affected, and the steps that Salus Scientific will undertake to ensure the closure plan is successful. These steps include describing to the department the steps that will be taken to notify all affected certified patients and designated caregivers, the steps that will be taken to properly destroy, transfer, or dispose of the supply of medical marijuana and medical marijuana products, how records will be maintained, and also how Salus Scientific will remain in compliance with all applicable regulations while it undergoes the closure process. Appropriate timetables and date estimations must be included in the intent of closure letter to the department. No closure procedures will be undertaken until after the department has given its final approval to Salus Scientific.

**b. Notify Certified Patients and Designated Caregivers**

- i. Upon department approval, Salus Scientific will begin to contact all affected certified patients as well as designated caregivers. Salus Scientific will call each certified patient and designated caregiver to explain to them the closure procedure and the timetables. The timetables will give certified patients and designated caregivers information on the last date on which they will be able to purchase approved medical marijuana products from Salus Scientific. The certified patients and designated caregivers will be asked if they would like to receive the information in writing, and if they elect to do so, Salus Scientific will mail the certified patient or designated caregiver the information in a discreet envelope. Additionally, Salus Scientific will advise each certified patient and designated caregiver of alternative registered organizations in New York that may be convenient for their needs. Salus Scientific will work with certified patients and designated caregivers to ensure that their needs are met.

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**c. Destroying and Transferring Medical Marijuana Products**

- i. Securely handling all medical marijuana and medical marijuana products during the closure process is crucial. Extra security steps must be taken to prevent diversion. Salus Scientific will take every step necessary to account for all medical marijuana and medical marijuana products in its possession during the closure process. During the closure process, Salus Scientific managers will decide whether medical marijuana and medical marijuana products will be destroyed or transferred to another facility. Before either process is initiated, a complete inventory will be taken of all medical marijuana and medical marijuana products located in the facility.
- ii. Destroying medical marijuana and medical marijuana products will be done by following the appropriate procedures described in the disposal plan. The inventory will be cross-referenced after destroying the batches or lots of medical marijuana and medical marijuana products to ensure accuracy.
- iii. Transferring medical marijuana or medical marijuana products to another facility will also be a meticulous process. Salus Scientific will take precautions to ensure no medical marijuana or medical marijuana products end up in the possession of any unauthorized persons. When transporting any products to another facility, the same protocols used in the transportation of approved medical marijuana products will be used.
- iv. Extra audits will be conducted at each step of the destroying or transferring process. Salus Scientific is committed to accounting for all medical marijuana and medical marijuana products in the closure process. Managers will investigate any discrepancies in the inventory.

**d. Maintaining Records**

- i. Maintaining records and making them available to the department will continue as usual during the closure process. All records procedures will be followed and records will be maintained for no less than five (5) years. Salus Scientific will appoint a records custodian who will maintain the records in both physical and digital format

for no less than five (5) years. These records will be made available to the department upon request.

- ii. Salus Scientific will inform the department of the appointed records custodian. The department will have the custodian's personal information, including name, address, contact information, and the location where the records are being held for safekeeping. The department will also be made aware of all the persons who have access to the records.

**e. Approved Closure Date**

- i. Salus Scientific shall take no action to close a facility prior to department approval of the closure plan. When the department approves the closure plan, the closure plan will be put into effect. Salus Scientific's effective closing date will be on the approved closure date; so long the closure plan has been successfully observed and implemented. Any of Salus Scientific's facilities identified in the closure plan will cease their operations on the approved closure date. No business may be conducted after the approved closure date, and no approved medical marijuana products may be sold to any certified patient or designated caregiver after the approved closure date.

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## **27. Community Impact Plan**

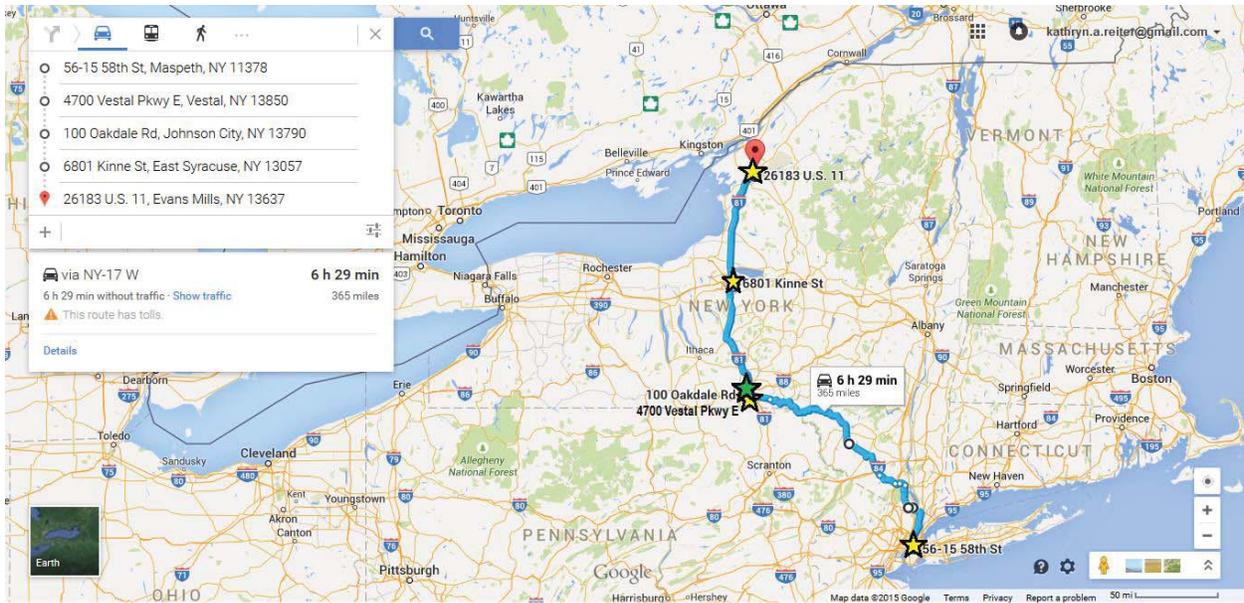
### **I. Introduction**

Salus Scientific is intent upon providing a positive impact for residents, businesses, and community organizations in New York. Salus Scientific is committed to providing patients and employees with safe, clean, and responsible medical marijuana manufacturing facilities and dispensaries. The four dispensing facilities and one manufacturing facility will create much-needed jobs. Salus Scientific strives to be a model business by establishing productive partnerships with law enforcement agencies and area non-profits; putting safe environmental practices in place; and hiring local employees to help boost the state's economy. Salus Scientific also has a plan to educate the public on marijuana law, safe practices, the marijuana plant itself and general marijuana industry practices and standards. A well-educated public means the entire industry has a better chance of moving forward in a positive direction. Below is our likely impact on the community and our plan for meeting the needs of the patients in the state of New York.

### **II. Salus Scientific Facilities**

Salus Scientific plans to open facilities across the state:

- Manufacturing Plant: 100 Oakdale St, Johnson City, NY 13790
- Dispensary 1: 4700 Vestal Parkway East Vestal, NY 13850
- Dispensary 2: 26183 US Route 11 Evans Mills, NY 13637
- Dispensary 3: 6801 Kinne St. East Syracuse, NY 13057
- Dispensary 4: 56-15 58<sup>th</sup> St Maspeth, NY 11358



The above map shows the geographic diversity of Salus Scientific’s facilities. See reproduction of Application Attachment A, included at the end of this Section, for maps and street views of individual locations. The location of these facilities is meant to help increase economic development, create jobs, aid in patient accessibility, and create greater community cooperation and education.

Salus Scientific projects that by establishing their facilities they will create 24 security jobs, 50 dispensary jobs, and 126 manufacturing jobs, totaling 200 new jobs across the state.

**a. Johnson City, Broome County**

**i. Population**

The Manufacturing Plant is located in Johnson City, which belongs to the Broome County/Binghamton Metropolitan Area, collectively the Southern Tier. In 2010, Broome County had 200,600 residents, making it the most populous county in New York’s Southern Tier region. Broome County counts Tioga county to the west, Delaware County to the east, and Cortland and Chenango Counties to the north and the Northern Tier of Pennsylvania as its neighbors.

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Together Broome and Tioga create the Binghamton Metropolitan Statistical Area (MSA). Population centers include the Town of Union (56,346), the City of Binghamton (47,376), and the Town of Vestal (28,043) in Broome County and the Town of Owego (19,883) in Tioga County. Together, these four communities comprise 60% of the population of the Binghamton MSA.

Salus Scientific is conscientious of the changes in the economy in the Southern Tier region. When the fracking industry promise did not come to fruition after the recession, economic rebound did not seem promising. In the last few years the unemployment rate in Broome County has been greater than the statewide average. In 2011 the unemployment rate in Broome County was 8.5% and in the state as a whole it was 8.2%, but by January of 2013 the unemployment rate in Broome County had expanded to 10.2%. Unemployment in Broome County grew the most in the private sector, but strong job growth in health care, social services and construction helped to keep the unemployment rate from reaching higher numbers.

Working with partners in Broome County, Salus Scientific will create a place where residents can rely on jobs that help them and their community to become more integrated and prosperous.

## **ii. Economic Impact**

Salus Scientific anticipates that it will initially create 126 manufacturing jobs and six security jobs at the manufacturing plant, with the potential to add more manufacturing jobs and dedicated transportation positions.

The manufacturing jobs will increase if the demand for medical marijuana products at the dispensaries grows. Salus Scientific anticipates that the Department will approve its plan to deliver medical marijuana products to patients. If this occurs, job creation for dedicated drivers from the manufacturing plant to the dispensaries will be necessary to fulfill the increased demand.

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### **iii. Community Partnership**

With a strong healthcare presence in Broome County, Salus Scientific believes that there will be many opportunities to learn from the healthcare sector when it comes to developing new products to serve patient needs and to help educate the region's healthcare providers on medical marijuana, the products the manufacturing plant produces and the benefits eligible patients could receive from medical marijuana recommendation.

The largest Healthcare provider in Broome County is United Health Services (UHS). UHS is a comprehensive regional health care system that operates two hospitals in Broome County: Binghamton General Hospital, a full-service hospital founded in 1888, and Wilson Medical Center, a teaching hospital that provides a range of medical and surgical services, in Johnson City. UHS also has primary care centers, walk-in clinics, and medical offices throughout the Southern Tier, serves as a leading provider of home care services and offers nursing care, assisted living, and private apartments at its Ideal Senior Living Center in Endicott. In 2011, UHS completed an expansion of its Cardiac Rehabilitation Program at Binghamton General Hospital, and initiated a fundraising campaign for a \$5 million expansion of the Intensive Care Unit at Wilson Medical Center in Johnson City. The latter is the first major upgrade to the unit since the mid-1970s. In addition, construction was completed on a \$29 million project to build a new state-of-the-art primary care center in Vestal, across from Binghamton University. UHS would be an excellent Healthcare partner for Salus Scientific.

#### **b. Vestal, Broome County**

The dispensary closest to the manufacturing plant will be in Vestal. Vestal is also located in Broome County.

### **i. Economic Impact**

In addition to the jobs created by the manufacturing facility, the Vestal dispensary would bring an additional 12-15 dispensary staff jobs and 2-6 security jobs, with the potential for expansion as the patient base expands and if Salus Scientific is eventually permitted to deliver medical marijuana products directly to patients.

### **ii. Patient Accessibility**

Having a dispensary located in such close proximity to the manufacturing plant will increase the speed with which patients served by the Vestal dispensary can have access to the medical marijuana products that they need.

Additionally, many patients will access dispensaries via public transportation. The Vestal dispensary is served by Broome County Transit.

### **c. Evans Mills, Jefferson County**

#### **i. Population**

Evans Mills is a village in Jefferson County in Northern New York. The population was 621 at the 2010 census. The Village of Evans Mills is within the Town of Le Ray and is northeast of Watertown.

The total Jefferson County population as of the 2010 U.S. Census is 116,229 people. The City of Watertown has a population of 27,023. The largest town is the Town of LeRay with a population of 21,782 people. The relatively large population of LeRay is attributed to the military presence of Fort Drum. By comparison, the town with the smallest population is the Town of Worth, with a total of 231 residents. There are 22 Towns, 20 Villages, and one City in Jefferson County.

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The largest industry in Jefferson County is government, employing almost 40% of the workforce. That is largely due to the presence of Fort Drum and the two state prisons in the County.

Fort Drum is located nine miles east of Watertown and is home to more than 36,900 soldiers, family members and civilian employees of the 10th Mountain Division (Light Infantry) and its supporting tenants. Fort Drum is the largest Army installation in the Northeast. Fort Drum occupies 107,265 acres in Jefferson County and stretches across the Towns of LeRay, Philadelphia, Antwerp, and Wilna. With around 24,000 employees, Fort Drum is the largest single-site employer in Jefferson County and in Upstate New York. With a location in Evans Mills, qualifying patients from other medical marijuana program states who are displaced due to assignment to Fort Drum will still have access to the medical marijuana products they need.

**d. East Syracuse, Onondaga County**

**i. Population and Location**

East Syracuse is a part of the city of Syracuse in eastern Onondaga County. As of the 2010 U.S. census, the village has a population of 3,084, greater Syracuse has a population of 145,170 and Onondaga County had a population of 467,026. The city of Syracuse is situated in the approximate center of the county and serves as the focus for commercial and business activities.

Onondaga County is conveniently situated at the intersection of Interstate Highways 81 and 90 (NYS Thruway). Local Amtrak and Greyhound terminals are located in the new Regional Transportation Center. One can also reach the city by air using Hancock International Airport, while the New York State Barge Canal System provides local connection by boat to the Great Lakes and the St. Lawrence River.

## **ii. Economic Impact**

In 2013 the Syracuse Metropolitan Area had an unemployment rate of 9.8%, which was a .3% increase from the year before and was much higher average than greater Onondaga County (6.7%), greater New York (7.7%) and the United States (7.4%). The introduction of a Salus Scientific dispensary into East Syracuse will bring reliable jobs to the region, with the potential for further job growth as the medical marijuana patient base grows. Salus Scientific anticipates an initial staff of 12-15 as dispensary staff and 2-6 as security staff.

## **iii. Patient Accessibility**

As Syracuse is the business center of Onondaga County, transit into and from Syracuse is readily available. Bus service in Onondaga is provided by four carriers, including three independent carriers and CENTRO, which is operated by the Central New York Regional Transportation Authority. Inter-city service is provided by a number of providers, including Greyhound and Adirondack Trailways.

## **iv. Community Partners**

In Onondaga County five of the largest employers are healthcare providers. The area's largest employer, the Upstate Medical University, a medical school that includes University Hospital, is the home of one of the country's eleven Joslin Centers for Diabetes. It is also the region's trauma center, burn center, kidney transplant center and pediatric emergency center. The University has also been given grants to research spinal cord and wrist injuries and to improve emergency response capabilities. University Hospital expanded the hospital's east wing to include a two-story children's hospital, creating Central New York's Children's Hospital at University Hospital. The \$99 million five-story vertical expansion increased the amount of space dedicated to pediatric medicine from 18,000 square feet to 87,000 square feet, which can house 50 private patient rooms and other amenities catering to the children and families cared for at the hospital.

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Creating a partnership with the hospital will help to further potential patient education, especially in the pediatric ward, and to help to serve patient needs in the state. Salus Scientific would like to work with the hospital to have visitors and potential patients counsel with the dispensary pharmacists to answer questions that potential patients and visitors from the hospital have about medical marijuana products.

In all, Onondaga County's health care system includes five hospitals, over 1,500 practicing physicians, two mental health centers, numerous ambulatory care programs, and a full range of long-term care facilities. Salus Scientific will attempt to reach out and create connections with as many of these institutions as possible.

**e. Maspeth (Queens), Queens County**

**i. Population**

Maspeth is a small community in the New York City borough of Queens. Queens is the easternmost and largest in area of the five boroughs of New York City, geographically adjacent to the borough of Brooklyn at the western end of Long Island. The borough of Queens is also Queens County. The borough of Queens is the second largest in population behind Brooklyn with a Census-estimated 2,321,580 residents in 2014, approximately 48% of which are foreign-born. Queens is the most ethnically diverse urban area in the world.

**ii. Patient Accessibility**

Meeting patient needs in Queens presents the unique challenge of serving an extremely diverse client base. In Queens, residents speak an estimated 138 languages. All Salus Scientific dispensaries will adhere to protocols set out by organizations such as The Multicultural Association of Medical Interpreters. Salus Scientific will contract with a reputable, HIPAA-compliant translation service such as RxTran, so that the organization and its team members may safely and effectively serve and educate all potential and current clients in their preferred languages, comply with all local, state, and federal regulations regarding medical and

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pharmaceutical translation services, and maintain accurate communications with a linguistically diverse public.

Having this service available in Queens will be essential to the dispensary there, but serving the needs of patients in Queens will help the other dispensaries better serve their patients as well. Salus Scientific will make sure that as much of the information that is disseminated to patients is translated into a language they speak as is possible. Salus Scientific hopes also to be able to print labels for medical marijuana products that are available in different languages. Salus Scientific will seek written approval from the Department before issuing any translations of statutorily required labeling language.

Salus Scientific will create a relationship with the Multicultural Association of Medical Interpreters and use their services in the dispensaries, with the permission of the Department, to aid patients and dispensary staff. Making sure that all parties understand one another will ensure that the right product gets to the right patient with the right security information.

**Multicultural Association of Medical Interpreters—Utica Office**

287 Genesee St., Suite #101 Utica, NY 13501

(315) 732-2271

**Multicultural Association of Medical Interpreters—Albany Office**

33 Central Ave., 3rd Floor Albany, NY 12210

(518) 426-1626

**Multicultural Association of Medical Interpreters—Syracuse Office**

731 James St., Suite 315 Syracuse, NY 13203

(315) 214-5003

**RxTran**

10 Cabot Road, Suite 209 Medford, MA 02155

(617) 621-0940

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Many of Salus Scientific's clients will access their local dispensary via public transportation. The Queens dispensary can be accessed via MTA bus routes Q67, Q32, and Q39.

Salus Scientific acknowledges the need for physically accessible facilities that comply with all requirements stipulated by the Americans with Disabilities Act. All facilities will meet these requirements prior to becoming operational.

### **III. Spreading Medical Marijuana Education**

#### **a. Goals**

Salus Scientific wants to cultivate a populous that is educated about medical marijuana, how to access it and how it helps patients. In order to assess the educational needs of the community, Salus Scientific will undertake an extensive fact-finding mission. Examples of ways in which Salus Scientific will address the community's—and its own—educational needs include:

- i. Remaining knowledgeable and responsible about the community's diverse cultural beliefs on medical marijuana. For example, Salus Scientific is staying up to date on the Orthodox Union's plans to approve kosher certified medical marijuana and plans to produce and distribute kosher certified marijuana products.
- ii. Anticipating that concerned citizens may have fears about medical marijuana being linked with crime, mental illness, or underage use. Salus Scientific does not seek to brush aside the concerns of community members, and when concerns are based on myth, misinformation, or speculation, we aim to mitigate such concerns with public education.

## **b. Community Partnership**

One of the best ways to increase community education is by creating partnerships with local community-based organizations. Salus Scientific's community partners will include local hospitals.

Employees will also be encouraged to volunteer at educational and community organizations geographically close to the Salus Scientific facilities. These employees will be instructed that their purpose in volunteering is not to educate the students on medical marijuana products but to positively represent Salus Scientific and the medical marijuana industry while giving back to the local community.

## **c. Transparency and Availability of Dispensaries**

Salus Scientific will work to open its doors to the fact-finding missions of various other groups, including community organizations and local governments. Salus Scientific actively engages with the public in order to maintain transparency and to ease the fears of community members. The organization will engage with the following community entities in these ways:

- i. Government and Law Enforcement. Salus Scientific will comply with all government regulations and cooperate with local government and law enforcement agencies and personnel. Salus Scientific believes in working with law enforcement to create relationships that improve the safety of the entire community.
- ii. Community and Non-Profit Groups. Salus Scientific will establish and maintain productive corporate partnerships with community and environmental organizations, exploring relationships with groups including the National Resources Defense Council, Sierra Club New York City, Environment New York and the New York Environmental Justice Alliance.

**d. Company Procedures: The Environment and the Community**

The Salus Companies are committed to minimizing the environmental footprint of all of their operations, from cultivation through dispensing. The companies will only use agricultural and horticultural practices that avoid, to the greatest extent possible, the use of herbicides and pesticides and conserve, to the greatest extent possible, soil and water associated with the land used for cultivation. With regard to harvesting and transportation of product, Salus Scientific will use equipment that produces the lowest emissions profile that can be readily obtained. By limiting power use and waste, Salus Scientific will seek to obtain LEED status for the processing facility and operations, with the guidance and support of the Green Building Council, NYSERDA and the local utility. If necessary, Salus Scientific will seek funding from the New York Green Bank to help purchase and install state of the art building materials and equipment. Finally, Salus Scientific will study the feasibility of installing renewable energy technologies on-site, including solar, anaerobic digestion, small wind and fuel cells.

**Attachment A: Identification of buildings, property, and facilities used for manufacturing and dispensing pursuant to PHL § 3365 and 10 NYCRR § 1004.5(b)(2).**

1. Salus Scientific maintains one (1) manufacturing facility located at:

a. 100 Oakdale Road, Johnson City, New York 13790

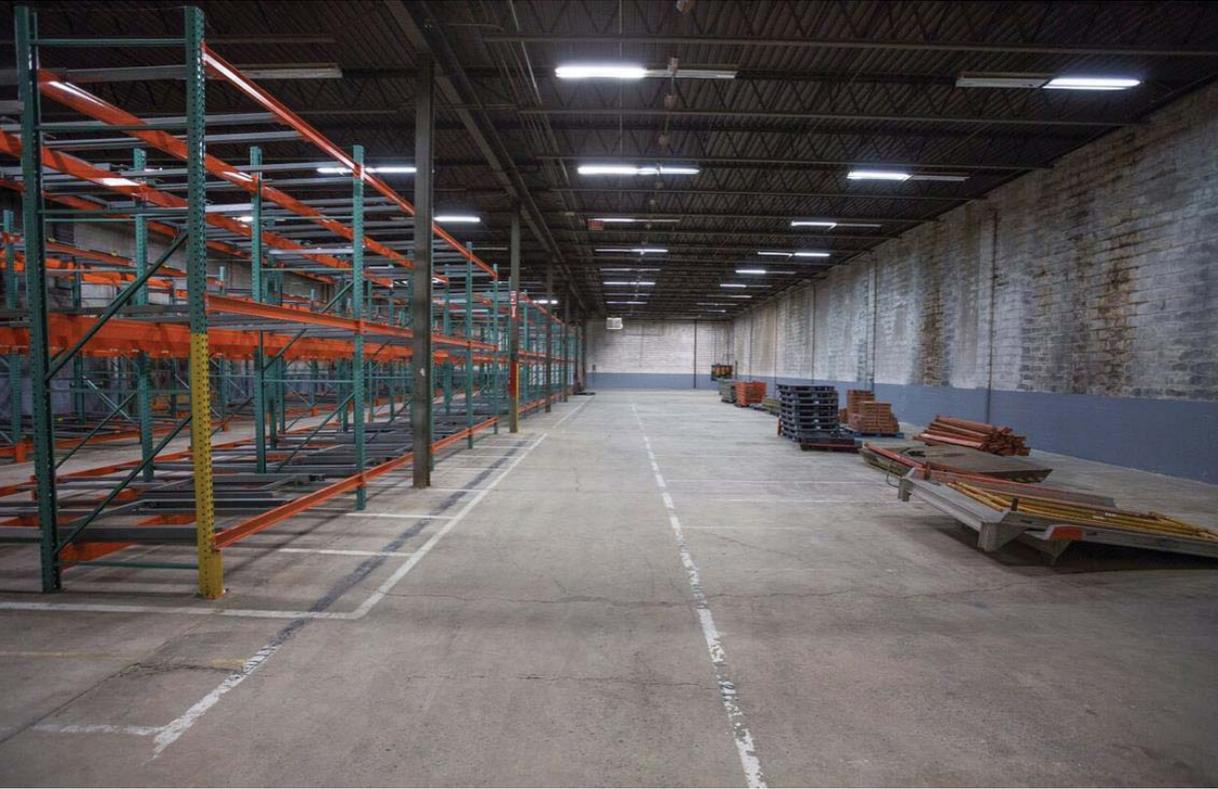
Located in western Broome County, the manufacturing facility is just off exit 70 on the Southern Tier Expressway, minutes from Binghamton, NY.



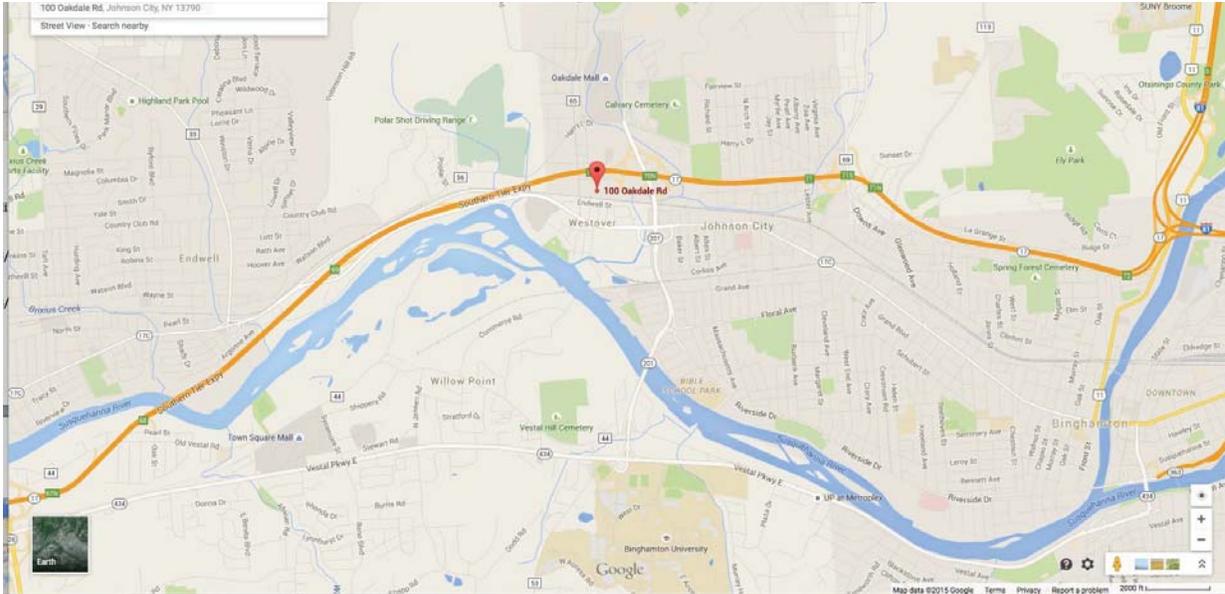
Street view of the manufacturing facility in Johnson City, NY.



Trade Secret (P.L. § 87(2)(b))  
Wide view of the manufacturing facility in Johnson City, NY.

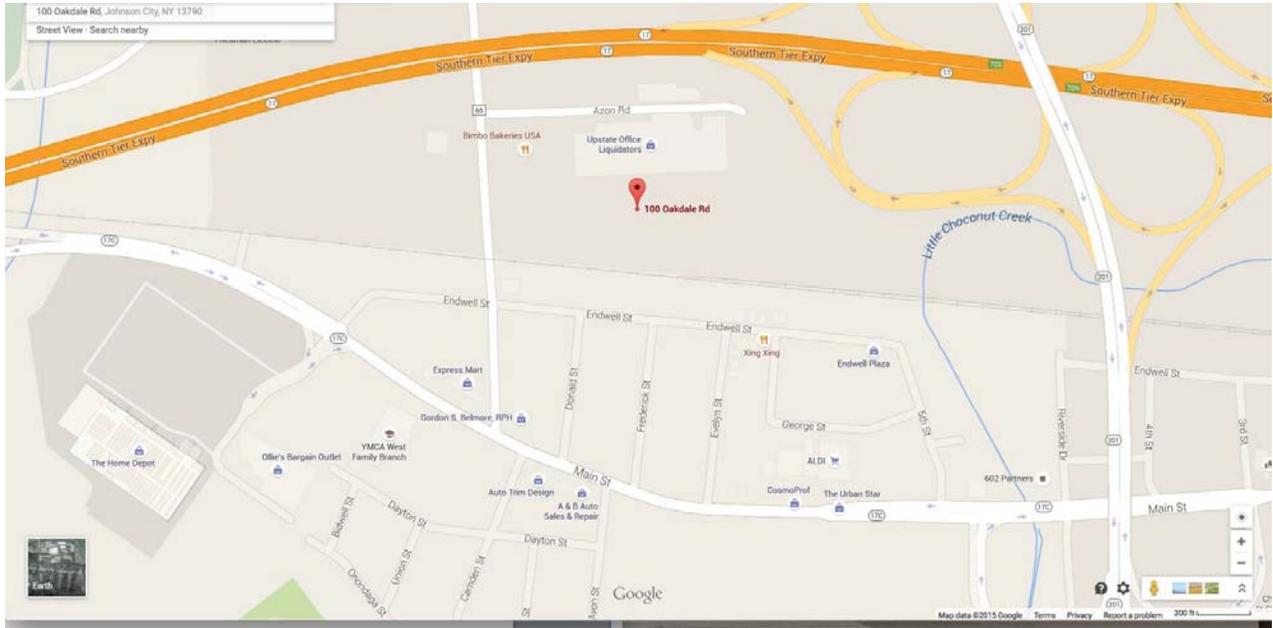


Interior view of the manufacturing facility in Johnson City, NY.



Aerial map showing the manufacturing facility in Johnson City, NY.

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**Inset aerial showing the manufacturing facility in Johnson City, NY.**

2. Salus Scientific maintains four (4) dispensing facilities. They are located at:

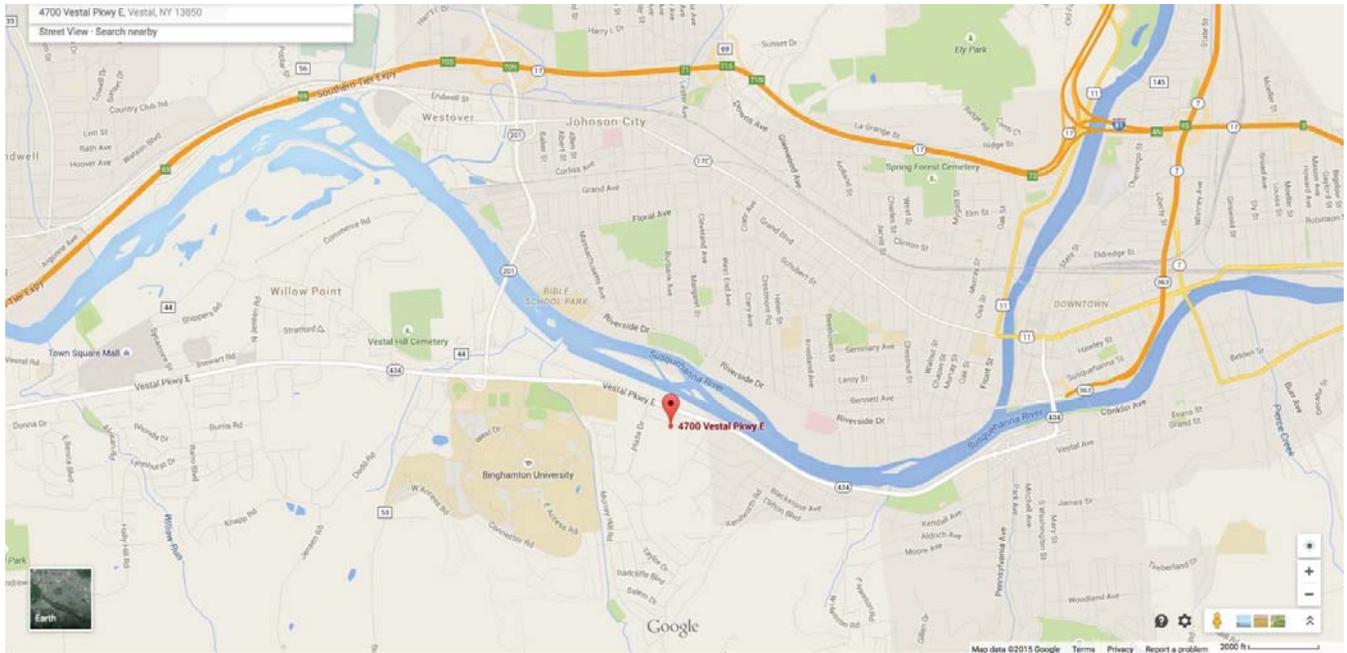
- a. 4700 Vestal Parkway East Vestal, New York 13850

Located on the south border of Broome County, the dispensary will provide medical marijuana products to certified patients in the Binghamton Metropolitan Area. Situated in the University Plaza shopping center, the dispensary is easily accessible by certified patients and designated caregivers.

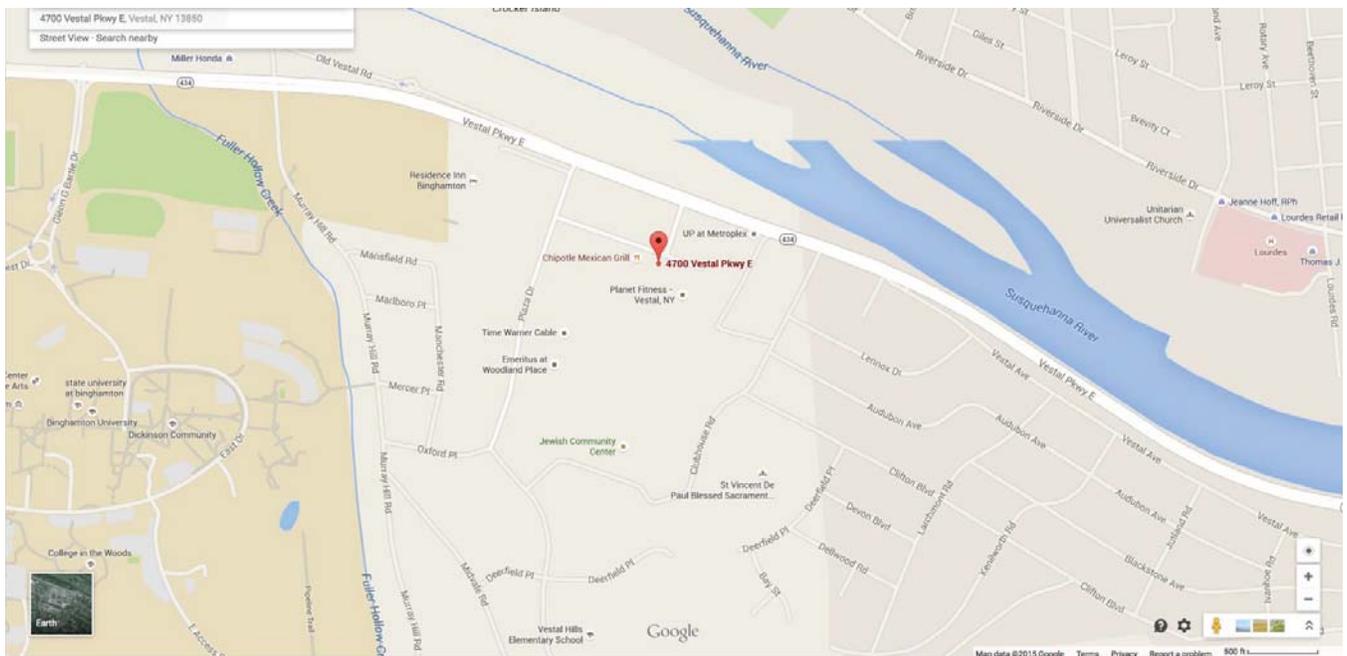


**Street view of University Plaza, location of the dispensing facility in Vestal, NY.**

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Aerial map showing the dispensing facility in Vestal, NY.



Inset aerial map showing the dispensing facility in Vestal, NY.

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Aerial photographic map showing the dispensing facility in Vestal, NY.

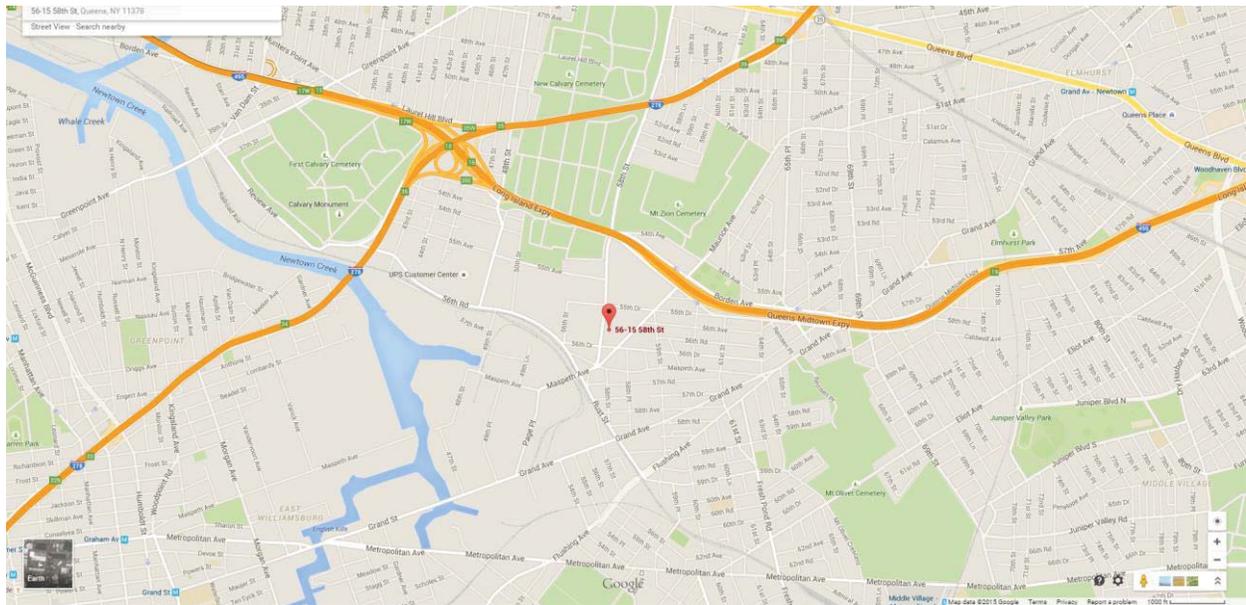
b. 56-15 58<sup>th</sup> Street, (Maspeth) Queens, New York 11378

Located in western Queens County, the dispensary is situated in Maspeth’s industrial lowlands and is easily accessible from Interstate 495.

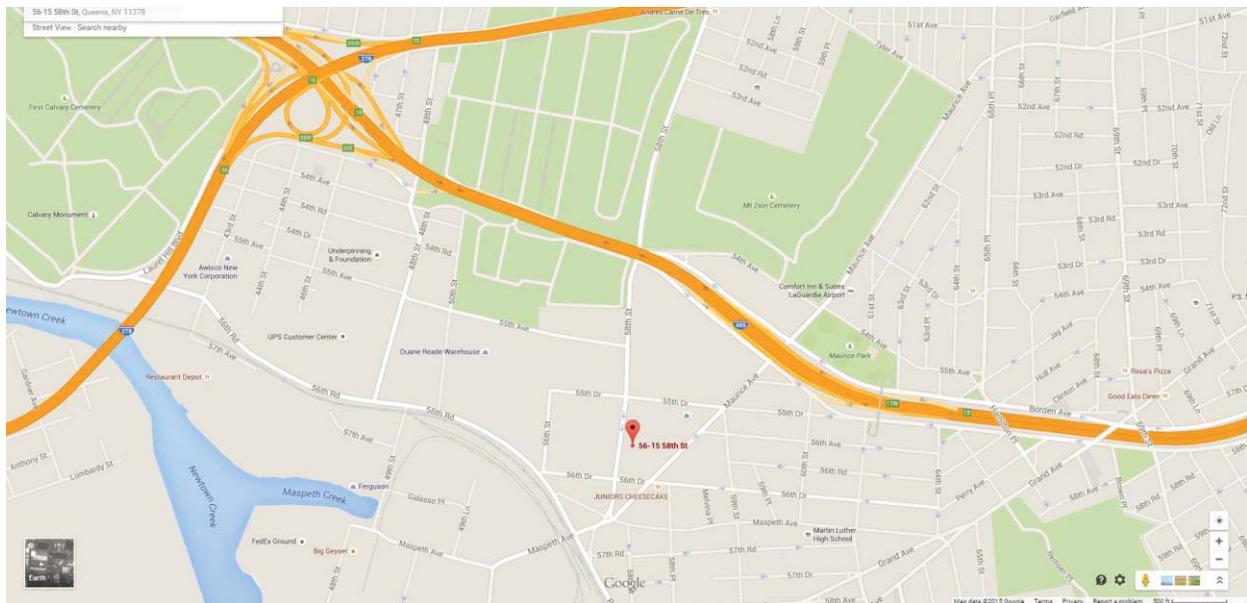


Street view of the dispensing facility in Queens, NY.

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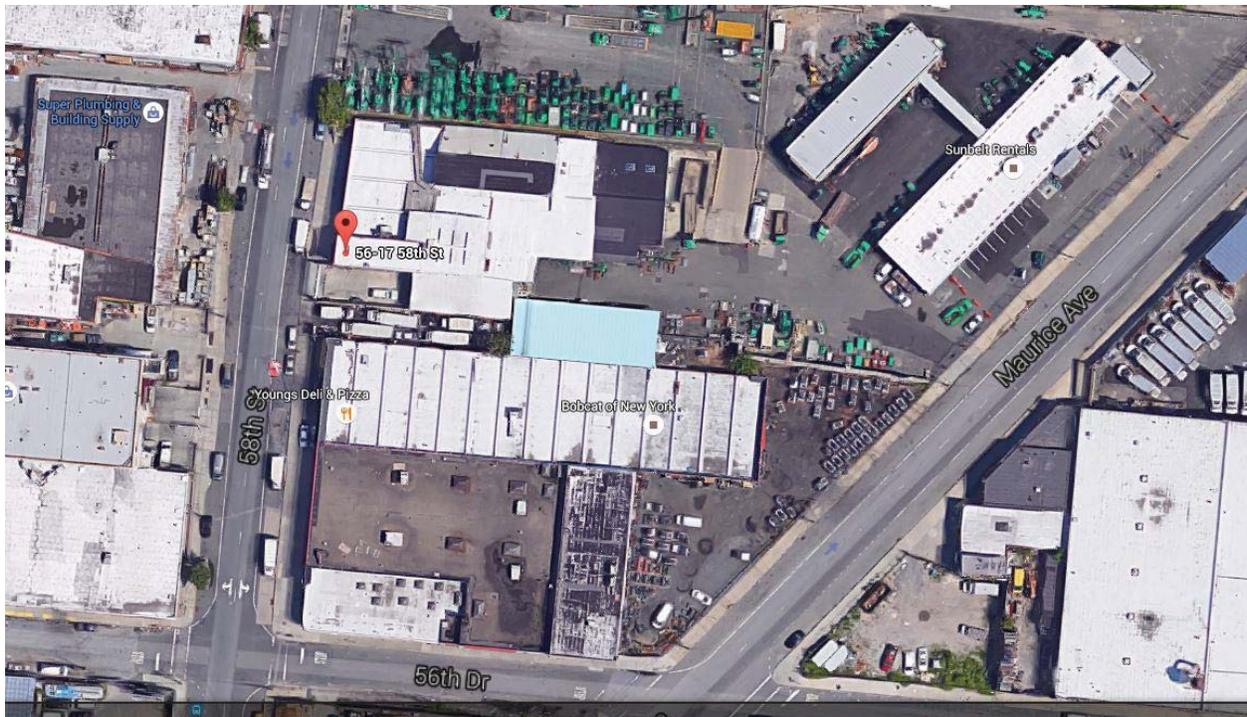


Aerial map showing the dispensing facility in Queens, NY.

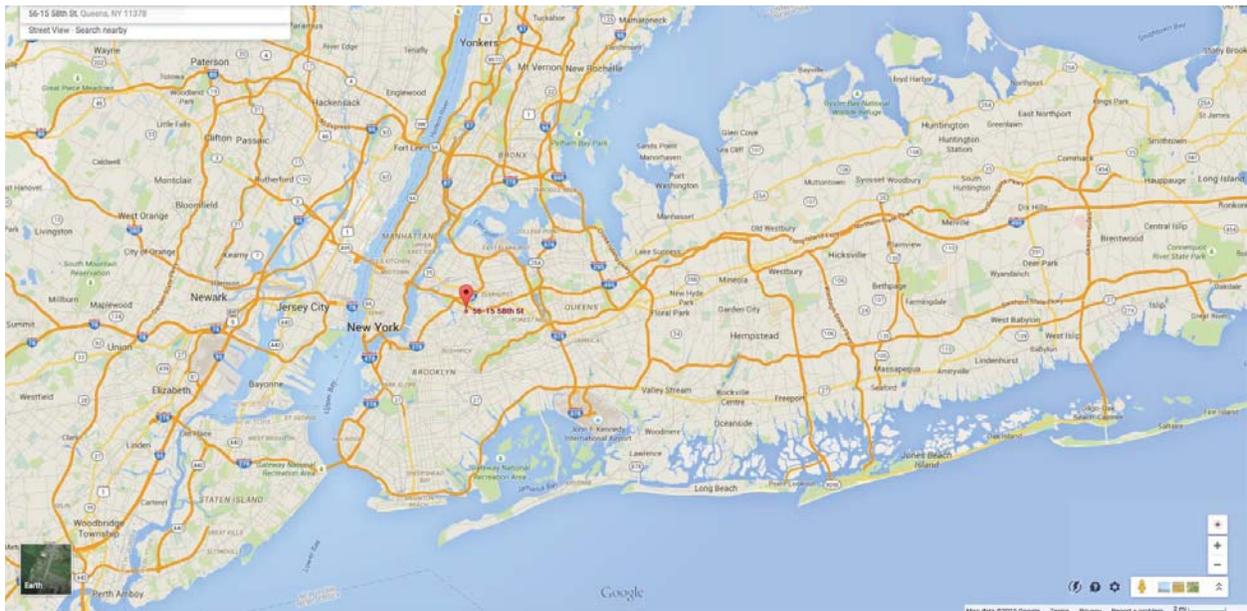


Inset aerial map showing the dispensing facility in Queens, NY.

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Aerial photographic map showing the dispensing facility in Queens, NY.



Regional map showing the dispensing facility in Queens, NY.

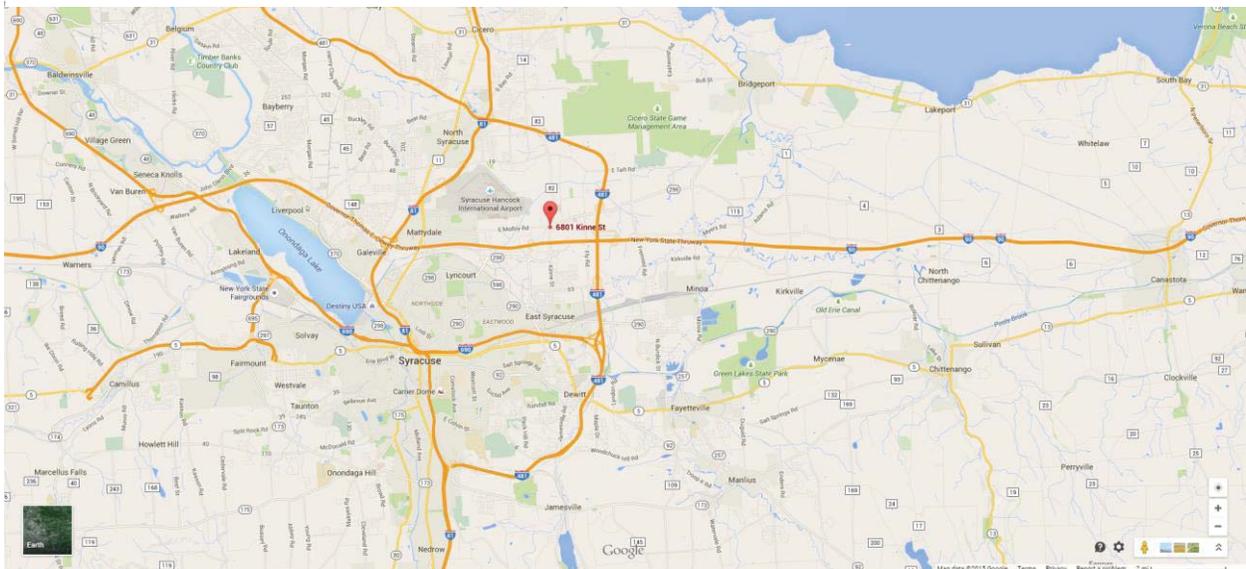
c. 6801 Kinne Street, East Syracuse, New York 13057

Located in a suburban area just outside of the City of Syracuse, the dispensary will provide medical marijuana products to certified patients in Onondaga County and the surrounding areas. The dispensary is easily accessible from Interstate 90 and Route 481.

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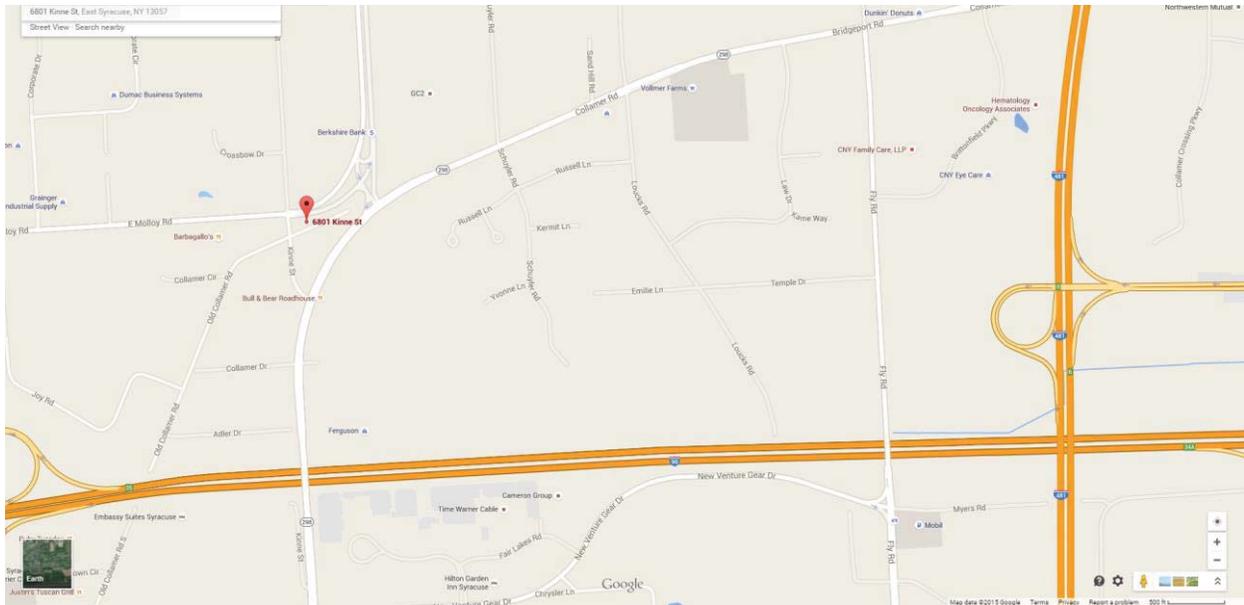


Street view of the dispensing facility in East Syracuse, NY.



Aerial map showing the dispensing facility in East Syracuse, NY.

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Trade Secret (POL § 87(2)(d))  
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**Inset aerial map showing the dispensing facility in East Syracuse, NY.**

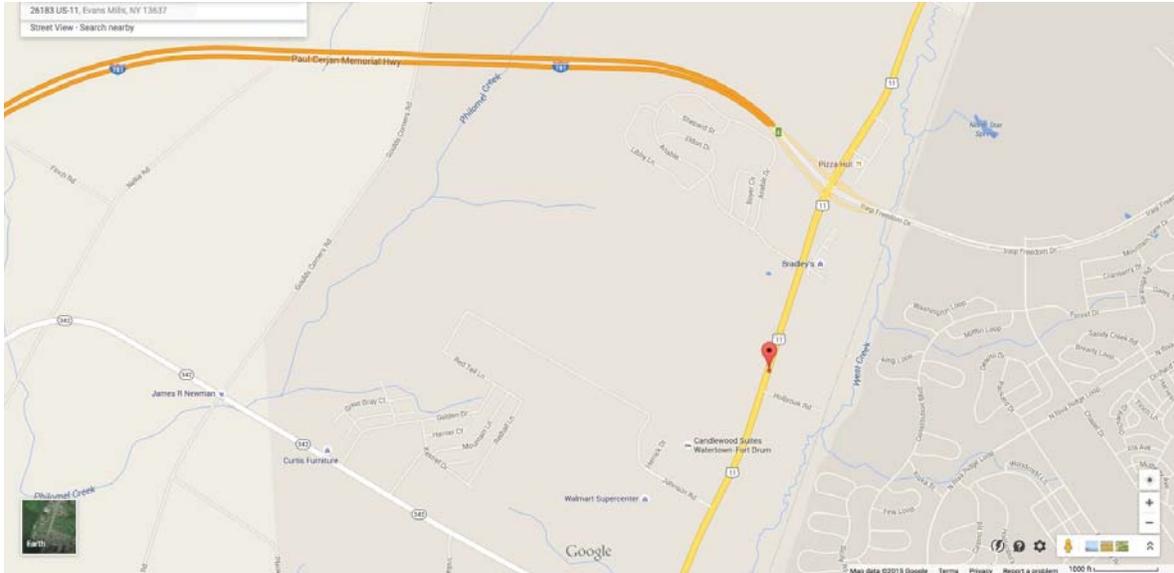
d. 26183 US Route 11, Evans Mills, New York 13637

Located just northeast of Watertown, the dispensary in Evans Mills is easily accessible from Interstate 81. This dispensary will serve the certified patients and designated caregivers in Jefferson and neighboring Northern New York counties.

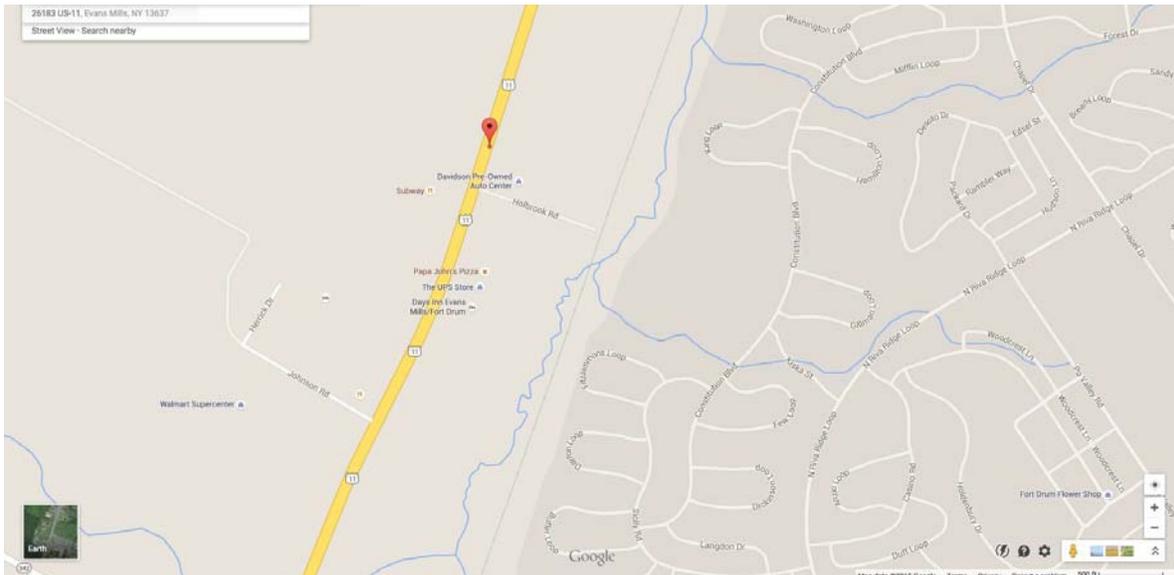


**Street view of the dispensing facility in Evans Mills, NY, prior to completion of construction in 2013.**

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Trade Secret (POL § 87(2)(d))  
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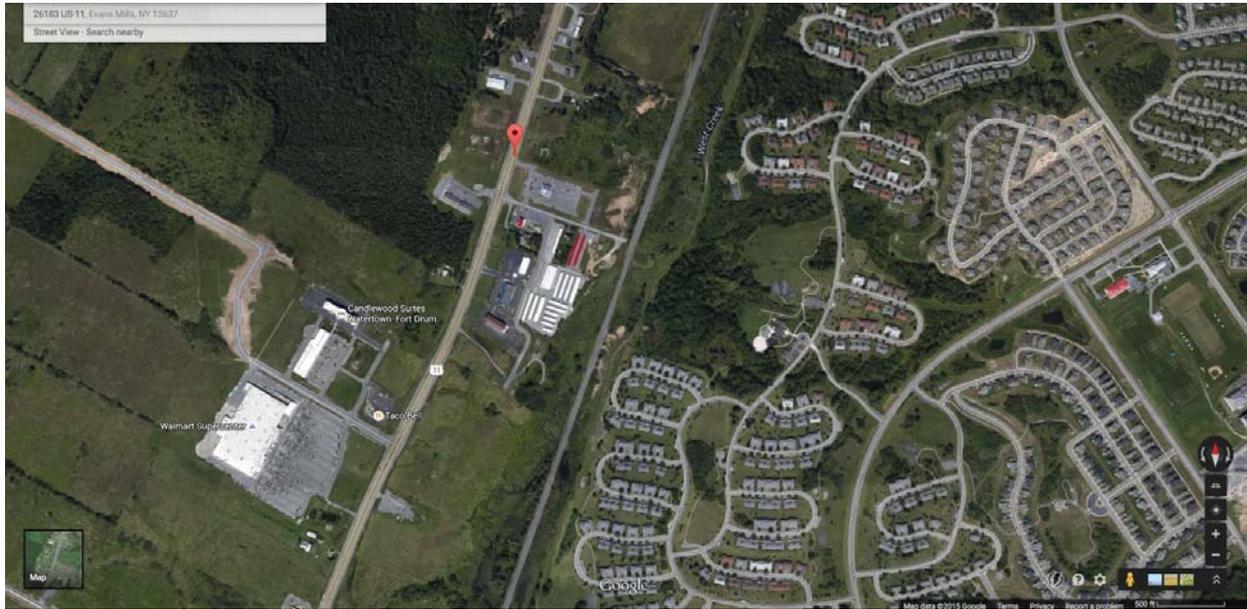


Aerial map showing the dispensing facility in Evans Mills, NY.



Inset aerial map showing the dispensing facility in Evans Mills, NY.

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**Trade Secret (POL § 87(2)(d))**  
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Aerial photographic map showing the dispensing facility in Evans Mills, NY.

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Trade Secret (POL § 87(2)(d))  
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# **Appendix A**

### **Section 5.3 Manufacturing batch record**

- (a) The manufacturing operation must prepare a manufacturing batch record for each batch of cannabis-derived product manufactured.
- (b) The manufacturing batch record must:
  - (1) Cross-reference or reproduce the appropriate manufacturing protocol; and
  - (2) Form a complete record of the manufacturing and control of the batch.
- (c) Each batch must be assigned a batch, lot, or control number which allows the complete history of the production and distribution of the batch to be determined. This code must be used in recording the disposition of each batch.
- (d) The manufacturing batch record must include, as applicable to the process:
  - (1) Identity of the cannabis-derived product;
  - (2) The batch, lot, or control number of the cannabis-derived product;
  - (3) Batch size;
  - (4) For each component used in production of the batch:
    - (i) Identity of each component used in the batch;
    - (ii) Batch, lot, or control number of each component used in the batch;
    - (iii) Actual weight or measure of each batch or lot of component used in the batch, including the unit of measure;
  - (5) Date(s) on which, and where applicable the time(s) at which, each step of the manufacturing process was performed;
  - (6) Actual results obtained during monitoring of production process parameters;
  - (7) Identity of processing lines and major equipment used in producing the batch;
  - (8) Date and where applicable the time of the maintenance, cleaning, and/or sanitizing of the major equipment used in producing the batch, or a cross-reference to records, such as individual equipment logs, where this information is recorded;
  - (9) If manufacture of the batch uses equipment or instruments requiring periodic calibration, inspection, or verification, the date and where applicable the time of the last calibration, inspection, or verification or the date on which such is next due; or a cross-reference to records, such as individual equipment logs, where this information is recorded;
  - (10) A statement of the actual yield and a statement regarding whether the actual yield is within the acceptable range of the theoretical yield as per section 5.1(a)(3) after each significant process step and at the end of manufacturing;

**FOR DISCUSSION. Prepared for consideration by state or local regulatory agencies in states within the United States.**

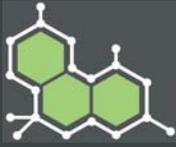
- (11) Records of any cannabis waste generated during production of the batch;
- (12) Records of any treatment, process adjustment, reprocessing, or other deviation that occurred during production of the batch;
- (13) Records of the date, time where applicable, quantity, and person responsible for any sample removed during or after production;
- (14) Actual results of any testing or examination of in-process material or cannabis-derived product, or a cross-reference to such results;
- (15) Documentation that the cannabis-derived product meets its specifications for identity, purity, strength, and composition, in accordance with the requirements of the manufacturing protocol;
- (16) Identity of each person performing each process step in production of the batch, including but not limited to:
  - (i) Weighing or measuring each component and verifying the weight or measure of each component used in the batch per section 5.4;
  - (ii) Adding each component to the batch and verifying the addition of each component to the batch per section 5.4;
  - (iii) Monitoring production process parameters;
  - (iv) Performing and verifying calculations of the actual yield and any other mathematical calculations;
  - (v) Directly overseeing each stage of production of the batch;
  - (vi) Performing any other checks or verifications in production of the batch, as needed; and
  - (vii) Releasing the batch from one stage of production to the next.
- (e) All data in the manufacturing batch record must be recorded at the time at which each action is performed.
- (f) The completed manufacturing batch record for each batch must be reviewed and signed by quality control personnel to determine compliance with all applicable specifications and other requirements of the manufacturing protocol before a batch is approved.

#### **Section 5.4 Allocation and charge-in of components**

- (a) Manufacturing operations must weigh, measure, or subdivide components to be used in a cannabis-derived product batch as appropriate for the batch.
- (b) If a component is removed from the original container to another, the new container must be identified with the following information:

**FOR DISCUSSION. Prepared for consideration by state or local regulatory agencies in states within the United States.**

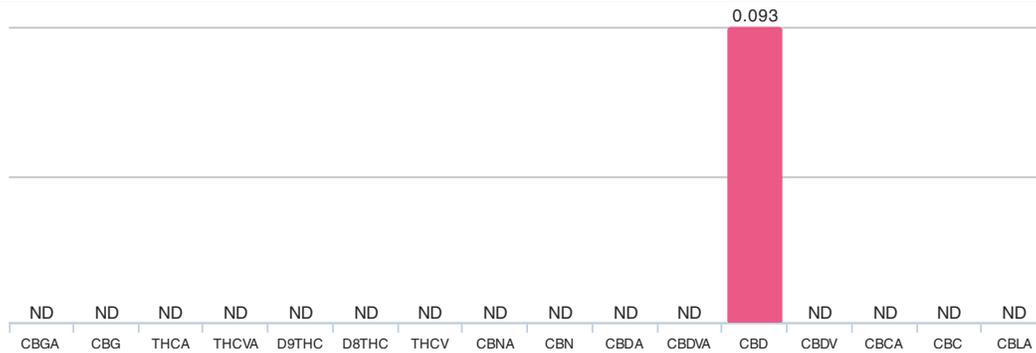
## **Appendix B**



# Pure of CBD

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: 12/4/14	
Submitted:		Tested: 12/15/2014		Reported: 12/29/2014	
				Samp ID: S349031	
				Sample Mass: 1.002	

## Cannabinoids as Percent of Total Sample Mass



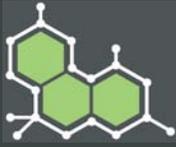
## Terpenoids as Percent of Total Sample Mass

No terpenoids to report

Sample Overview	Sample Details				
<p>Pure of CBD</p>	<table border="1"> <tr> <td>Mycotoxin</td> <td>Not Detected</td> </tr> <tr> <td>Pesticide</td> <td>Not Detected</td> </tr> </table> <p>For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit <a href="http://www.steephilllab.com/FAQ">www.steephilllab.com/FAQ</a>.</p>	Mycotoxin	Not Detected	Pesticide	Not Detected
Mycotoxin	Not Detected				
Pesticide	Not Detected				

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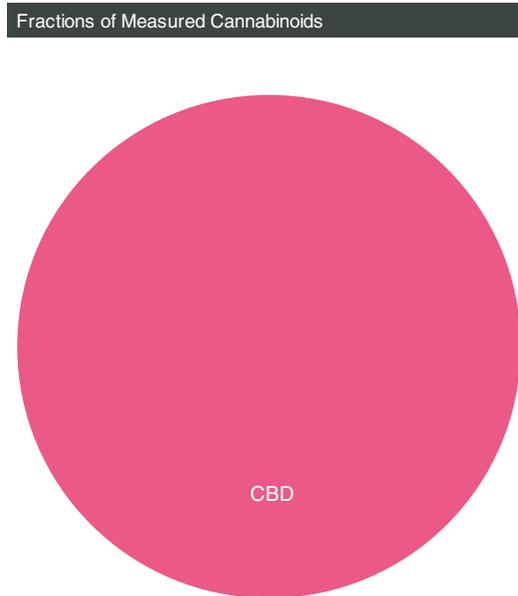




# Pure of CBD

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: 12/4/14	
Submitted:		Tested: 12/15/2014		Reported: 12/29/2014	
				Samp ID: S349031	
				Sample Mass: 1.002	

Cannabinoid Profile		
Compound	% mass	≈ mg/g
CBGA	ND	ND
CBG	ND	ND
THCA	ND	ND
THCVA	ND	ND
D9THC	ND	ND
D8THC	ND	ND
THCV	ND	ND
CBNA	ND	ND
CBN	ND	ND
CBDA	ND	ND
CBDVA	ND	ND
CBD	0.093	0.93
CBDV	ND	ND
CBCA	ND	ND
CBC	ND	ND
CBLA	ND	ND

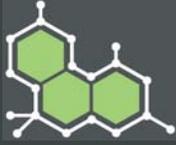


## Calculated Liquid Chromatogram



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## Pure of CBD

Customer: TRITONOL	Test Site: OAK	Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile	Type: Concentrate	Customer's ID: 12/4/14	Samp ID: S349031
Submitted:	Tested: 12/15/2014	Reported: 12/29/2014	Sample Mass: 1.002

Terpenoid Profile		
Compound	% mass	≈ mg/g
Terpinolene	ND	ND
Linalool	ND	ND
Phytol	ND	ND
Beta Myrcene	ND	ND
Citronellol	ND	ND
Caryophyllene Oxide	ND	ND
Alpha Pinene	ND	ND
Limonene	ND	ND
Beta Caryophyllene	ND	ND
Alpha Humulene	ND	ND

### Fractions of Measured Terpenes

No terpenoids to chart

### Calculated Liquid Chromatogram



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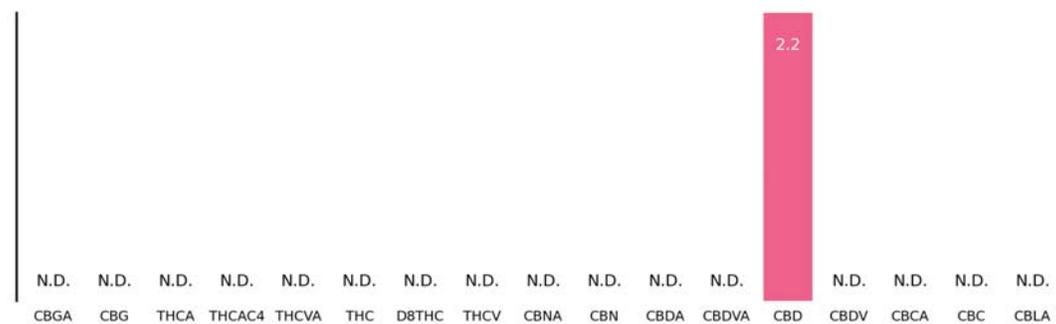




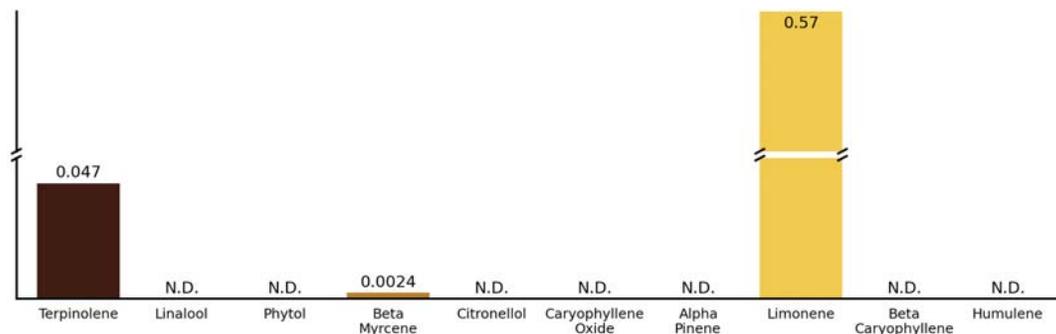
## Sample C

Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:	Sample ID: S91007_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.1192 g

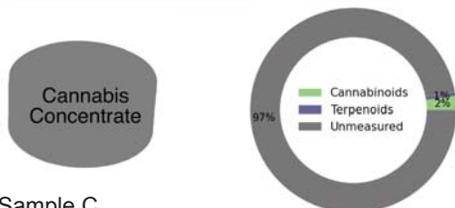
### Cannabinoids as Percent by Mass



### Terpenes as Percent by Mass



### Sample Overview



Sample C

### Sample Details

Pesticides: Not Detected  
Mycotoxins: Not Detected

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ)

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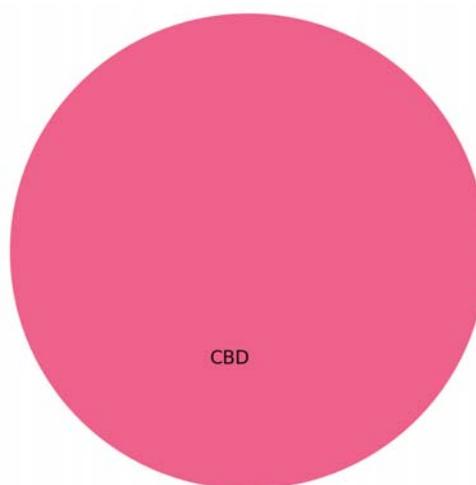


## Sample C

Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:	Sample ID: S91007_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.1192 g

Cannabinoid Profile		
Compound	□ Mass	mg/g
CBGA	N.D.	N.D.
CBG	N.D.	N.D.
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	N.D.	N.D.
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	N.D.	N.D.
CBDA	N.D.	N.D.
CBDVA	N.D.	N.D.
CBD	2.2	22
CBDV	N.D.	N.D.
CBCA	N.D.	N.D.
CBC	N.D.	N.D.
CBLA	N.D.	N.D.

### Fractions of Measured Cannabinoids



### Calculated Liquid Chromatogram



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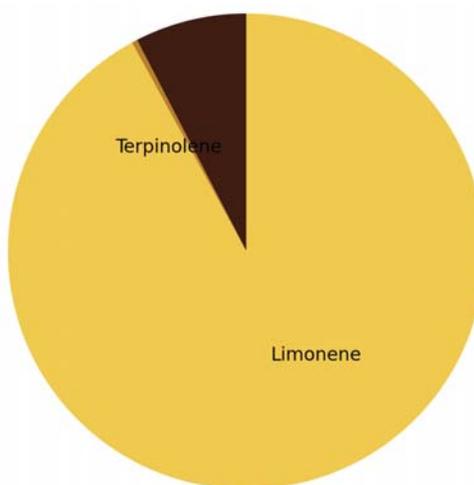


## Sample C

Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:	Sample ID: S91007_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.1192 g

Terpenoid Profile		
Compound	□ Mass	mg/g
Terpinolene	0.047	0.47
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	0.0024	0.024
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	0.57	5.7
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

Fractions of Measured Terpenes



Calculated Liquid Chromatogram



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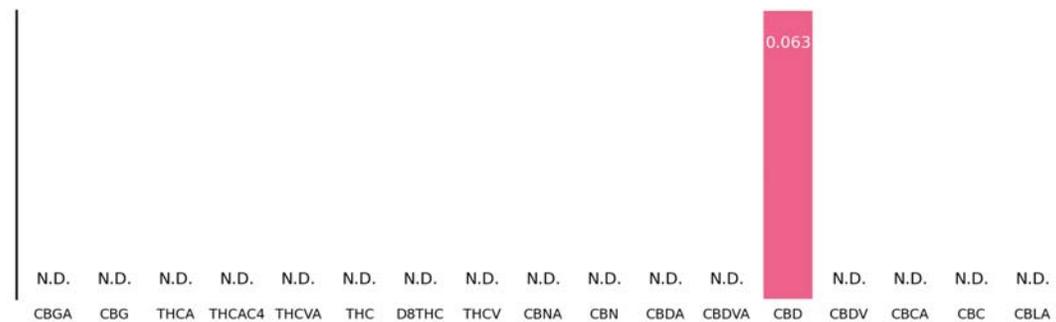




# Sample B

Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:	Sample ID: S91006_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.1199 g

## Cannabinoids as Percent by Mass



## Terpenes as Percent by Mass

None Detected

Sample Overview	Sample Details
<p><b>Cannabis Concentrate</b></p> <p>100% Cannabinoids, 0% Terpenoids, 0% Unmeasured</p>	<p>Pesticides: Not Detected</p> <p>Mycotoxins: Not Detected</p> <p>For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit <a href="http://www.steephilllab.com/FAQ">www.steephilllab.com/FAQ</a></p>

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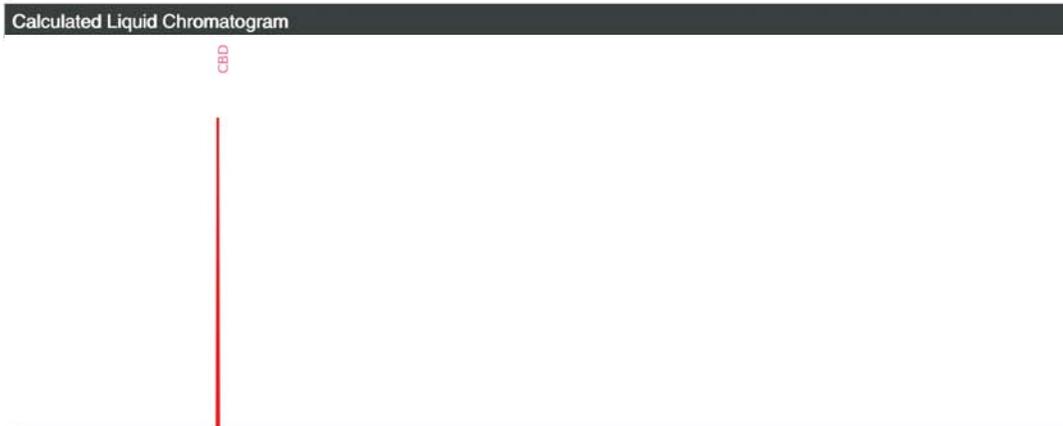




## Sample B

Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:	Sample ID: S91006_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.1199 g

Cannabinoid Profile			Fractions of Measured Cannabinoids	
Compound	□ Mass	mg/g		
CBGA	N.D.	N.D.		
CBG	N.D.	N.D.		
THCA	N.D.	N.D.		
THCAC4	N.D.	N.D.		
THCVA	N.D.	N.D.		
D9THC	N.D.	N.D.		
D8THC	N.D.	N.D.		
THCV	N.D.	N.D.		
CBNA	N.D.	N.D.		
CBN	N.D.	N.D.		
CBDA	N.D.	N.D.		
CBDVA	N.D.	N.D.		
CBD	0.06□	0.6□		
CBDV	N.D.	N.D.		
CBCA	N.D.	N.D.		
CBC	N.D.	N.D.		
CBLA	N.D.	N.D.		



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## Sample B

Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:	Sample ID: S91006_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.1199 g

Terpenoid Profile		
Compound	□ Mass	mg/g
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	N.D.	N.D.
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	N.D.	N.D.
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

### Fractions of Measured Terpenes

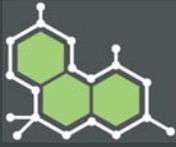
None  
Detected

### Calculated Liquid Chromatogram



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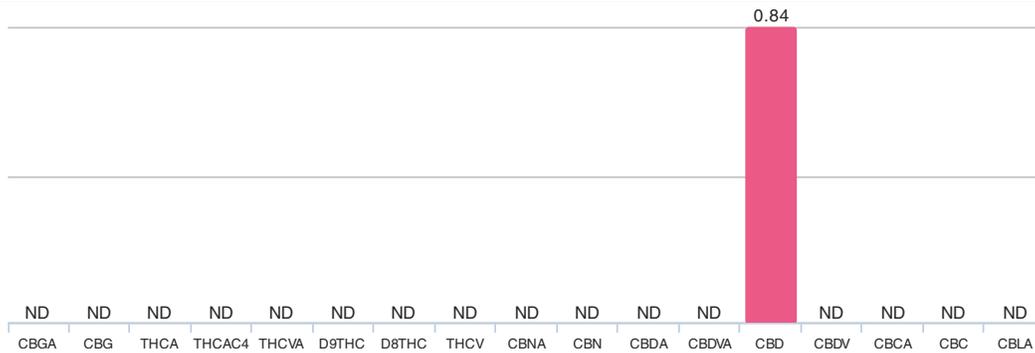




# Sample 1

Customer: Lab Employee		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate	Customer's ID: -		Sample ID: CON-2209-R01
Submitted: -		Tested: 10/25/2014	Reported: 10/27/2014		Sample Mass: 162.2 mg

### Cannabinoids as Percent of Total Sample Mass



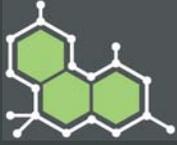
### Terpenoids as Percent of Total Sample Mass

No terpenoids to report

Sample Overview	Sample Details				
<p><b>Cannabis Concentrate</b> Sample 1</p>	<table border="1"> <tr> <td>Mycotoxin</td> <td>NOT REQUESTED</td> </tr> <tr> <td>Pesticide</td> <td>NOT REQUESTED</td> </tr> </table> <p>For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit <a href="http://www.steephilllab.com/FAQ">www.steephilllab.com/FAQ</a>.</p>	Mycotoxin	NOT REQUESTED	Pesticide	NOT REQUESTED
Mycotoxin	NOT REQUESTED				
Pesticide	NOT REQUESTED				

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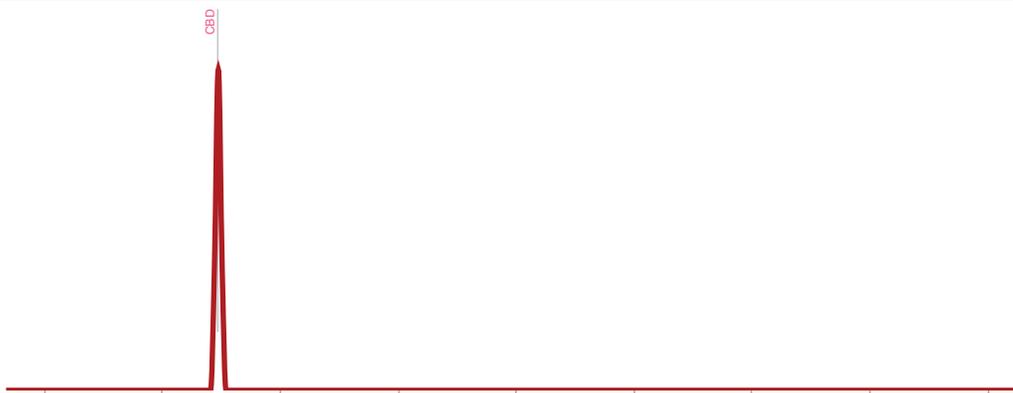


# Sample 1

Customer: Lab Employee		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: -	
Submitted: -		Tested: 10/25/2014		Reported: 10/27/2014	
				Sample ID: CON-2209-R01	
				Sample Mass: 162.2 mg	

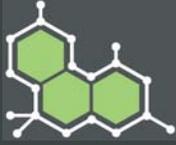
Cannabinoid Profile			Fractions of Measured Cannabinoids
Compound	% mass	≈ mg/g	
CBGA	ND	ND	
CBG	ND	ND	
THCA	ND	ND	
THCAC4	ND	ND	
THCVA	ND	ND	
D9THC	ND	ND	
D8THC	ND	ND	
THCV	ND	ND	
CBNA	ND	ND	
CBN	ND	ND	
CBDA	ND	ND	
CBDVA	ND	ND	
CBD	0.84	8.4	
CBDV	ND	ND	
CBCA	ND	ND	
CBC	ND	ND	
CBLA	ND	ND	

## Calculated Liquid Chromatogram



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# Sample 1

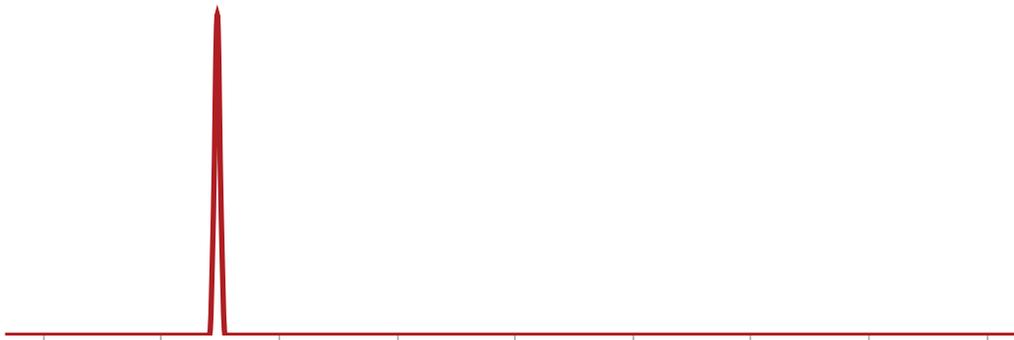
Customer: Lab Employee		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: -	
Submitted: -		Tested: 10/25/2014		Reported: 10/27/2014	
				Sample ID: CON-2209-R01	
				Sample Mass: 162.2 mg	

Terpenoid Profile		
Compound	% mass	≈ mg/g
Terpinolene	ND	ND
Linalool	ND	ND
Phytol	ND	ND
Beta Myrcene	ND	ND
Citronellol	ND	ND
Caryophyllene Oxide	ND	ND
Alpha Pinene	ND	ND
Limonene	ND	ND
Beta Caryophyllene	ND	ND
Alpha Humulene	ND	ND

## Fractions of Measured Terpenes

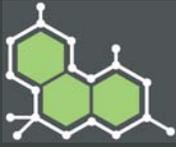
No terpenoids to chart

## Calculated Liquid Chromatogram



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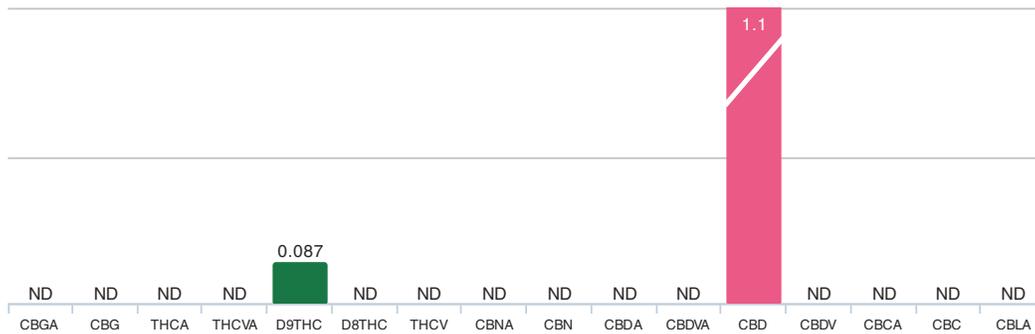




# Pure of Gel CBD

Customer: TRITONOL	Test Site: OAK	Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile	Type: Concentrate	Customer's ID: 11/11/14	Samp ID: S349029
Submitted:	Tested: 12/15/2014	Reported: 12/30/2014	Sample Mass: 1.0549

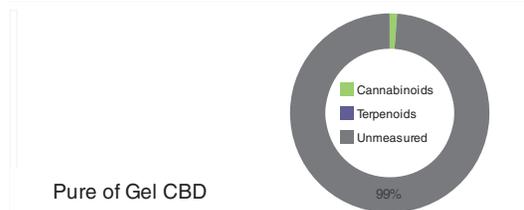
### Cannabinoids as Percent of Total Sample Mass



### Terpenoids as Percent of Total Sample Mass

No terpenoids to report

### Sample Overview



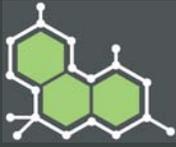
### Sample Details

Mycotoxin	Not Detected
Pesticide	Not Detected

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steepphilllab.com/FAQ](http://www.steepphilllab.com/FAQ).

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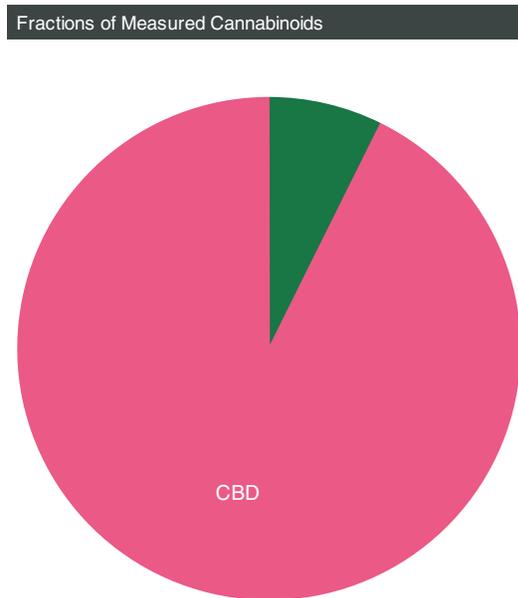




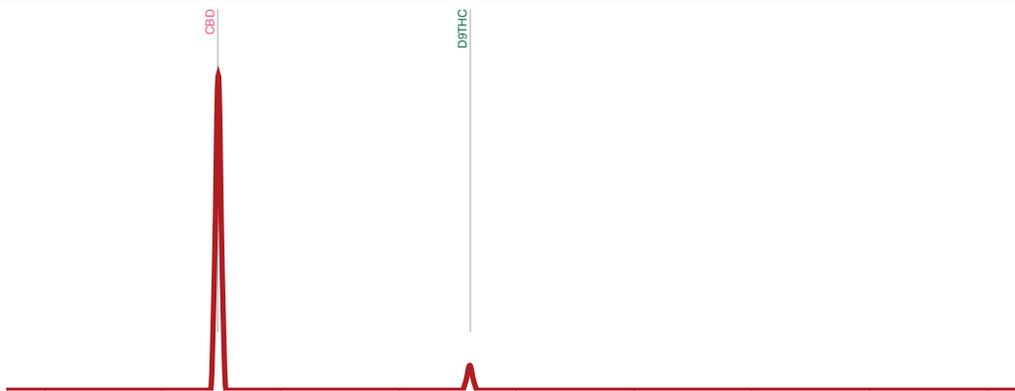
# Pure of Gel CBD

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: 11/11/14	
Submitted:		Tested: 12/15/2014		Reported: 12/30/2014	
				Sample Mass: 1.0549	

Cannabinoid Profile		
Compound	% mass	≈ mg/g
CBGA	ND	ND
CBG	ND	ND
THCA	ND	ND
THCVA	ND	ND
D9THC	0.087	0.87
D8THC	ND	ND
THCV	ND	ND
CBNA	ND	ND
CBN	ND	ND
CBDA	ND	ND
CBDVA	ND	ND
CBD	1.1	11.0
CBDV	ND	ND
CBCA	ND	ND
CBC	ND	ND
CBLA	ND	ND

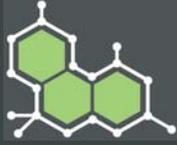


## Calculated Liquid Chromatogram



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## Pure of Gel CBD

Customer: TRITONOL	Test Site: OAK	Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile	Type: Concentrate	Customer's ID: 11/11/14	Samp ID: S349029
Submitted:	Tested: 12/15/2014	Reported: 12/30/2014	Sample Mass: 1.0549

Terpenoid Profile		
Compound	% mass	≈ mg/g
Terpinolene	ND	ND
Linalool	ND	ND
Phytol	ND	ND
Beta Myrcene	ND	ND
Citronellol	ND	ND
Caryophyllene Oxide	ND	ND
Alpha Pinene	ND	ND
Limonene	ND	ND
Beta Caryophyllene	ND	ND
Alpha Humulene	ND	ND

### Fractions of Measured Terpenes

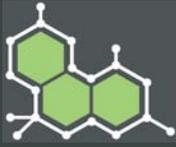
No terpenoids to chart

### Calculated Liquid Chromatogram



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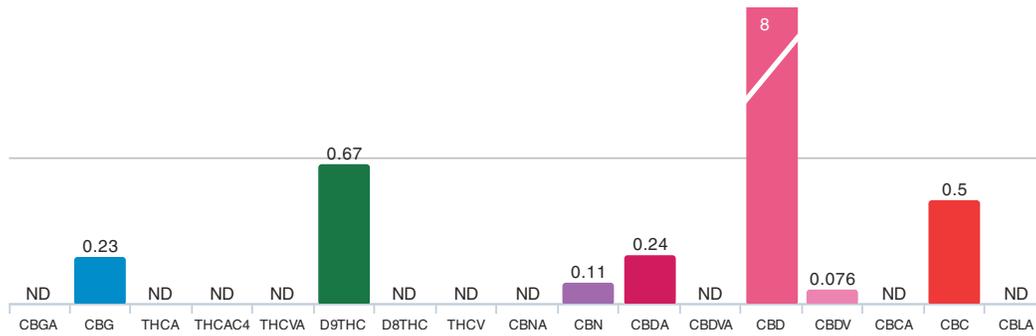




# CBDiol

Customer: Tritonol		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Tincture		Customer's ID: -	
Submitted: -		Tested: 10/15/2014		Reported: 10/15/2014	
Sample ID: TIN-0138-R01					
Sample Mass: 1036 mg					

**Cannabinoids as Milligrams per Milliliter**



**Terpenoids as Milligrams per Milliliter**

No terpenoids to report

**Sample Overview**



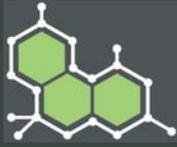
**Sample Details**

Mycotoxin	NOT REQUESTED
Pesticide	NOT REQUESTED
Density	1.04 g/ml

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ).

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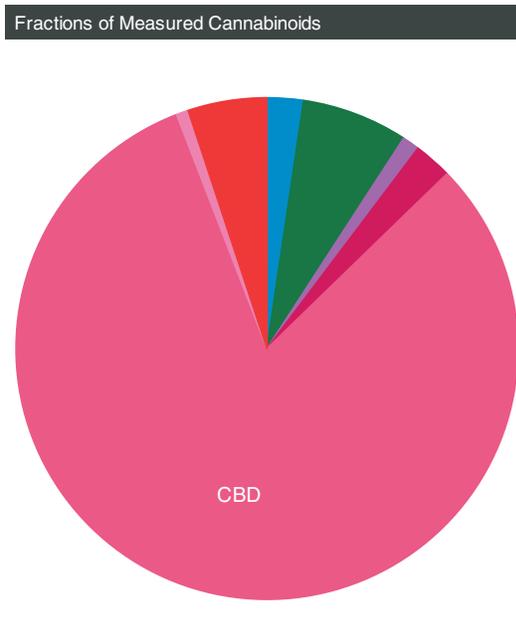




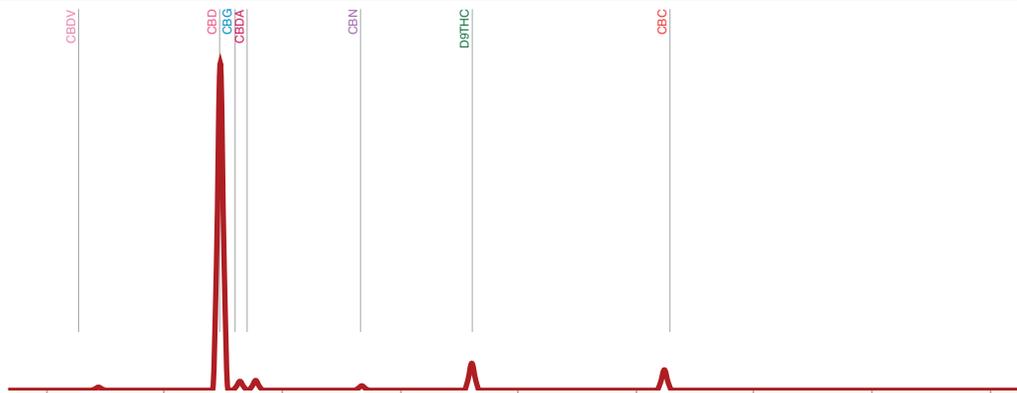
# CBDiol

Customer: Tritonol	Test Site: SHL Oakland	Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile	Type: Tincture	Customer's ID: -	Sample ID: TIN-0138-R01
Submitted: -	Tested: 10/15/2014	Reported: 10/15/2014	Sample Mass: 1036 mg

Cannabinoid Profile		
Compound	mg/ml	≈ mg/tsp
CBGA	ND	ND
CBG	0.23	1.1
THCA	ND	ND
THCAC4	ND	ND
THCVA	ND	ND
D9THC	0.67	3.3
D8THC	ND	ND
THCV	ND	ND
CBNA	ND	ND
CBN	0.11	0.55
CBDA	0.24	1.2
CBDVA	ND	ND
CBD	8	40
CBDV	0.076	0.37
CBCA	ND	ND
CBC	0.5	2.5
CBLA	ND	ND

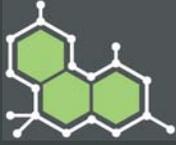


### Calculated Liquid Chromatogram



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# CBDiol

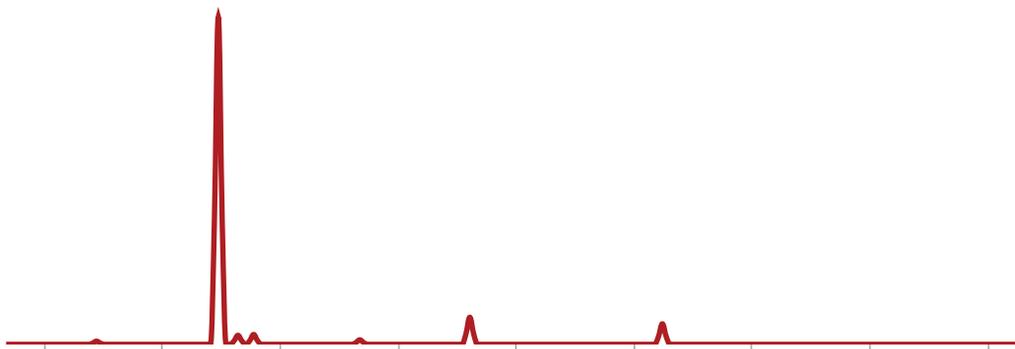
Customer: Tritonol		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Tincture		Customer's ID: -	
Submitted: -		Tested: 10/15/2014		Reported: 10/15/2014	
				Sample ID: TIN-0138-R01	
				Sample Mass: 1036 mg	

Terpenoid Profile		
Compound	mg/ml	≈ mg/tsp
Terpinolene	ND	ND
Linalool	ND	ND
Phytol	ND	ND
Beta Myrcene	ND	ND
Citronellol	ND	ND
Caryophyllene Oxide	ND	ND
Alpha Pinene	ND	ND
Limonene	ND	ND
Beta Caryophyllene	ND	ND
Alpha Humulene	ND	ND

## Fractions of Measured Terpenes

No terpenoids to chart

## Calculated Liquid Chromatogram



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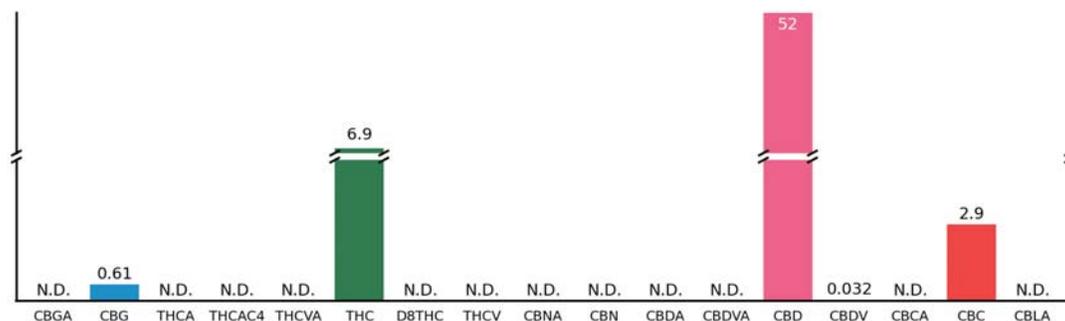




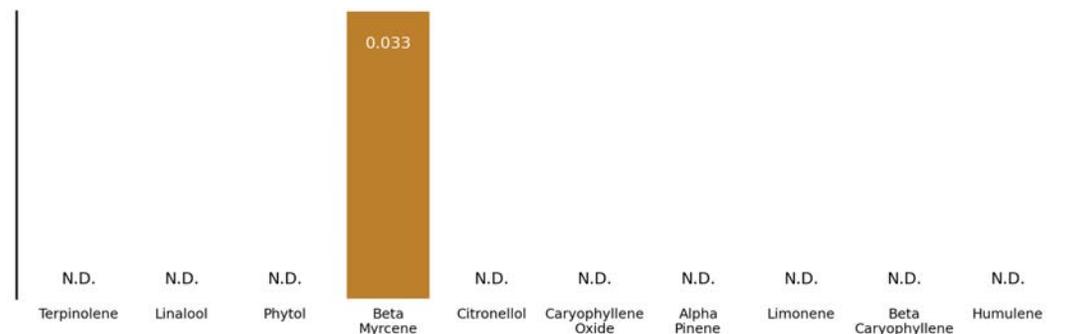
## Large CBD Capsule

Customer: Push Boys	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Capsule	Customer's ID:	Sample ID: C2
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.084 g

### Cannabinoids as Milligrams per Capsule



### Terpenes as Milligrams per Capsule

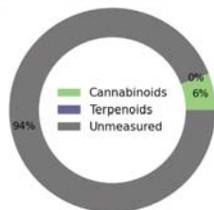


### Sample Overview



Cannabis Infused Product

Large CBD Capsule



### Sample Details

Pesticides:	Not Requested
Mycotoxins:	Not Requested
Capsules per Package:	1.0
Capsule Mass (g):	1.084

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ)

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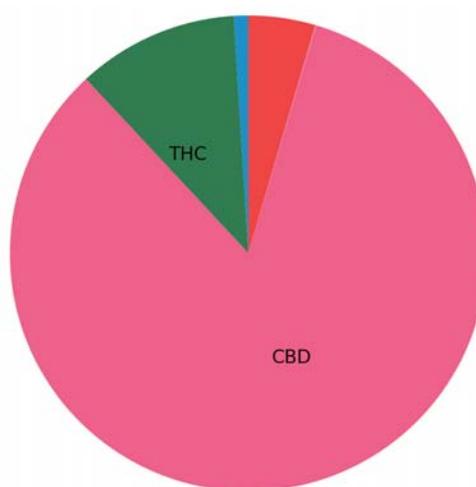


## Large CBD Capsule

Customer: Push Boys	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Capsule	Customer's ID:	Sample ID: C2
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.084 g

Cannabinoid Profile		
Compound	mg/capsule	mg/pkg
CBGA	N.D.	N.D.
CBG	0.61	0.61
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	6.9	6.9
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	N.D.	N.D.
CBDA	N.D.	N.D.
CBDVA	N.D.	N.D.
CBD	52	52
CBDV	0.0±2	0.0±2
CBCA	N.D.	N.D.
CBC	2.9	2.9
CBLA	N.D.	N.D.

Fractions of Measured Cannabinoids



Calculated Liquid Chromatogram



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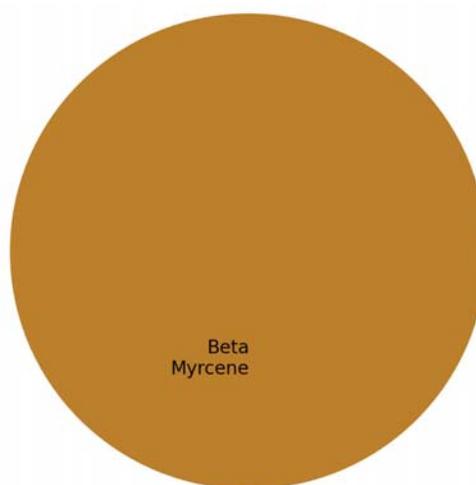


# Large CBD Capsule

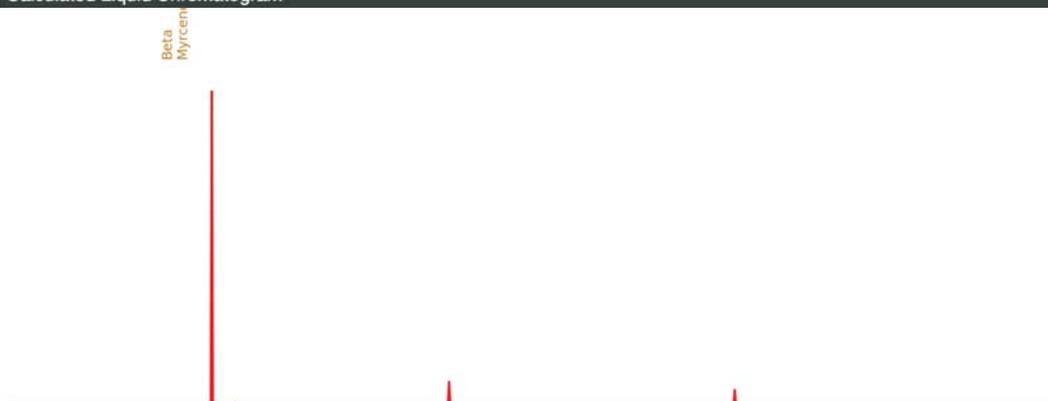
Customer: Push Boys	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Capsule	Customer's ID:	Sample ID: C2
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.084 g

Terpenoid Profile		
Compound	mg/capsule	mg/pkg
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	0.00	0.00
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	N.D.	N.D.
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

## Fractions of Measured Terpenes



## Calculated Liquid Chromatogram



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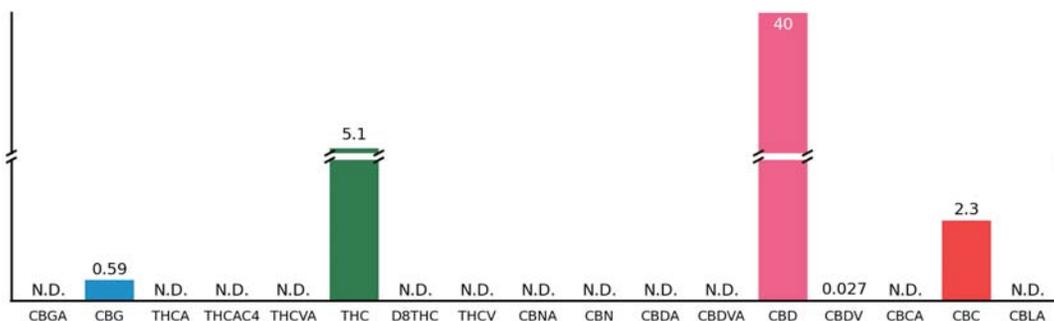




# Small CBD Capsule

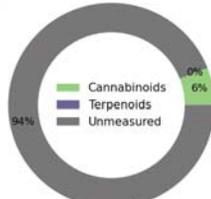
Customer: Push Boys	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Capsule	Customer's ID:	Sample ID: C1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.8067 g

## Cannabinoids as Milligrams per Capsule



## Terpenes as Milligrams per Capsule

None Detected

Sample Overview	Sample Details
 <p>Cannabis Infused Product</p> <p>Small CBD Capsule</p> 	<p>Pesticides: Not Requested</p> <p>Mycotoxins: Not Requested</p> <p>Capsules per Package: 1.0</p> <p>Capsule Mass [g]: 0.8067</p> <p>For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit <a href="http://www.steehilllab.com/FAQ">www.steehilllab.com/FAQ</a></p>

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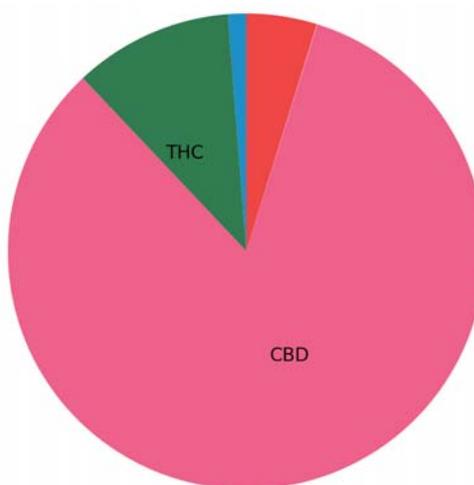


## Small CBD Capsule

Customer: Push Boys	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Capsule	Customer's ID:	Sample ID: C1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.8067 g

Cannabinoid Profile		
Compound	mg/capsule	mg/pkg
CBGA	N.D.	N.D.
CBG	0.59	0.59
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	5.1	5.1
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	N.D.	N.D.
CBDA	N.D.	N.D.
CBDVA	N.D.	N.D.
CBD	40	40
CBDV	0.027	0.027
CBCA	N.D.	N.D.
CBC	2.0	2.0
CBLA	N.D.	N.D.

Fractions of Measured Cannabinoids



Calculated Liquid Chromatogram



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# Small CBD Capsule

Customer: Push Boys	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Capsule	Customer's ID:	Sample ID: C1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.8067 g

Terpenoid Profile		
Compound	mg/capsule	mg/pkg
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	N.D.	N.D.
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	N.D.	N.D.
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

## Fractions of Measured Terpenes

None  
Detected

## Calculated Liquid Chromatogram



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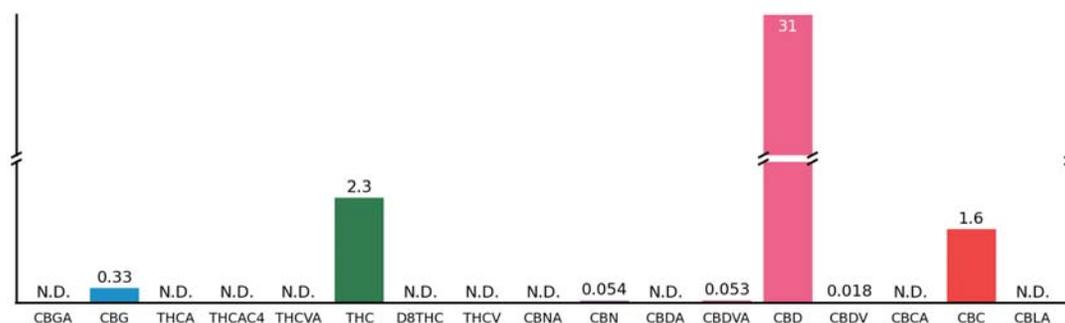




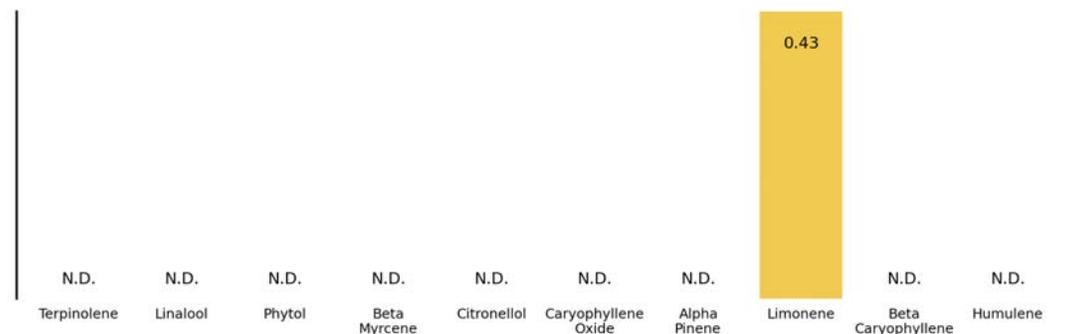
## Sample

Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Tincture	Customer's ID:	Sample ID: S91008_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.071 g

### Cannabinoids as Milligrams per Milliliter



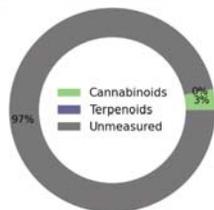
### Terpenes as Milligrams per Milliliter



### Sample Overview



Cannabis Infused Product



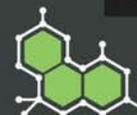
Sample

### Sample Details

Pesticides: Not Detected  
Mycotoxins: Not Detected  
Density (g/mL): 1.071

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ)

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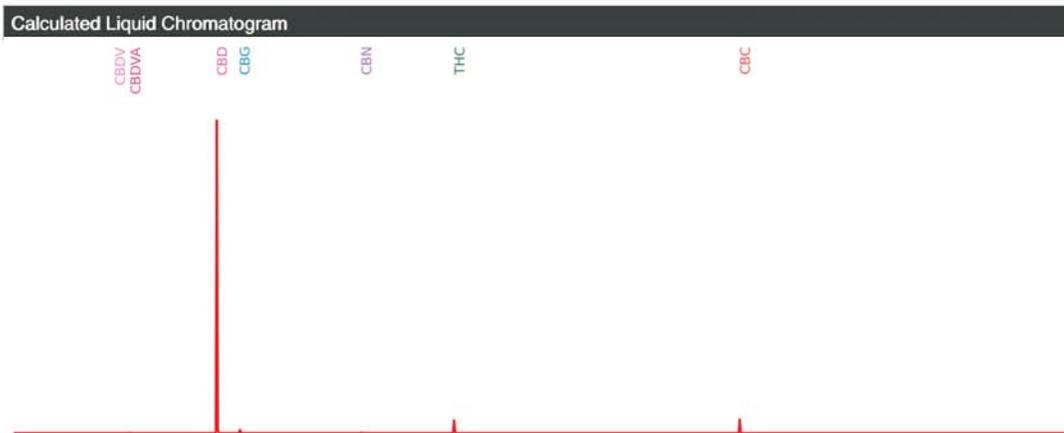
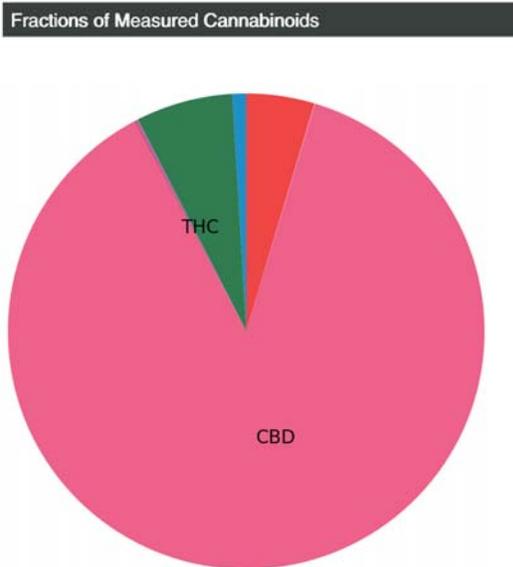




## Sample

Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Tincture	Customer's ID:	Sample ID: S91008_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.071 g

Cannabinoid Profile		
Compound	mg/mL	mg/g
CBGA	N.D.	N.D.
CBG	0.□□	0.□1
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	2.□	2.2
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	0.054	0.050
CBDA	N.D.	N.D.
CBDVA	0.05□	0.049
CBD	□1	29
CBDV	0.018	0.017
CBCA	N.D.	N.D.
CBC	1.6	1.5
CBLA	N.D.	N.D.



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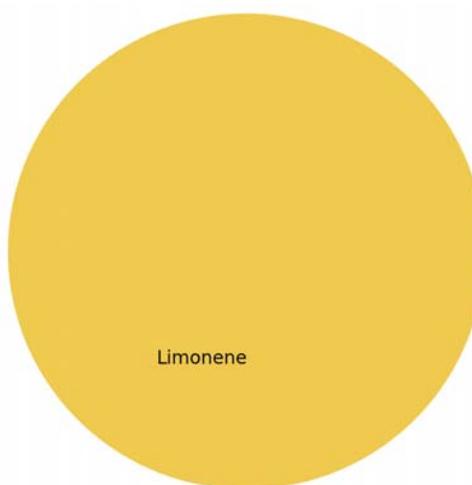


## Sample

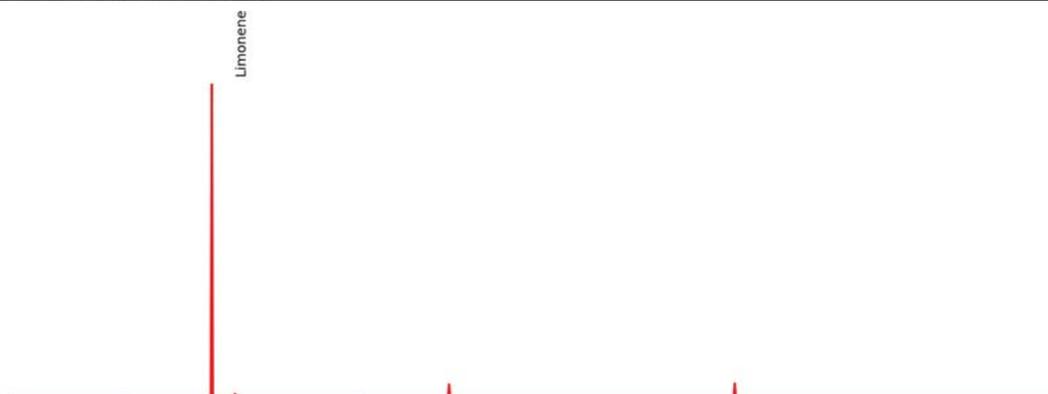
Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Tincture	Customer's ID:	Sample ID: S91008_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.071 g

Terpenoid Profile		
Compound	mg/mL	mg/g
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	N.D.	N.D.
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	0.4 <input type="checkbox"/>	0.40
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

### Fractions of Measured Terpenes



### Calculated Liquid Chromatogram



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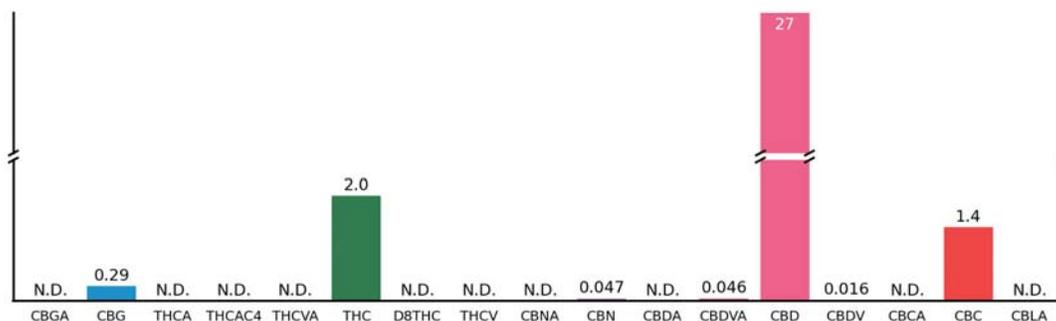




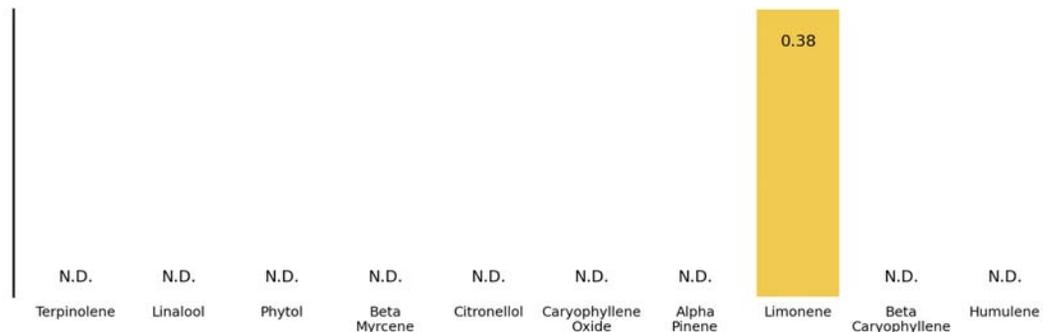
## Sample D

Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:	Sample ID: S91008_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.1041 g

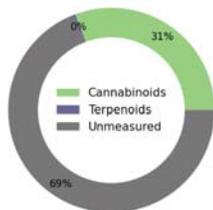
### Cannabinoids as Percent by Mass



### Terpenes as Percent by Mass



### Sample Overview



### Sample D

### Sample Details

Pesticides: Not Detected  
Mycotoxins: Not Detected

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ)

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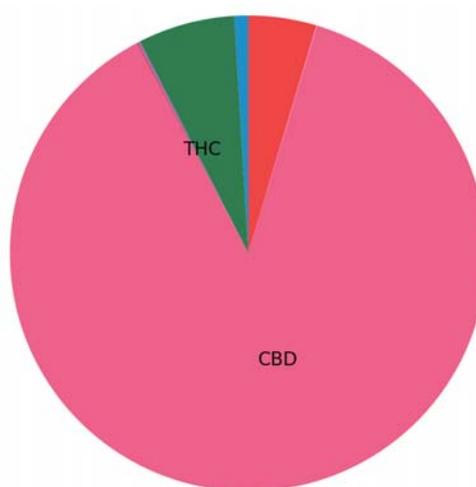


## Sample D

Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:	Sample ID: S91008_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.1041 g

Cannabinoid Profile		
Compound	□ Mass	mg/g
CBGA	N.D.	N.D.
CBG	0.29	2.9
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	2.0	20
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	0.047	0.47
CBDA	N.D.	N.D.
CBDVA	0.046	0.46
CBD	27	270
CBDV	0.016	0.16
CBCA	N.D.	N.D.
CBC	1.4	14
CBLA	N.D.	N.D.

Fractions of Measured Cannabinoids



Calculated Liquid Chromatogram



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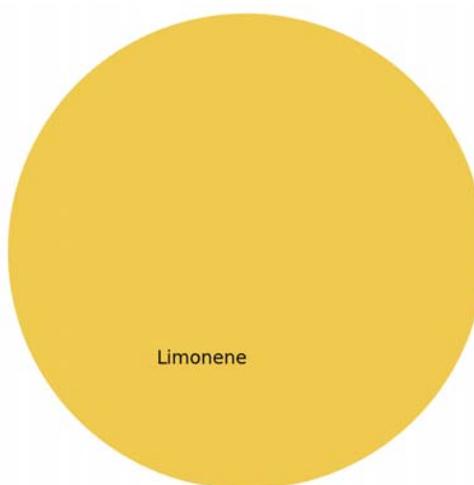


## Sample D

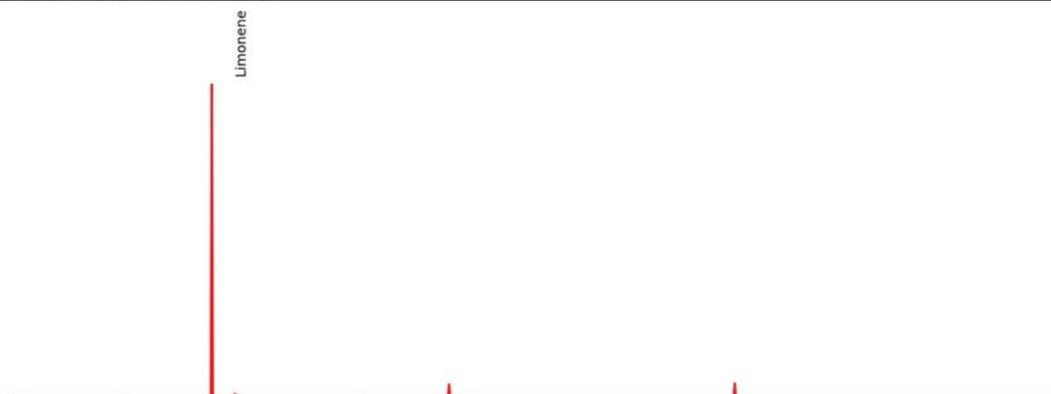
Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:	Sample ID: S91008_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.1041 g

Terpenoid Profile		
Compound	□ Mass	mg/g
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	N.D.	N.D.
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	0.18	1.8
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

### Fractions of Measured Terpenes



### Calculated Liquid Chromatogram



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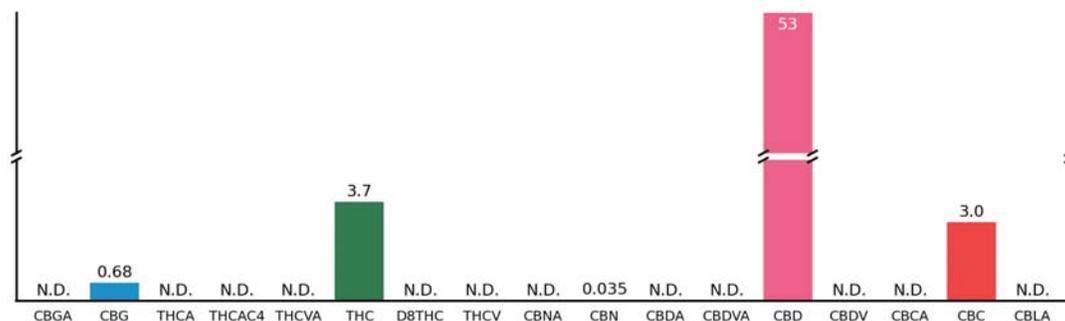




## Sample D

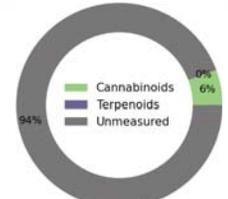
Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Capsule	Customer's ID:	Sample ID: S91009 R1D2
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.084 g

### Cannabinoids as Milligrams per Capsule



### Terpenes as Milligrams per Capsule

None Detected

Sample Overview	Sample Details
 <p>Cannabis infused Product</p> <p>Sample D</p> 	<p>Pesticides: Not Detected</p> <p>Mycotoxins: Not Detected</p> <p>Capsules per Package: 2.0</p> <p>Capsule Mass [g]: 1.084</p> <p>For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit <a href="http://www.steephilllab.com/FAQ">www.steephilllab.com/FAQ</a></p>

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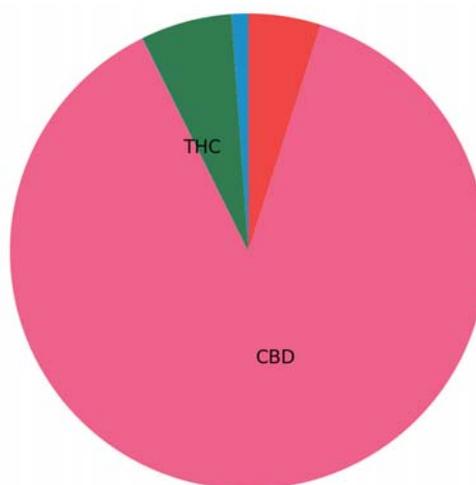


## Sample D

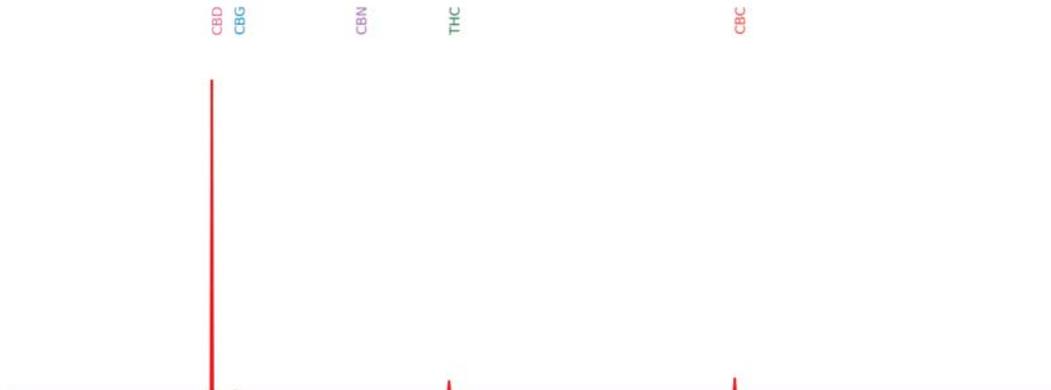
Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Capsule	Customer's ID:	Sample ID: S91009 R1D2
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.084 g

Cannabinoid Profile		
Compound	mg/capsule	mg/pkg
CBGA	N.D.	N.D.
CBG	0.68	1.4
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	0.7	7.4
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	0.005	0.069
CBDA	N.D.	N.D.
CBDVA	N.D.	N.D.
CBD	50	110
CBDV	N.D.	N.D.
CBCA	N.D.	N.D.
CBC	0	5.9
CBLA	N.D.	N.D.

Fractions of Measured Cannabinoids



Calculated Liquid Chromatogram



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## Sample D

Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Capsule	Customer's ID:	Sample ID: S91009 R1D2
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.084 g

Terpenoid Profile		
Compound	mg/capsule	mg/pkg
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	N.D.	N.D.
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	N.D.	N.D.
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

### Fractions of Measured Terpenes

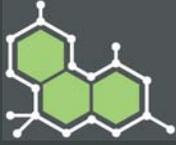
None  
Detected

### Calculated Liquid Chromatogram



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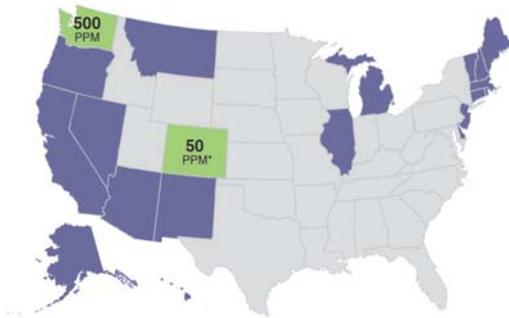




## Pure of Gel CBD

Customer: TRITONOL	Test Site: OAK	Instrument: LCMSMS	
Test: Residual Solvent Screen	Type: Concentrate	Customer's ID: 11/11/14	Samp ID: S349029
Submitted:	Tested: 12/15/2014	Reported: 12/30/2014	Sample Mass: 0.5153

Parts Per Million (PPM) Limits	Test Summary
--------------------------------	--------------



Total Residual Solvents < 20 ppm

### COLORADO

CO Retail Mandatory Testing: Basis and Purpose – R 712

- N-Butane, Iso-butane, Propane < 50PPM\*
- Heptane, Isopropyl, Ethanol < 10PPM
- Solvents not pursuant with Rule R 605 < None Detected

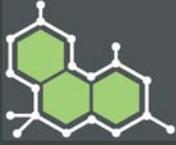
### WASHINGTON

WAC 314-55-104 Marijuana Processor License Extraction Requirements:

- For finished cannabis extract < 500PPM

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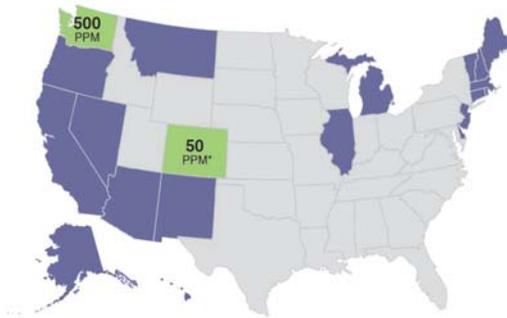




## CBD-75

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Residual Solvent Screen		Type: Concentrate		Customer's ID: 12/2/14	
Submitted:		Tested: 12/15/2014		Reported: 12/30/2014	
				Samp ID: S349028	
				Sample Mass: 0.5209	

Parts Per Million (PPM) Limits	Test Summary
--------------------------------	--------------



Total Residual Solvents < 20 ppm

### COLORADO

CO Retail Mandatory Testing: Basis and Purpose – R 712

- N-Butane, Iso-butane, Propane < 50PPM\*
- Heptane, Isopropyl, Ethanol < 10PPM
- Solvents not pursuant with Rule R 605 < None Detected

### WASHINGTON

WAC 314-55-104 Marijuana Processor License Extraction Requirements:

- For finished cannabis extract < 500PPM

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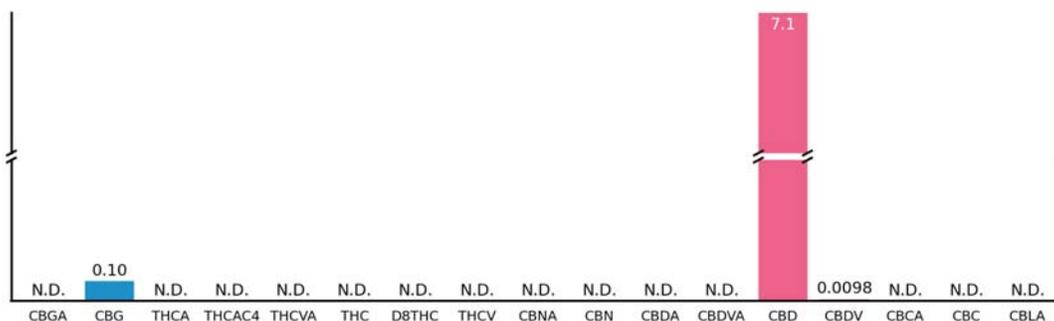




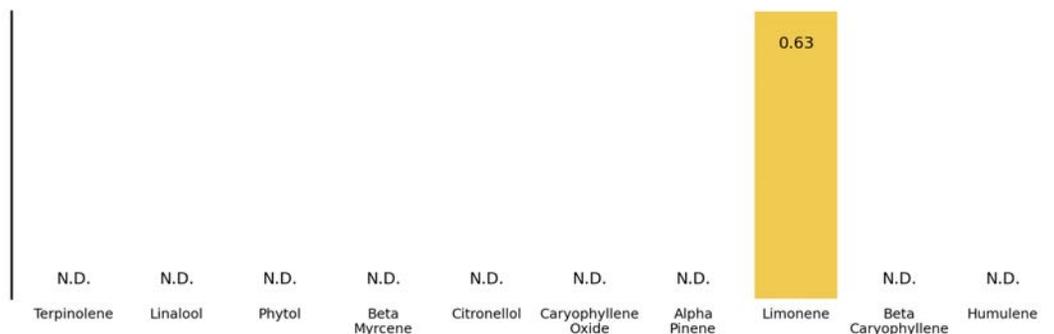
# CBD Tincture

Customer: <input type="checkbox"/> ush Boys	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Tincture	Customer's ID:	Sample ID: T1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.054 g

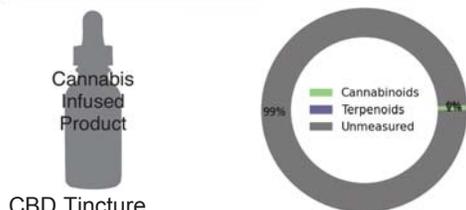
## Cannabinoids as Milligrams per Milliliter



## Terpenes as Milligrams per Milliliter



## Sample Overview



## Sample Details

Pesticides:	Not Re <sub>u</sub> ested
Mycotoxins:	Not Re <sub>u</sub> ested
Density (g/mL):	1.0541

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ)

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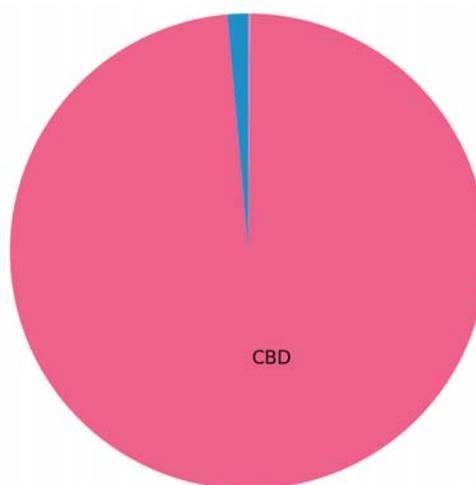


## CBD Tincture

Customer: Kush Boys	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Tincture	Customer's ID:	Sample ID: T1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.054 g

Cannabinoid Profile		
Compound	mg/mL	mg/g
CBGA	N.D.	N.D.
CBG	0.10	0.096
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	N.D.	N.D.
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	N.D.	N.D.
CBDA	N.D.	N.D.
CBDVA	N.D.	N.D.
CBD	7.1	6.8
CBDV	0.0098	0.009
CBCA	N.D.	N.D.
CBC	N.D.	N.D.
CBLA	N.D.	N.D.

Fractions of Measured Cannabinoids



Calculated Liquid Chromatogram



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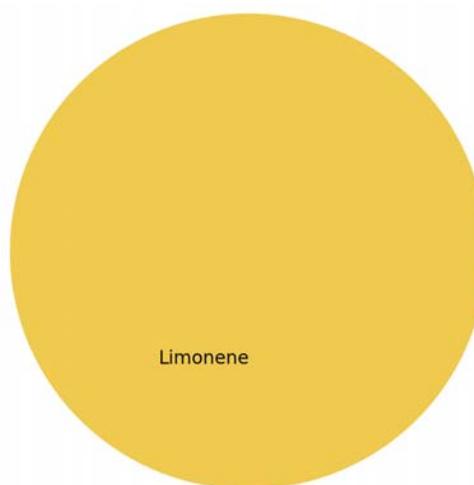


# CBD Tincture

Customer: Push Boys	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Tincture	Customer's ID:	Sample ID: T1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.054 g

Terpenoid Profile		
Compound	mg/mL	mg/g
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	N.D.	N.D.
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	0.6	0.59
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

## Fractions of Measured Terpenes



## Calculated Liquid Chromatogram



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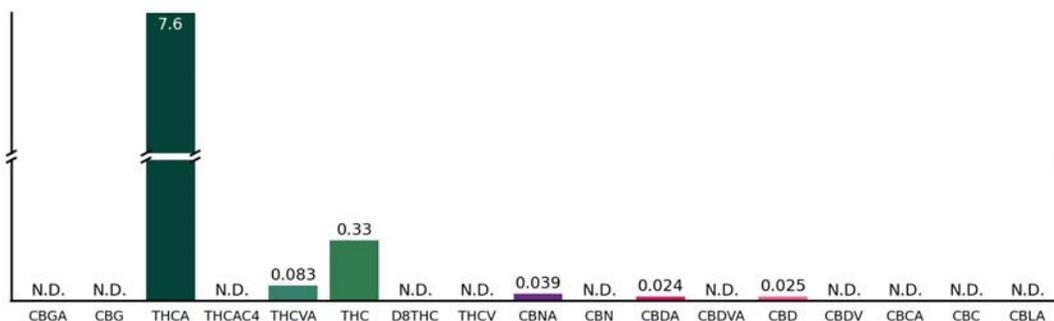




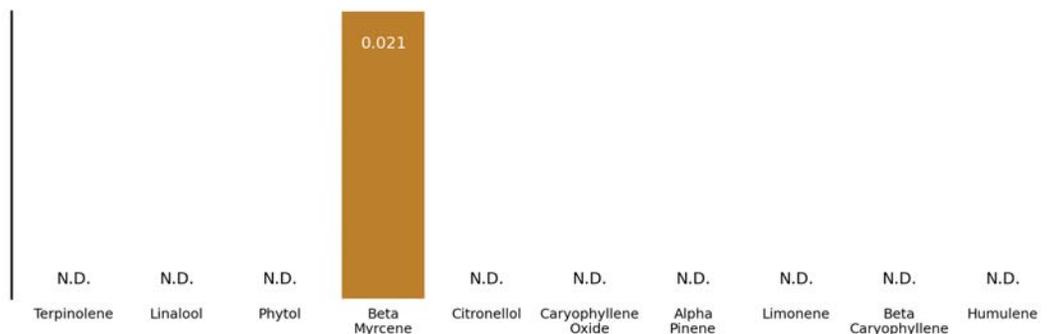
# Sample A

Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:	Sample ID: S91005_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.1156 g

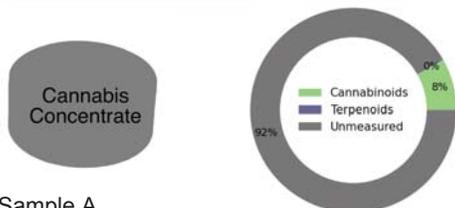
## Cannabinoids as Percent by Mass



## Terpenes as Percent by Mass



## Sample Overview



Sample A

## Sample Details

Pesticides: Not Detected  
Mycotoxins: Not Detected

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ)

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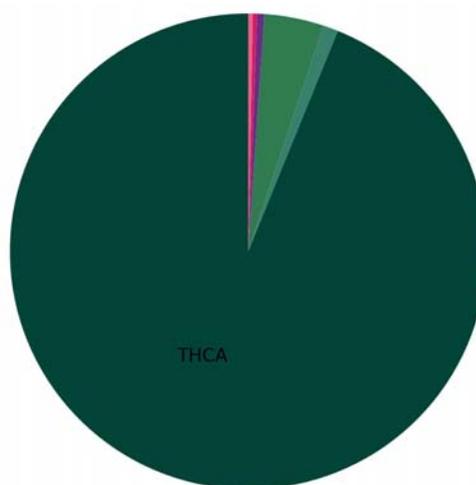


## Sample A

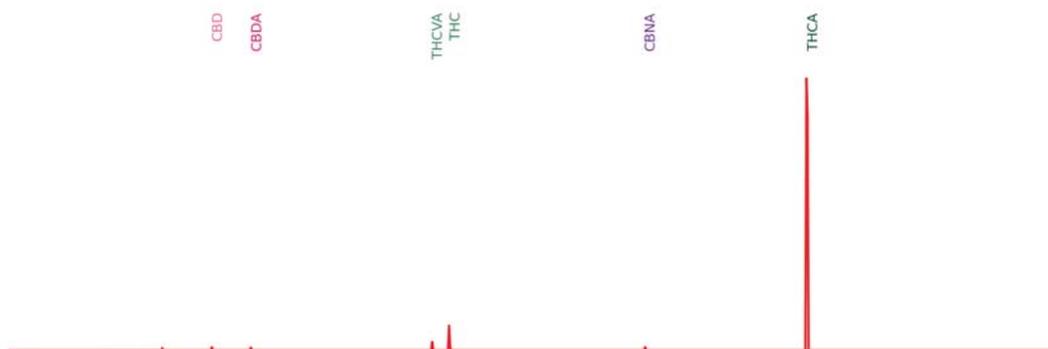
Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:	Sample ID: S91005_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.1156 g

Cannabinoid Profile		
Compound	□ Mass	mg/g
CBGA	N.D.	N.D.
CBG	N.D.	N.D.
THCA	7.6	76
THCAC4	N.D.	N.D.
THCVA	0.08□	0.8□
D9THC	0.□□	□□
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	0.0□9	0.□9
CBN	N.D.	N.D.
CBDA	0.024	0.24
CBDVA	N.D.	N.D.
CBD	0.025	0.25
CBDV	N.D.	N.D.
CBCA	N.D.	N.D.
CBC	N.D.	N.D.
CBLA	N.D.	N.D.

Fractions of Measured Cannabinoids



Calculated Liquid Chromatogram



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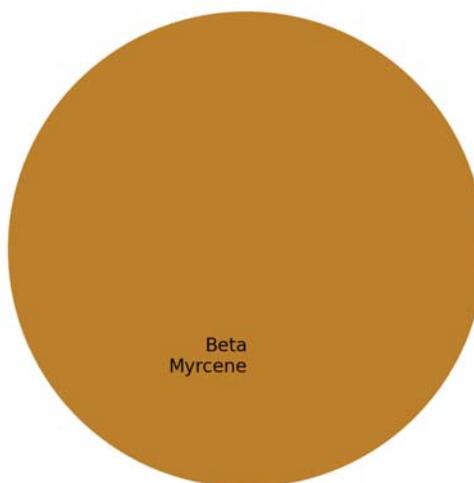


## Sample A

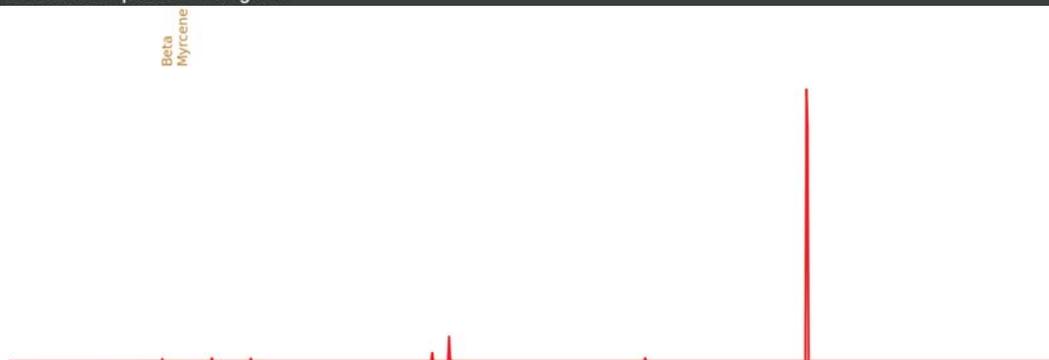
Customer: TRITONOL	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:	Sample ID: S91005_R2D1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.1156 g

Terpenoid Profile		
Compound	□ Mass	mg/g
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	0.021	0.21
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	N.D.	N.D.
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

### Fractions of Measured Terpenes

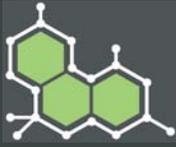


### Calculated Liquid Chromatogram



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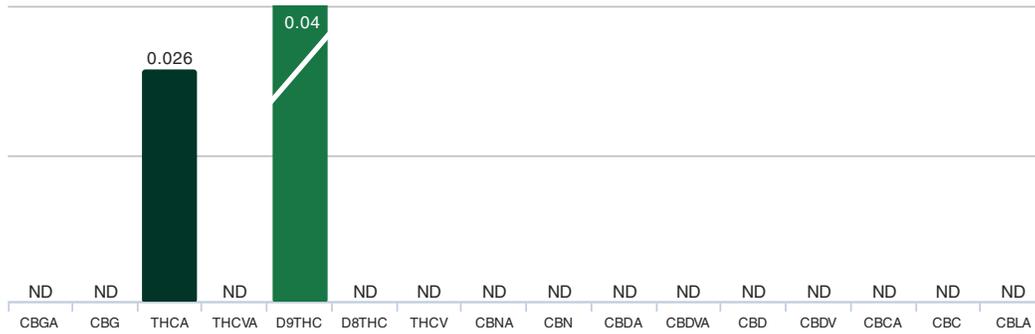




# Sample 4200

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: N/A	
Submitted:		Tested: 12/15/2014		Reported: 12/29/2014	
				Sample Mass: 1.018	

### Cannabinoids as Percent of Total Sample Mass



### Terpenoids as Percent of Total Sample Mass

No terpenoids to report

Sample Overview	Sample Details				
<p>Sample 4200</p> <p>100%</p>	<table border="1"> <tr> <td>Mycotoxin</td> <td>Not Detected</td> </tr> <tr> <td>Pesticide</td> <td>Not Detected</td> </tr> </table> <p>For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit <a href="http://www.steehilllab.com/FAQ">www.steehilllab.com/FAQ</a>.</p>	Mycotoxin	Not Detected	Pesticide	Not Detected
Mycotoxin	Not Detected				
Pesticide	Not Detected				

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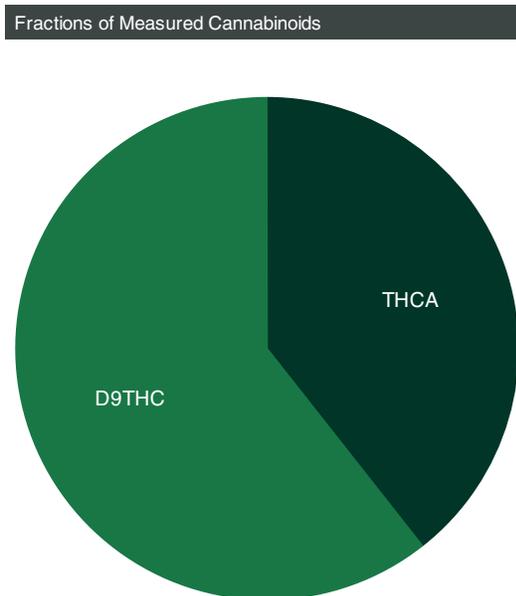




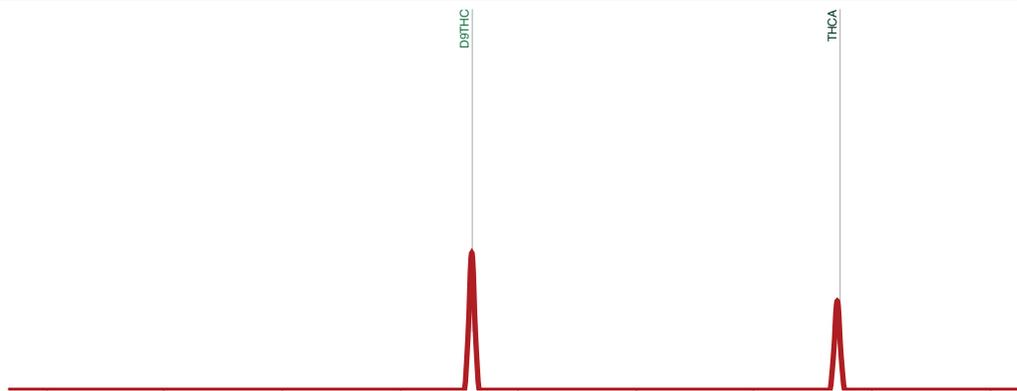
# Sample 4200

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: N/A	
Submitted:		Tested: 12/15/2014		Reported: 12/29/2014	
				Samp ID: S349030	
				Sample Mass: 1.018	

Cannabinoid Profile		
Compound	% mass	≈ mg/g
CBGA	ND	ND
CBG	ND	ND
THCA	0.026	0.26
THCVA	ND	ND
D9THC	0.04	0.4
D8THC	ND	ND
THCV	ND	ND
CBNA	ND	ND
CBN	ND	ND
CBDA	ND	ND
CBDVA	ND	ND
CBD	ND	ND
CBDV	ND	ND
CBCA	ND	ND
CBC	ND	ND
CBLA	ND	ND

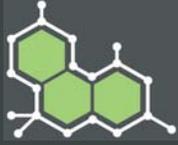


### Calculated Liquid Chromatogram



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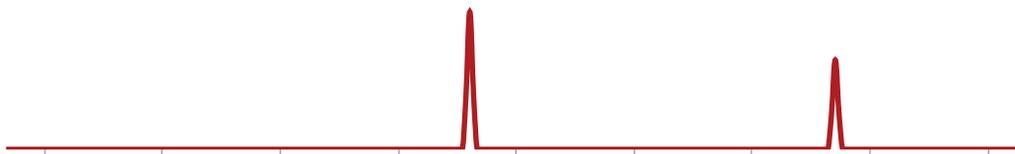


# Sample 4200

Customer: TRITONOL	Test Site: OAK	Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile	Type: Concentrate	Customer's ID: N/A	Samp ID: S349030
Submitted:	Tested: 12/15/2014	Reported: 12/29/2014	Sample Mass: 1.018

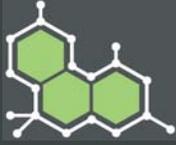
Terpenoid Profile			Fractions of Measured Terpenes
Compound	% mass	≈ mg/g	
Terpinolene	ND	ND	No terpenoids to chart
Linalool	ND	ND	
Phytol	ND	ND	
Beta Myrcene	ND	ND	
Citronellol	ND	ND	
Caryophyllene Oxide	ND	ND	
Alpha Pinene	ND	ND	
Limonene	ND	ND	
Beta Caryophyllene	ND	ND	
Alpha Humulene	ND	ND	

## Calculated Liquid Chromatogram



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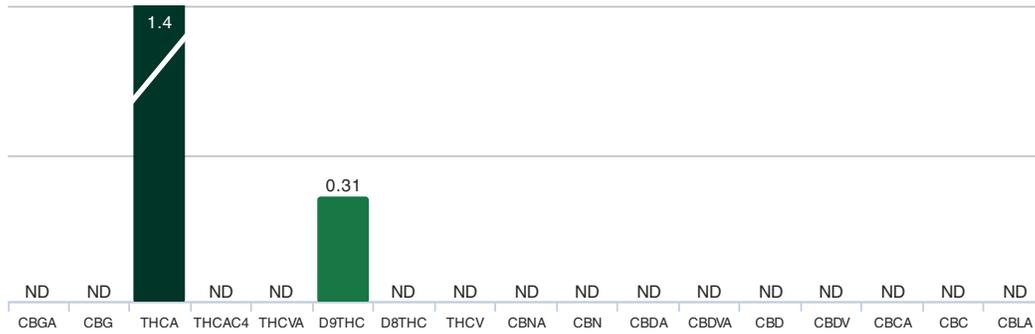




# Sample 2

Customer: Lab Employee		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate	Customer's ID: -		Sample ID: CON-2210-R01
Submitted: -		Tested: 10/25/2014	Reported: 10/27/2014		Sample Mass: 197.6 mg

### Cannabinoids as Percent of Total Sample Mass

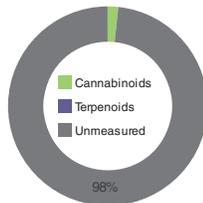


### Terpenoids as Percent of Total Sample Mass

No terpenoids to report

### Sample Overview

Cannabis Concentrate  
Sample 2



### Sample Details

Mycotoxin	NOT REQUESTED
Pesticide	NOT REQUESTED

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steehilllab.com/FAQ](http://www.steehilllab.com/FAQ).

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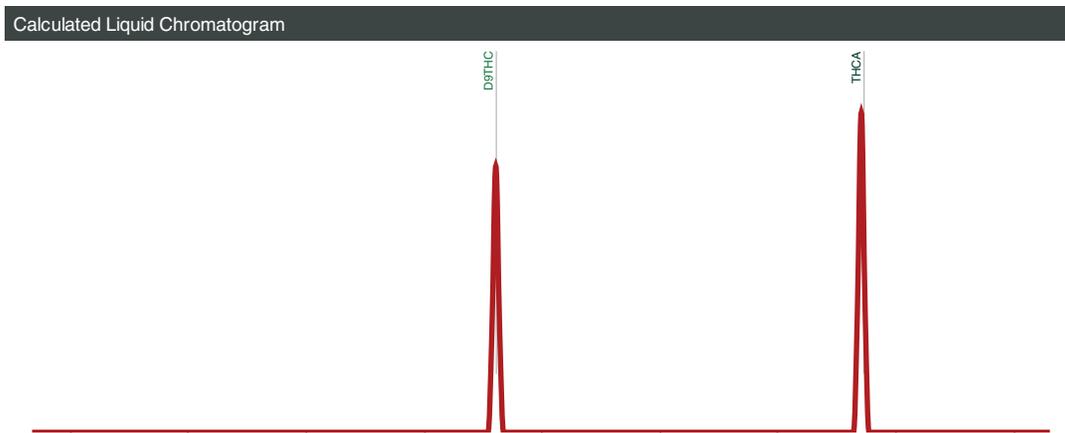
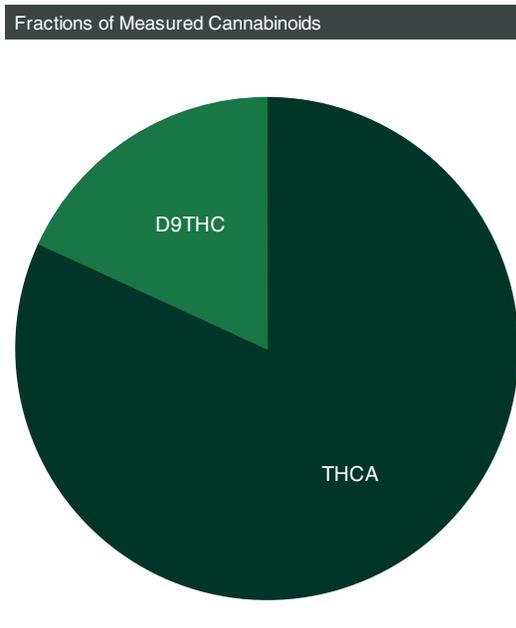




# Sample 2

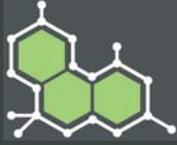
Customer: Lab Employee		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: -	
Submitted: -		Tested: 10/25/2014		Sample ID: CON-2210-R01	
		Reported: 10/27/2014		Sample Mass: 197.6 mg	

Cannabinoid Profile		
Compound	% mass	≈ mg/g
CBGA	ND	ND
CBG	ND	ND
THCA	1.4	14
THCAC4	ND	ND
THCVA	ND	ND
D9THC	0.31	3.1
D8THC	ND	ND
THCV	ND	ND
CBNA	ND	ND
CBN	ND	ND
CBDA	ND	ND
CBDVA	ND	ND
CBD	ND	ND
CBDV	ND	ND
CBCA	ND	ND
CBC	ND	ND
CBLA	ND	ND



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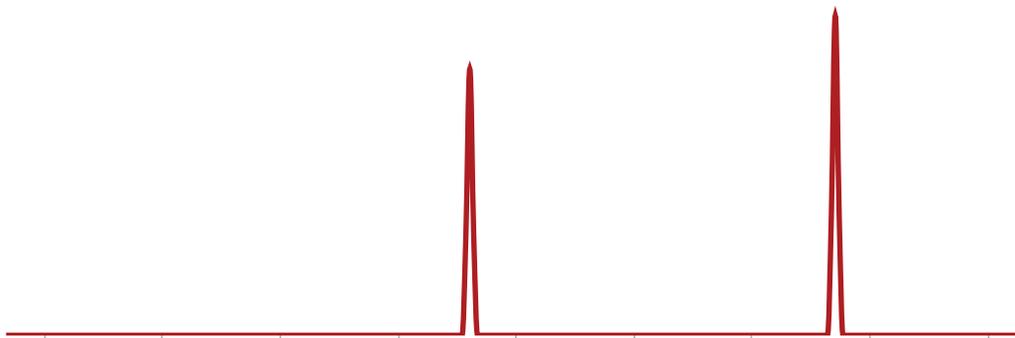


## Sample 2

Customer: Lab Employee		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: -	
Submitted: -		Tested: 10/25/2014		Reported: 10/27/2014	
				Sample ID: CON-2210-R01	
				Sample Mass: 197.6 mg	

Terpenoid Profile			Fractions of Measured Terpenes	
Compound	% mass	≈ mg/g		
Terpinolene	ND	ND	No terpenoids to chart	
Linalool	ND	ND		
Phytol	ND	ND		
Beta Myrcene	ND	ND		
Citronellol	ND	ND		
Caryophyllene Oxide	ND	ND		
Alpha Pinene	ND	ND		
Limonene	ND	ND		
Beta Caryophyllene	ND	ND		
Alpha Humulene	ND	ND		

### Calculated Liquid Chromatogram



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# **Appendix C**

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## 1. Critical Safety Overview



Throughout these instructions, this symbol is used to indicate that the instructions are critically important to your safety and the safety of your system. Failure to follow the instructions as written can result in a rapid release of high pressure CO<sub>2</sub> potentially causing equipment or personnel damage.



Subcritical and Supercritical CO<sub>2</sub> systems operate under high pressure. Operators must be fully trained and familiar with the system. Failure to operate the system can result in equipment damage and/or bodily injury.



Subcritical and Supercritical CO<sub>2</sub> systems use large amounts of CO<sub>2</sub> during operation. Ensure that system is installed in a well-ventilated area to prevent buildup of CO<sub>2</sub> which can cause asphyxiation. Use of a CO<sub>2</sub> monitor is strongly recommended.



Opening a vessel under pressure can result in a rapid release of pressure and ejection of the material inside the vessel. **DO NOT ATTEMPT TO OPEN A VESSEL UNDER PRESSURE!** Always make sure a vent path for the vessel is opened and the corresponding pressure gage reads zero prior to loosening the vessel closure bolts.



Subcritical and Supercritical CO<sub>2</sub> systems are designed to operate in doors. Extreme temperatures (below 50°F and above 85°F) will negatively impact the functionality of the system. The environmental temperature range is for the system, chiller, pump and CO<sub>2</sub> bottles.



Only use Propylene Glycol and distilled water in the chiller and cooling system. Never use Deionized Water in the chiller or cooling system.



Never turn on the chiller without the thermocouple probe installed and connected to the chiller.



## 2. Unpacking Instructions

CO<sub>2</sub> extraction systems are shipped in three separator crates. One containing the chiller, one containing the air compressor and one containing the botanical extraction system. Following are the steps for removing the system from the crates and making service connections for initial use.

### 2.1. Shipping Crate Inspection

- 2.1.1. Prior to opening the crate(s), verify that that there was no external damage caused to the wood crate. If damage is found, do not accept the delivery from the shipping company without first opening the crate to verify that there was no damage to the system.



Figure 1. Approximate appearance of 1500-5L and 1500-20L Shipping Crate

- 2.1.2. Locate the two TiltWatch Plus sensors on the outside of the crate. Ensure that the crate has not exceeded 30° in any direction. If the crate has exceeded 30°, do not accept the delivery from the shipping company until manufacturer.

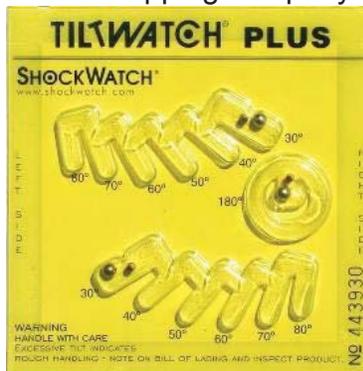


Figure 2. TiltWatch Sensor

## 2.2. Unpacking Instructions

- 2.2.1. Remove the plywood from the all four sides and the top of the crate using a Phillips head screwdriver.



Figure 3. Appearance of crate with top removed

- 2.2.2. Remove the support hardware inside the crate. Support hardware should include a cordless impact wrench, impact wrench socket, 11/16-in open end wrench, 5/8-in ratchet wrench, aluminum funnel, two O-rings, four sanitary gaskets, a flexible metal hose, a vacuum hose, vacuum pump and four rubber coated leveling feet.



Figure 4. Overview image of support hardware

- 2.2.3. Remove the horizontal 2x3s from the top of the crate using a hammer or crowbar.
- 2.2.4. Remove the vertical 2x4s from the four corners of the crate using a hammer or crowbar.
- 2.2.5. Remove the two 2x3s running across the top of the system frame and the two 2x3s running alongside the system frame using a Phillips head screwdriver.



Figure 5. Image of 2x3s support top and sides of system frame



Figure 6. Appearance of crate with 2x3s removed

2.2.1. Using a forklift or pallet jack lift the system off the base of the crate. It may be necessary to tip the system slightly towards the back in order to slide the forks under the stainless steel horizontal frame support members.

2.2.1.1. The system weighs in excess of 600-lbs, take extreme caution when lifting or moving the system. Do not attempt this step without adequate help.

**! WARNING !**

The system weighs over 600-lbs (275-kg), use a minimum of three people to stabilize the system while moving.

2.2.2. Remove the chiller (in cardboard box) from the second crate.

**! WARNING !**

The chiller over 120-lbs, use a minimum of two people or a lift cart when moving the chiller assembly.

2.2.3. Retain the crate and all packing materials for future shipping should the system ever need to be moved to another facility or shipped back to manufacturer.

### 3. System Requirements

#### 3.1. General System Specifications

	1500-5L Extraction System	Chiller/Heater System	Compressor
Vessel Size (liter)	5-L	15-L	80-Gal
Max Pressure (psi)	1500-psi	100-psi	125-PSI
Operating Temperature (F)	14°F - 122°F	14°F - 122°F	N/A
Dimensions (in)	45 X 30 X 77	28 X 15 X 23	54 X 29 X 61
Weight (lbs)	460-lbs	168-LBS	1000-LBS
Power (V/A/Phase)	110/15/1PH	230/12/1PH	230/40/3PH

	1500-20L Extraction System	Chiller/Heater System	Compressor
Vessel Size (liter)	20-L	45-L	80-Gal
Max Pressure (psi)	1500-psi	100-psi	125-PSI
Operating Temperature (F)	14°F - 122°F	14°F - 122°F	N/A
Dimensions (in)	45 X 30 X 77	28 X 15 X 23	54 X 29 X 61
Weight (lbs)	460-lbs	168-LBS	1000-LBS
Power (V/A/Phase)	110/15/1PH	230/12/1PH	230/60/3PH

#### 3.2. Facility

- 3.2.1. Temperature – The 1500-5L and 1500-20L are designed to run in a climate controlled facility, where the temperature is maintained between 50°F and 85°F.
- 3.2.2. Dust Control – The 1500-5L and 1500-20L should not be placed in an environment that has excess dust from other manufacturing operations.
- 3.2.3. Location – The system is designed to be installed on a concrete or similarly stable and flat floor.
- 3.2.4. Compressed Air – Compressed air must be non-lubricated and should be filtered to between 5μ and 40μ and have a dew point between 0°F and 50°F

#### 3.3. Electrical

- 3.3.1. The 1500-5L and 1500-20L have three independent electrical requirements; a 110V, 15A, 60Hz, 1 phase NEMA 5-15 male plug for the systems controller, a 220V, 15A, 60Hz, 1 phase NEMA 6-15 male plug for the chiller/heater, and a hardwired 230-V, 3 phase connection for the air compressor. See chiller and air compressor manuals for additional electrical requirements.
  - 3.3.1.1. Note that the air compressors can also be ordered prewired for 440-V to 480-V circuits.


**WARNING**
  
 Do not modify the power connections.

### 3.4. Recirculating Water Chiller/Heater

3.4.1. Recirculating chiller/heater fluid should be a mixture of 50/50 distilled water and propylene glycol.

**⚠ WARNING ⚠**  
Do not use Deionized Water

## 4. Setup and Assembly

1500-5L and 1500-20L system, chiller and air compressor come fully assembled and require only facility hookup and system interconnect installation.

### 4.1. Leveling Feet

- 4.1.1. Use a fork lift or pallet jack to raise the system approximately 6-in off the ground, use clamps or tie down straps to secure the system to the forks/jack to prevent it from tipping.
- 4.1.2. Insert the supplied leveling feet into the four threaded holes on the bottom of the extraction system. Ensure that the leveling feet are not threaded into the scale receiver too far or they will hit the frame and negate scale functionality.



Figure 7. Extraction system leveling feet.

### 4.2. Coolant Connections

**⚠ WARNING ⚠**  
Never turn on the chiller without the remote temperature probe installed and connected to the chiller.

- 4.2.1. Connect the blue cooling lines to the back of the chiller.
  - 4.2.1.1. Connect the free end of the coiled heat exchanger blue cooling line to the outlet port on the back of the chiller. Connect the free end of the upper separator #2 blue cooling line to the inlet port on the back of the chiller.



Figure 8. Location and orientation of coolant lines

4.2.2. The separator side of the extraction system will be pre-assembled. In the event that adjustments need to be made or the system gets taken apart during use, the water flow path should always be from bottom to top in any vertically oriented vessel.

4.2.2.1. For systems with a 4-in separator upgrade. The collection cup has baffles installed that control the coolant flow path. Therefore either cooling line port on the collection cup can be connected to the inlet or outlet.

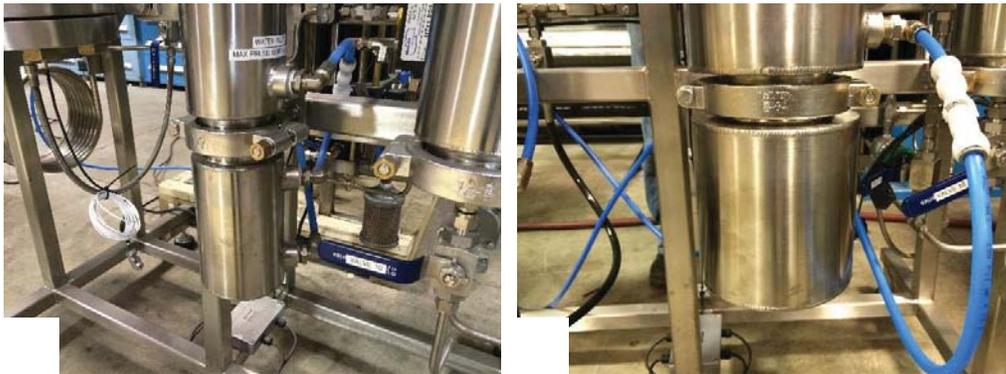


Figure 9. Image of separator coolant lines; a) standard separator b) 4-in separator

4.2.3. The remote temperature probe is typically pre-assembled into the bottom of the 1500-5L and 1500-20L extraction vessels. If it is not installed or it was removed after receipt of the system, install the probe into the tube fitting located off center on the bottom flange of the extraction vessel. The nut on the tube fitting should be tightened 1/8-turn past finger tight or until it is leak free. Additional instructions regarding these tube fittings is available at <http://www.swagelok.com/downloads/webcatalogs/EN/MS-13-151.pdf>



Figure 10. Location of remote temperature probe on bottom of extraction vessel

### 4.3. CO<sub>2</sub> Connections

**⚠ WARNING ⚠**

CO<sub>2</sub> cylinders are under high pressure. Use proper storage and handling procedures to prevent damage and sudden release of CO<sub>2</sub> from the cylinder

- 4.3.1. CO<sub>2</sub> used with the 1500-5L and 1500-20L system should be a 99% purity or better (medical or food grade typically suffice), gas feed, 50-lb, 75-lb or 100-lb high pressure cylinder.
  - 4.3.1.1. The CO<sub>2</sub> cylinder connection is a standard CGA-320 and is provided with the system.
- 4.3.2. The supplied hose should be connected directly to the CO<sub>2</sub> cylinder valve. No regulator is required. A supplied CGA-320 plastic gasket is required to seal the connection between the hose and the CO<sub>2</sub> cylinder.



Figure 11. CO<sub>2</sub> cylinder connection

- 4.3.3. The CO<sub>2</sub> line is typically preassembled on the 1500-5L and 1500-20L systems. If the line was not connected or was removed for cleaning/shipping, reconnect the line to the tube fitting located on top of Valve 12. The connection is a metal-to-metal seal and does not require any thread sealant. Tighten 1/8 turn past finger tight or until leak free. Additional instructions regarding these tube fittings is available at <http://www.swagelok.com/downloads/webcatalogs/EN/MS-13-151.pdf>.

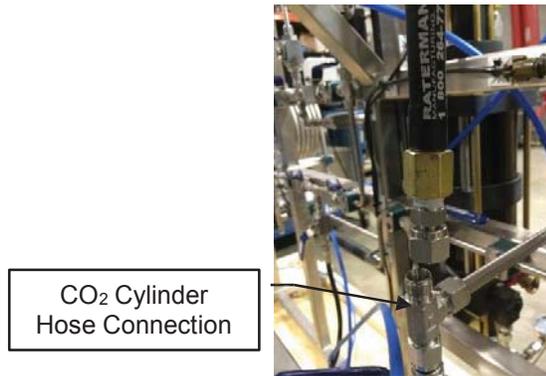


Figure 12. CO<sub>2</sub> Hose Connection

#### 4.4. Air System Connections

4.4.1. The air filter and solenoid valve assembly is typically preassembled on the system. If the assembly was not connected or was removed for cleaning/shipping, reconnect the assembly using two large crescent wrenches. The fittings are brass metal to metal seals. Do not over tighten.



Figure 13. Air filter and solenoid assembly

4.4.2. Connect the air compressor to the blue filter using a 1/2-in male NPT fitting.

- 4.4.2.1. CO<sub>2</sub> system air connection is 1/2" NPT female. Connection to compressed air should be made through a minimum 1/2" inner diameter pipe or flexible hose. Runs longer than 20 feet should be 3/4" minimum inner diameter.
- 4.4.2.2. Always follow the air compressor manufacturer's operating instructions to insure proper performance of the compressed air system.

#### 4.5. Electrical Connections

4.5.1. Hardwire the compressor in accordance with the manufacturer's specifications.

- 4.5.1.1. Ensure that both the compressor and the refrigerant drier are wired correctly.
- 4.5.1.2. The compressor will typically be 230-V or 460-V, 3-Phase. The refrigerant drier is typically 110-V, 1-Phase.

4.5.2. Plug the extraction system control panel into a 110-V, 15-A standard outlet.

4.5.3. Insert and tighten the remote temperature probe's RS232 connection into the back of the chiller in the Remote Probe port.

- 4.5.3.1. The remote temperature probe and the chiller must be connected whenever the chiller's main circuit breaker switch is on. Failure to connect the thermocouple probe will cause the chiller to stop working and require

maintenance from the manufacturer. Damaged caused by operating the chiller without the remote temperature probe installed and connected will not be covered by warranty.

**⚠ WARNING ⚠**

Do not turn plug in or turn on the chiller with remote probe disconnected or disconnect the probe while the chiller is under power



**Figure 14. Chiller/Heater Remote Temperature Probe Connection**  
**DO NOT TURN ON CHILLER WITH REMOTE PROBE DISCONNECTED OR DISCONNECT PROBE WHILE CHILLER IS UNDER POWER!**

#### 4.6. Chiller/Heater Setup

- 4.6.1. Attach the supplied cord to the back of the chiller. See Figure 14.
- 4.6.2. Plug the chiller into a 220-V, 15-A outlet.
- 4.6.3. It may be necessary to adjust the chiller settings for Remote Probe Control mode.
  - 4.6.3.1. To verify chiller is in Remote Probe Control mode, press the Menu button 5 times until the left display shows “P1” or “P2”
  - 4.6.3.2. If left display shows “P1”, then chiller is in Remote Probe Control mode and no other adjustments are necessary. Press menu 1 time so the left display shows water pressure in “psi”.
  - 4.6.3.3. NOTE: When “P1” is displayed on the left screen, the temperature of the water inside the chiller displayed on the right screen.
- 4.6.4. If left display shows “P2”, then press and hold menu button for ~3 seconds, press menu button 6 times until “rP” is displayed on the left, and use the temperature control knob to adjust the right display setting to “rPC”. Wait for 10 seconds for the chiller to reset out of the menu mode.
- 4.6.5. Coolant fluid (50/50 mix of distilled water and propylene glycol) is added to the system through the reservoir cap on the top of the chiller.
  - 4.6.5.1. After the system is operational, recheck the coolant level (while the system is running) and add more coolant as necessary.
- 4.6.6. More detailed operating instructions for the heater/chiller can be found in the manufacturer’s operating instructions.

## 5. System Operation

The following operating instructions are for the 1500-5L and 1500-20L CO<sub>2</sub>-based Botanical Oil Extraction systems. Instructions assume that chiller and CO<sub>2</sub> Booster Pump are OEM supplied. Failure to follow the instructions provided below may void the warranty of the 1500-5L and 1500-20L systems.

### 5.1. 1500-5L and 20L Overview



## 5.2. Automation Systems Overview

- 5.2.1. The Human Machine Interface (HMI) is a touch screen. Almost all of the inputs, outputs and human/machine interactions are managed through the HMI. The features not controlled or reported through the HMI are the Air Compressor maintenance schedule and the chiller/heater temperature setting. Refer to their respective owners manuals for additional operational instructions.
- 5.2.2. The HMI has two functions; 1) to provide information and 2) to accept inputs from the operator. The ways to determine if an action is required by the user are defined below.
  - 5.2.2.1. If a display value or message is colored Red or Orange, an operator must take an action before progressing forward.
    - 5.2.2.1.1. Red indicates messages indicate that a component of the system has either failed to reach the minimum operating pressures or temperatures or that it exceeded the programmed operating limits.
    - 5.2.2.1.2. Orange indicates that an operator activity is required before the Start button can be depressed. Typically, messages highlighted Orange are indicative of a scheduled maintenance interval being reached.
- 5.2.3. Any variable or message that needs to be (or can be) controlled by the operator are graphically raised to illustrate that the “message” is a button. An example of the different graphical representations is shown below.

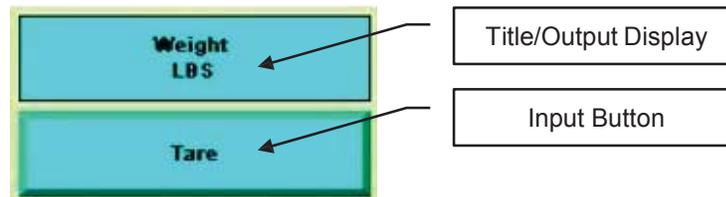


Figure 15. Chiller/Heater remote temperature probe connection

- 5.2.1. The controller has safety interlocks preprogrammed into it. These safety interlocks prevent unsafe operations from occurring by always monitoring the systems parameters and by removing unsafe action/input control buttons from the HMI. When buttons appear to be missing from the home screen, it is because the system is performing an operation that would be unsafe in combination with the missing button/action.
- 5.2.2. The HMI will provide message popups (in yellow boxes) to instruct the operator what steps are required next in order to complete any action selected. Most message popups are also acknowledgement buttons that must be pressed before any further action can be taken.
- 5.2.3. The primary operating valves on the 1500-5L and 1500-20L are air actuated valves controlled by the systems controller. In the event of an air compressor failure or a power failure all air actuated valve will close automatically.
- 5.2.4. Each air actuated valve has an indicator on the top to inform the operator which valves are open and which ones are closed. The indicator lines correspond with the flow direction. The following figure illustrates both an open and closed valve. Note that it does not matter which way the air actuator is oriented, rather the direction of CO<sub>2</sub> flow is important.

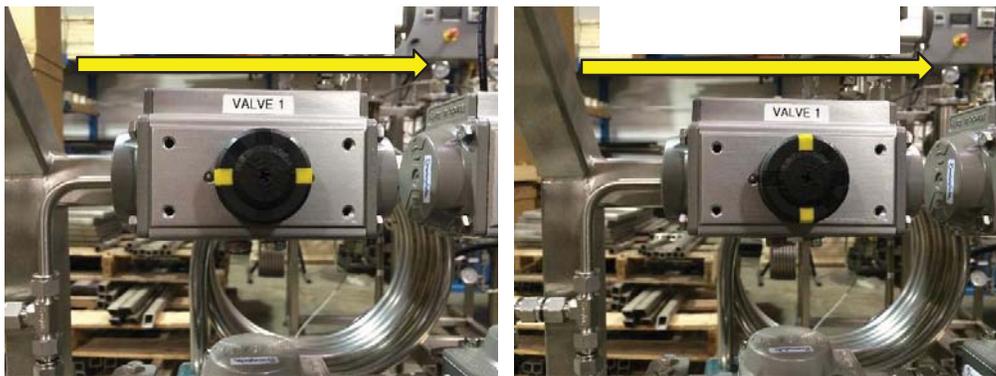


Figure 16. a) Valve 1 in the open position, b) Valve 1 in the closed position

### 5.3. Pre-Cleaning

5.3.1. The 1500-5L and 20L systems are constructed from 304 and 316 stainless steel and can be cleaned with any cleaner that is compatible with both stainless steel and your extracted product. Simple Green cleaner, ethanol and acetone work well for most applications.

5.3.2. The system should be cleaned to the appropriate level (determined by your application and corresponding regulations) prior to processing each batch of botanical material.

5.3.2.1. It is the user's responsibility to ensure that the system meets their required level of cleanliness.

### 5.4. Opening Extraction Vessel



#### **WARNING**



DO NOT ATTEMPT TO OPEN A VESSEL UNDER PRESSURE!  
Always make sure a vent path for the vessel is opened and the corresponding pressure gauge(s) reads zero prior to loosening the vessel closure bolts.

5.4.1. This operation cannot be performed during an extraction. The extraction must be stopped prior to opening the Extraction vessel

5.4.2. From the home screen (see Figure 29), press "Go To Manual Screen" button.

5.4.3. From the manual screen (see Figure 30), press the "Open Extractor Vessel" button.

5.4.3.1. If the extractor is under pressure, the system will require the operator to acknowledge that they want to vent all the CO<sub>2</sub> in the extractor.

5.4.4. When the extractor vessel gauge on top of the vessel and on the home screen both read zero, it is safe to move to the next step.

5.4.5. Used the supplied impact wrench to remove the bolts from the top or bottom flange.

5.4.6. Pivot the flange toward the back and let it rest on the integral hinge stops.

5.4.6.1. Use caution not to scratch or otherwise damage the O-ring sealing surfaces on the flanges.



Figure 17. Appearance of extractor vessel in open condition, note bolt can be placed in bolt rack below the flange

## 5.5. Loading Botanical or Other Media

5.5.1. Material to be extracted is loaded directly into the extraction vessel. The supplied funnel can be used to help minimize spillage.

5.5.1.1. Typically botanicals perform best in CO<sub>2</sub> extractions when ground to a particle size between 50 µm and roughly the consistency of coffee grounds.

5.5.1.2. Any amount of material can be loaded into the Extraction Vessel – the vessel does not have to be full in order to operate correctly

5.5.2. Gentle compression or packing can be used to increase the amount of material loaded in the vessel, however heavy compaction should be avoided because it will cause channeling of CO<sub>2</sub> during the extraction process.

## 5.6. Closing Extraction Vessel

5.6.1. Ensure all sealing surfaces are clean and free of debris

5.6.2. Check the O-ring for any visible damage or defects. Replace as necessary

5.6.2.1. The O-ring does not require any lubrication

5.6.3. Close the vessel flange and install each of the closure bolts hand tight

5.6.4. Using the supplied impact wrench and socket, tighten the bolts in a star pattern. Use the supplied impact wrench with 1-2 second bursts to deliver approximately 50 ft-lbs of torque to each bolt. Heavy torquing of the bolts is not required.

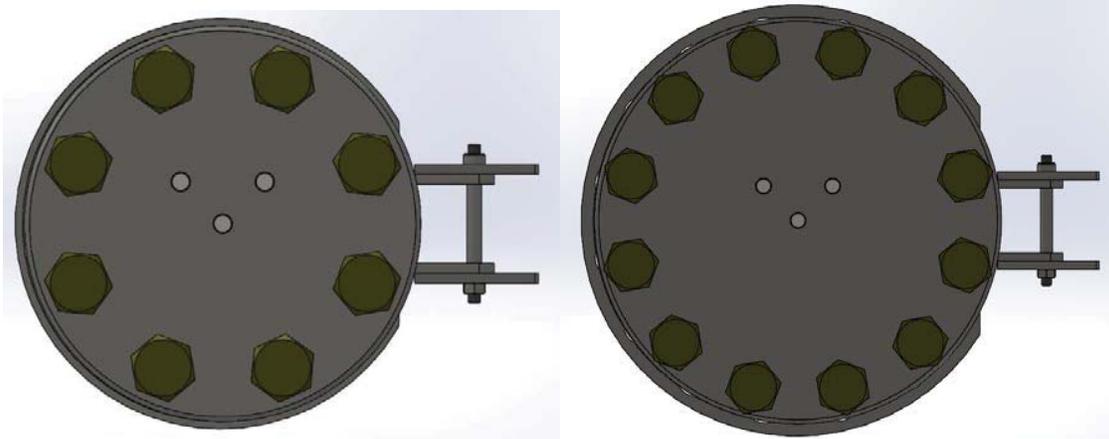


Figure 18. Torque sequence for 1500-5L and 1500-20L extraction vessels

## 5.7. Chiller Start Up

5.7.1. Verify chiller's cooling lines are connected to the extraction system.

- 5.7.2. Turn chiller on
  - 5.7.2.1. The main power switch is located on the back of the chiller see Figure 14
  - 5.7.2.2. The operations power button is located below the black knob on the front of the chiller
- 5.7.3. Set the target temperature to 65°F by quickly depressing the control knob on the chiller and turning it to the appropriate temperature.
  - 5.7.3.1. In the event that the chiller is displaying temperatures in Celsius, turn off the main power switch, press and hold the menu button on the front of the machine and turn on the main power. Then let off the menu button. The chiller will briefly display dF indicating it is set to display temperature in degrees Fahrenheit.

## 5.8. Evacuating the System

- 5.8.1. From the Home Screen (see Figure 29), click the Manual Screen Button.
- 5.8.2. From the Manual Screen (see Figure 30), click the Evacuate Button.
- 5.8.3. Verify that all the gauges on the system display zero pressure.
- 5.8.4. Verify that the supplied vacuum pump is filled with the appropriate oil.
  - 5.8.4.1. Refer to the vacuum pump owners manual for more detailed information.
- 5.8.5. Connect the vacuum gauge, blue vacuum hose and vacuum pump to Valve 10 on the bottom of Separator #2.



Figure 19. Appearance of correctly connected vacuum gauge, blue vacuum hose and vacuum pump

- 5.8.1. Open Valve 10.
- 5.8.2. Turn on the vacuum pump.
- 5.8.3. Allow the pump to run for approximately 10-min.
  - 5.8.3.1. If the vacuum gauge does not reach -20 in.Hg, either the pump is faulty or there is a leak in the system.
- 5.8.4. Close Valve 10.
- 5.8.5. Turn off the vacuum pump.
- 5.8.6. Disconnect the vacuum gauge, blue vacuum hose and pump.
- 5.8.7. Press the message button acknowledging that the evacuation is complete
  - 5.8.7.1. The acknowledgement message button will appear on the Manual Screen after pressing the Evacuate Button.
- 5.8.8. Press the Blue Arrow Buttons to select the Go To Home option on the Manual Screen and press the Return button “enter”.

## 5.9. Conducting an Extraction

- 5.9.1. Press the Go To Auto Mode Button on the upper left hand corner of the Home Screen.
  - 5.9.1.1. This resets the controller and enables it to start a new cycle/extraction.
  - 5.9.1.2. The first time you run the system, immediately following a loss of power, or after any abnormal run conditions the system will default to Manual Mode for safety.
- 5.9.2. Verify the chiller is on and target temperature is set to 65°F.
- 5.9.3. Verify that a 50-lb, 75-lb or 100-lb cylinder of CO<sub>2</sub> with a sufficient amount of CO<sub>2</sub> is connected to the system.
- 5.9.4. Verify that material is loaded into extraction vessel and extraction vessel is properly closed
  - 5.9.4.1. The system can be run with no material in the extraction vessel. This can be used as a way to clean the stainless steel tubing upstream of the separation vessel.
- 5.9.5. Verify that the Separator vessels are both closed and sanitary clamps are tight (clamps are considered tight when there is a 1/16-in to 1/8-in between opposing sides of the clamp)

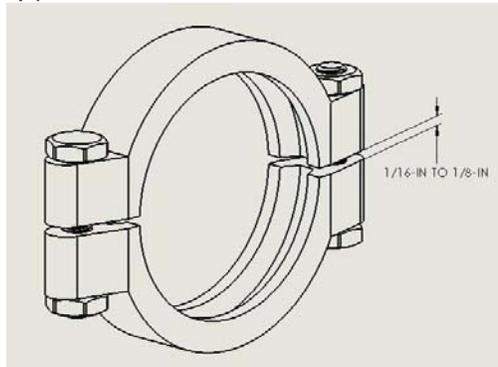


Figure 20. Appearance of tight sanitary clamp

- 5.9.6. Press the Start button on the home screen, Figure 29.
- 5.9.7. After pressing start the system will prompt the operator to;
  - 5.9.7.1. Set Extractor Pressure (between 900-psi and 1400-psi)
    - 5.9.7.1.1. The recommended starting extractor pressure is 1200-psi
  - 5.9.7.2. Set the System Run Time (between 1-hour and 48-hours)
    - 5.9.7.2.1. The recommended run time is 2 hours per pound of botanical
  - 5.9.7.3. Verify the Extractor is properly closed
  - 5.9.7.4. Verify the Separator is properly closed
  - 5.9.7.5. Close Valve 10
  - 5.9.7.6. Open the CO<sub>2</sub> Bottle
- 5.9.8. The system will start filling the vessels with CO<sub>2</sub> to the target extractor pressure.
  - 5.9.8.1. During the filling stage the Home Screen will display a blue box labeled “Filling” to inform the operator of the systems current activities.
- 5.9.9. Once the target extractor pressure is reached, the system information box will change from “Filling” to “Running”. An additional information box will appear indicating the direction of the flow, either “Forward Flow” or “Reverse Flow”.

- 5.9.9.1. The system routinely switches the flow direction to keep the filters from clogging with plant material and to prevent the CO<sub>2</sub> from forming flow channels inside the plant material.
- 5.9.10. The system will continue in run mode until it reaches the target run time, at which point it will begin recovering the CO<sub>2</sub> into the CO<sub>2</sub> cylinder. The information box will switch from “Running” to “Recovering”.
  - 5.9.10.1. The system will prompt the operator to turn up the chiller/heater to 110-F. This helps to speed up the recovery process.
  - 5.9.10.2. It is not a required step, the system will recover without turning up the temperature or acknowledging the message.
    - 5.9.10.2.1. Note that increases the chiller/heater temperature also increases the temperature of the oil in the collection cup.
- 5.9.11. At the end of recovery the system will have approximately 70-psi in all the vessels. The system will provide message boxes to instruct the operator through the final shut down process. The prompts are;
  - 5.9.11.1. Close the CO<sub>2</sub> cylinder
  - 5.9.11.2. Open Valve 10.
- 5.9.12. Once the operator acknowledges that the CO<sub>2</sub> cylinder and Valve 10 are closed, the system will open all valves, vent any trapped CO<sub>2</sub> and wait for the next command.

### 5.10. Removing Spent Botanical

- 5.10.1. From the home screen (see Figure 29), press “Go To Manual Screen” button.
- 5.10.2. From the manual screen (see Figure 30), press the “Open Extractor Vessel” button.
  - 5.10.2.1. If the extractor is under pressure, the system will require the operator to acknowledge that they want to vent all the CO<sub>2</sub> in the extractor.
- 5.10.3. When the extractor vessel gauge on top of the vessel and on the home screen both read zero, it is safe to move to the next step.
- 5.10.4. Used the supplied impact wrench to remove the bolts from the top or bottom flange.
- 5.10.5. Pivot the flange toward the back and let it rest on the integral hinge stops.
  - 5.10.5.1. Use caution not to scratch or otherwise damage the O-ring sealing surfaces on the flanges.
- 5.10.6. Once the extraction vessel is open, the spent botanical material can be removed with a dust collector or stainless steel vacuum.
  - 5.10.6.1. Alternatively, the bottom vessel closure can be opened using the same instructions provided above. With the bottom closure open the botanical will fall out of the vessel and can be collected in a bag or other collection device.

### 5.11. Oil Collection



**DO NOT ATTEMPT TO OPEN A VESSEL UNDER PRESSURE!**  
Always make sure a vent path for the vessel is opened and the corresponding pressure gauge(s) reads zero prior to loosening the vessel closure bolts.

- 5.11.1. Verify that both Separator vessel gauges read zero and that Valve 10 is open.
- 5.11.2. Remove the flexible metal lines from the top of the separators. Use two wrenches to prevent the NPT fittings from loosening in the separator cap.



Figure 21. Illustration of using two wrenches to remove flexible metal lines

- 5.11.3. Remove the yellow wire connected to the Separator #1 thermocouple.
- 5.11.4. Use the 5/8-in ratchet wrench to remove the high pressure sanitary clamps from the top of both the separator vessels.
- 5.11.5. Remove the caps from the top of both separator vessels.
- 5.11.6. Collect any available oil from the separator caps.
- 5.11.7. Use acetone or alcohol to clean the caps and orifice tube.
  - 5.11.7.1. Separator caps must be cleaned every run.
- 5.11.8. Use the supplied round squeegee to push any residual oil from the sides of the separators down to the bottom of the separators.
- 5.11.9. Use the 5/8-in ratchet wrench to remove the high pressure sanitary clamps from the bottom of the separator vessels.
- 5.11.10. Turn off the chiller/heater
- 5.11.11. Disconnect the two blue water line quick connects on the back of the collection cup.
- 5.11.12. Remove the collection cup from Separator #1 and the bottom cap from Separator #2
- 5.11.13. Collect the oil from inside the collection cup.
  - 5.11.13.1. Note: there is typically residual dry ice in the collection cup mixed in with the oil. The dry ice will sublimate without any additional heat. It is sometimes more efficient to remove the dry ice/oil mixture and place it in collection device (like a Pyrex dish).



Figure 22. Image of collection cup after removal from separator.

- 5.11.14. Use the round squeegee and alcohol or acetone to thoroughly clean the inside of the separators and collection cup.
- 5.11.15. Both separators and the collection cup must be cleaned after each extraction.
- 5.11.16. Reassemble both separators by reversing the steps above.
  - 5.11.16.1. Reconnect the water lines before turning on the chiller/heater.
- 5.11.17. Verify that the system is in its waiting mode and all valves are in the open position.
  - 5.11.17.1. If Valve 11 is not open, skip to the next section.
- 5.11.18. Disconnect the separator outlet line from the cap of Separator #2



Figure 23. Image of separator outlet line after being disconnected.

- 5.11.19. Disconnect the pump inlet line at the tee immediately in front of the pump. Loosen the fitting in the same line (closer to the front of the system so the bent tubing can be pointed downward).



Figure 24. Image of pump inlet line before and after being disconnected.

- 5.11.20. Pour alcohol or acetone into the separator outlet line until the solvent is colorless coming out the end that was connected to the pump inlet. After which use compressed air to blow out the line ensuring that no residual alcohol or acetone remains in the line between the separator and the pump.
- 5.11.21. Reconnect the separator outlet line and pump inlet line.
- 5.11.22. The separator outlet line must be cleaned after each extraction.

## 6. Troubleshooting

### 6.1. Ice On Separator

It is normal for the high pressure clamps and flexible metal lines on the top of the separator to form ice during operation. If ice is forming on the outside of the separator vessels that is an indicator that either the chiller/heater was not connected properly/turned on, the collection cup

water lines were not reconnected, or that the CO<sub>2</sub> cylinders were too cold. If the bottles are below approximately 50°F, it is possible for the chiller/heater to have difficulty maintain system temperature. If ice forms on the outside of the separator vessel, it suggests that the coolant cannot keep up and may be freezing inside the cooling jacket. In either event, the system should be shut down by pressing the Recover CO<sub>2</sub> Button on the Manual. This will put the system into recovery mode so that the cooling system can be inspected or the bottle can warm up. It will take several hours for the ice to thaw if it froze inside the collection cup cooling jacket.

Do not attempt to work on the cooling system while the system is running.

### **6.2. Opened Bottle Too Early**

If the bottle was accidentally opened while the system was in stand by (waiting after previous extraction was completed) there is no way to recover the 100% CO<sub>2</sub>. The only way to correct this event is to slowly open Valve 10 until the separator pressure is below 300-psi. At which point the system can be started and it will operate as normal.

### **6.3. Low Extractor Pressure**

If the extractor pressure is unable to meet the target pressure, first verify that the CO<sub>2</sub> cylinder has sufficient CO<sub>2</sub>. If yes, this is an indicator that the pump seals have reached the end of their life. If the extractor is above 1000-psi, the system will continue producing oil. Adjust the target pressure to 1000-psi and allow it system complete its target run time, it is recommended that the run time be increased by 10% to make up for the reduced extractor pressure. After the system completes the cycle, either rebuild the pump or send it out for a rebuild. Manufacturer can provide contact information for pump rebuild if it is going to be sent out.

### **6.4. Extractor Overpressure – Orifice Clog**

The valveless expansion technology uses a small orifice to regulate pressure. This orifice can become plugged when foreign material is entered into the plumbing between the extraction vessel and separator vessel. Typically, the foreign material is a piece of Teflon tape from the NPT fittings near the orifice.

In the event that separator pressure decreases or extractor pressure increases causing an extractor high pressure fault, it is most likely a plugged orifice. Follow the steps below to clear an orifice clog.

- 6.4.1. From the Home Screen, Press the Manual Screen Button.
- 6.4.2. From the Manual Screen, Press the Clear Clogged Orifice Button.
- 6.4.3. Wait for the system to provide a message popup indicating it is safe to Open Valve 10 and clean the orifice.
- 6.4.4. Open Valve 10
- 6.4.5. Verify that both Separator vessel gauges read zero.
- 6.4.6. Remove the flexible metal lines from the top of the separators. Use two wrenches to prevent the NPT fittings from loosening in the separator cap.
- 6.4.7. Remove the yellow wire connected to the Separator #1 thermocouple.
- 6.4.8. Use the 5/8-in ratchet wrench to remove the high pressure sanitary clamps from the top of Separator #1.
- 6.4.9. Remove the cap from the top of Separator #1.

- 6.4.10. Remove the orifice from the orifice tube using two wrenches to prevent the 45-deg fitting from rotating.
- 6.4.11. Clean the orifice by soaking it in acetone or alcohol and blowing it out with compressed air. Verify the orifice is clear by looking through it.
- 6.4.12. Reassemble the orifice using Teflon tape. Use caution to prevent excess Teflon tape from getting into the orifice. Tighten the orifice assembly such that the orifice is between tangent and +30 degrees from tangent to the separator wall as shown below. This facilitates cyclonic separation and minimizes oil carryover.

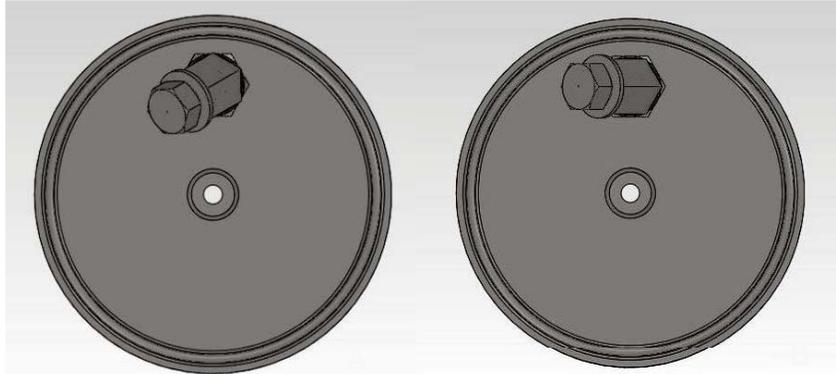


Figure 25. Orifice orientation A) Tangent and B) 30-Deg off tangent

- 6.4.13. Replace the separator cap and tighten the clamp bolts.
- 6.4.14. Reinstall the flexible metal hoses and the thermocouple connection.
- 6.4.15. Close Valve 10.
- 6.4.16. Press the popup message button when orifice is reinstalled, the high pressure clamps are tight and the flexible hoses are reconnected.

### 6.5. Low Separator Pressure – Orifice Clog

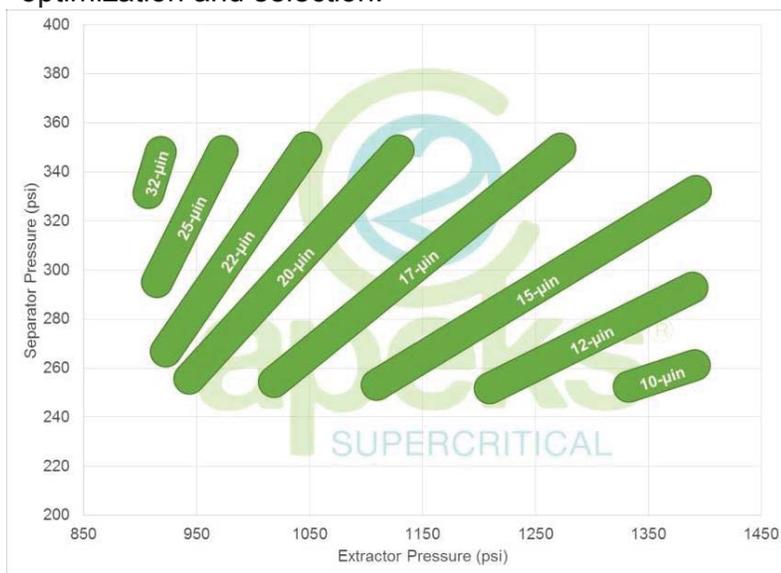
Low Separator pressure is typically caused by one of two things (an orifice clog or the wrong orifice installed). If the system has been operating with the current orifice and consistently maintained a separator pressure between 250-psi and 350-psi, this suggests that the orifice is clogged. To correct an orifice clog refer to the instructions in the section above (Extractor Overpressure).

### 6.6. Low Separator Pressure – Wrong Orifice Size

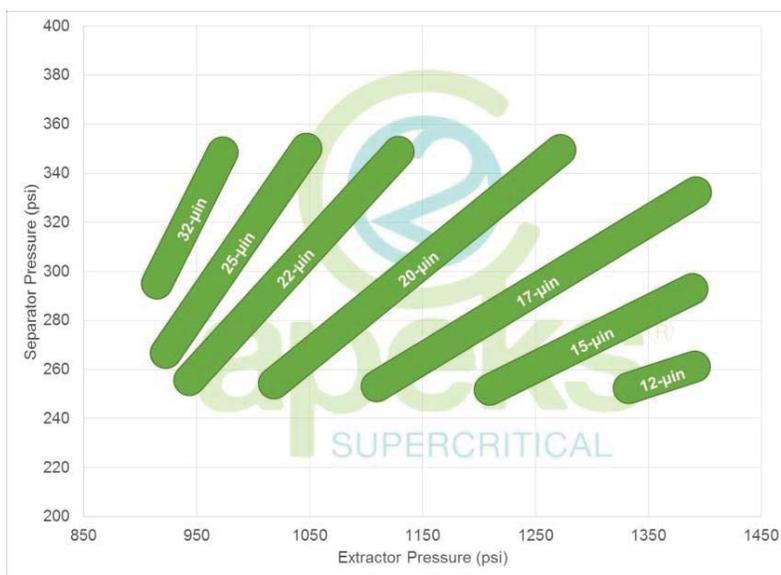
Low Separator pressure is typically caused by one of two things. If the orifice was recently changed or the system was moved to a new location, the low separator pressure is typically an indicator that the installed orifice is too small. To install the correct orifice;

- 6.6.1. From the Home Screen, Press the Manual Screen Button.
- 6.6.2. From the Manual Screen, Press the Clear Clogged Orifice Button.
- 6.6.3. Wait for the system to provide a message popup indicating it is safe to Open Valve 10 and clean the orifice.
- 6.6.4. Open Valve 10
- 6.6.5. Verify that both Separator vessel gauges read zero.
- 6.6.6. Remove the flexible metal lines from the top of Separator #1. Use two wrenches to prevent the NPT fittings from loosening in the separator cap.
- 6.6.7. Remove the yellow wire connected to the Separator #1 thermocouple.
- 6.6.8. Use the 5/8-in ratchet wrench to remove the high pressure sanitary clamps from the top of Separator #1.

- 6.6.9. Remove the cap from the top of Separator #1.
- 6.6.10. Remove the orifice from the orifice tube using two wrenches to prevent the 45-deg fitting from rotating.
- 6.6.11. Use the graphs below to determine which orifice best fits the operating conditions of the system.
  - 6.6.11.1. Note that it is best to run the largest orifice possible to produce the target extractor pressure while maintaining a separator pressure under 350-psi.
  - 6.6.11.2. The graphs are baseline recommendations only, temperature, elevation, and humidity all impact air and CO<sub>2</sub> density—which impact orifice size optimization and selection.



**Figure 26. Orifice selection guide for a 15-hp compressor**



**Figure 27. Orifice selection guide for a 25-hp compressor**

- 6.6.12. Install a larger orifice using Teflon tape. Use caution to prevent excess Teflon tape from getting into the orifice. Tighten the orifice assembly such that the

orifice is between tangent and +30 degrees from tangent to the separator wall as shown below. This facilitates cyclonic separation and minimizes oil carryover.

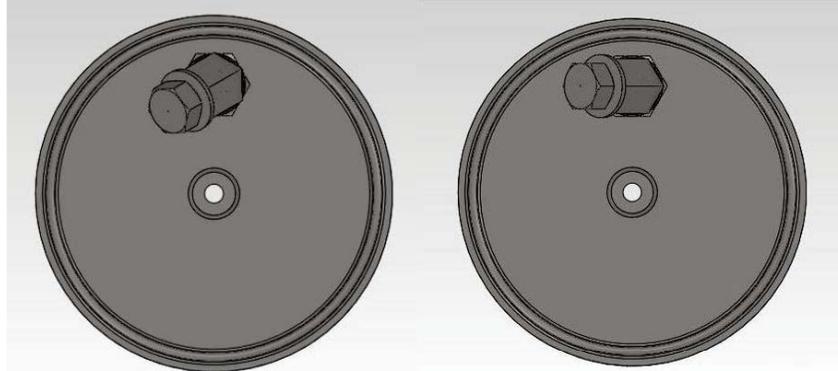


Figure 28. Orifice orientation A) Tangent and B) 30-Deg off tangent

- 6.6.13. Replace the separator cap and tighten the clamp bolts.
- 6.6.14. Reinstall the flexible metal hoses and the thermocouple connection.
- 6.6.15. Close Valve 10.
- 6.6.16. Press the popup message button when orifice is reinstalled, the high pressure clamps are tight and the flexible hoses are reconnected.

#### 6.7. High Separator #1 Pressure (>350-psi) and Low Separator #2 Pressure

High Separator #1 pressure is most often caused by a clog (dry ice or oil) in the flexible line between Separator #1 and Separator #2. Follow the steps below to clean the flexible line.

- 6.7.1. From the Home Screen, Press the Manual Screen Button.
- 6.7.2. From the Manual Screen, Press the Clear Clogged Orifice Button.
- 6.7.3. Wait for the system to provide a message popup indicating it is safe to Open Valve 10 and clean the orifice.
- 6.7.4. Open Valve 10
- 6.7.5. Verify that both Separator vessel gauges read zero.
- 6.7.6. Completely remove the flexible metal lines from the top of both separators. Use two wrenches to prevent the NPT fittings from loosening in the separator cap.
- 6.7.7. Thoroughly clean the flexible metal lines with alcohol or acetone to remove any debris that might be clogging the lines.
- 6.7.8. Blow the flexible metal hoses out with compressed air to verify the clog has been removed.
- 6.7.9. Reinstall the flexible metal hoses.
- 6.7.10. Close Valve 10.
- 6.7.11. Press the popup message button when orifice is reinstalled, the high pressure clamps are tight and the flexible hoses are reconnected.

## 7. System Maintenance

Maintenance on the system is critical to proper operation. Failure to follow these maintenance items can cause premature system failure and void the warranty. The maintenance items below pertain to the CO<sub>2</sub> system only. Follow the manufacturer's recommended maintenance plan for the chiller/heater unit and the air compressor.

This maintenance schedule is based on the maintenance timer on the Maintenance Screen (see Figure 31).

Frequency	Maintenance Item
After Each Extraction	<ul style="list-style-type: none"> <li>• Remove spent material from the extraction vessel by vacuuming it out through the top flange.</li> <li>• Verify the extractor filters are clear and free of debris</li> <li>• Check extraction vessel O-rings and O-rings groove sealing surfaces for damage – replace if necessary</li> <li>• Remove extracted oil from separator vessels and clean entire vessel and cup with acetone or alcohol.</li> <li>• Clean the separator outlet line/pump inlet line with acetone or alcohol.</li> <li>• Check separator vessel gaskets for damage – replace if necessary</li> </ul>
Weekly	<ul style="list-style-type: none"> <li>• Lubricate CO<sub>2</sub> pump spool valve O-rings. Replace if necessary.</li> <li>• Clean all flexible metal lines going into and out of both separators</li> <li>• Check chiller/heater water level is between min and max</li> <li>• Clean CO<sub>2</sub> flow lines between the pump and the coiled heat exchanger with acetone or alcohol. Flowlines must be disconnected from pump and extraction system to thoroughly clean.</li> </ul>
Monthly	<ul style="list-style-type: none"> <li>• Remove the CO<sub>2</sub> pump heads and clean with alcohol or acetone. Do not remove the seals from the head unless they show visible signs of wear. In which case, replace the seals before reassembly.</li> </ul>
Every 500 Hours	<ul style="list-style-type: none"> <li>• Replace all seals on the CO<sub>2</sub> Pump. The pump seal life is highly dependent on cleanliness. Lack of performing scheduled maintenance will decrease seal life.</li> </ul>

**Attachment D Section 2: Transportation and Distribution (§ 1004.5(b)(4))**  
Redacted pursuant to N.Y. Public Officers Law, Art. 6

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## **15. Community Impact Plan**

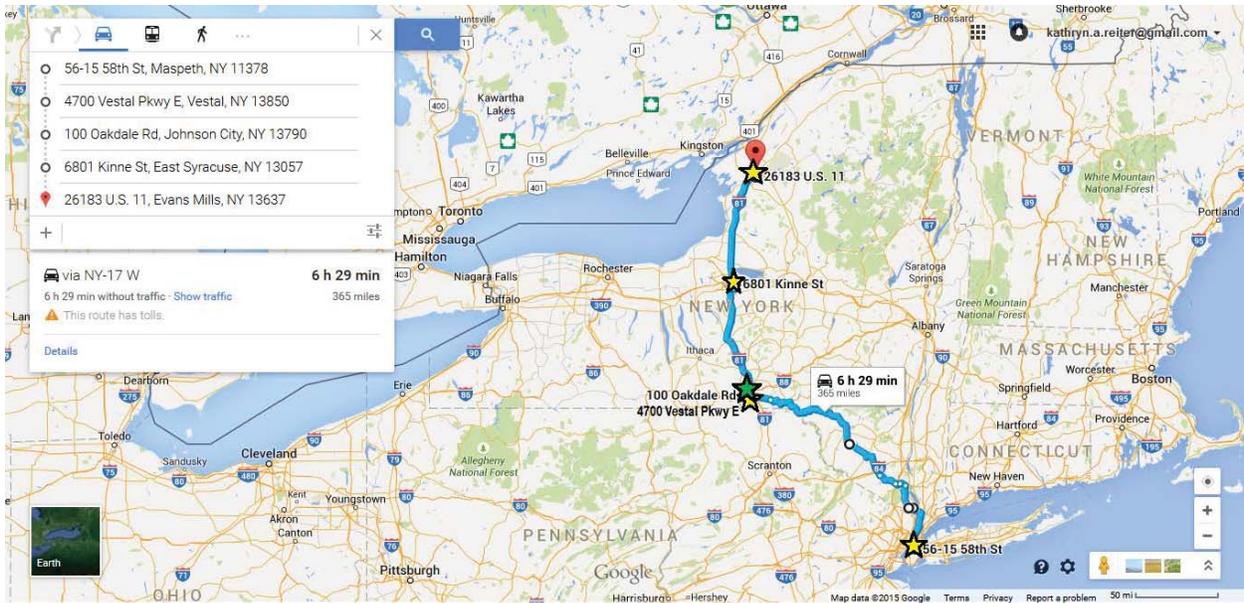
### **I. Introduction**

Salus Scientific is intent upon providing a positive impact for residents, businesses, and community organizations in New York. Salus Scientific is committed to providing patients and employees with safe, clean, and responsible medical marijuana manufacturing facilities and dispensaries. The four dispensing facilities and one manufacturing facility will create much-needed jobs. Salus Scientific strives to be a model business by establishing productive partnerships with law enforcement agencies and area non-profits; putting safe environmental practices in place; and hiring local employees to help boost the state's economy. Salus Scientific also has a plan to educate the public on marijuana law, safe practices, the marijuana plant itself and general marijuana industry practices and standards. A well-educated public means the entire industry has a better chance of moving forward in a positive direction. Below is our likely impact on the community and our plan for meeting the needs of the patients in the state of New York.

### **II. Salus Scientific Facilities**

Salus Scientific plans to open facilities across the state:

- Manufacturing Plant: 100 Oakdale St, Johnson City, NY 13790
- Dispensary 1: 4700 Vestal Parkway East Vestal, NY 13850
- Dispensary 2: 26183 US Route 11 Evans Mills, NY 13637
- Dispensary 3: 6801 Kinne St. East Syracuse, NY 13057
- Dispensary 4: 56-15 58<sup>th</sup> St Maspeth, NY 11358



The above map shows the geographic diversity of Salus Scientific’s facilities. See reproduction of Application Attachment A, included at the end of this Section, for maps and street views of individual locations. The location of these facilities is meant to help increase economic development, create jobs, aid in patient accessibility, and create greater community cooperation and education.

Salus Scientific projects that by establishing their facilities they will create 24 security jobs, 50 dispensary jobs, and 126 manufacturing jobs, totaling 200 new jobs across the state.

**a. Johnson City, Broome County**

**i. Population**

The Manufacturing Plant is located in Johnson City, which belongs to the Broome County/Binghamton Metropolitan Area, collectively the Southern Tier. In 2010, Broome County had 200,600 residents, making it the most populous county in New York’s Southern Tier region. Broome County counts Tioga county to the west, Delaware County to the east, and Cortland and Chenango Counties to the north and the Northern Tier of Pennsylvania as its neighbors.

Together Broome and Tioga create the Binghamton Metropolitan Statistical Area (MSA). Population centers include the Town of Union (56,346), the City of Binghamton (47,376), and the Town of Vestal (28,043) in Broome County and the Town of Owego (19,883) in Tioga County. Together, these four communities comprise 60% of the population of the Binghamton MSA.

Salus Scientific is conscientious of the changes in the economy in the Southern Tier region. When the fracking industry promise did not come to fruition after the recession, economic rebound did not seem promising. In the last few years the unemployment rate in Broome County has been greater than the statewide average. In 2011 the unemployment rate in Broome County was 8.5% and in the state as a whole it was 8.2%, but by January of 2013 the unemployment rate in Broome County had expanded to 10.2%. Unemployment in Broome County grew the most in the private sector, but strong job growth in health care, social services and construction helped to keep the unemployment rate from reaching higher numbers.

Working with partners in Broome County, Salus Scientific will create a place where residents can rely on jobs that help them and their community to become more integrated and prosperous.

## **ii. Economic Impact**

Salus Scientific anticipates that it will initially create 126 manufacturing jobs and six security jobs at the manufacturing plant, with the potential to add more manufacturing jobs and dedicated transportation positions.

The manufacturing jobs will increase if the demand for medical marijuana products at the dispensaries grows. Salus Scientific anticipates that the Department will approve its plan to deliver medical marijuana products to patients. If this occurs, job creation for dedicated drivers from the manufacturing plant to the dispensaries will be necessary to fulfill the increased demand.

### **iii. Community Partnership**

With a strong healthcare presence in Broome County, Salus Scientific believes that there will be many opportunities to learn from the healthcare sector when it comes to developing new products to serve patient needs and to help educate the region's healthcare providers on medical marijuana, the products the manufacturing plant produces and the benefits eligible patients could receive from medical marijuana recommendation.

The largest Healthcare provider in Broome County is United Health Services (UHS). UHS is a comprehensive regional health care system that operates two hospitals in Broome County: Binghamton General Hospital, a full-service hospital founded in 1888, and Wilson Medical Center, a teaching hospital that provides a range of medical and surgical services, in Johnson City. UHS also has primary care centers, walk-in clinics, and medical offices throughout the Southern Tier, serves as a leading provider of home care services and offers nursing care, assisted living, and private apartments at its Ideal Senior Living Center in Endicott. In 2011, UHS completed an expansion of its Cardiac Rehabilitation Program at Binghamton General Hospital, and initiated a fundraising campaign for a \$5 million expansion of the Intensive Care Unit at Wilson Medical Center in Johnson City. The latter is the first major upgrade to the unit since the mid-1970s. In addition, construction was completed on a \$29 million project to build a new state-of-the-art primary care center in Vestal, across from Binghamton University. UHS would be an excellent Healthcare partner for Salus Scientific.

#### **b. Vestal, Broome County**

The dispensary closest to the manufacturing plant will be in Vestal. Vestal is also located in Broome County.

### **i. Economic Impact**

In addition to the jobs created by the manufacturing facility, the Vestal dispensary would bring an additional 12-15 dispensary staff jobs and 2-6 security jobs, with the potential for expansion as the patient base expands and if Salus Scientific is eventually permitted to deliver medical marijuana products directly to patients.

### **ii. Patient Accessibility**

Having a dispensary located in such close proximity to the manufacturing plant will increase the speed with which patients served by the Vestal dispensary can have access to the medical marijuana products that they need.

Additionally, many patients will access dispensaries via public transportation. The Vestal dispensary is served by Broome County Transit.

### **c. Evans Mills, Jefferson County**

#### **i. Population**

Evans Mills is a village in Jefferson County in Northern New York. The population was 621 at the 2010 census. The Village of Evans Mills is within the Town of Le Ray and is northeast of Watertown.

The total Jefferson County population as of the 2010 U.S. Census is 116,229 people. The City of Watertown has a population of 27,023. The largest town is the Town of LeRay with a population of 21,782 people. The relatively large population of LeRay is attributed to the military presence of Fort Drum. By comparison, the town with the smallest population is the Town of Worth, with a total of 231 residents. There are 22 Towns, 20 Villages, and one City in Jefferson County.

The largest industry in Jefferson County is government, employing almost 40% of the workforce. That is largely due to the presence of Fort Drum and the two state prisons in the County.

Fort Drum is located nine miles east of Watertown and is home to more than 36,900 soldiers, family members and civilian employees of the 10th Mountain Division (Light Infantry) and its supporting tenants. Fort Drum is the largest Army installation in the Northeast. Fort Drum occupies 107,265 acres in Jefferson County and stretches across the Towns of LeRay, Philadelphia, Antwerp, and Wilna. With around 24,000 employees, Fort Drum is the largest single-site employer in Jefferson County and in Upstate New York. With a location in Evans Mills, qualifying patients from other medical marijuana program states who are displaced due to assignment to Fort Drum will still have access to the medical marijuana products they need.

**d. East Syracuse, Onondaga County**

**i. Population and Location**

East Syracuse is a part of the city of Syracuse in eastern Onondaga County. As of the 2010 U.S. census, the village has a population of 3,084, greater Syracuse has a population of 145,170 and Onondaga County had a population of 467,026. The city of Syracuse is situated in the approximate center of the county and serves as the focus for commercial and business activities.

Onondaga County is conveniently situated at the intersection of Interstate Highways 81 and 90 (NYS Thruway). Local Amtrak and Greyhound terminals are located in the new Regional Transportation Center. One can also reach the city by air using Hancock International Airport, while the New York State Barge Canal System provides local connection by boat to the Great Lakes and the St. Lawrence River.

## **ii. Economic Impact**

In 2013 the Syracuse Metropolitan Area had an unemployment rate of 9.8%, which was a .3% increase from the year before and was much higher average than greater Onondaga County (6.7%), greater New York (7.7%) and the United States (7.4%). The introduction of a Salus Scientific dispensary into East Syracuse will bring reliable jobs to the region, with the potential for further job growth as the medical marijuana patient base grows. Salus Scientific anticipates an initial staff of 12-15 as dispensary staff and 2-6 as security staff.

## **iii. Patient Accessibility**

As Syracuse is the business center of Onondaga County, transit into and from Syracuse is readily available. Bus service in Onondaga is provided by four carriers, including three independent carriers and CENTRO, which is operated by the Central New York Regional Transportation Authority. Inter-city service is provided by a number of providers, including Greyhound and Adirondack Trailways.

## **iv. Community Partners**

In Onondaga County five of the largest employers are healthcare providers. The area's largest employer, the Upstate Medical University, a medical school that includes University Hospital, is the home of one of the country's eleven Joslin Centers for Diabetes. It is also the region's trauma center, burn center, kidney transplant center and pediatric emergency center. The University has also been given grants to research spinal cord and wrist injuries and to improve emergency response capabilities. University Hospital expanded the hospital's east wing to include a two-story children's hospital, creating Central New York's Children's Hospital at University Hospital. The \$99 million five-story vertical expansion increased the amount of space dedicated to pediatric medicine from 18,000 square feet to 87,000 square feet, which can house 50 private patient rooms and other amenities catering to the children and families cared for at the hospital.

Creating a partnership with the hospital will help to further potential patient education, especially in the pediatric ward, and to help to serve patient needs in the state. Salus Scientific would like to work with the hospital to have visitors and potential patients counsel with the dispensary pharmacists to answer questions that potential patients and visitors from the hospital have about medical marijuana products.

In all, Onondaga County's health care system includes five hospitals, over 1,500 practicing physicians, two mental health centers, numerous ambulatory care programs, and a full range of long-term care facilities. Salus Scientific will attempt to reach out and create connections with as many of these institutions as possible.

**e. Maspeth (Queens), Queens County**

**i. Population**

Maspeth is a small community in the New York City borough of Queens. Queens is the easternmost and largest in area of the five boroughs of New York City, geographically adjacent to the borough of Brooklyn at the western end of Long Island. The borough of Queens is also Queens County. The borough of Queens is the second largest in population behind Brooklyn with a Census-estimated 2,321,580 residents in 2014, approximately 48% of which are foreign-born. Queens is the most ethnically diverse urban area in the world.

**ii. Patient Accessibility**

Meeting patient needs in Queens presents the unique challenge of serving an extremely diverse client base. In Queens, residents speak an estimated 138 languages. All Salus Scientific dispensaries will adhere to protocols set out by organizations such as The Multicultural Association of Medical Interpreters. Salus Scientific will contract with a reputable, HIPAA-compliant translation service such as RxTran, so that the organization and its team members may safely and effectively serve and educate all potential and current clients in their preferred languages, comply with all local, state, and federal regulations regarding medical and

pharmaceutical translation services, and maintain accurate communications with a linguistically diverse public.

Having this service available in Queens will be essential to the dispensary there, but serving the needs of patients in Queens will help the other dispensaries better serve their patients as well. Salus Scientific will make sure that as much of the information that is disseminated to patients is translated into a language they speak as is possible. Salus Scientific hopes also to be able to print labels for medical marijuana products that are available in different languages. Salus Scientific will seek written approval from the Department before issuing any translations of statutorily required labeling language.

Salus Scientific will create a relationship with the Multicultural Association of Medical Interpreters and use their services in the dispensaries, with the permission of the Department, to aid patients and dispensary staff. Making sure that all parties understand one another will ensure that the right product gets to the right patient with the right security information.

**Multicultural Association of Medical Interpreters—Utica Office**

287 Genesee St., Suite #101 Utica, NY 13501

(315) 732-2271

**Multicultural Association of Medical Interpreters—Albany Office**

33 Central Ave., 3rd Floor Albany, NY 12210

(518) 426-1626

**Multicultural Association of Medical Interpreters—Syracuse Office**

731 James St., Suite 315 Syracuse, NY 13203

(315) 214-5003

**RxTran**

10 Cabot Road, Suite 209 Medford, MA 02155

(617) 621-0940

Many of Salus Scientific's clients will access their local dispensary via public transportation. The Queens dispensary can be accessed via MTA bus routes Q67, Q32, and Q39.

Salus Scientific acknowledges the need for physically accessible facilities that comply with all requirements stipulated by the Americans with Disabilities Act. All facilities will meet these requirements prior to becoming operational.

### **III. Spreading Medical Marijuana Education**

#### **a. Goals**

Salus Scientific wants to cultivate a populous that is educated about medical marijuana, how to access it and how it helps patients. In order to assess the educational needs of the community, Salus Scientific will undertake an extensive fact-finding mission. Examples of ways in which Salus Scientific will address the community's—and its own—educational needs include:

- i. Remaining knowledgeable and responsible about the community's diverse cultural beliefs on medical marijuana. For example, Salus Scientific is staying up to date on the Orthodox Union's plans to approve kosher certified medical marijuana and plans to produce and distribute kosher certified marijuana products.
- ii. Anticipating that concerned citizens may have fears about medical marijuana being linked with crime, mental illness, or underage use. Salus Scientific does not seek to brush aside the concerns of community members, and when concerns are based on myth, misinformation, or speculation, we aim to mitigate such concerns with public education.

## **b. Community Partnership**

One of the best ways to increase community education is by creating partnerships with local community-based organizations. Salus Scientific's community partners will include local hospitals.

Employees will also be encouraged to volunteer at educational and community organizations geographically close to the Salus Scientific facilities. These employees will be instructed that their purpose in volunteering is not to educate the students on medical marijuana products but to positively represent Salus Scientific and the medical marijuana industry while giving back to the local community.

## **c. Transparency and Availability of Dispensaries**

Salus Scientific will work to open its doors to the fact-finding missions of various other groups, including community organizations and local governments. Salus Scientific actively engages with the public in order to maintain transparency and to ease the fears of community members. The organization will engage with the following community entities in these ways:

- i. Government and Law Enforcement. Salus Scientific will comply with all government regulations and cooperate with local government and law enforcement agencies and personnel. Salus Scientific believes in working with law enforcement to create relationships that improve the safety of the entire community.
- ii. Community and Non-Profit Groups. Salus Scientific will establish and maintain productive corporate partnerships with community and environmental organizations, exploring relationships with groups including the National Resources Defense Council, Sierra Club New York City, Environment New York and the New York Environmental Justice Alliance.

**d. Company Procedures: The Environment and the Community**

The Salus Companies are committed to minimizing the environmental footprint of all of their operations, from cultivation through dispensing. The companies will only use agricultural and horticultural practices that avoid, to the greatest extent possible, the use of herbicides and pesticides and conserve, to the greatest extent possible, soil and water associated with the land used for cultivation. With regard to harvesting and transportation of product, Salus Scientific will use equipment that produces the lowest emissions profile that can be readily obtained. By limiting power use and waste, Salus Scientific will seek to obtain LEED status for the processing facility and operations, with the guidance and support of the Green Building Council, NYSERDA and the local utility. If necessary, Salus Scientific will seek funding from the New York Green Bank to help purchase and install state of the art building materials and equipment. Finally, Salus Scientific will study the feasibility of installing renewable energy technologies on-site, including solar, anaerobic digestion, small wind and fuel cells.

**Attachment A: Identification of buildings, property, and facilities used for manufacturing and dispensing pursuant to PHL § 3365 and 10 NYCRR § 1004.5(b)(2).**

1. Salus Scientific maintains one (1) manufacturing facility located at:

a. 100 Oakdale Road, Johnson City, New York 13790

Located in western Broome County, the manufacturing facility is just off exit 70 on the Southern Tier Expressway, minutes from Binghamton, NY.



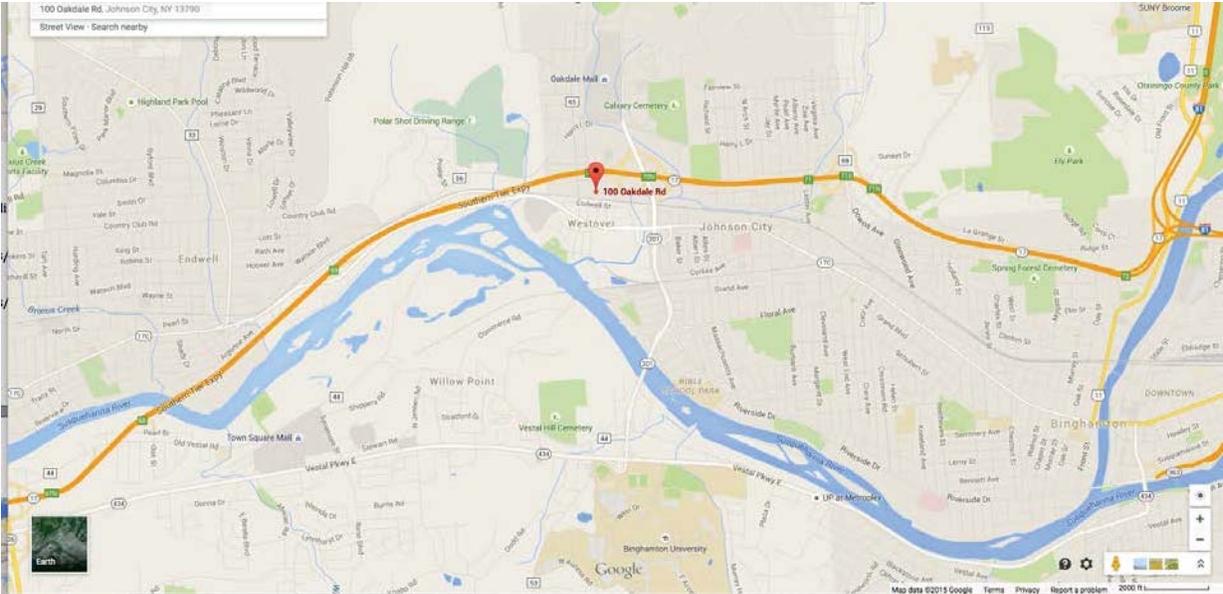
Street view of the manufacturing facility in Johnson City, NY.



**REQUEST FOR EXEMPTION FROM FOIL**  
Wide view of the manufacturing facility in Johnson City, NY.  
**Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])**  
**NOT FOR DISTRIBUTION**

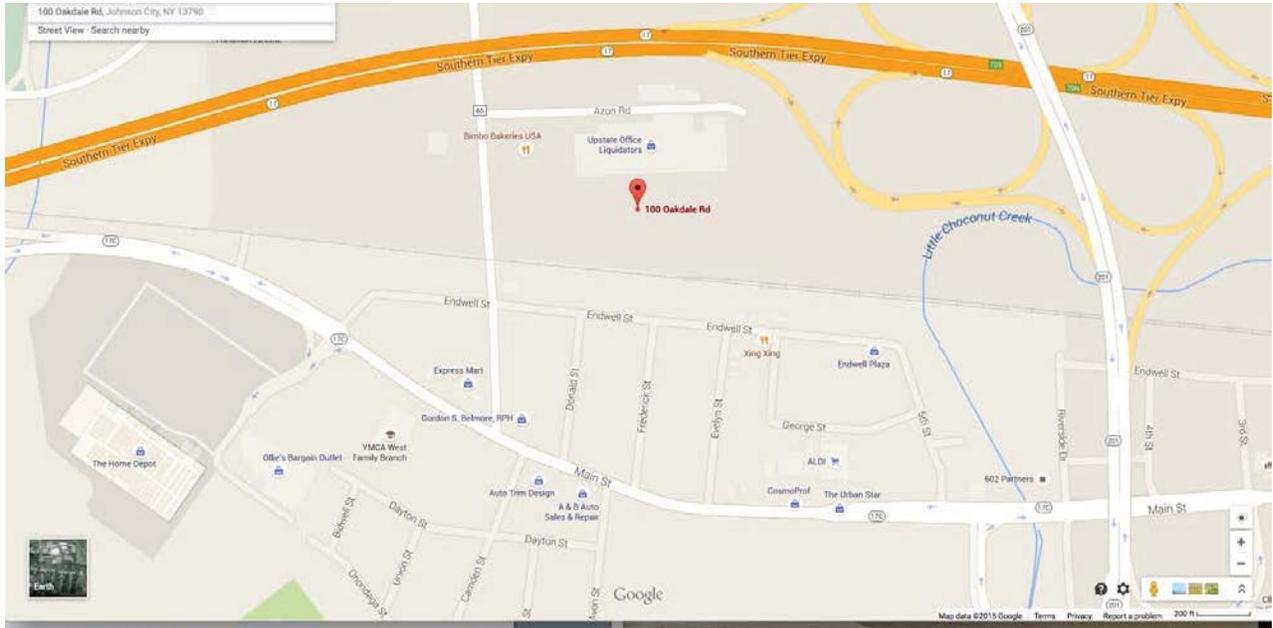


Interior view of the manufacturing facility in Johnson City, NY.



Aerial map showing the manufacturing facility in Johnson City, NY.

**REQUEST FOR EXEMPTION FROM FOIL**  
**Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])**  
**NOT FOR DISTRIBUTION**



Inset aerial showing the manufacturing facility in Johnson City, NY.

2. Salus Scientific maintains four (4) dispensing facilities. They are located at:

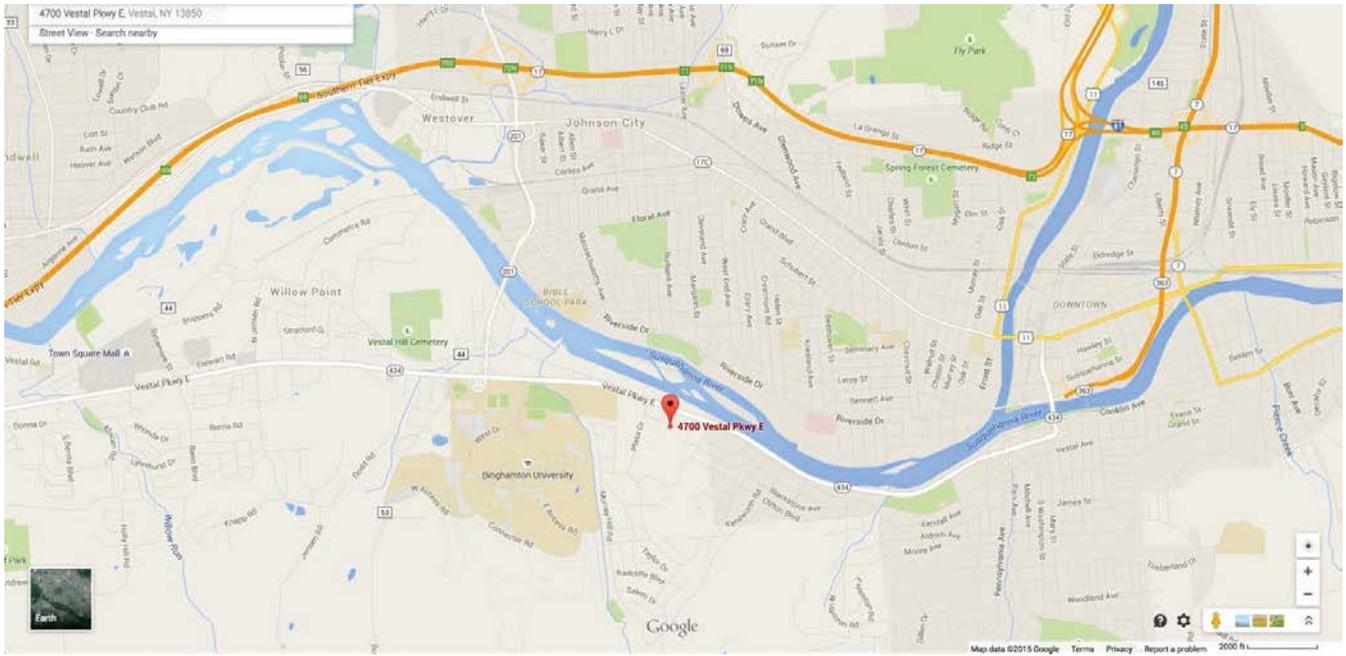
- a. 4700 Vestal Parkway East Vestal, New York 13850

Located on the south border of Broome County, the dispensary will provide medical marijuana products to certified patients in the Binghamton Metropolitan Area. Situated in the University Plaza shopping center, the dispensary is easily accessible by certified patients and designated caregivers.

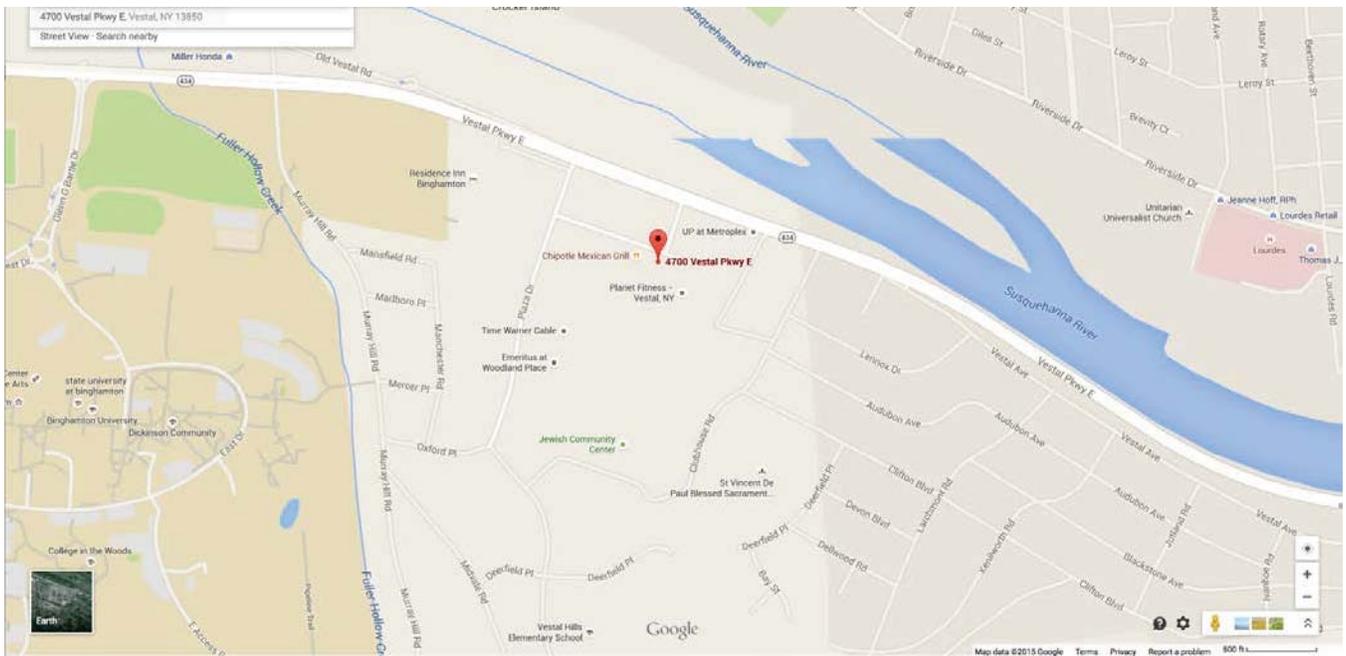


Street view of University Plaza, location of the dispensing facility in Vestal, NY

**REQUEST FOR EXEMPTION FROM FOIL**  
**Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])**  
**NOT FOR DISTRIBUTION**



Aerial map showing the dispensing facility in Vestal, NY.



Inset aerial map showing the dispensing facility in Vestal, NY.

**REQUEST FOR EXEMPTION FROM FOIL**  
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**NOT FOR DISTRIBUTION**



Aerial photographic map showing the dispensing facility in Vestal, NY.

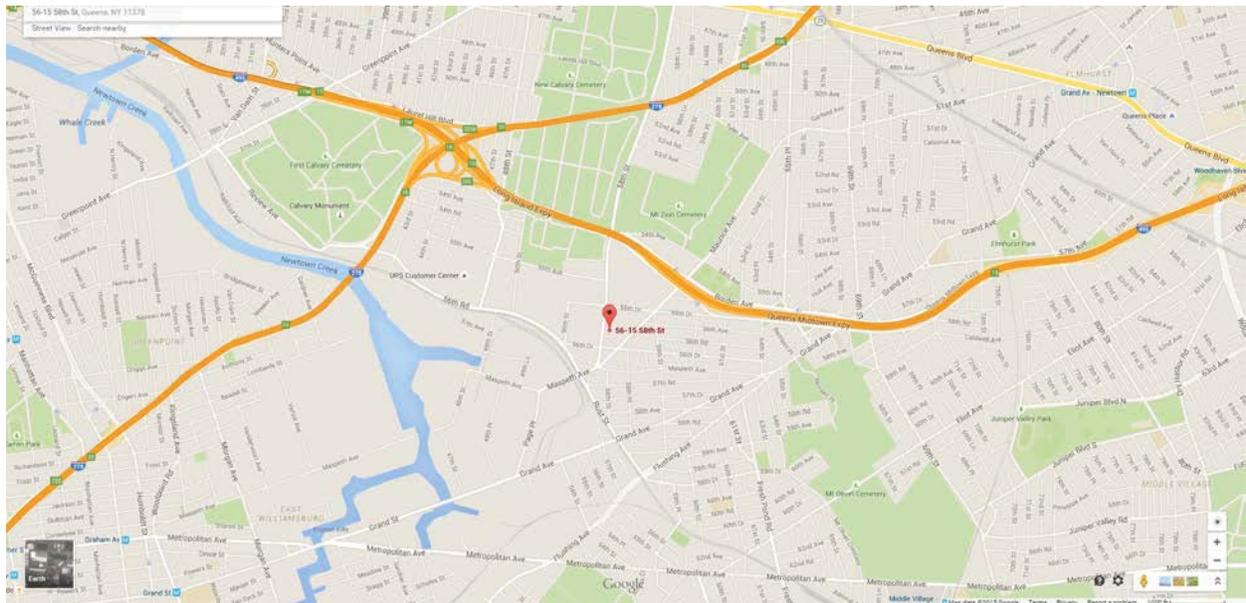
b. 56-15 58<sup>th</sup> Street, (Maspeth) Queens, New York 11378

Located in western Queens County, the dispensary is situated in Maspeth's industrial lowlands and is easily accessible from Interstate 495.

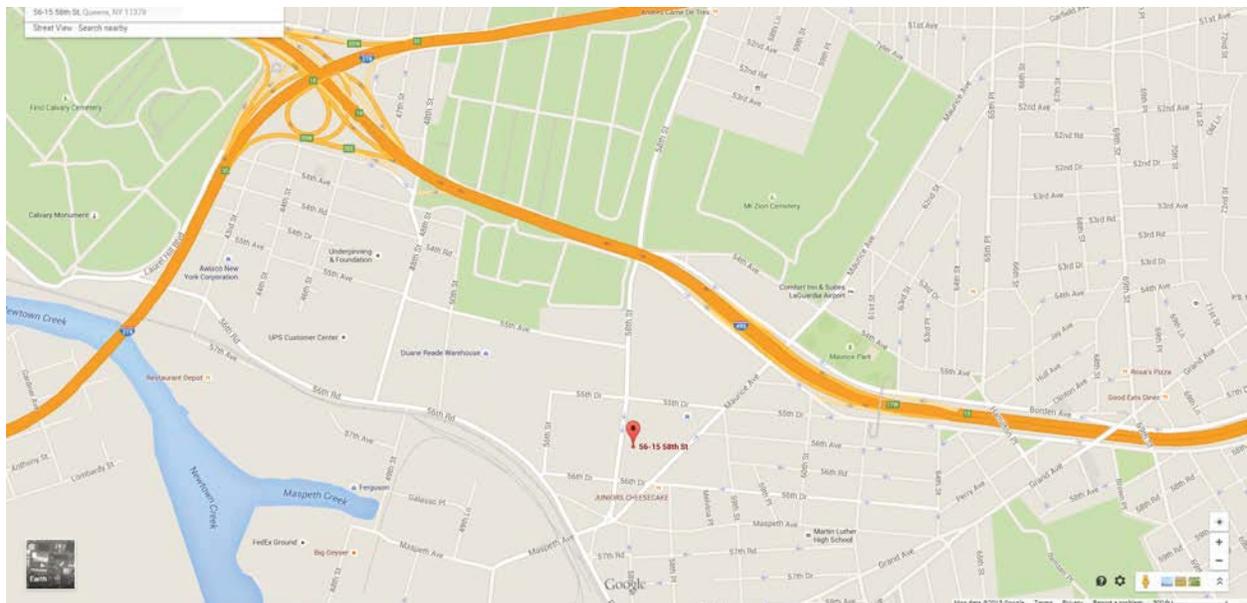


Street view of the dispensing facility in Queens, NY.

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NOT FOR DISTRIBUTION**

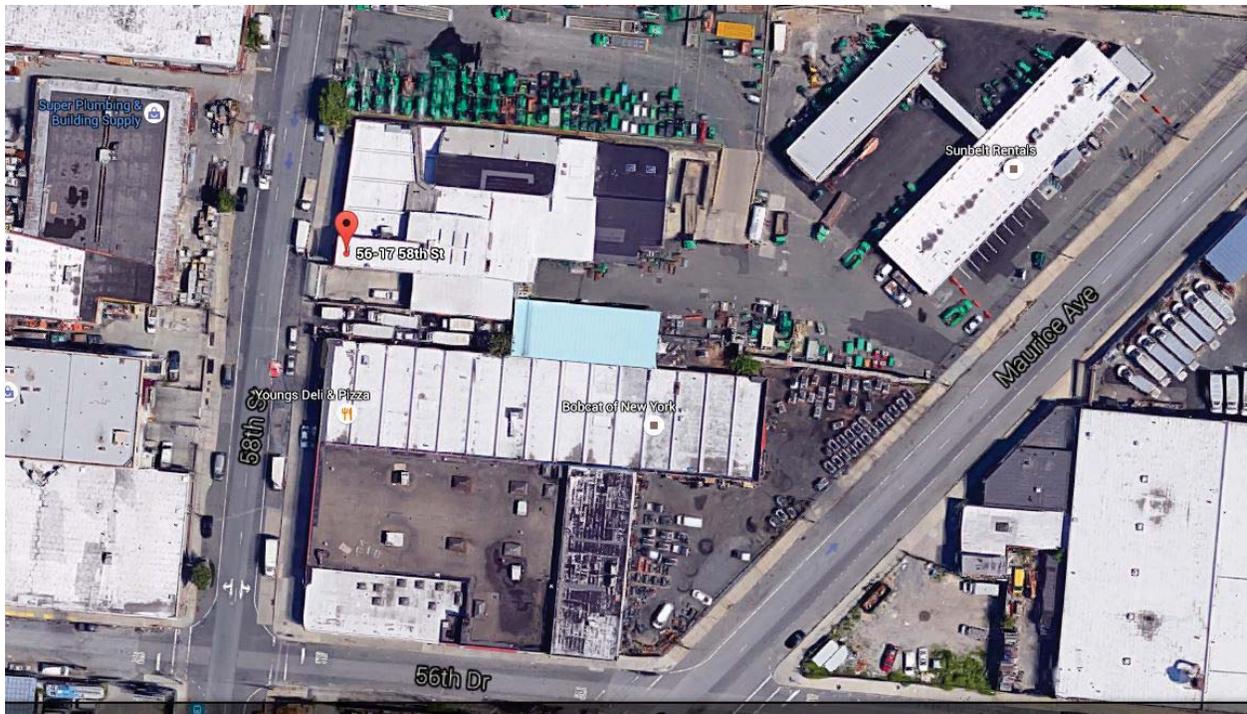


Aerial map showing the dispensing facility in Queens, NY.

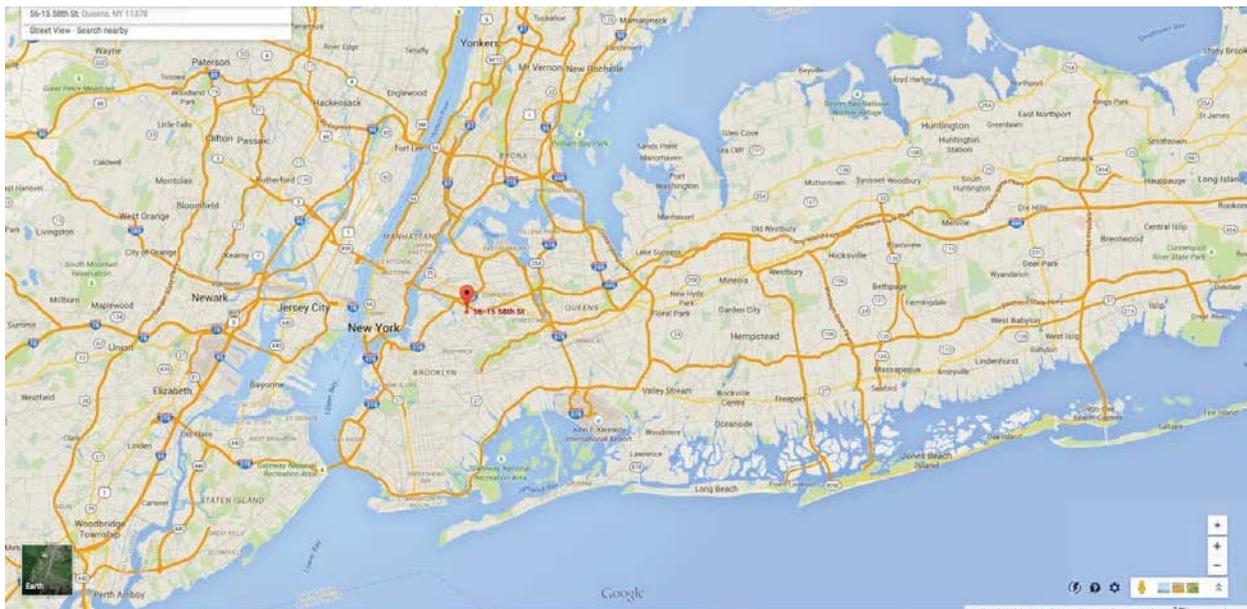


Inset aerial map showing the dispensing facility in Queens, NY.

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**NOT FOR DISTRIBUTION**



Aerial photographic map showing the dispensing facility in Queens, NY.



Regional map showing the dispensing facility in Queens, NY.

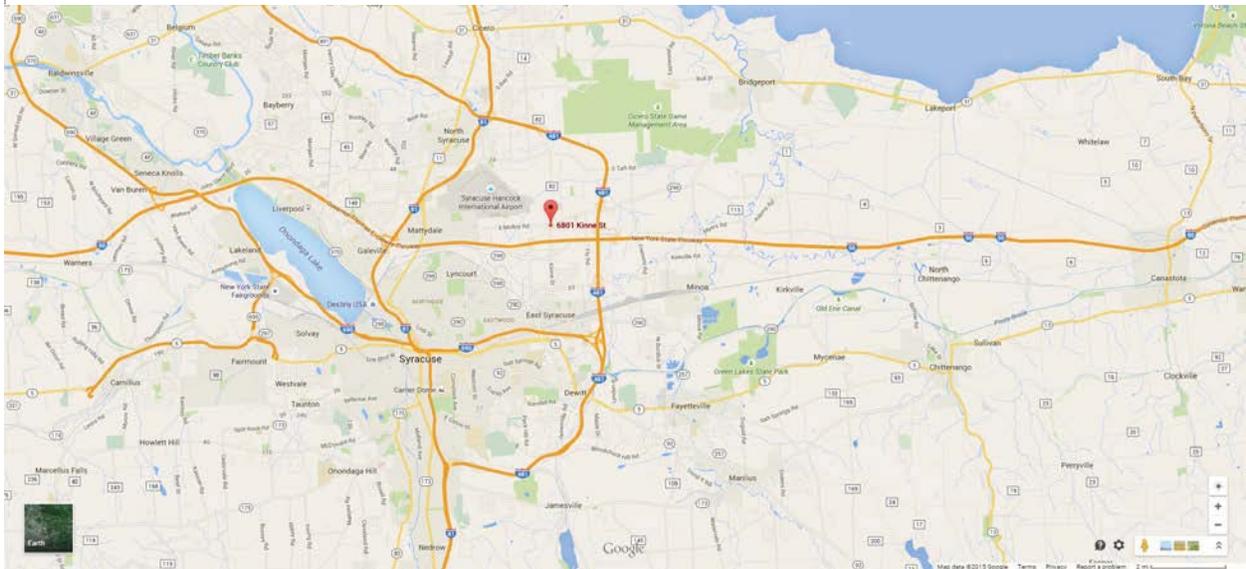
c. 6801 Kinne Street, East Syracuse, New York 13057

Located in a suburban area just outside of the City of Syracuse, the dispensary will provide medical marijuana products to certified patients in Onondaga County and the surrounding areas. The dispensary is easily accessible from Interstate 90 and Route 481.

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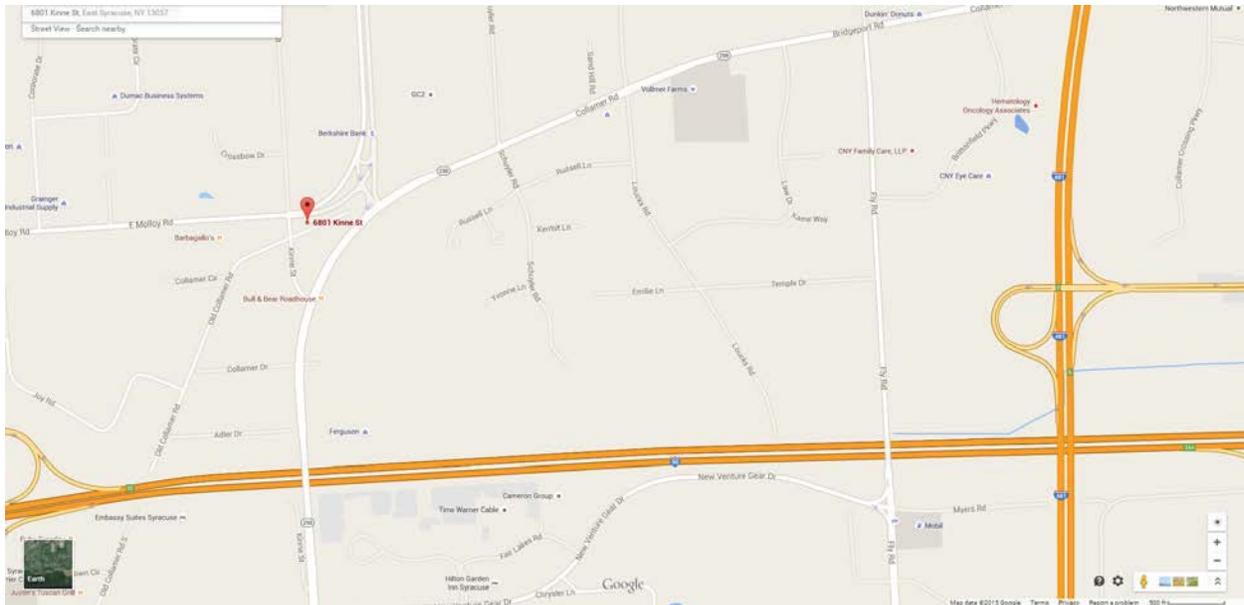


Street view of the dispensing facility in East Syracuse, NY.



Aerial map showing the dispensing facility in East Syracuse, NY.

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Inset aerial map showing the dispensing facility in East Syracuse, NY.

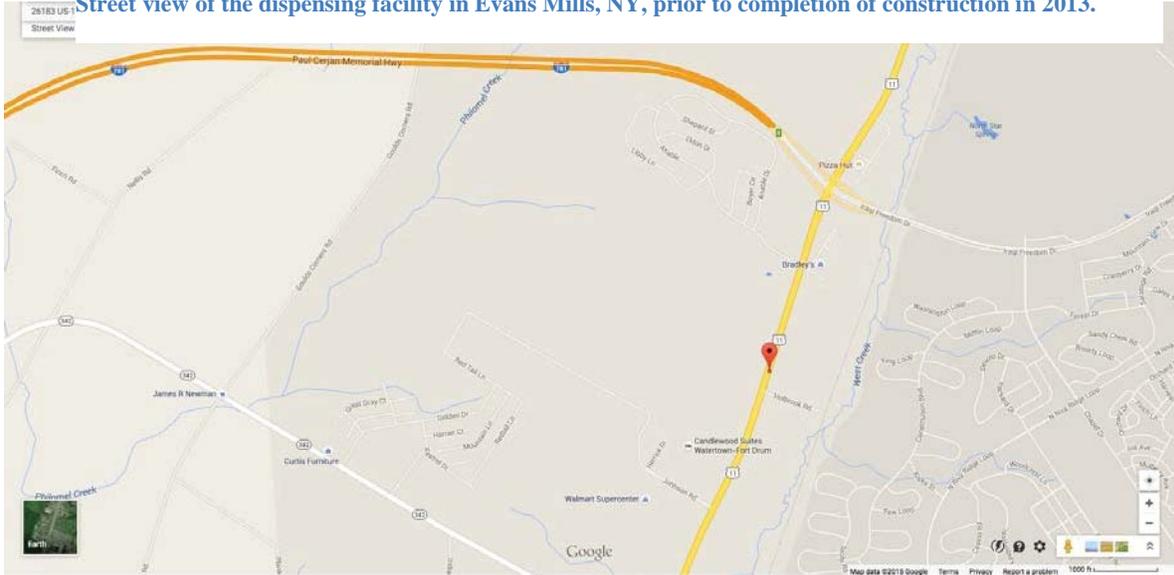
d. 26183 US Route 11, Evans Mills, New York 13637

Located just northeast of Watertown, the dispensary in Evans Mills is easily accessible from Interstate 81. This dispensary will serve the certified patients and designated caregivers in Jefferson and neighboring Northern New York counties.

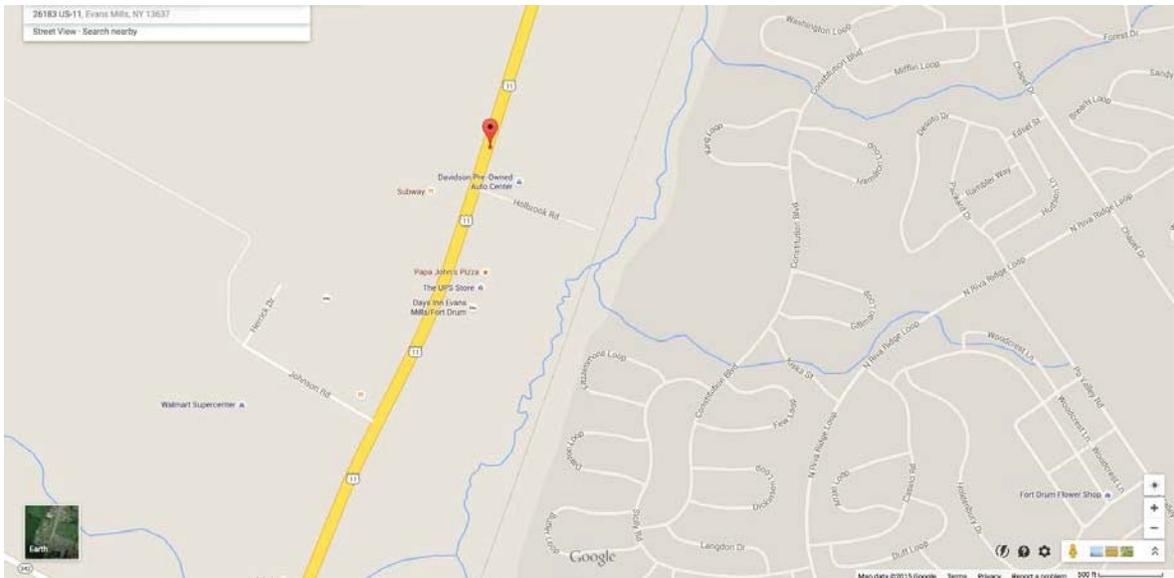


**REQUEST FOR EXEMPTION FROM FOIL  
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Street view of the dispensing facility in Evans Mills, NY, prior to completion of construction in 2013.

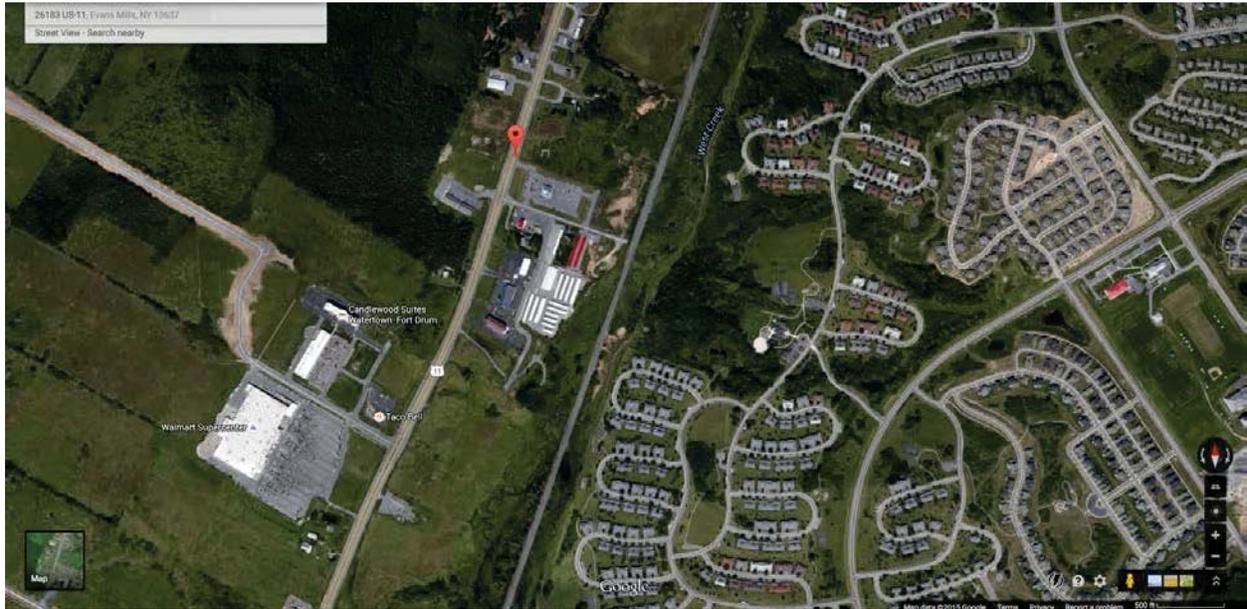


Aerial map showing the dispensing facility in Evans Mills, NY.



Inset aerial map showing the dispensing facility in Evans Mills, NY.

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NOT FOR DISTRIBUTION**



Aerial photographic map showing the dispensing facility in Evans Mills, NY.

**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)(d))  
NOT FOR DISTRIBUTION**

**Attachment D Section 4: Devices (§ 1004.5(b)(4)(i))**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**REQUEST FOR EXEMPTION FROM FOIL  
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**NOT FOR DISTRIBUTION**

**Attachment D Section 5: Security and Control (§ 1004.5(b)(4)(ii))**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5])  
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Redacted pursuant to N.Y. Public Officers Law, Art. 6

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## **Attachment D.6.1: Standard Operating Procedure: Organizational Overview**

### **Salus Scientific, LLC - Executive Summary**

#### ***Company Mission:***

*Cultivating global medical breakthroughs in New York.*

#### **Company Vision**

Combining over 200 years of pioneering scientific research, industry safety, and security benchmarks with a collaborative community of world-class innovators, Salus Scientific will provide pure, safe, and consistent cannabinoid medicines to New York's qualified patients. We aim to employ good manufacturing practices, perform standardized extractions, and formulate consistent cannabinoid medicine.

Salus Scientific is at the forefront of medical cannabis research and delivery. Our comprehensive team of researchers, physicians, cultivators, manufacturers and patient care specialists has the unique expertise to produce a safe, consistent and sustainable supply of cannabis-derived, pharmaceutical-grade medicines. Through integrity, transparency, reliability and stewardship, we will provide efficient and affordable access for the relief of New York's countless qualifying patients in need.

#### **Our Team and Inspiration**

At its core, Salus Scientific's culture comes from its most valued asset – its people. By strategically partnering extensive scientific research and industry knowledge from around the nation and the globe, Salus Scientific is able to empower local New York resources to match passion with relevant expertise, compassion with global teamwork and responsible science with innovative products to move New York State into the forefront of all aspects of this nascent industry. Salus Scientific provides a unique, made-in-New-York solution: global in reach, but clearly local in economic and social impact.

Salus Scientific cofounder and Chairman of the Board Michael P. Falcone, a fifth generation New Yorker, contributes his passion for community development in New York State to the opportunities created by the region's emerging medical cannabis industry. As an owner of an

organic farm and several wineries in New York, Mr. Falcone sees the potential for 200 medical marijuana manufacturing and retail jobs to be created by Salus Scientific and its partners in New York. Creating economic development while providing innovative, research-oriented patient solutions will compound the local benefit where it is needed most.

Through her work with the Cleveland Clinic Lou Ruvo Center for Brain Health, Salus Scientific cofounder and CEO Nicole Ruvo Falcone has become passionate about the use of medical cannabis to treat devastating conditions. Her entire family has dedicated themselves to the treatment of neurological conditions like Alzheimer's, Huntington's disease, Parkinson's disease and amyotrophic lateral sclerosis (ALS) through the fundraising of over \$200 million for the Keep Memory Alive Foundation to operate the clinic. Ms. Ruvo Falcone brings a unique business-minded desire for clinical research in neurology and has a successful career of bringing highly regulated products to market.

The lynchpin to the recent move to regulated marijuana access across much of the nation stems from the compounding effect of brilliant scientific research from Israel, formulated by Salus Scientific team members over decades of isolated study with the move to demonstrable efficacy in usage. This is embodied by Salus Scientific team members' involvement in the forwarding of medicinal marijuana usage by children in Colorado. Chris Stubbs, long passionate about proper dosage and the responsible labelling of cannabis-related products, actually counseled the Figi family (Charlotte's Web) on the appropriateness of cannabis-derived medicines, sourced the high cannabidiol (CBD) cultivars from locals, and helped to formulate and test the first delivery systems in this nationally significant case. His recent work, embodied in the rigorous devotion to detailed production protocols (GenCanna Production Platform™), has enabled the leading industrial hemp producer in Kentucky to provide jobs in production, laboratory testing, processing, formulation, product development and branding.

The most exciting discoveries relating to the application of cannabis-derived medicines to various disease-states have yet to be scientifically demonstrated. This has led Dr. Perry Fine, past President of the American Association of Pain Management, to bring to Salus Scientific his considerable efforts as a new breed of clinicians slowly begin to embrace this new treatment

modality. With his ability to bridge the gap between global research and the clinical proof of efficacy, Dr. Fine inspires growing confidence in new treatment modalities. Furthermore, his colleague and CEO of ISA Scientific, Dr. Mark Rosenfeld, has done an outstanding job of securing intellectual property and technological market solutions for the delivery of CBD in relevant disease states.

Hugh Hempel, Vice President of Community Services, and his wife, Chris, know firsthand the power of cannabis to treat epilepsy. Though their identical 11-year-old twin daughters, Addison and Cassidy, are currently using cannabis oils rich in CBD to alleviate seizures related to a fatal genetic disorder that presents as childhood Alzheimer's, the Hempels did not always have a reliable supply of high quality medicine; before turning to cannabis treatments, their work with top Food and Drug Administration (FDA) officials to create an experimental pharmaceutical medicine for their daughters resulted in the initiation of current clinical trials at the National Institutes of Health (NIH). This medicine has been used to treat terminally ill children around the world.

In order to achieve the goal of finding a cure for serious public health epidemics such as diabetes, chronic pain, cancer, and immunological and neurological disorders including adult and childhood onset Alzheimer's through medical cannabis research, Salus Scientific depends on the crucial ingredient of a highly skilled team of professionals with hands on experience in the cannabis industry. Salus Scientific has assembled many of the most recognized professionals from the global cannabis industry including chemists, clinicians, agronomists, leading cannabinoid researchers, world-class botanists and operators from several western states and New York's leading physicians. Salus Scientific also intends to pursue research relationships with the new Binghamton University School of Pharmacy and Pharmaceutical Sciences. In each instance, these professionals are recognized as leading experts in their field, and their portfolio of patents, proprietary processes, publications and trials prove it.

Jim Rice, Vice President of Operations for Salus Scientific, opened High Level Health as a medical marijuana dispensary in Denver, CO in September of 2009 and it currently remains one of the premier marijuana dispensaries in Denver, with two locations serving both the recreational

and medical markets. High Level Health has maintained their market leading position through strong vertical integration, effective management, tight inventory and financial controls, superior products, strict adherence to compliance and maintaining a loyal customer base. Additionally, High Level Health owns and operates two marijuana production facilities comprised of 10 acres with 20,000 square feet of active grow space and an additional 67,000 square feet of warehouse space for potential future expansion.

Salus Scientific has embraced all aspects of its security footprint because the new industry requires top-down compliance in every regard. The ability to bring forward decades of experience from the DEA, ATF, TSA, NYPD and NYSP to internalize this in Salus Scientific's culture is a testament to the organization's broad strength through its people and the clear path towards assuaging any and all fears that this new industry is anything other than completely transparent. Salus Scientific also intends to employ security personnel from the pool of local retired law enforcement officers who are familiar with not only law enforcement, but the local communities Salus Scientific will be working in.

### **Company Values**

**Integrity:** A sense of follow-through is sorely lacking in the medical cannabis industry. Our team has been dedicated, for many years now, to truth in dosing and labeling, community involvement, training, providing jobs, and positively impacting the lives of patients that need palliative care involving cannabis therapies.

**Transparency:** A sense of transparency in our operational motivations means that Salus Scientific can have meaningful implications on industry and research surrounding the medical cannabis program in New York by sharing data and intellectual property while keeping employees and patients safe. Paramount to our success is providing transparency in production methods so that the lives of patients are positively impacted. Furthermore, our security team lends a sense of regulatory importance with respect to compliance that is top-notch.

**Reliability:** Our spectrum of care is predicated on guaranteed dosing levels and testing standardization, safe methods of administration, and a commitment to expanding our capabilities to best educate and serve patients in need. Simply put, being able to serve a patient population that has found something that works for them is extremely important. We firmly believe it is

unethical to provide a beneficial treatment that works, then not have it available in the future.

This problem is widespread in the cannabis industry; patients often find a product that works for them, but cannot reproduce the result because the product line is erratic in its formulated content.

**Community Stewardship:** Developing a sense of responsibility in the community is key to the success of any business. The controversial nature of medical cannabis necessitates responsibility through scientific knowledge. We intend to lead our community involvement efforts through a series of outreach mechanisms and research endeavors that help inform and educate the public in a positive and responsible manner.

In support of these values, Salus Scientific has created four critical advisory boards: Advisory Board, Physician Advisory Board, Science Advisory Board and Security Advisory Board. This ensures that everything we do is grounded in decades of specifically relevant experience and in the best interest of our patients. Once Salus Scientific becomes operational, a Community Advisory Board will be created and local community leaders will be appointed as members. As Salus Scientific begins serving certified patients, we will also establish an advisory board specifically for the individuals we directly serve.

### **Company Goals**

- Salus Scientific will meet an aggressive operational timeline of six (6) months without issue due to the experience of our team's operational fortitude.
- Salus Scientific estimates an ability to provide 200 local jobs and begin local and statewide public education programs in the cannabinoid clinical and research sciences.
- Salus Scientific will pursue research partnerships with Cornell University, as well as programmatic and educational opportunities with the new Binghamton University School of Pharmacy and Pharmaceutical Sciences.
- Standardize cannabinoid dosing, testing and labeling practices through internal testing and external collaboration with labs and other industry partners.
- Develop products more familiar to patients and physicians to increase acceptance and emphasize New York State's evolution of cannabis-derived medicine delivery.
- Develop responsive formularies and delivery innovations for specific ailments with the intent of carrying out clinical trials with existing clinical networks.

- Support the Department of Health in the thoughtful consideration of expanding the list of recognized conditions to eventually include Alzheimer's, PTSD, chronic pain, and a host of other illnesses shown clinically to respond to cannabinoid therapies.
- Impact the agronomic side of research and development through future participation in the New York hemp program with industry experts GenCanna Global.

### **Salus Scientific Research Advantage**

Mankind has used the cannabis plant as both food and medicine for centuries. In recent decades the plant has been exhaustively studied by our partners and advisers who have created a significant and industry-renowned body of evidence regarding cannabis's potential as a treatment for some of humanity's most devastating conditions, such as diabetes, chronic pain and numerous neurological conditions.

Salus Scientific, through its partners, owns, controls and/or otherwise has exclusive rights to:

- An extensive cannabis-specific patent library from decades of research and development, many of which are specific for the use of CBD to treat diabetes, cancer, and cancer-related pain.
- Next generation technology for bioavailability, extraction, and related processes.
- Four patents pending on phytocannabinoid extraction and purification.
- Proprietary patents based on water soluble liquids and powder technology of CBDiol™.
- A number of patents related to biomarker availability and proprietary ingredients and formulations that are currently used in many products for anti-inflammatory pain, osteoporosis, sports performance, and type II diabetes.
- Technology to make numerous fat soluble compounds more easily absorbed as a new natural process that makes beneficial oils such as fish oil omega-3 more stable and less resistant to spoilage.

The Salus Scientific team of advisers and partners also owns trade secrets for:

- Improved quality management systems for natural products development.
- Improved manufacturing processes for developing commercially viable natural products.

- ❑ Marketing and product development processes for developing natural products.
- ❑ Improved extraction methods offering better yield, better control of finished product.
- ❑ Improved dose delivery systems offering greater bioavailability and efficacy.
- ❑ Compositions treating diseases and/or having a specific effect on the body.
- ❑ Processes for producing compositions treating diseases.

Significant rigorous clinical research is still required to confirm evidence and, more importantly, to provide solid data that helps to optimize cannabis use efficacy and safety. To that end, Salus Scientific is committed to facilitating broad public and private clinical research efforts in medical cannabis.

Oversight of public research by Salus Scientific will be led by advisory board members Dr. Gloria Meredith, Founding Dean for the Binghamton University School of Pharmacy and Pharmaceutical Sciences, and Dr. Flint Beal, Anne Parrish Titzell Professor and Chairman of the Department of Neurology and Neuroscience, Weill Medical College of Cornell University, and Neurologist-in-Chief, New York-Presbyterian Hospital/Weill Cornell Medical Center. Private research will be facilitated with non-profit research institutions including the Nicole Ruvo-Falcone-supported and family-founded Cleveland Clinic Lou Ruvo Center for Brain Health.

With our partners, and with the support of the State of New York, Salus Scientific will answer the call for non-psychoactive and non-abusable oral cannabinoid products, paving the way for substantive potential improvements in treating debilitating and even life-threatening health conditions afflicting many New Yorkers.

## **Attachment D.6.2: Standard Operating Procedures: Human Resources**

### 1. Salus Scientific Mission Statement and Values

- a. It is our mission at Salus Scientific to be the catalyst for medical marijuana research and the leading supplier of high quality cannabis solutions. Led by a team of seasoned business owners, experienced cannabis cultivators and compassionate healers, Salus Scientific offers a holistic and educational healing approach to help its patients maintain a higher quality of life. In compliance with 10 NYCRR § 1004.14(b), no board member, officer, manager, owner, partner, principal stakeholder or member of a registered organization shall have an interest or voting rights in the laboratory performing medical marijuana testing.
- b. We have many values that define who we are and that set us apart. At Salus Scientific, we strive to understand and facilitate the patients' needs, ensuring they have the product they need and the research they deserve. We cultivate a company atmosphere based on professionalism, education, compassion, security, and privacy. Salus Scientific strives to respect and honor the medical marijuana laws set forth by the State of New York and the local jurisdictions in which we will operate.
- c. We provide a variety of high quality medical marijuana solutions for patients and ensure that their experience with the medicine is positive and comfortable. Helping keep the local communities safe, clean, and peaceful is also very important for Salus Scientific. We plan to be active supporters of local charities, local culture, and the local economy. At Salus Scientific, we believe that it is our responsibility to be a positive example to both the marijuana industry and for other communities working to revise medical marijuana laws.
- d. Our employees are what make everything possible. Providing our employees with a safe, friendly and positive working environment will ensure that our mission is carried out. Eliminating negative stigmas attached to medical marijuana and patients seeking treatment, through industry-leading services, charitable outreach, ongoing research and continuing education, is also a value that Salus Scientific strongly believes in.

## 2. Equal Opportunity Employment

- a. Salus Scientific is an equal employment opportunity employer. All employment decisions are based on merit and on our business needs. Salus Scientific will not base employment needs or preferences on race, color, citizenship status, national origin, ancestry, gender, sexual orientation, age, religion, creed, physical or mental disability, marital status, veteran status, political affiliation, or any other trait that is protected by law. Salus Scientific complies with the laws regarding reasonable accommodation for handicapped and disabled employees.

## 3. Staffing Plan

- a. The human resources department will evaluate work performance at Salus Scientific on an ongoing basis, and determine whether new positions need to be created and also whether the company requires new hires to assist in the workplace duties. It is important to have a sufficient amount of employees so that every aspect of Salus Scientific can be properly executed. We believe that being understaffed is never an option; such a situation can lead to unsafe work conditions and low quality work product.
- b. In determining whether new hires are needed, human resources will also evaluate the department that requires new hires and determine whether the business climate at Salus Scientific is able to support new hires. Economic forecasts should be conducted to better understand the effects of changes in staffing.

## 4. Hiring and Recruiting

- a. Hiring new employees is an exciting and challenging process at Salus Scientific. We strive to hire people that meet our strict standards and comply with all applicable state and local laws. Candidates will be placed through several screenings to ensure that we are able to select the best fit for us. After writing a detailed job description and placing the open position available on proper recruitment boards, the hiring process can begin.
- b. As a first step, only applications from applicants who are over 21 years old and who have no convictions of any felony for the sale or possession of drugs, narcotics, or controlled substances will be considered. Those applicants who meet

the requirements will then be given a short telephonic interview. Successful candidates will then be scheduled for in-person interviews with supervising managers. If, at this point, supervising managers are not ready to offer candidates a position, the candidates may be given a second interview. This process will ensure that only the candidates that best fit Salus Scientific will be recruited.

#### 5. Employee Benefits

- a. Retaining talented employees is important for Salus Scientific. Competent employees benefit the company tremendously, and to that end we offer a competitive employee benefits package to all eligible employees.
- b. All Salus Scientific employees will be given time off to perform their civic duties, such as voting and jury duty. Paid time off will be given to eligible employees who use their accrued vacation time. Employees must request their time off in a timely manner; otherwise it may be difficult or impossible for Salus Scientific to accommodate sudden requests. Exceptions will be made for bereavement leave and other unforeseen situations.
- c. At Salus Scientific, we are proud to offer our employees fully subsidized health, vision, and dental health plans. Additionally, employee's immediate family members qualify, as do domestic partners. By ensuring the health of our employees, our employees can in return perform their duties and responsibilities to the fullest of their abilities, reduce absences due to illness, and maintain a healthy workplace environment.

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

























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## 8. Employee Communication

- a. At Salus Scientific, we encourage you to discuss any issue you may have with a co-worker directly with that person. Such a discussion should not adversely interfere with work-related duties. In the event that you and your coworker are unable to reach a resolution, your next step is to arrange a meeting with your supervisor to discuss any concern, problem, or issue that arises during the course of your employment. From time to time, Salus Scientific will conduct employee meetings. All information discussed in an employee meeting is considered confidential and may not be discussed outside of the workplace or with non-employees. It is understandable that every once in a while, employees may misinterpret information, and pass along that information as gossip or rumor. Such miscommunications harm the mission of Salus Scientific, and we encourage employees to speak with their supervisors if they have questions or concerns. All employees will be given opportunities to discuss their ideas on how to make the workplace at Salus Scientific a better place.

## 9. Harassment Policy

- a. The workplace environment at Salus Scientific will be professional and free from intimidation, hostility, and other offenses that would interfere with employee work performance. Harassment of any sort, whether verbal, physical, or visual will not be tolerated. Any sort of harassment against employee's race, color, religion, sex, age, sexual orientation, national origin or ancestry, disability, medical condition, marital status, veteran status, or any other attributable characteristic will not be acceptable at the workplace and will be grounds for discipline.
- b. Sexual harassment is a form of employment misconduct that undermines the integrity of the employment. Unwelcome, unsolicited sexual overtures do not conform to Salus Scientific employee policies, and are unacceptable in the workplace. Sexual harassment is against the law, thus it is illegal and against the policies of Salus Scientific for any employee, regardless of gender, to sexually harass another employee.

- c. Sexual harassment refers to behavior that is not welcome, that is personally offensive, that lowers morale, and that results in disrupting employee work effectiveness. There are many different forms of sexual harassment, all of which will not be tolerated. Some forms of sexual harassment include, but are not limited to: sexual innuendos, sexual slurs, suggestive language, sexually themed jokes, sexual propositions, obscene gestures, touching and unwanted physical contact, coercing sexual intercourse, and assault.

#### 10. Disciplinary Procedures

- a. Salus Scientific employees will be subject to disciplinary policies. Management will determine the level of discipline necessary. More severe cases may result in automatic termination, rather than going through the steps outlined below. Managers are expected to follow the disciplinary procedures, unless they determine that other action is necessary. Serious offenses may justify other means of discipline.
- b. The Salus Scientific process for dealing with unacceptable behavior involves an oral reminder, a written warning, a period of unpaid leave, and finally, termination.
- c. All employees will be required to conform to Salus Scientific policies regarding attendance, conduct, work performance, and other work rules and regulations. Managers are trained to support employees when they experience problems meeting Salus Scientific standards, and to devise a plan to achieve an effective solution. Unfortunately, it may not always be possible to have a positive result. In such cases when the employee does not respond to the plan, the supervising manager will resort to the disciplinary steps.

#### 11. Termination Procedures

- a. Employment at Salus Scientific is at-will. At-will employment means that neither employees nor Salus Scientific have entered into an employment contract for a specific duration. Employees may terminate their employment with Salus Scientific at any time, with or without reason. Similarly, Salus Scientific reserves the right to terminate, discipline, transfer, or demote employees at any time, with or without reason.

- b. An employee will be considered terminated once they are removed from the company payroll. The effective day of termination will be the last day worked by the employee. After an employee has been involuntarily terminated, they will receive their final paycheck within one business day. For employees who voluntarily elect to terminate their employment with Salus Scientific, their final paycheck will be given on the next scheduled payday.
- c. Salus Scientific will consider the following situations and actions as an employee's election to voluntarily terminate their employment: resigning from Salus Scientific, failing to return from an approved leave of absence on the date specified by Salus Scientific, or failing to report to work or call in for three (3) or more consecutive workdays.
- d. Additionally, employees may be terminated for poor performance, misconduct, excessive absences, tardiness, discrimination, harassment, or other workplace policy violations.

**Attachment D.6.3: Standard Operating Procedures: Employee Training**  
Redacted pursuant to N.Y. Public Officers Law, Art. 6

















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**Attachment D.6.4: Standard Operating Procedures: Manufacturing**  
Redacted pursuant to N.Y. Public Officers Law, Art. 6

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# **Appendix A**

### **Section 5.3 Manufacturing batch record**

- (a) The manufacturing operation must prepare a manufacturing batch record for each batch of cannabis-derived product manufactured.
- (b) The manufacturing batch record must:
  - (1) Cross-reference or reproduce the appropriate manufacturing protocol; and
  - (2) Form a complete record of the manufacturing and control of the batch.
- (c) Each batch must be assigned a batch, lot, or control number which allows the complete history of the production and distribution of the batch to be determined. This code must be used in recording the disposition of each batch.
- (d) The manufacturing batch record must include, as applicable to the process:
  - (1) Identity of the cannabis-derived product;
  - (2) The batch, lot, or control number of the cannabis-derived product;
  - (3) Batch size;
  - (4) For each component used in production of the batch:
    - (i) Identity of each component used in the batch;
    - (ii) Batch, lot, or control number of each component used in the batch;
    - (iii) Actual weight or measure of each batch or lot of component used in the batch, including the unit of measure;
  - (5) Date(s) on which, and where applicable the time(s) at which, each step of the manufacturing process was performed;
  - (6) Actual results obtained during monitoring of production process parameters;
  - (7) Identity of processing lines and major equipment used in producing the batch;
  - (8) Date and where applicable the time of the maintenance, cleaning, and/or sanitizing of the major equipment used in producing the batch, or a cross-reference to records, such as individual equipment logs, where this information is recorded;
  - (9) If manufacture of the batch uses equipment or instruments requiring periodic calibration, inspection, or verification, the date and where applicable the time of the last calibration, inspection, or verification or the date on which such is next due; or a cross-reference to records, such as individual equipment logs, where this information is recorded;
  - (10) A statement of the actual yield and a statement regarding whether the actual yield is within the acceptable range of the theoretical yield as per section 5.1(a)(3) after each significant process step and at the end of manufacturing;

**FOR DISCUSSION. Prepared for consideration by state or local regulatory agencies in states within the United States.**

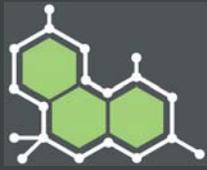
- (11) Records of any cannabis waste generated during production of the batch;
- (12) Records of any treatment, process adjustment, reprocessing, or other deviation that occurred during production of the batch;
- (13) Records of the date, time where applicable, quantity, and person responsible for any sample removed during or after production;
- (14) Actual results of any testing or examination of in-process material or cannabis-derived product, or a cross-reference to such results;
- (15) Documentation that the cannabis-derived product meets its specifications for identity, purity, strength, and composition, in accordance with the requirements of the manufacturing protocol;
- (16) Identity of each person performing each process step in production of the batch, including but not limited to:
  - (i) Weighing or measuring each component and verifying the weight or measure of each component used in the batch per section 5.4;
  - (ii) Adding each component to the batch and verifying the addition of each component to the batch per section 5.4;
  - (iii) Monitoring production process parameters;
  - (iv) Performing and verifying calculations of the actual yield and any other mathematical calculations;
  - (v) Directly overseeing each stage of production of the batch;
  - (vi) Performing any other checks or verifications in production of the batch, as needed; and
  - (vii) Releasing the batch from one stage of production to the next.
- (e) All data in the manufacturing batch record must be recorded at the time at which each action is performed.
- (f) The completed manufacturing batch record for each batch must be reviewed and signed by quality control personnel to determine compliance with all applicable specifications and other requirements of the manufacturing protocol before a batch is approved.

#### **Section 5.4 Allocation and charge-in of components**

- (a) Manufacturing operations must weigh, measure, or subdivide components to be used in a cannabis-derived product batch as appropriate for the batch.
- (b) If a component is removed from the original container to another, the new container must be identified with the following information:

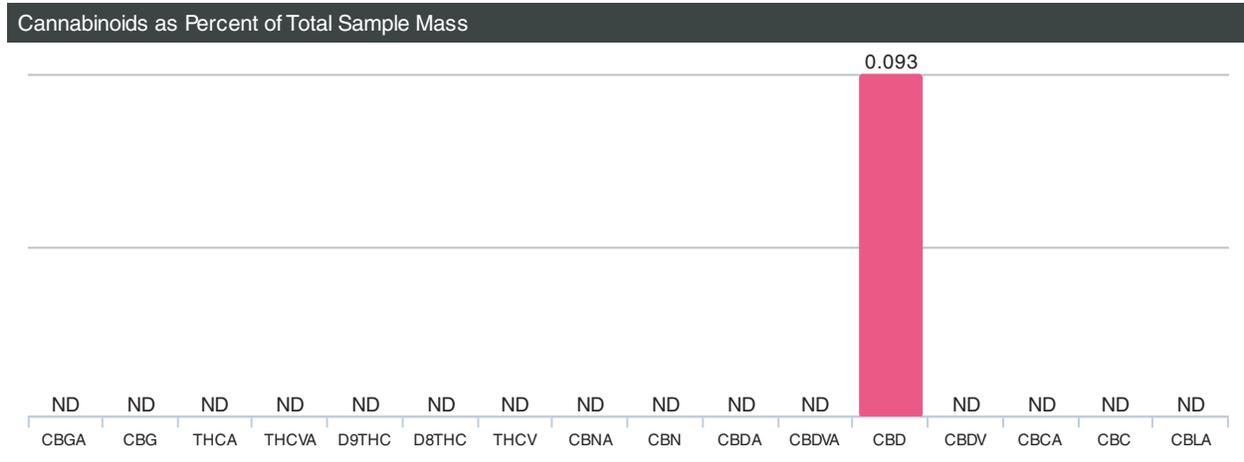
**FOR DISCUSSION. Prepared for consideration by state or local regulatory agencies in states within the United States.**

## **Appendix B**



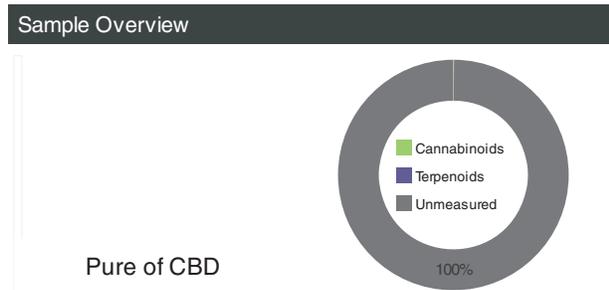
## Pure of CBD

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: 12/4/14	
Submitted:		Tested: 12/15/2014		Reported: 12/29/2014	
				Samp ID: S349031	
				Sample Mass: 1.002	



**Terpenoids as Percent of Total Sample Mass**

No terpenoids to report



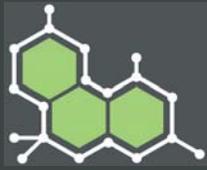
**Sample Details**

Mycotoxin	Not Detected
Pesticide	Not Detected

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steehilllab.com/FAQ](http://www.steehilllab.com/FAQ).

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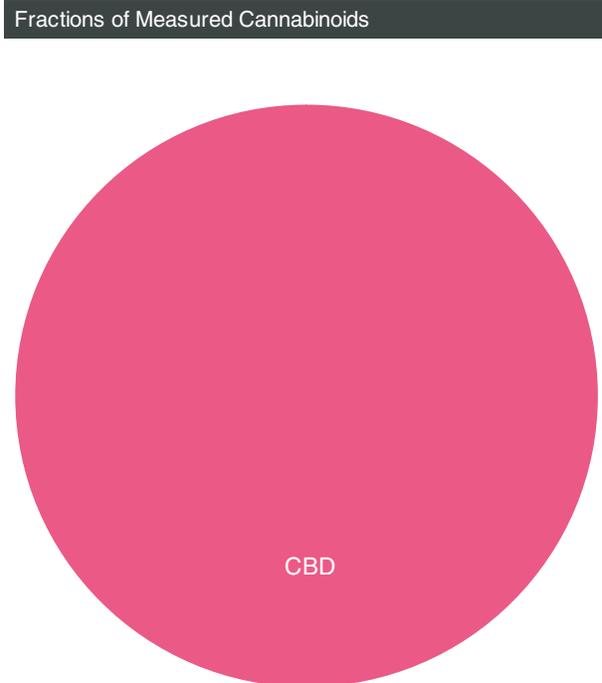




## Pure of CBD

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: 12/4/14	
Submitted:		Tested: 12/15/2014		Reported: 12/29/2014	
				Samp ID: S349031	
				Sample Mass: 1.002	

Cannabinoid Profile		
Compound	% mass	≈ mg/g
CBGA	ND	ND
CBG	ND	ND
THCA	ND	ND
THCVA	ND	ND
D9THC	ND	ND
D8THC	ND	ND
THCV	ND	ND
CBNA	ND	ND
CBN	ND	ND
CBDA	ND	ND
CBDVA	ND	ND
CBD	0.093	0.93
CBDV	ND	ND
CBCA	ND	ND
CBC	ND	ND
CBLA	ND	ND



### Calculated Liquid Chromatogram



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## Pure of CBD

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: 12/4/14	
Submitted:		Tested: 12/15/2014		Reported: 12/29/2014	
				Samp ID: S349031	
				Sample Mass: 1.002	

Terpenoid Profile		
Compound	% mass	≈ mg/g
Terpinolene	ND	ND
Linalool	ND	ND
Phytol	ND	ND
Beta Myrcene	ND	ND
Citronellol	ND	ND
Caryophyllene Oxide	ND	ND
Alpha Pinene	ND	ND
Limonene	ND	ND
Beta Caryophyllene	ND	ND
Alpha Humulene	ND	ND

### Fractions of Measured Terpenes

No terpenoids to chart

### Calculated Liquid Chromatogram



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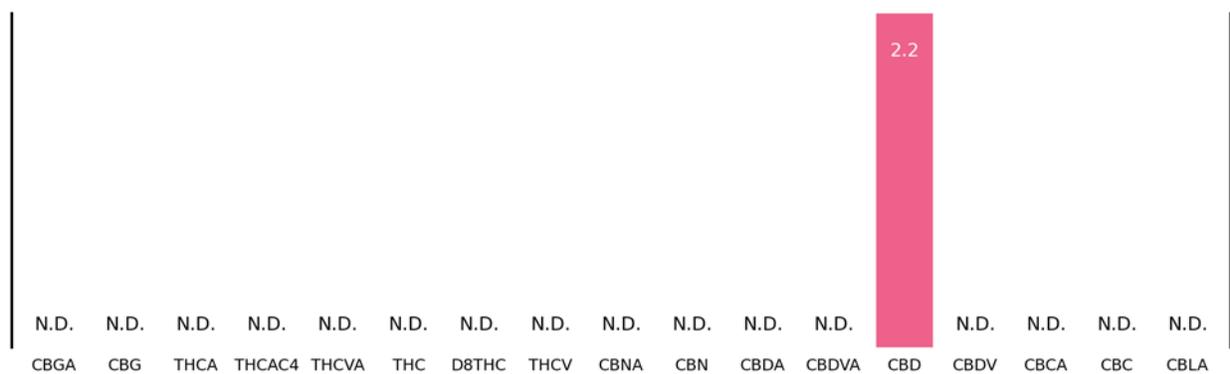




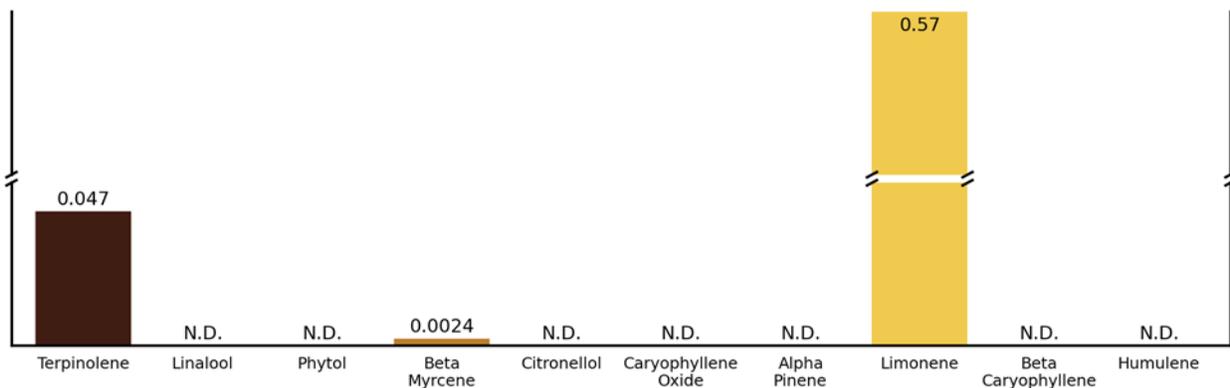
## Sample C

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Concentrate	Customer's ID:		Sample ID: S91007_R2D1	
Submitted: -	Analyzed: -	Reported: -		Sample Mass: 0.1192 g	

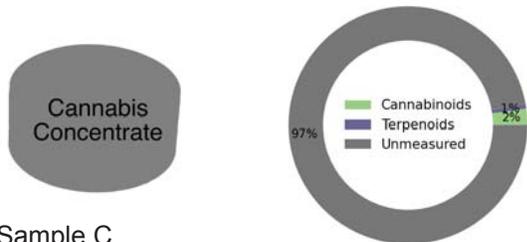
### Cannabinoids as Percent by Mass



### Terpenes as Percent by Mass



### Sample Overview



### Sample C

### Sample Details

Pesticides: Not Detected  
Mycotoxins: Not Detected

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ)

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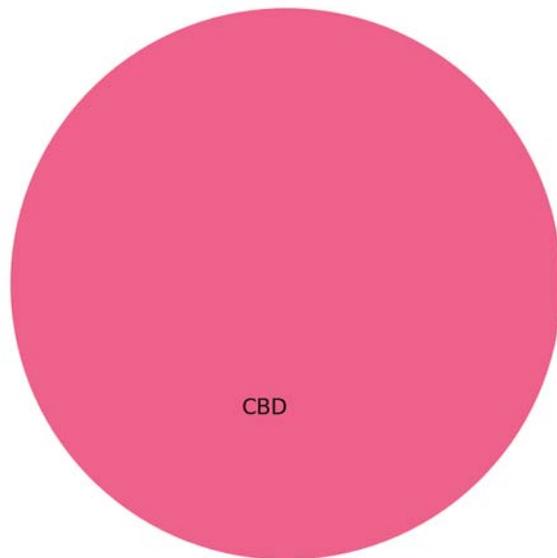


## Sample C

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Concentrate		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91007_R2D1	
				Sample Mass: 0.1192 g	

Cannabinoid Profile		
Compound	□ Mass	mg/g
CBGA	N.D.	N.D.
CBG	N.D.	N.D.
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	N.D.	N.D.
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	N.D.	N.D.
CBDA	N.D.	N.D.
CBDVA	N.D.	N.D.
CBD	2.2	22
CBDV	N.D.	N.D.
CBCA	N.D.	N.D.
CBC	N.D.	N.D.
CBLA	N.D.	N.D.

### Fractions of Measured Cannabinoids

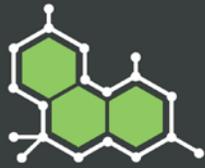


### Calculated Liquid Chromatogram



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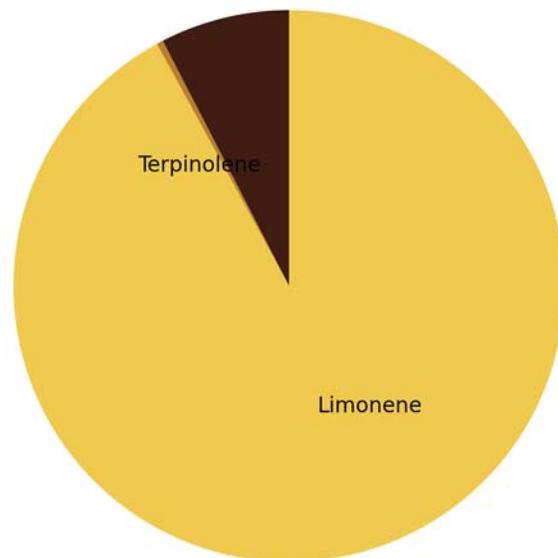


## Sample C

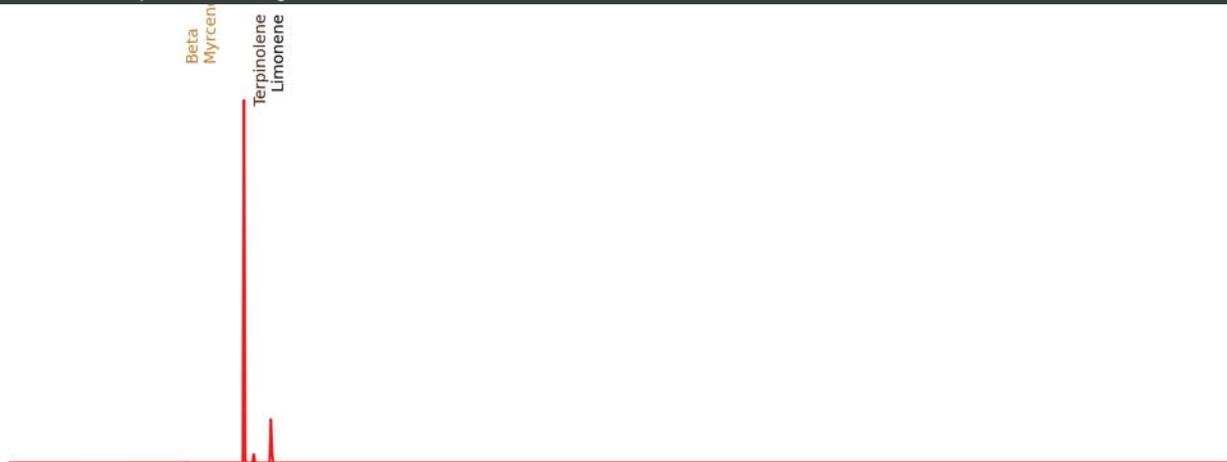
Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Concentrate		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91007_R2D1	
				Sample Mass: 0.1192 g	

Terpenoid Profile		
Compound	□ Mass	mg/g
Terpinolene	0.047	0.47
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	0.0024	0.024
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	0.57	5.7
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

### Fractions of Measured Terpenes

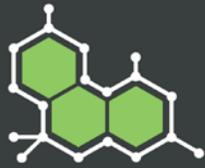


### Calculated Liquid Chromatogram



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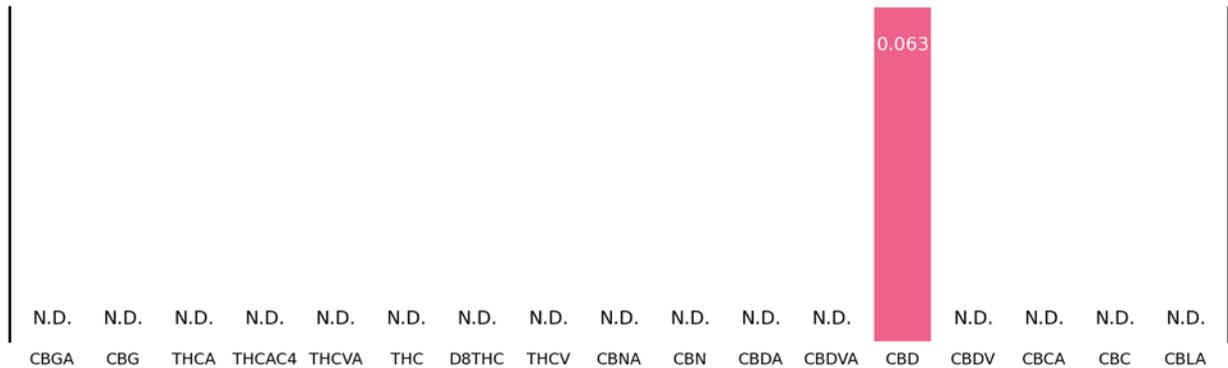




## Sample B

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Concentrate		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91006_R2D1	
				Sample Mass: 0.1199 g	

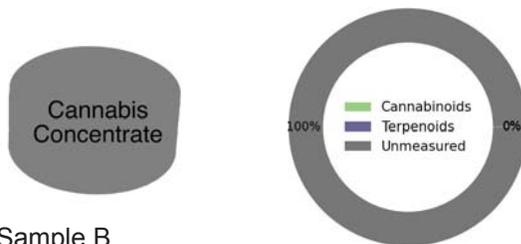
### Cannabinoids as Percent by Mass



### Terpenes as Percent by Mass

## None Detected

### Sample Overview



### Sample B

### Sample Details

Pesticides: Not Detected  
Mycotoxins: Not Detected

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steehilllab.com/FAQ](http://www.steehilllab.com/FAQ)

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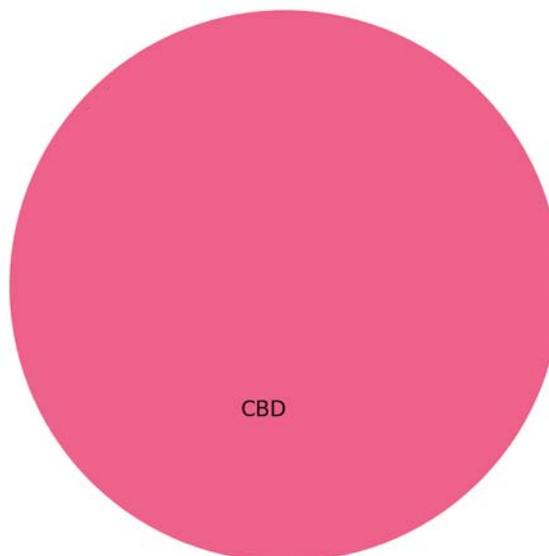
## Sample B

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Concentrate		Customer's ID:	Sample ID: S91006_R2D1
Submitted: -		Analyzed: -		Reported: -	Sample Mass: 0.1199 g

### Cannabinoid Profile

Compound	□ Mass	mg/g
CBGA	N.D.	N.D.
CBG	N.D.	N.D.
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	N.D.	N.D.
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	N.D.	N.D.
CBDA	N.D.	N.D.
CBDVA	N.D.	N.D.
CBD	0.06□	0.6□
CBDV	N.D.	N.D.
CBCA	N.D.	N.D.
CBC	N.D.	N.D.
CBLA	N.D.	N.D.

### Fractions of Measured Cannabinoids

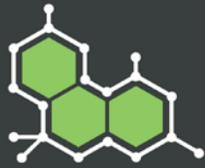


### Calculated Liquid Chromatogram



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## Sample B

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Concentrate		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91006_R2D1	
				Sample Mass: 0.1199 g	

Terpenoid Profile		
Compound	□ Mass	mg/g
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	N.D.	N.D.
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	N.D.	N.D.
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

### Fractions of Measured Terpenes

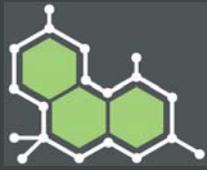
None  
Detected

### Calculated Liquid Chromatogram



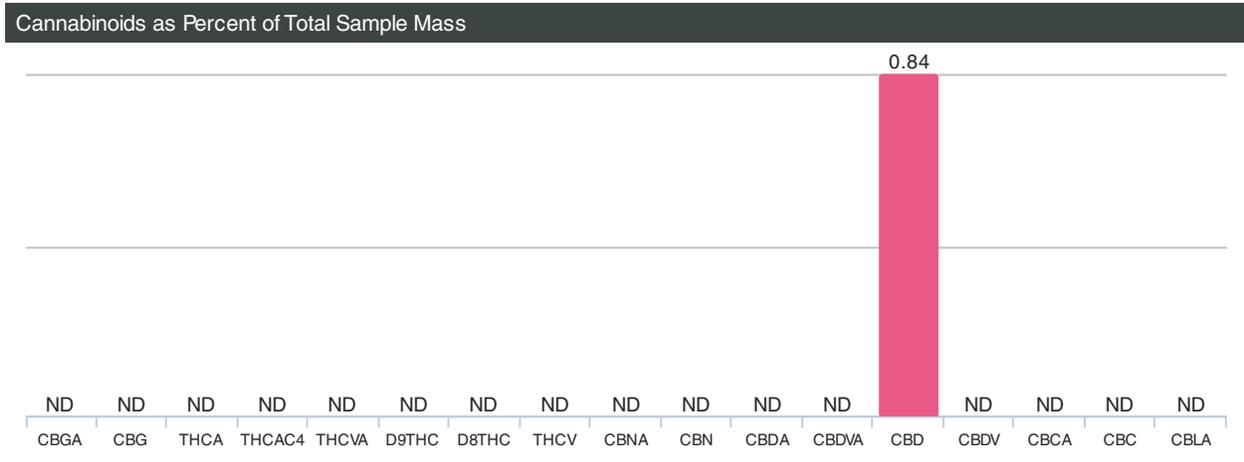
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# Sample 1

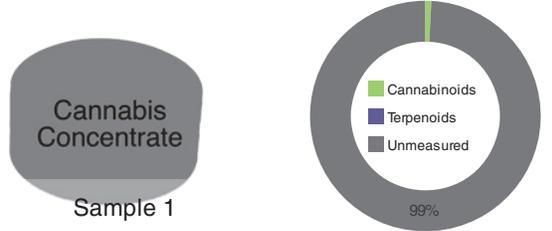
Customer: Lab Employee		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate	Customer's ID: -		Sample ID: CON-2209-R01
Submitted: -		Tested: 10/25/2014	Reported: 10/27/2014		Sample Mass: 162.2 mg



**Terpenoids as Percent of Total Sample Mass**

## No terpenoids to report

### Sample Overview

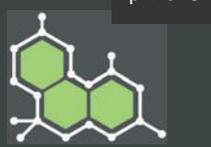


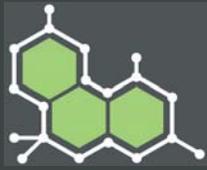
### Sample Details

Mycotoxin	NOT REQUESTED
Pesticide	NOT REQUESTED

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ).

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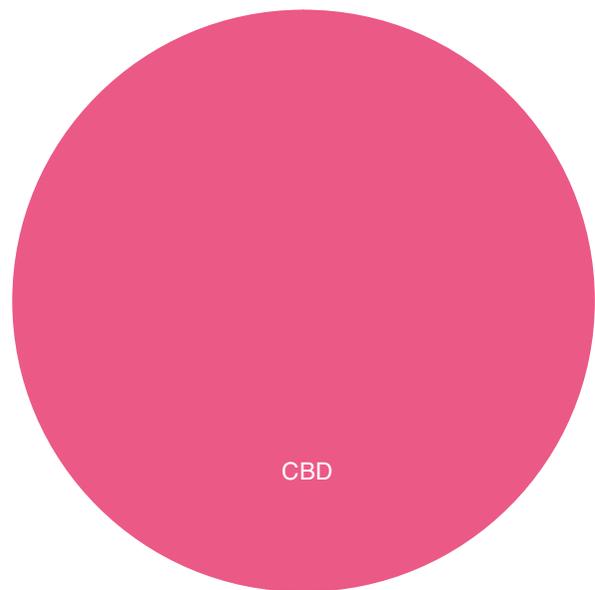


## Sample 1

Customer: Lab Employee		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate	Customer's ID: -		Sample ID: CON-2209-R01
Submitted: -		Tested: 10/25/2014	Reported: 10/27/2014		Sample Mass: 162.2 mg

Cannabinoid Profile		
Compound	% mass	≈ mg/g
CBGA	ND	ND
CBG	ND	ND
THCA	ND	ND
THCAC4	ND	ND
THCVA	ND	ND
D9THC	ND	ND
D8THC	ND	ND
THCV	ND	ND
CBNA	ND	ND
CBN	ND	ND
CBDA	ND	ND
CBDVA	ND	ND
CBD	0.84	8.4
CBDV	ND	ND
CBCA	ND	ND
CBC	ND	ND
CBLA	ND	ND

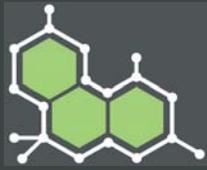
### Fractions of Measured Cannabinoids



### Calculated Liquid Chromatogram



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## Sample 1

Customer: Lab Employee		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: -	Sample ID: CON-2209-R01
Submitted: -		Tested: 10/25/2014		Reported: 10/27/2014	Sample Mass: 162.2 mg

Terpenoid Profile		
Compound	% mass	≈ mg/g
Terpinolene	ND	ND
Linalool	ND	ND
Phytol	ND	ND
Beta Myrcene	ND	ND
Citronellol	ND	ND
Caryophyllene Oxide	ND	ND
Alpha Pinene	ND	ND
Limonene	ND	ND
Beta Caryophyllene	ND	ND
Alpha Humulene	ND	ND

### Fractions of Measured Terpenes

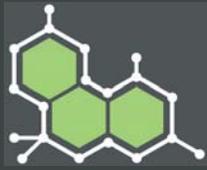
No terpenoids to chart

### Calculated Liquid Chromatogram



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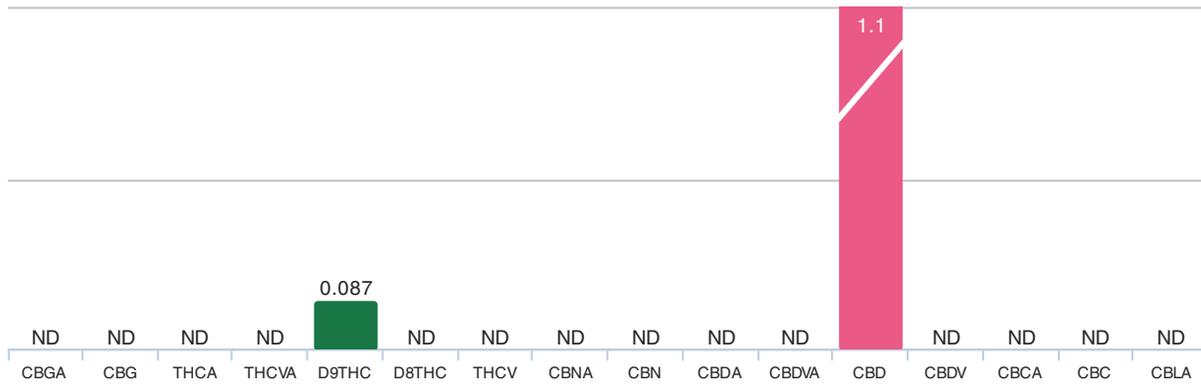




## Pure of Gel CBD

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: 11/11/14	
Submitted:		Tested: 12/15/2014		Reported: 12/30/2014	
				Sample Mass: 1.0549	

### Cannabinoids as Percent of Total Sample Mass

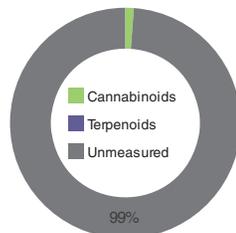


### Terpenoids as Percent of Total Sample Mass

No terpenoids to report

#### Sample Overview

Pure of Gel CBD



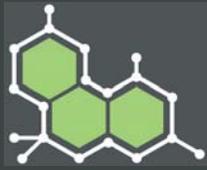
#### Sample Details

Mycotoxin	Not Detected
Pesticide	Not Detected

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ).

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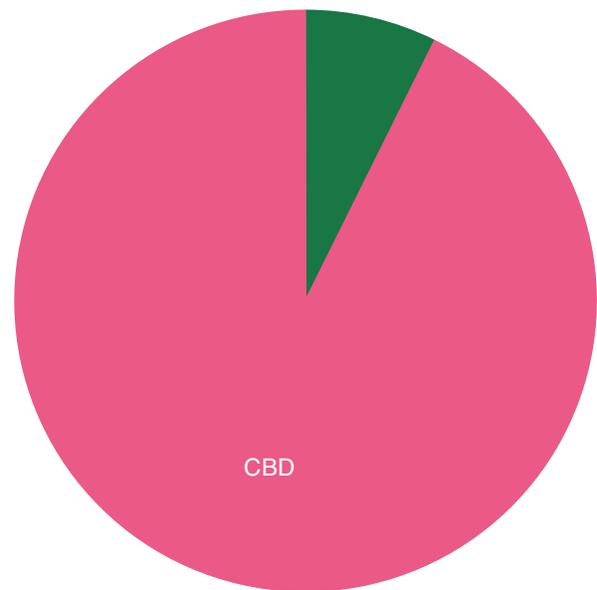


## Pure of Gel CBD

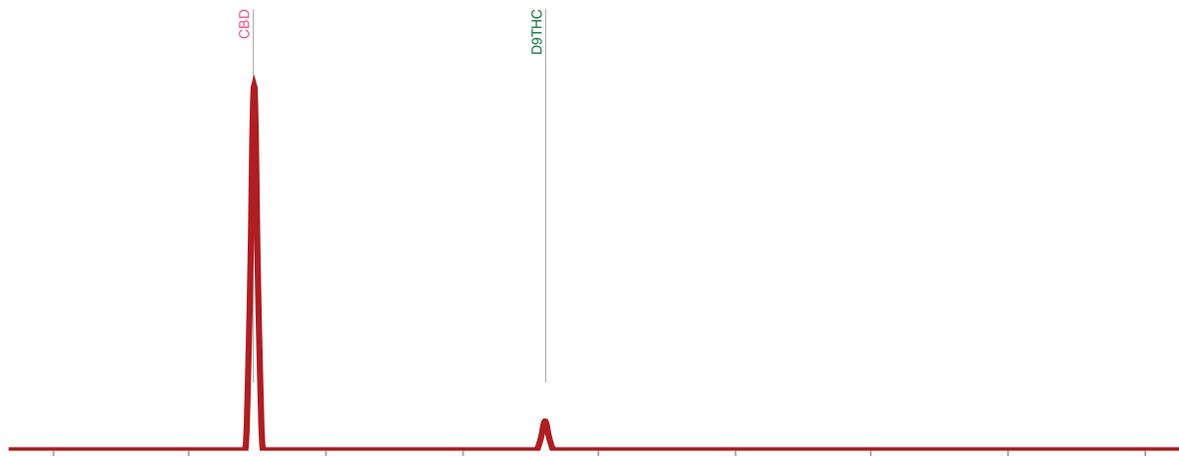
Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: 11/11/14	
Submitted:		Tested: 12/15/2014		Reported: 12/30/2014	
				Samp ID: S349029	
				Sample Mass: 1.0549	

Cannabinoid Profile		
Compound	% mass	≈ mg/g
CBGA	ND	ND
CBG	ND	ND
THCA	ND	ND
THCVA	ND	ND
D9THC	0.087	0.87
D8THC	ND	ND
THCV	ND	ND
CBNA	ND	ND
CBN	ND	ND
CBDA	ND	ND
CBDVA	ND	ND
CBD	1.1	11.0
CBDV	ND	ND
CBCA	ND	ND
CBC	ND	ND
CBLA	ND	ND

Fractions of Measured Cannabinoids

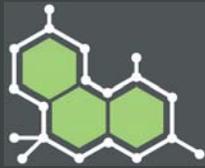


Calculated Liquid Chromatogram



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## Pure of Gel CBD

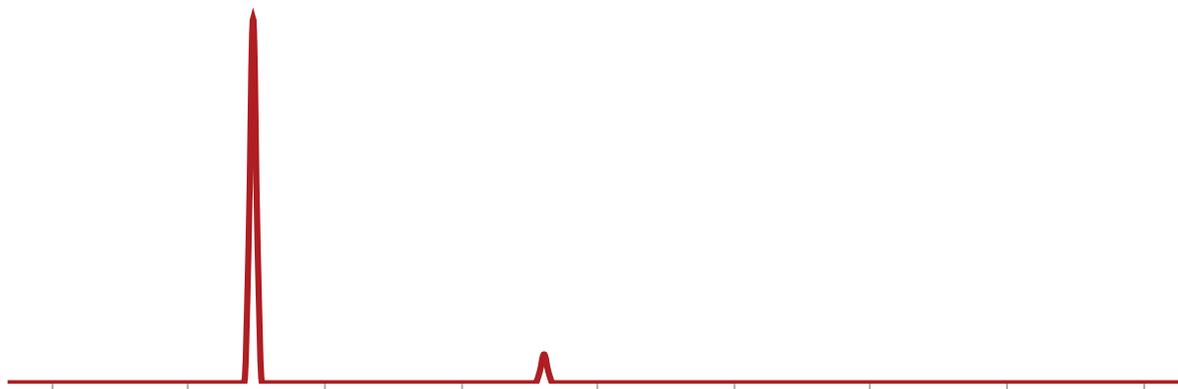
Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: 11/11/14	
Submitted:		Tested: 12/15/2014		Reported: 12/30/2014	
				Samp ID: S349029	
				Sample Mass: 1.0549	

Terpenoid Profile		
Compound	% mass	≈ mg/g
Terpinolene	ND	ND
Linalool	ND	ND
Phytol	ND	ND
Beta Myrcene	ND	ND
Citronellol	ND	ND
Caryophyllene Oxide	ND	ND
Alpha Pinene	ND	ND
Limonene	ND	ND
Beta Caryophyllene	ND	ND
Alpha Humulene	ND	ND

### Fractions of Measured Terpenes

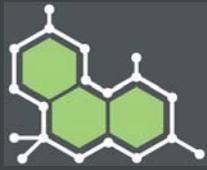
No terpenoids to chart

### Calculated Liquid Chromatogram



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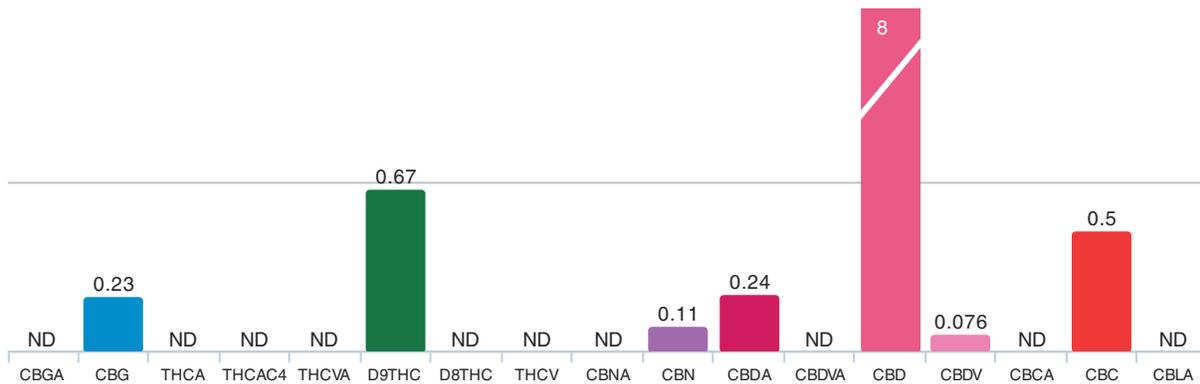




## CBDiol

Customer: Tritonol		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Tincture		Customer's ID: -	
Submitted: -		Tested: 10/15/2014		Reported: 10/15/2014	
				Sample ID: TIN-0138-R01	
				Sample Mass: 1036 mg	

### Cannabinoids as Milligrams per Milliliter



### Terpenoids as Milligrams per Milliliter

No terpenoids to report

#### Sample Overview

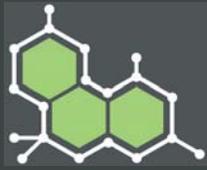


#### Sample Details

Mycotoxin	NOT REQUESTED
Pesticide	NOT REQUESTED
Density	1.04 g/ml

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ).

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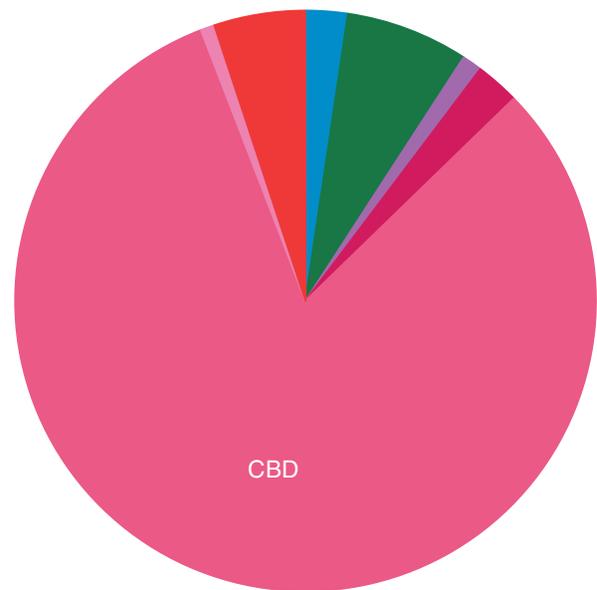


## CBDiol

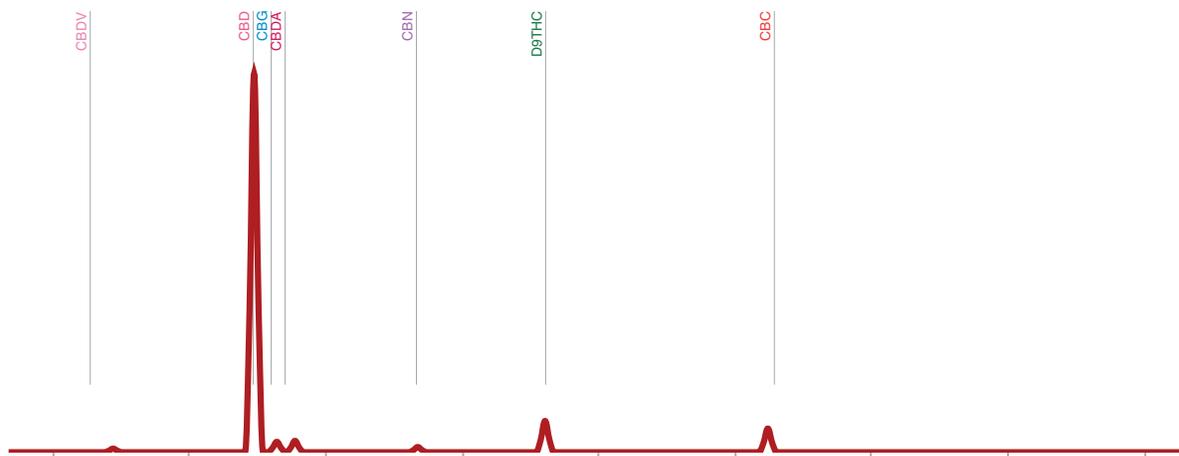
Customer: Tritonol		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Tincture		Customer's ID: -	
Submitted: -		Tested: 10/15/2014		Reported: 10/15/2014	
				Sample ID: TIN-0138-R01	
				Sample Mass: 1036 mg	

Cannabinoid Profile		
Compound	mg/ml	≈ mg/tsp
CBGA	ND	ND
CBG	0.23	1.1
THCA	ND	ND
THCAC4	ND	ND
THCVA	ND	ND
D9THC	0.67	3.3
D8THC	ND	ND
THCV	ND	ND
CBNA	ND	ND
CBN	0.11	0.55
CBDA	0.24	1.2
CBDVA	ND	ND
CBD	8	40
CBDV	0.076	0.37
CBCA	ND	ND
CBC	0.5	2.5
CBLA	ND	ND

Fractions of Measured Cannabinoids

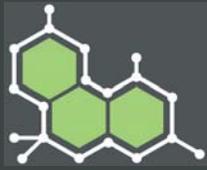


Calculated Liquid Chromatogram



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## CBDiol

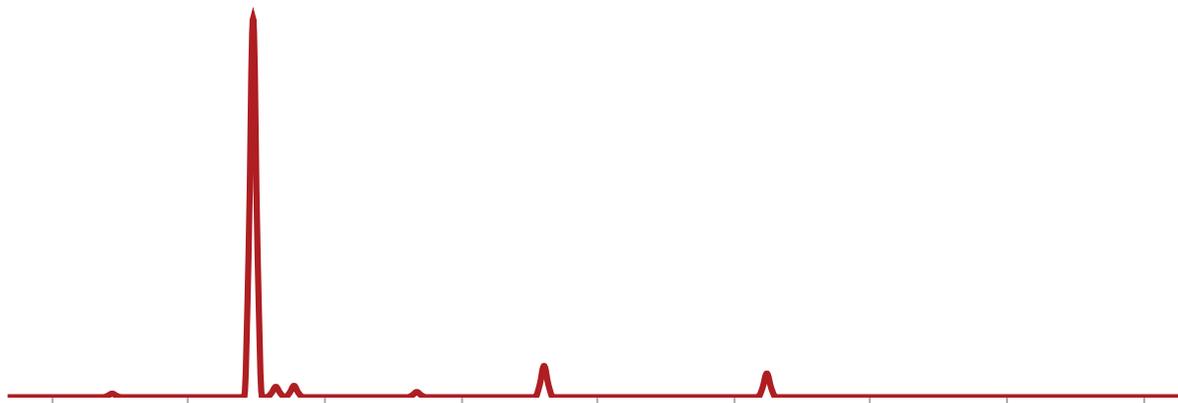
Customer: Tritonol		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Tincture		Customer's ID: -	
Submitted: -		Tested: 10/15/2014		Reported: 10/15/2014	
				Sample ID: TIN-0138-R01	
				Sample Mass: 1036 mg	

Terpenoid Profile		
Compound	mg/ml	≈ mg/tsp
Terpinolene	ND	ND
Linalool	ND	ND
Phytol	ND	ND
Beta Myrcene	ND	ND
Citronellol	ND	ND
Caryophyllene Oxide	ND	ND
Alpha Pinene	ND	ND
Limonene	ND	ND
Beta Caryophyllene	ND	ND
Alpha Humulene	ND	ND

### Fractions of Measured Terpenes

No terpenoids to chart

### Calculated Liquid Chromatogram



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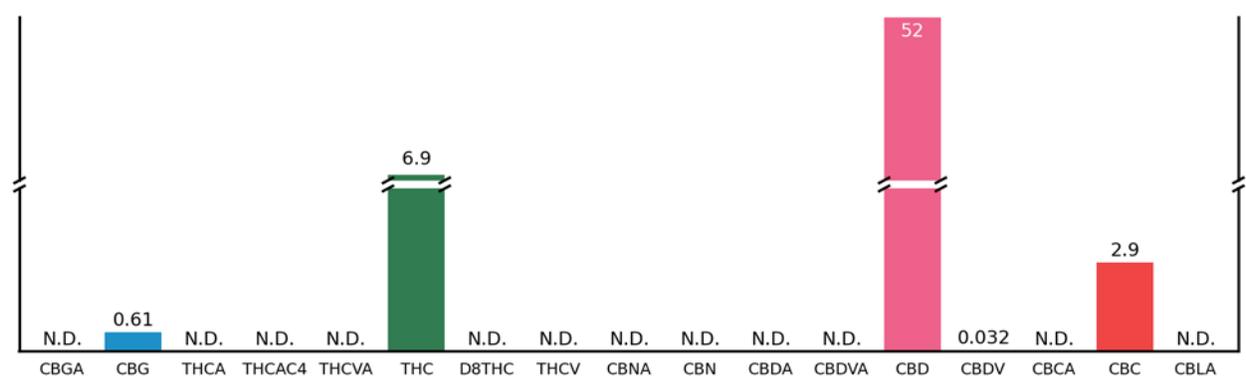




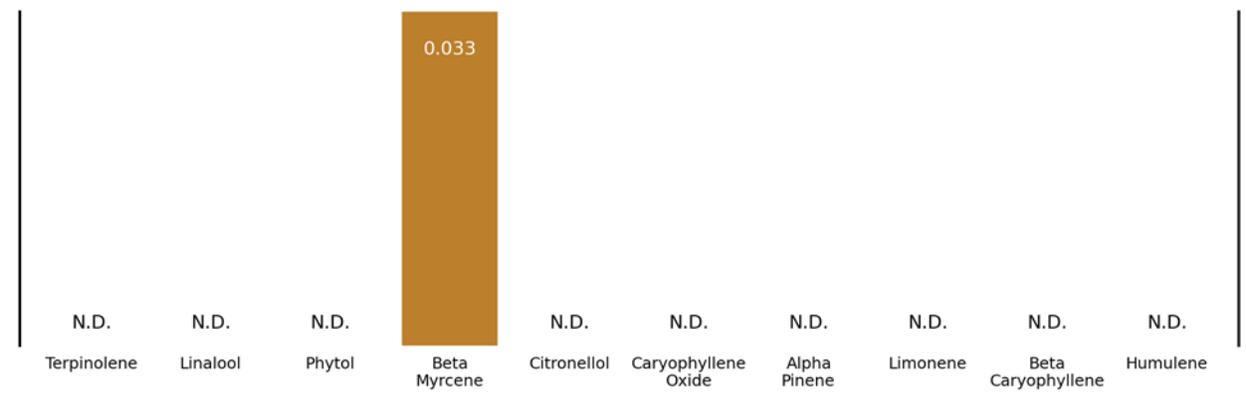
## Large CBD Capsule

Customer: Push Boys	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Capsule	Customer's ID:	Sample ID: C2
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.084 g

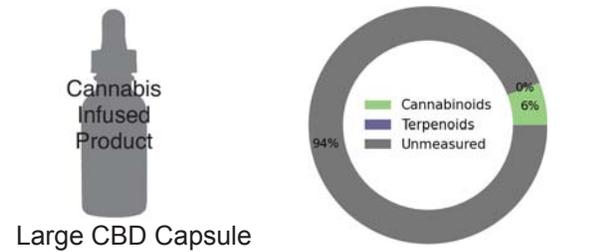
### Cannabinoids as Milligrams per Capsule



### Terpenes as Milligrams per Capsule



### Sample Overview

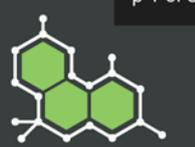


### Sample Details

Pesticides:	Not Requested
Mycotoxins:	Not Requested
Capsules per Package:	1.0
Capsule Mass (g):	1.084

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steepphilllab.com/FAQ](http://www.steepphilllab.com/FAQ)

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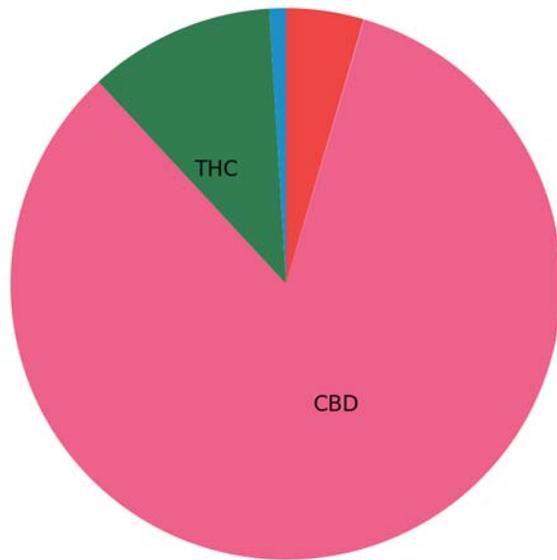
## Large CBD Capsule

Customer: Push Boys		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Capsule		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: C2	
				Sample Mass: 1.084 g	

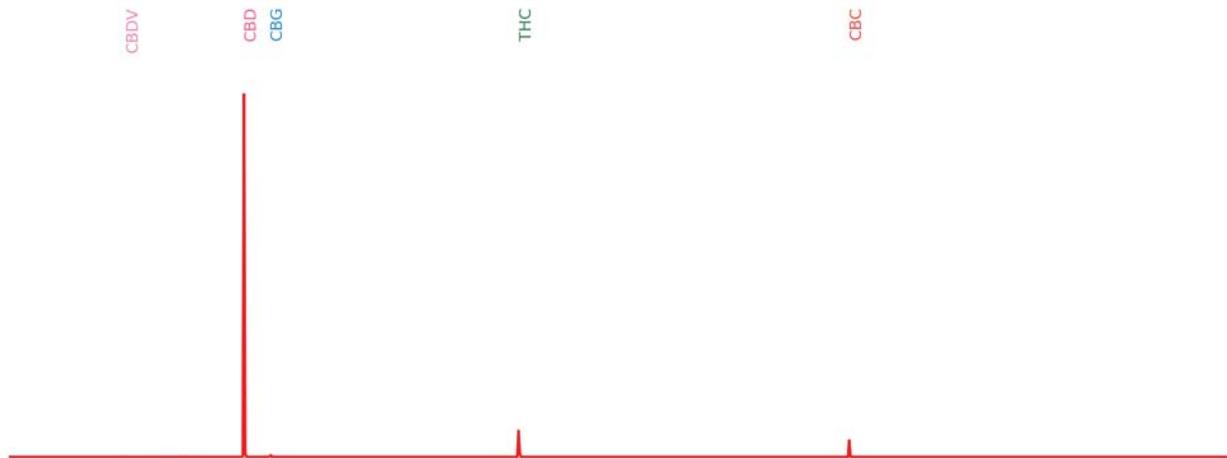
### Cannabinoid Profile

Compound	mg/capsule	mg/pkg
CBGA	N.D.	N.D.
CBG	0.61	0.61
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	6.9	6.9
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	N.D.	N.D.
CBDA	N.D.	N.D.
CBDVA	N.D.	N.D.
CBD	52	52
CBDV	0.02	0.02
CBCA	N.D.	N.D.
CBC	2.9	2.9
CBLA	N.D.	N.D.

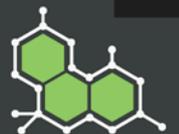
### Fractions of Measured Cannabinoids



### Calculated Liquid Chromatogram



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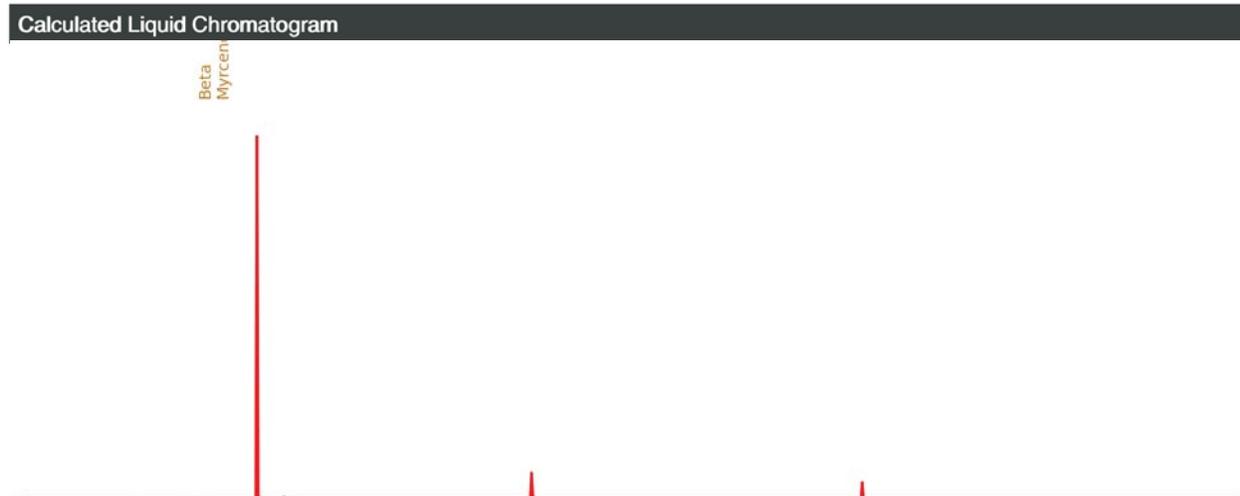
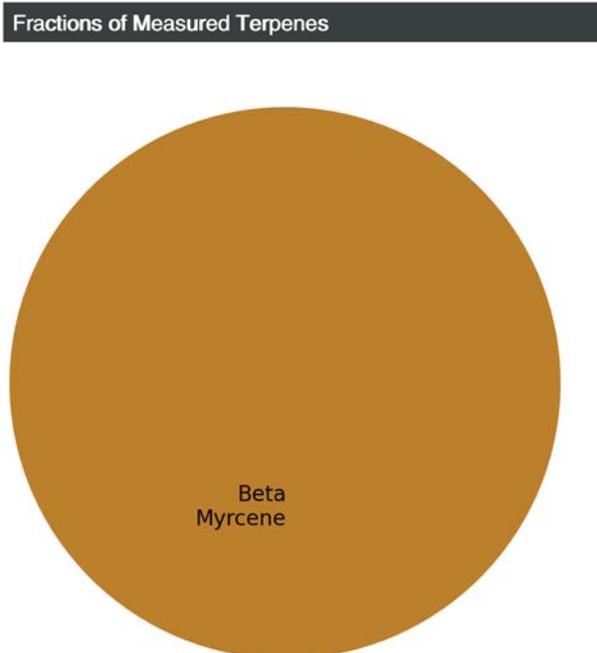




## Large CBD Capsule

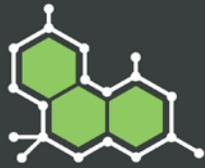
Customer: Bush Boys		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Capsule		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: C2	
				Sample Mass: 1.084 g	

Terpenoid Profile		
Compound	mg/capsule	mg/pkg
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	0.000	0.000
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	N.D.	N.D.
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.



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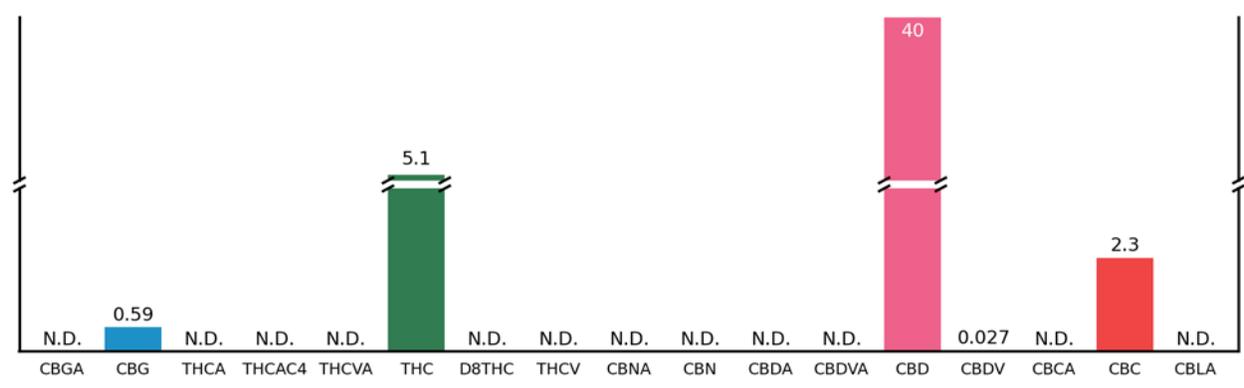




## Small CBD Capsule

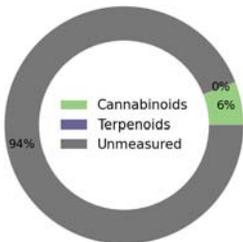
Customer: Push Boys	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Capsule	Customer's ID:	Sample ID: C1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 0.8067 g

### Cannabinoids as Milligrams per Capsule



### Terpenes as Milligrams per Capsule

None Detected

Sample Overview	Sample Details
 <p>Cannabis Infused Product</p> <p>Small CBD Capsule</p> 	<p>Pesticides: Not Re<sub>u</sub>ested</p> <p>Mycotoxins: Not Re<sub>u</sub>ested</p> <p>Capsules per Package: 1.0</p> <p>Capsule Mass (g): 0.8067</p> <p>For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit <a href="http://www.steephilllab.com/FAQ">www.steephilllab.com/FAQ</a></p>

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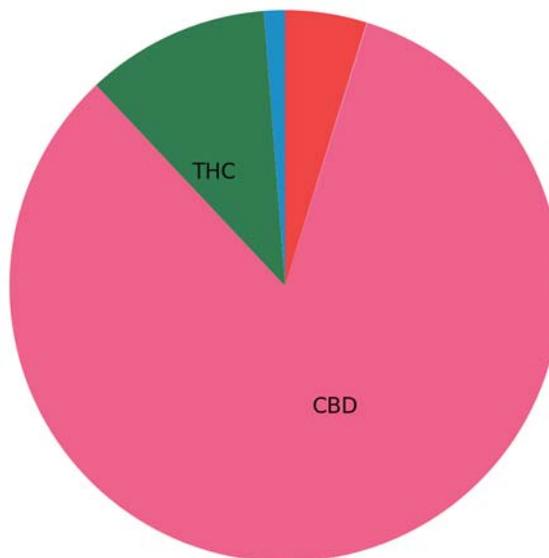
## Small CBD Capsule

Customer: Push Boys		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Capsule		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: C1	
				Sample Mass: 0.8067 g	

### Cannabinoid Profile

Compound	mg/capsule	mg/pkg
CBGA	N.D.	N.D.
CBG	0.59	0.59
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	5.1	5.1
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	N.D.	N.D.
CBDA	N.D.	N.D.
CBDVA	N.D.	N.D.
CBD	40	40
CBDV	0.027	0.027
CBCA	N.D.	N.D.
CBC	2.0	2.0
CBLA	N.D.	N.D.

### Fractions of Measured Cannabinoids



### Calculated Liquid Chromatogram



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## Small CBD Capsule

Customer: Push Boys		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Capsule	Customer's ID:		Sample ID: C1
Submitted: -		Analyzed: -		Reported: -	Sample Mass: 0.8067 g

Terpenoid Profile		
Compound	mg/capsule	mg/pkg
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	N.D.	N.D.
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	N.D.	N.D.
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

### Fractions of Measured Terpenes

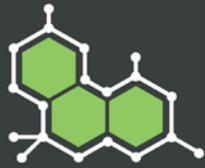
None  
Detected

### Calculated Liquid Chromatogram



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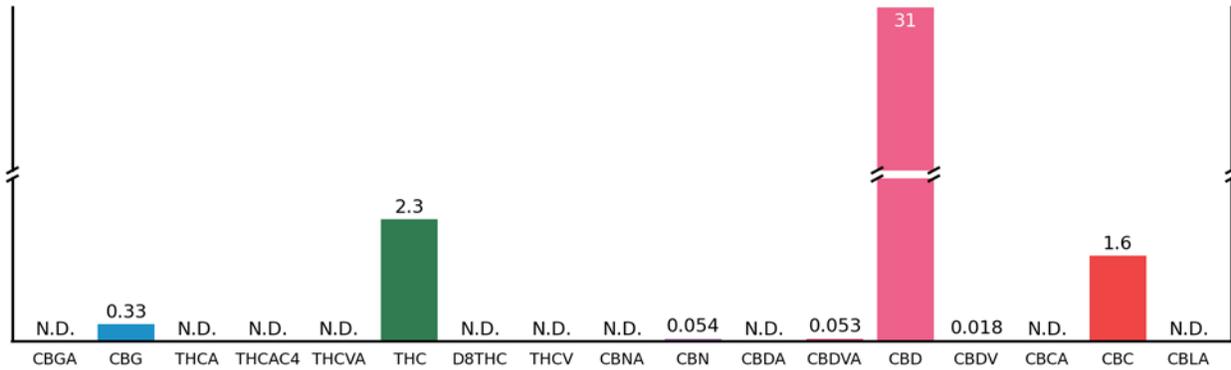




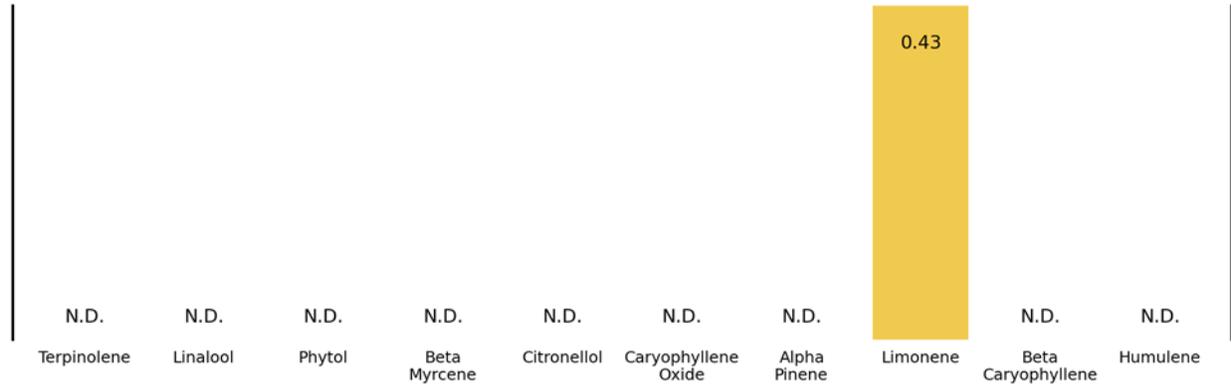
## Sample

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Tincture		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91008_R2D1	
				Sample Mass: 1.071 g	

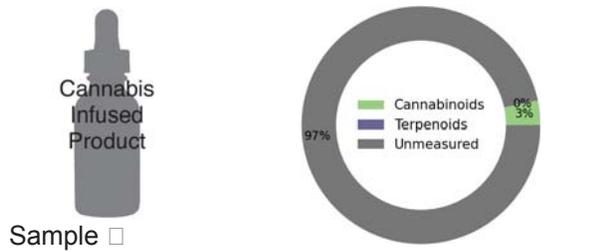
### Cannabinoids as Milligrams per Milliliter



### Terpenes as Milligrams per Milliliter



### Sample Overview

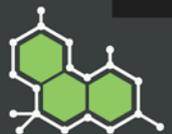


### Sample Details

Pesticides: Not Detected  
 Mycotoxins: Not Detected  
 Density (g/mL): 1.071

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steehilllab.com/FAQ](http://www.steehilllab.com/FAQ)

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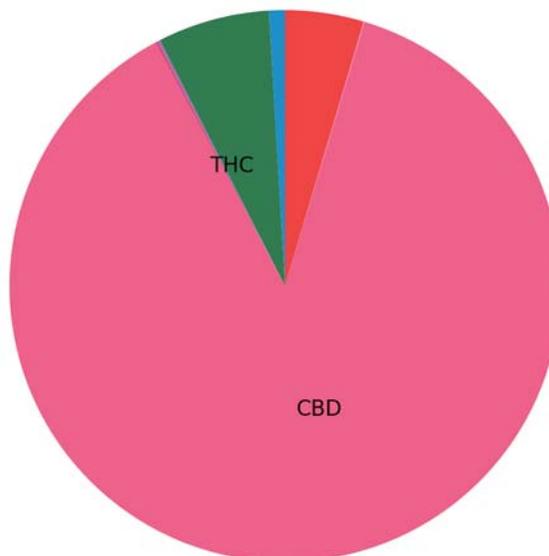
## Sample

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Tincture		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91008_R2D1	
				Sample Mass: 1.071 g	

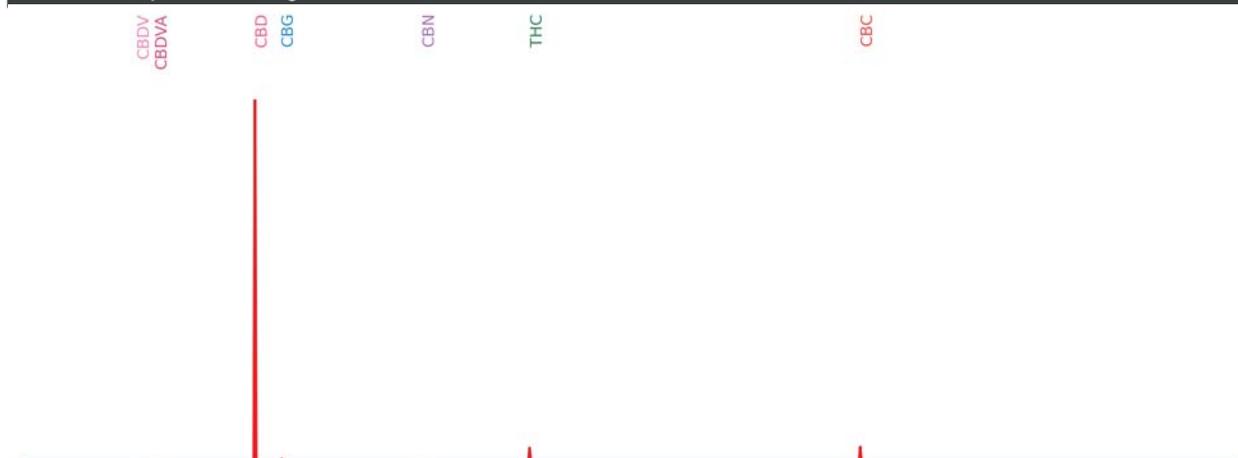
### Cannabinoid Profile

Compound	mg/mL	mg/g
CBGA	N.D.	N.D.
CBG	0.00	0.01
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	2.0	2.2
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	0.054	0.050
CBDA	N.D.	N.D.
CBDVA	0.050	0.049
CBD	0.1	29
CBDV	0.018	0.017
CBCA	N.D.	N.D.
CBC	1.6	1.5
CBLA	N.D.	N.D.

### Fractions of Measured Cannabinoids



### Calculated Liquid Chromatogram



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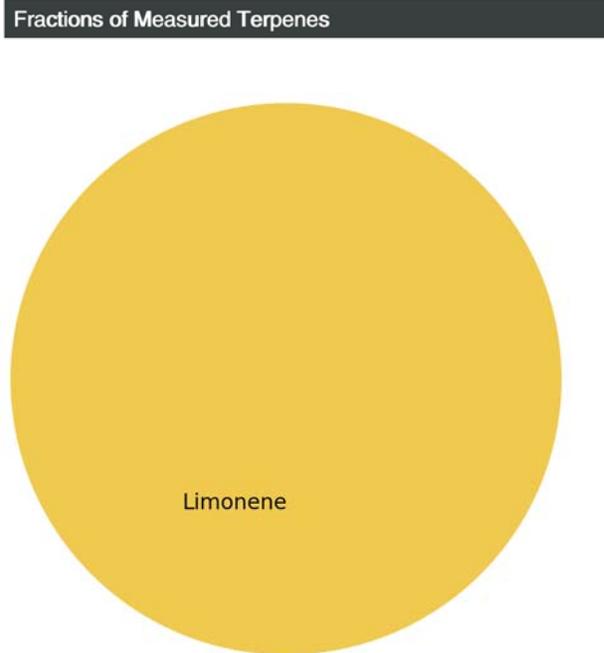




## Sample

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Tincture		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91008_R2D1	
				Sample Mass: 1.071 g	

Terpenoid Profile		
Compound	mg/mL	mg/g
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	N.D.	N.D.
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	0.4 <input type="checkbox"/>	0.40
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.



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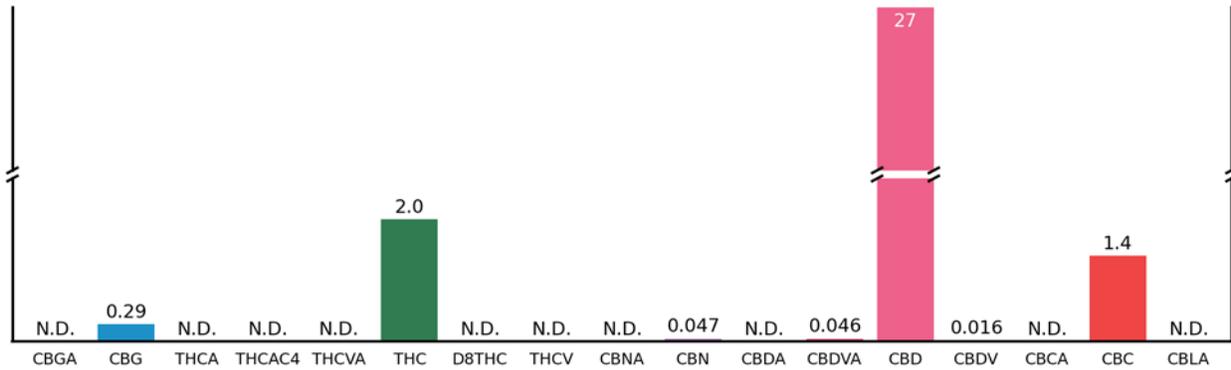




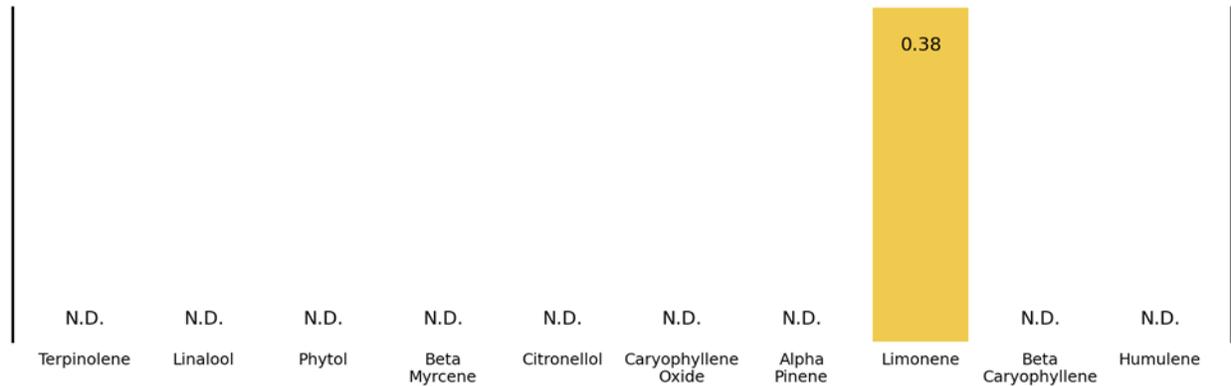
## Sample D

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Concentrate		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91008_R2D1	
				Sample Mass: 0.1041 g	

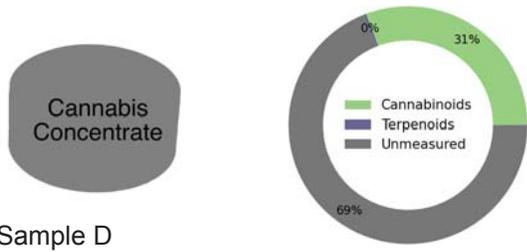
### Cannabinoids as Percent by Mass



### Terpenes as Percent by Mass



### Sample Overview



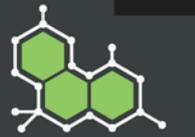
### Sample Details

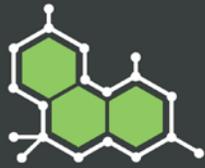
Pesticides: Not Detected  
Mycotoxins: Not Detected

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steepphilllab.com/FAQ](http://www.steepphilllab.com/FAQ)

### Sample D

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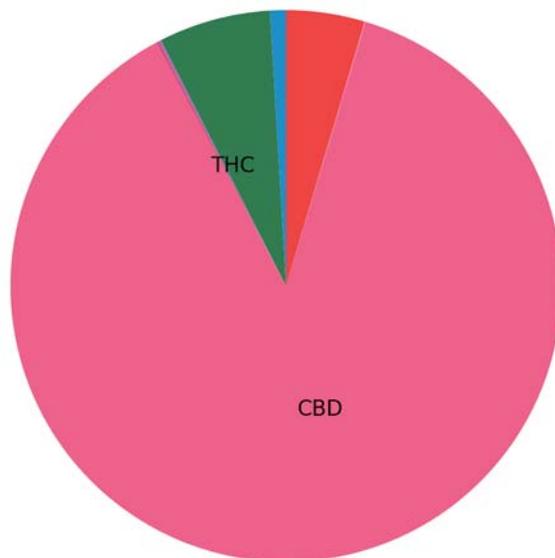


## Sample D

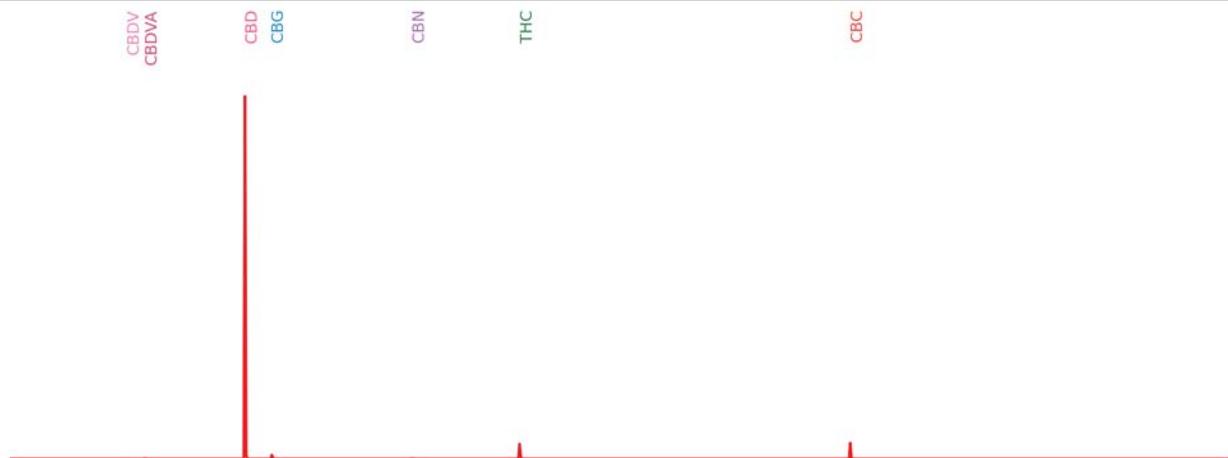
Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Concentrate		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91008_R2D1	
				Sample Mass: 0.1041 g	

Cannabinoid Profile		
Compound	□ Mass	mg/g
CBGA	N.D.	N.D.
CBG	0.29	2.9
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	2.0	20
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	0.047	0.47
CBDA	N.D.	N.D.
CBDVA	0.046	0.46
CBD	27	270
CBDV	0.016	0.16
CBCA	N.D.	N.D.
CBC	1.4	14
CBLA	N.D.	N.D.

Fractions of Measured Cannabinoids

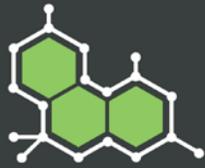


Calculated Liquid Chromatogram



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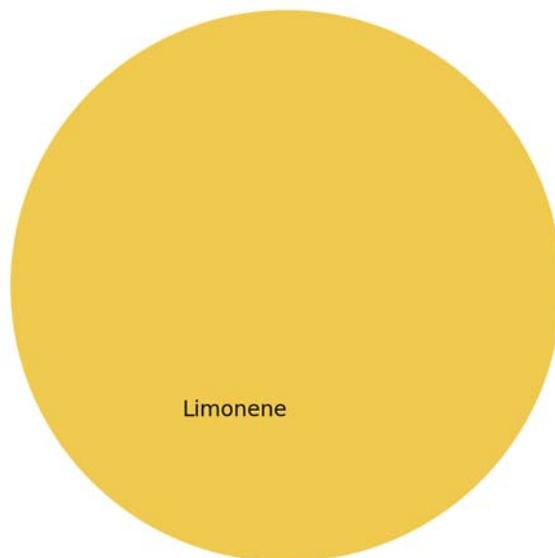


## Sample D

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Concentrate		Customer's ID:	Sample ID: S91008_R2D1
Submitted: -		Analyzed: -		Reported: -	Sample Mass: 0.1041 g

Terpenoid Profile		
Compound	□ Mass	mg/g
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	N.D.	N.D.
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	0.□8	□.8
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

### Fractions of Measured Terpenes

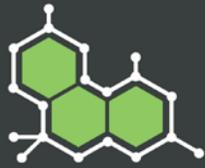


### Calculated Liquid Chromatogram



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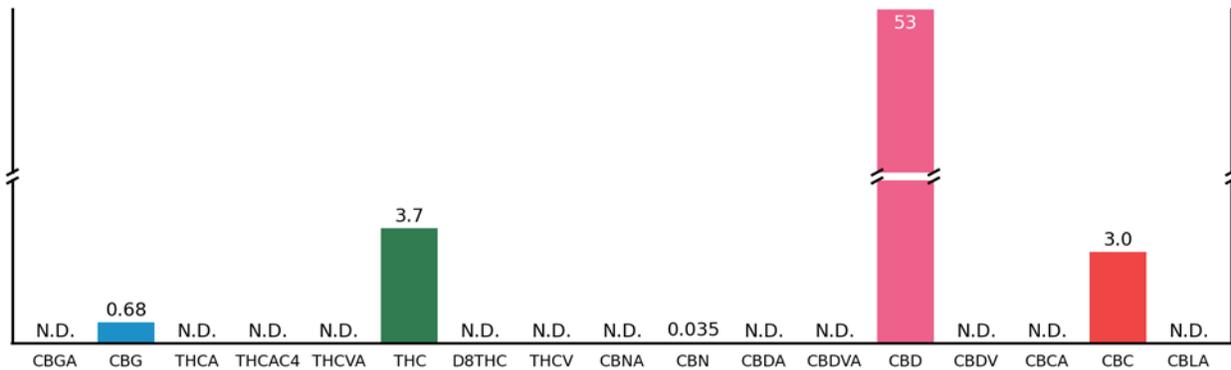




## Sample D

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Capsule		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91009 R1D2	
				Sample Mass: 1.084 g	

### Cannabinoids as Milligrams per Capsule



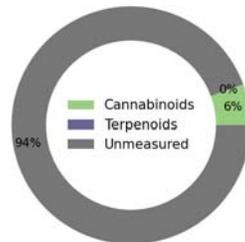
### Terpenes as Milligrams per Capsule

## None Detected

### Sample Overview



Sample D



### Sample Details

Pesticides:	Not Detected
Mycotoxins:	Not Detected
Capsules per Package:	2.0
Capsule Mass (g):	1.084

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ)

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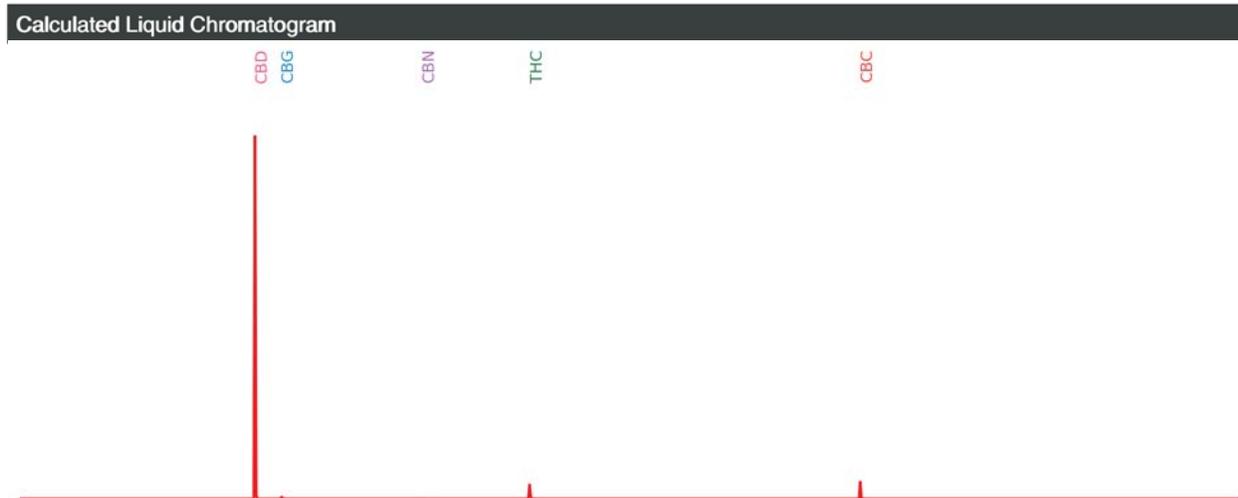
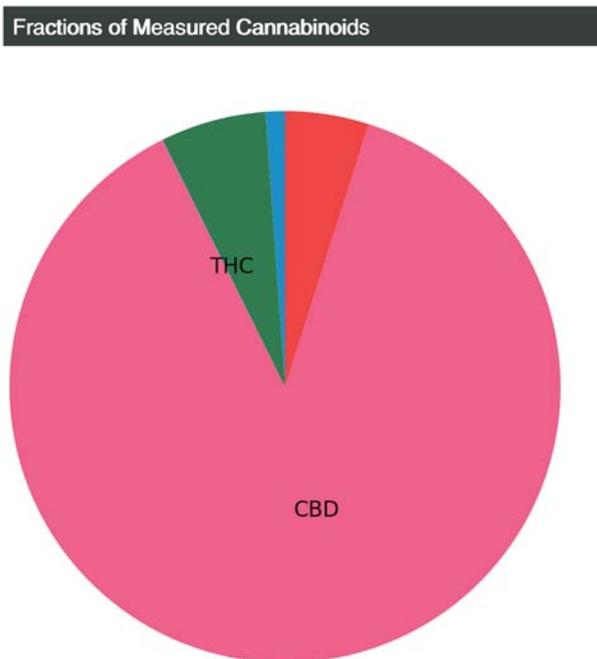




## Sample D

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Capsule		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91009 R1D2	
				Sample Mass: 1.084 g	

Cannabinoid Profile		
Compound	mg/capsule	mg/pkg
CBGA	N.D.	N.D.
CBG	0.68	1.4
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	0.17	7.4
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	0.005	0.069
CBDA	N.D.	N.D.
CBDVA	N.D.	N.D.
CBD	50	110
CBDV	N.D.	N.D.
CBCA	N.D.	N.D.
CBC	0.0	5.9
CBLA	N.D.	N.D.



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## Sample D

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Capsule	Customer's ID:		Sample ID: S91009 R1D2
Submitted: -		Analyzed: -		Reported: -	
Sample Mass: 1.084 g					

Terpenoid Profile		
Compound	mg/capsule	mg/pkg
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	N.D.	N.D.
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	N.D.	N.D.
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

### Fractions of Measured Terpenes

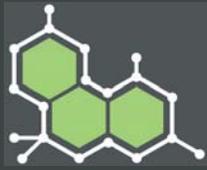
None  
Detected

### Calculated Liquid Chromatogram



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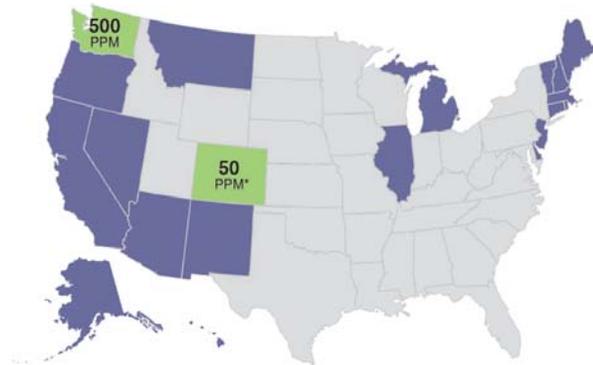


## Pure of Gel CBD

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Residual Solvent Screen		Type: Concentrate		Customer's ID: 11/11/14	
Submitted:		Tested: 12/15/2014		Reported: 12/30/2014	
				Sample Mass: 0.5153	

### Parts Per Million (PPM) Limits

### Test Summary



Total Residual Solvents < 20 ppm

#### COLORADO

CO Retail Mandatory Testing: Basis and Purpose – R 712

- N-Butane, Iso-butane, Propane < 50PPM\*
- Heptane, Isopropyl, Ethanol < 10PPM
- Solvents not pursuant with Rule R 605 < None Detected

#### WASHINGTON

WAC 314-55-104 Marijuana Processor License Extraction Requirements:

- For finished cannabis extract < 500PPM

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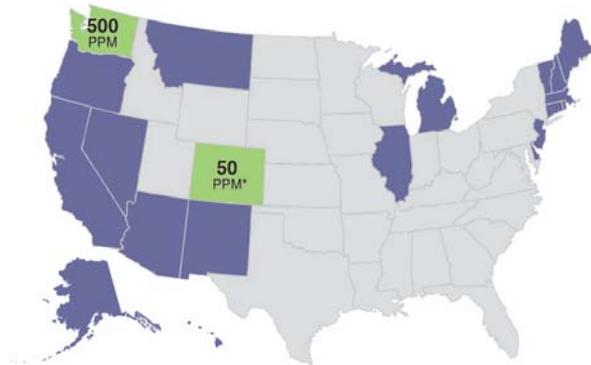




## CBD-75

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Residual Solvent Screen		Type: Concentrate		Customer's ID: 12/2/14	
Submitted:		Tested: 12/15/2014		Reported: 12/30/2014	
				Samp ID: S349028	
				Sample Mass: 0.5209	

### Parts Per Million (PPM) Limits



### Test Summary

Total Residual Solvents < 20 ppm

#### COLORADO

CO Retail Mandatory Testing: Basis and Purpose – R 712

- N-Butane, Iso-butane, Propane < 50PPM\*
- Heptane, Isopropyl, Ethanol < 10PPM
- Solvents not pursuant with Rule R 605 < None Detected

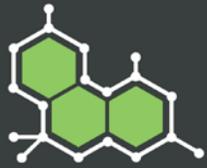
#### WASHINGTON

WAC 314-55-104 Marijuana Processor License Extraction Requirements:

- For finished cannabis extract < 500PPM

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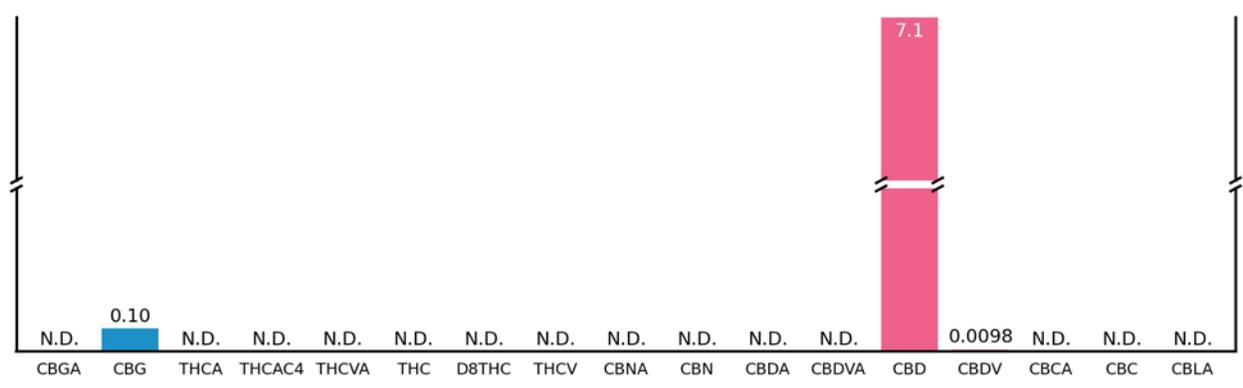




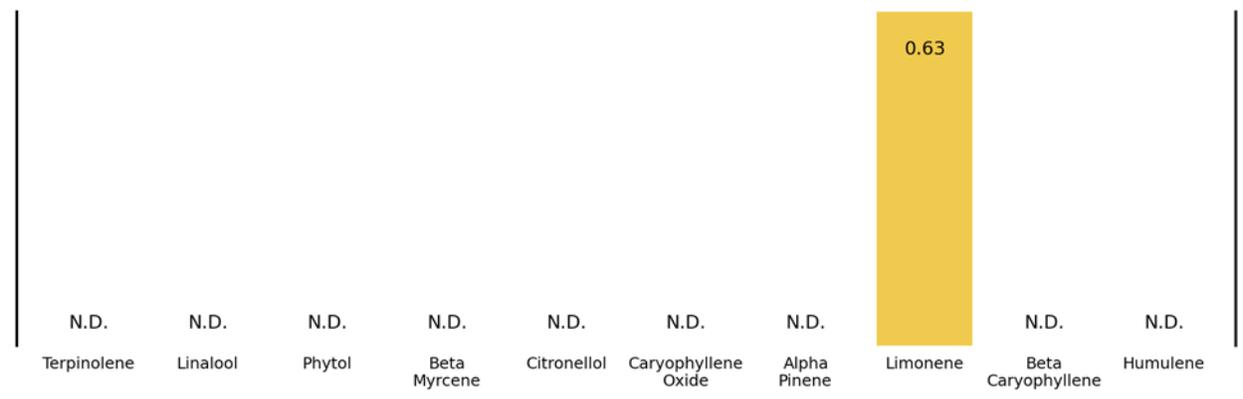
# CBD Tincture

Customer: Push Boys	Test Site: SHL Oakland	Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency	Sample Type: Tincture	Customer's ID:	Sample ID: T1
Submitted: -	Analyzed: -	Reported: -	Sample Mass: 1.054 g

### Cannabinoids as Milligrams per Milliliter



### Terpenes as Milligrams per Milliliter

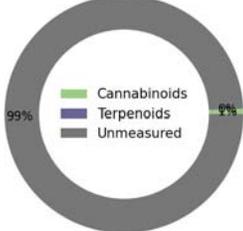


### Sample Overview



Cannabis Infused Product

**CBD Tincture**

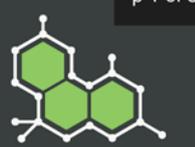


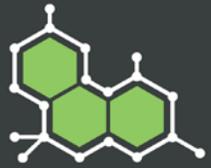
### Sample Details

Pesticides: Not Requested  
 Mycotoxins: Not Requested  
 Density (g/mL): 1.0541

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steehilllab.com/FAQ](http://www.steehilllab.com/FAQ)

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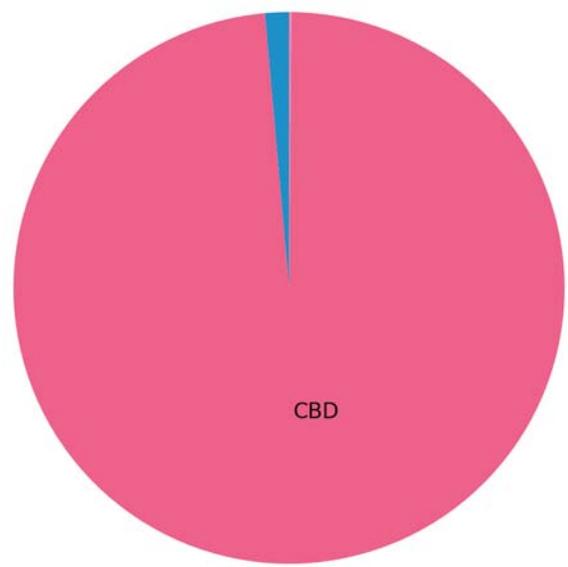


# CBD Tincture

Customer: Push Boys		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Tincture		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: T1	
				Sample Mass: 1.054 g	

Cannabinoid Profile		
Compound	mg/mL	mg/g
CBGA	N.D.	N.D.
CBG	0.10	0.096
THCA	N.D.	N.D.
THCAC4	N.D.	N.D.
THCVA	N.D.	N.D.
D9THC	N.D.	N.D.
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	N.D.	N.D.
CBN	N.D.	N.D.
CBDA	N.D.	N.D.
CBDVA	N.D.	N.D.
CBD	7.1	6.8
CBDV	0.0098	0.009
CBCA	N.D.	N.D.
CBC	N.D.	N.D.
CBLA	N.D.	N.D.

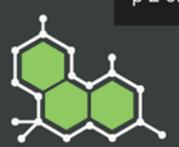
### Fractions of Measured Cannabinoids

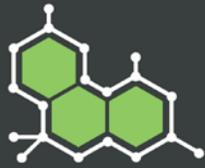


### Calculated Liquid Chromatogram



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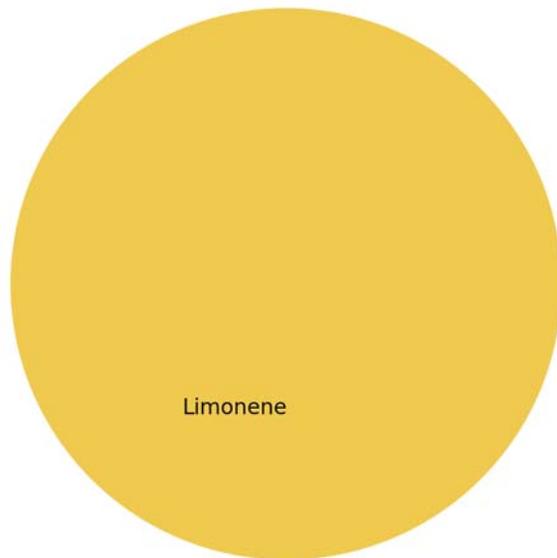


## CBD Tincture

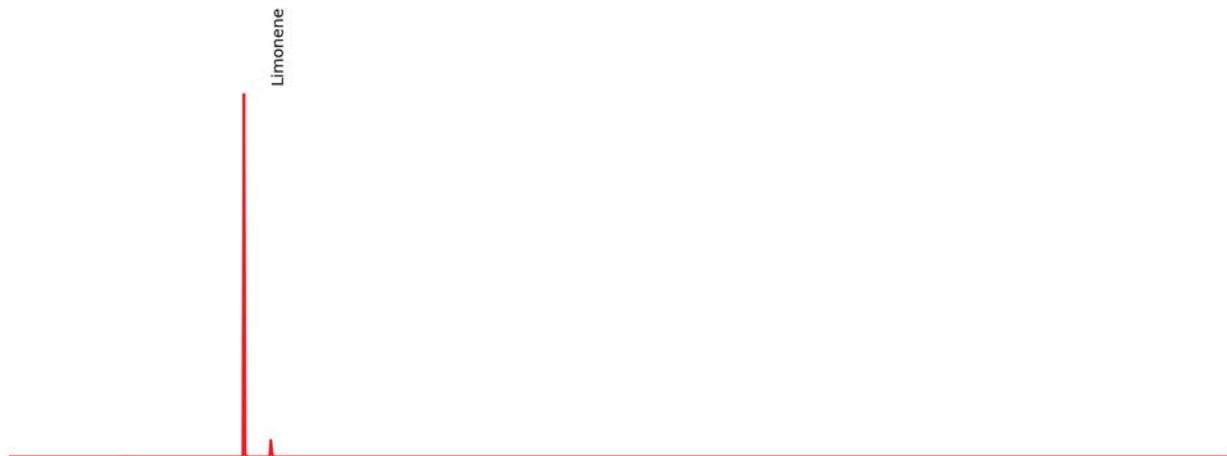
Customer: Bush Boys		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Tincture		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: T1	
				Sample Mass: 1.054 g	

Terpenoid Profile		
Compound	mg/mL	mg/g
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	N.D.	N.D.
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	0.6	0.59
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

### Fractions of Measured Terpenes

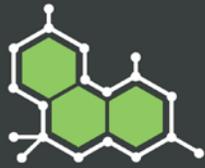


### Calculated Liquid Chromatogram



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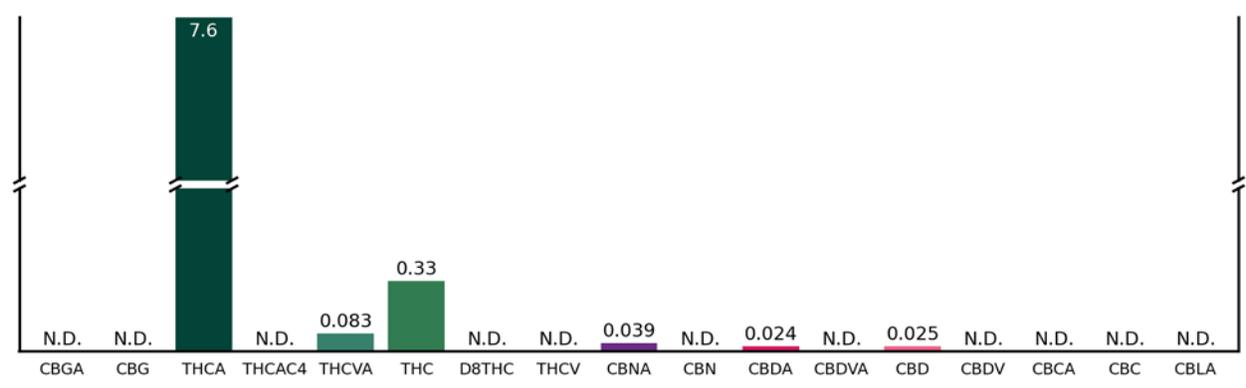




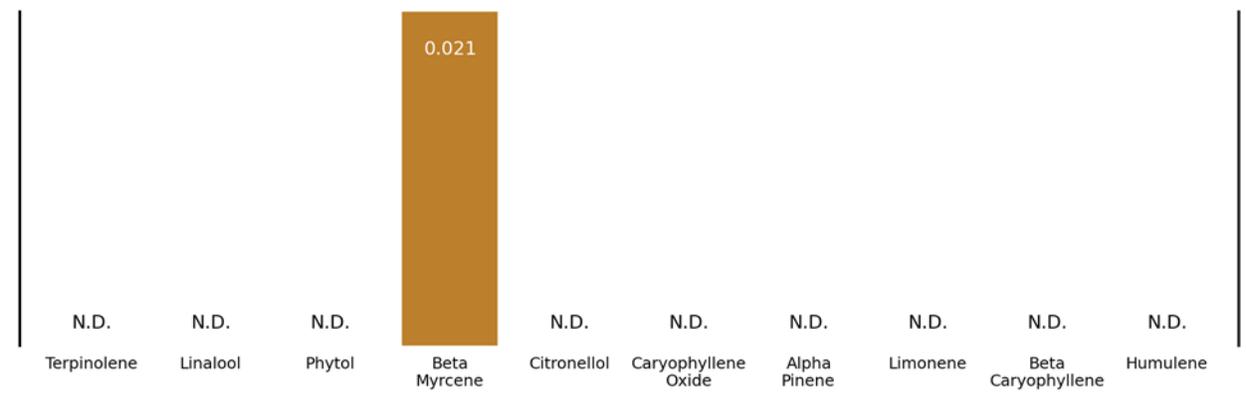
## Sample A

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Concentrate		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91005_R2D1	
				Sample Mass: 0.1156 g	

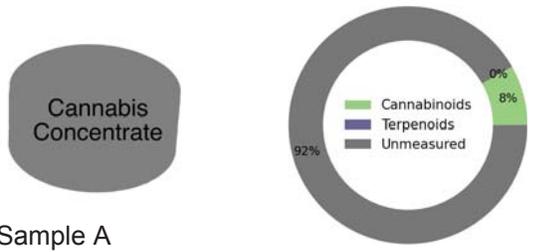
### Cannabinoids as Percent by Mass



### Terpenes as Percent by Mass



### Sample Overview



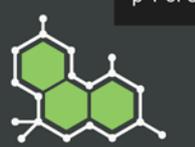
### Sample A

### Sample Details

Pesticides: Not Detected  
Mycotoxins: Not Detected

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ)

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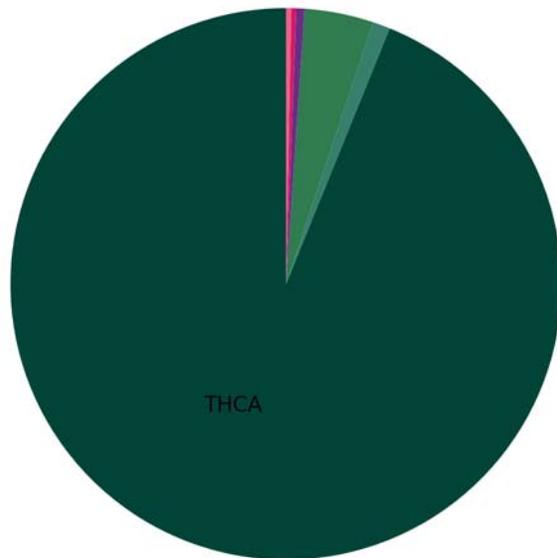
## Sample A

Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Concentrate		Customer's ID:	
Submitted: -		Analyzed: -		Reported: -	
				Sample ID: S91005_R2D1	
				Sample Mass: 0.1156 g	

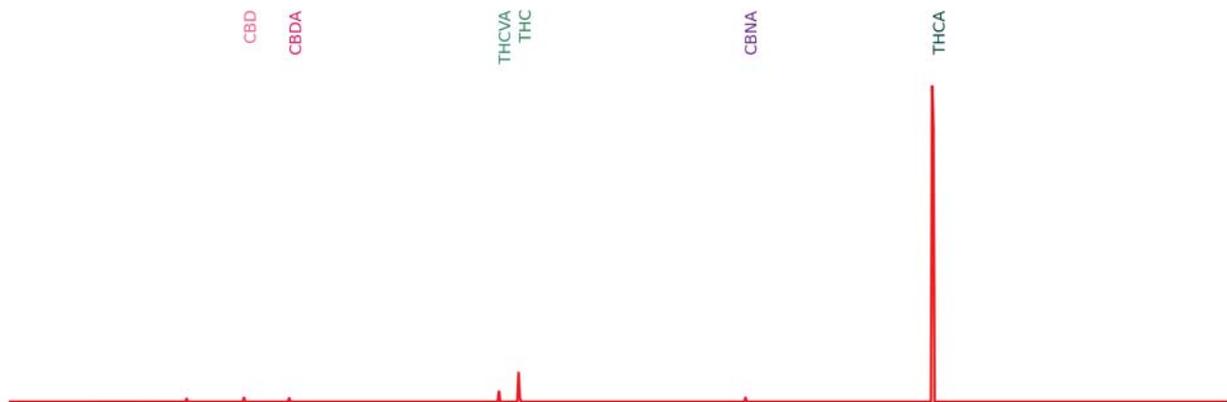
### Cannabinoid Profile

Compound	□ Mass	mg/g
CBGA	N.D.	N.D.
CBG	N.D.	N.D.
THCA	7.6	76
THCAC4	N.D.	N.D.
THCVA	0.08□	0.8□
D9THC	0.□□	□□
D8THC	N.D.	N.D.
THCV	N.D.	N.D.
CBNA	0.0□9	0.□9
CBN	N.D.	N.D.
CBDA	0.024	0.24
CBDVA	N.D.	N.D.
CBD	0.025	0.25
CBDV	N.D.	N.D.
CBCA	N.D.	N.D.
CBC	N.D.	N.D.
CBLA	N.D.	N.D.

### Fractions of Measured Cannabinoids

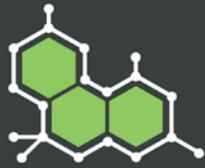


### Calculated Liquid Chromatogram



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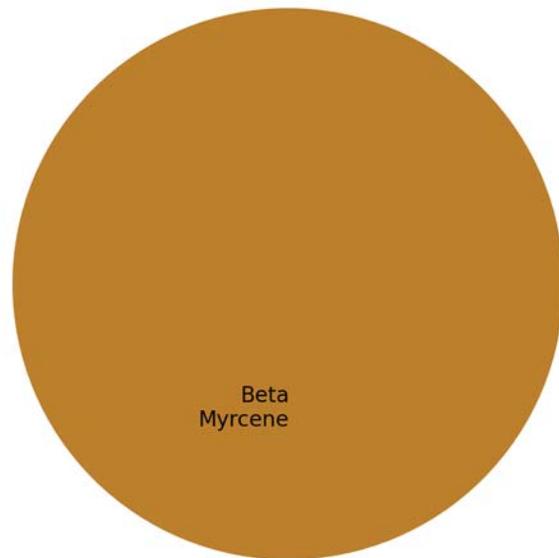


## Sample A

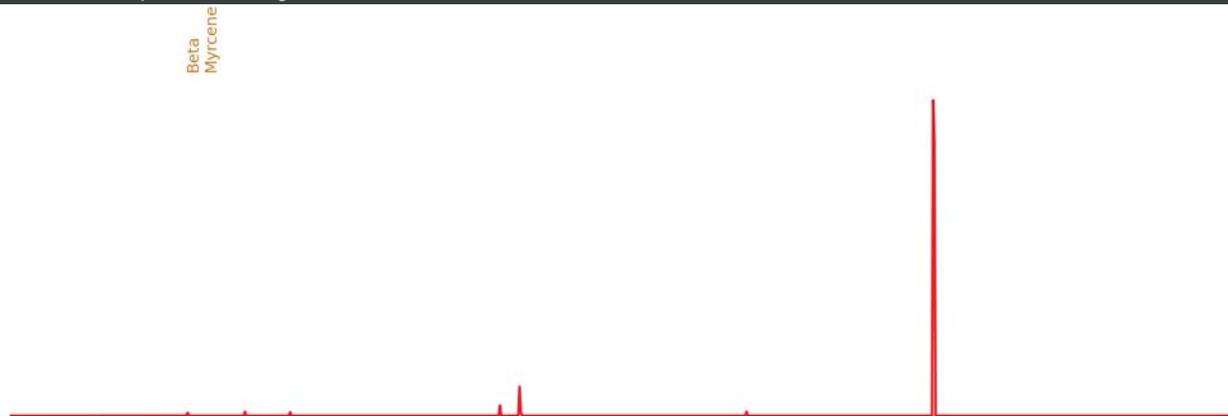
Customer: TRITONOL		Test Site: SHL Oakland		Instrument: HPLC-DAD-MS	
Test: Cannabinoid, Terpene Potency		Sample Type: Concentrate		Customer's ID:	Sample ID: S91005_R2D1
Submitted: -		Analyzed: -		Reported: -	Sample Mass: 0.1156 g

Terpenoid Profile		
Compound	□ Mass	mg/g
Terpinolene	N.D.	N.D.
Linalool	N.D.	N.D.
Phytol	N.D.	N.D.
Beta Myrcene	0.021	0.21
Citronellol	N.D.	N.D.
Caryophyllene Oxide	N.D.	N.D.
Alpha Pinene	N.D.	N.D.
Limonene	N.D.	N.D.
Beta Caryophyllene	N.D.	N.D.
Alpha Humulene	N.D.	N.D.

### Fractions of Measured Terpenes

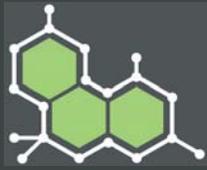


### Calculated Liquid Chromatogram



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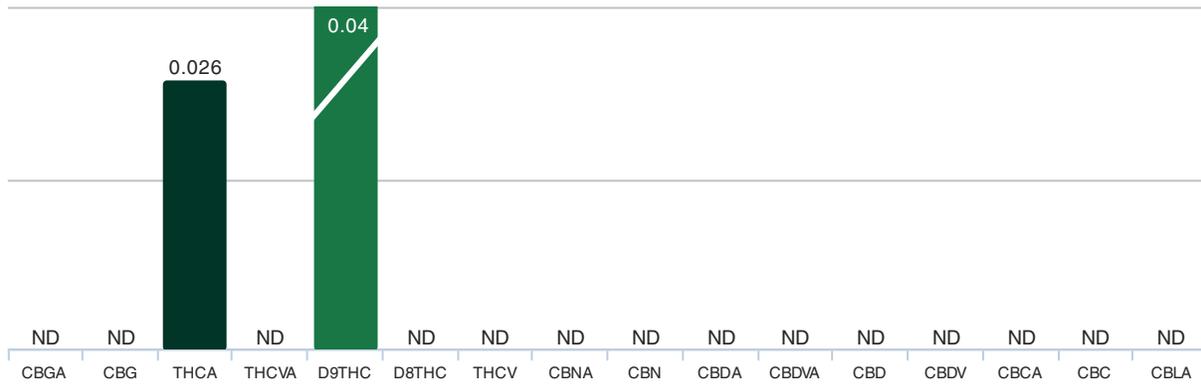




## Sample 4200

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: N/A	
Submitted:		Tested: 12/15/2014		Reported: 12/29/2014	
				Samp ID: S349030	
				Sample Mass: 1.018	

### Cannabinoids as Percent of Total Sample Mass

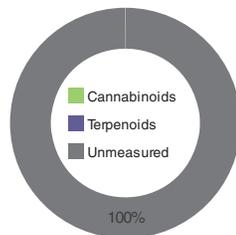


### Terpenoids as Percent of Total Sample Mass

No terpenoids to report

#### Sample Overview

Sample 4200



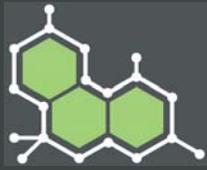
#### Sample Details

Mycotoxin	Not Detected
Pesticide	Not Detected

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steehilllab.com/FAQ](http://www.steehilllab.com/FAQ).

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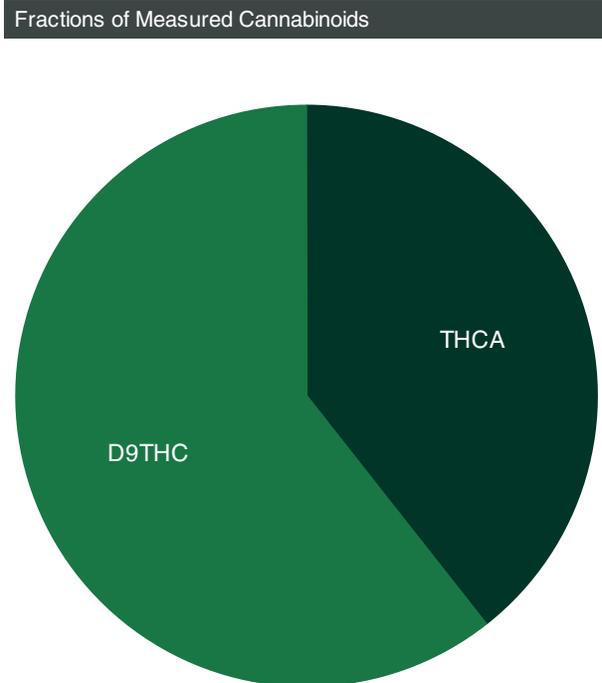




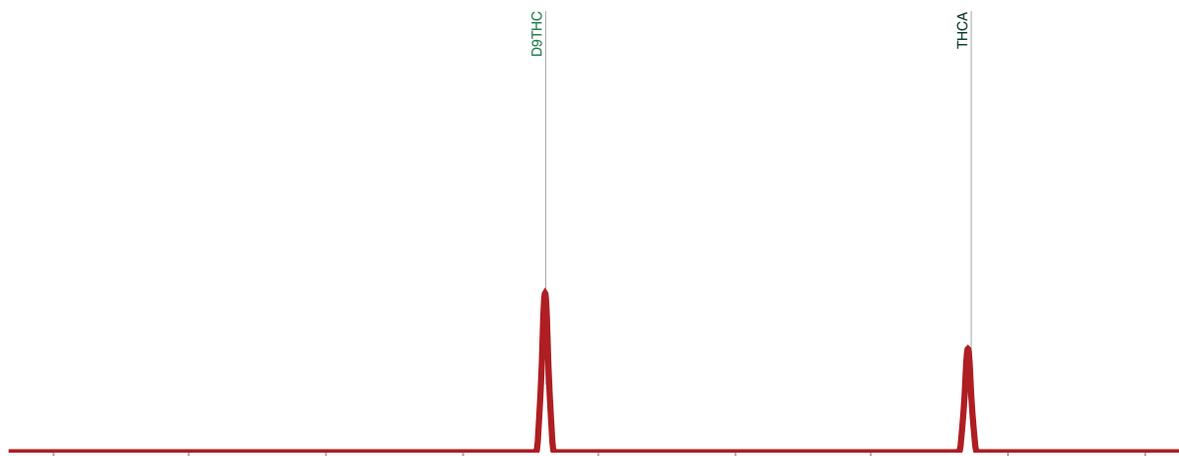
## Sample 4200

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: N/A	
Submitted:		Tested: 12/15/2014		Reported: 12/29/2014	
				Samp ID: S349030	
				Sample Mass: 1.018	

Cannabinoid Profile		
Compound	% mass	≈ mg/g
CBGA	ND	ND
CBG	ND	ND
THCA	0.026	0.26
THCVA	ND	ND
D9THC	0.04	0.4
D8THC	ND	ND
THCV	ND	ND
CBNA	ND	ND
CBN	ND	ND
CBDA	ND	ND
CBDVA	ND	ND
CBD	ND	ND
CBDV	ND	ND
CBCA	ND	ND
CBC	ND	ND
CBLA	ND	ND

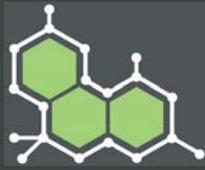


### Calculated Liquid Chromatogram



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## Sample 4200

Customer: TRITONOL		Test Site: OAK		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: N/A	
Submitted:		Tested: 12/15/2014		Reported: 12/29/2014	
				Samp ID: S349030	
				Sample Mass: 1.018	

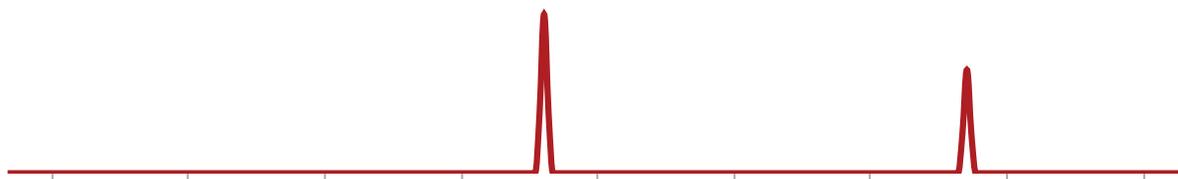
### Terpenoid Profile

Compound	% mass	≈ mg/g
Terpinolene	ND	ND
Linalool	ND	ND
Phytol	ND	ND
Beta Myrcene	ND	ND
Citronellol	ND	ND
Caryophyllene Oxide	ND	ND
Alpha Pinene	ND	ND
Limonene	ND	ND
Beta Caryophyllene	ND	ND
Alpha Humulene	ND	ND

### Fractions of Measured Terpenes

No terpenoids to chart

### Calculated Liquid Chromatogram



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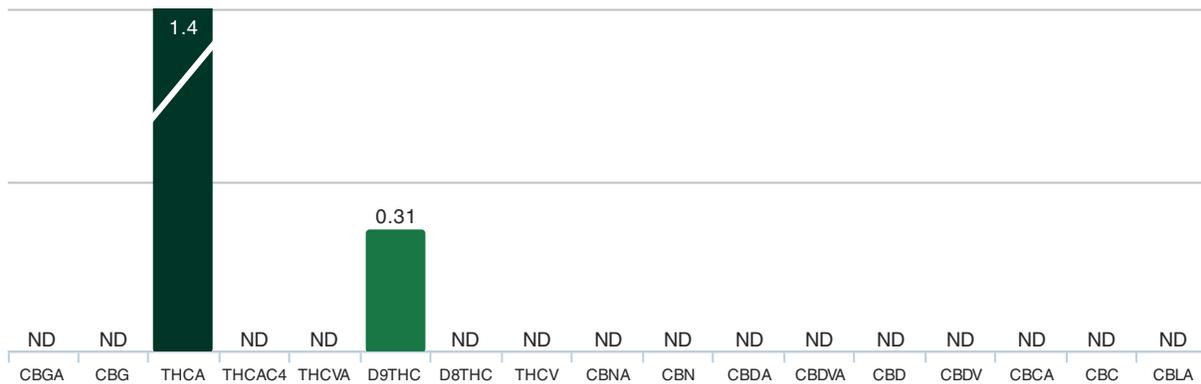




## Sample 2

Customer: Lab Employee		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile	Type: Concentrate	Customer's ID: -	Sample ID: CON-2210-R01		
Submitted: -	Tested: 10/25/2014	Reported: 10/27/2014	Sample Mass: 197.6 mg		

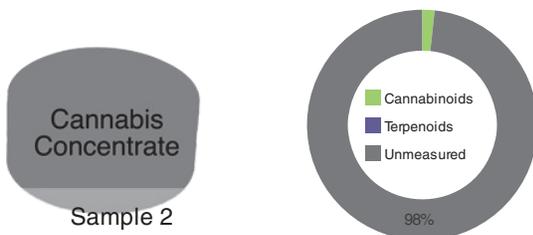
### Cannabinoids as Percent of Total Sample Mass



### Terpenoids as Percent of Total Sample Mass

No terpenoids to report

### Sample Overview



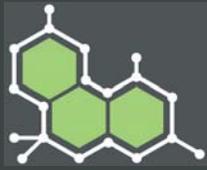
### Sample Details

Mycotoxin	NOT REQUESTED
Pesticide	NOT REQUESTED

For more information about this report, including how to calculate your own approximate post-decarboxylate THC and CBD values, please visit [www.steephilllab.com/FAQ](http://www.steephilllab.com/FAQ).

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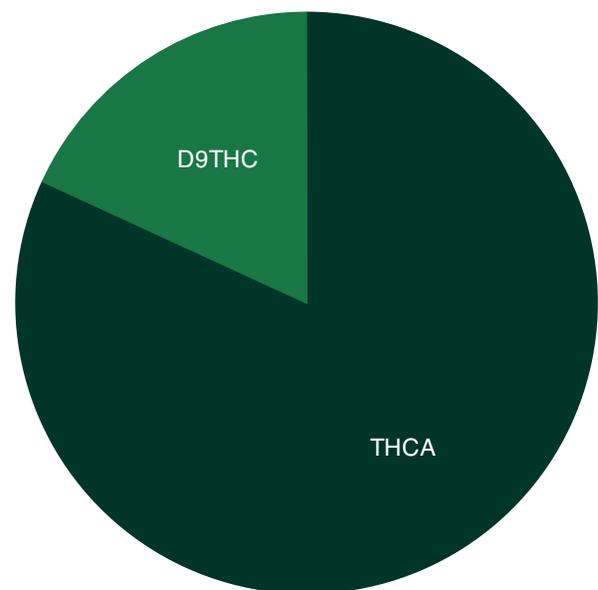


## Sample 2

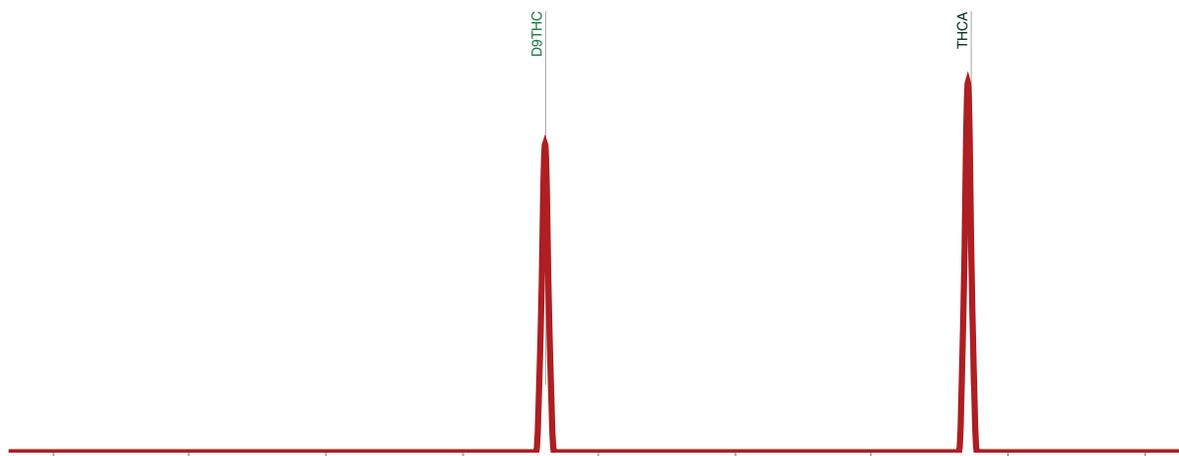
Customer: Lab Employee		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: -	Sample ID: CON-2210-R01
Submitted: -		Tested: 10/25/2014		Reported: 10/27/2014	Sample Mass: 197.6 mg

Cannabinoid Profile		
Compound	% mass	≈ mg/g
CBGA	ND	ND
CBG	ND	ND
THCA	1.4	14
THCAC4	ND	ND
THCVA	ND	ND
D9THC	0.31	3.1
D8THC	ND	ND
THCV	ND	ND
CBNA	ND	ND
CBN	ND	ND
CBDA	ND	ND
CBDVA	ND	ND
CBD	ND	ND
CBDV	ND	ND
CBCA	ND	ND
CBC	ND	ND
CBLA	ND	ND

Fractions of Measured Cannabinoids

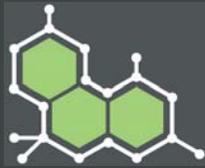


Calculated Liquid Chromatogram



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## Sample 2

Customer: Lab Employee		Test Site: SHL Oakland		Instrument: LCMSMS	
Test: Terpenoid/Cannabinoid Profile		Type: Concentrate		Customer's ID: -	Sample ID: CON-2210-R01
Submitted: -		Tested: 10/25/2014		Reported: 10/27/2014	Sample Mass: 197.6 mg

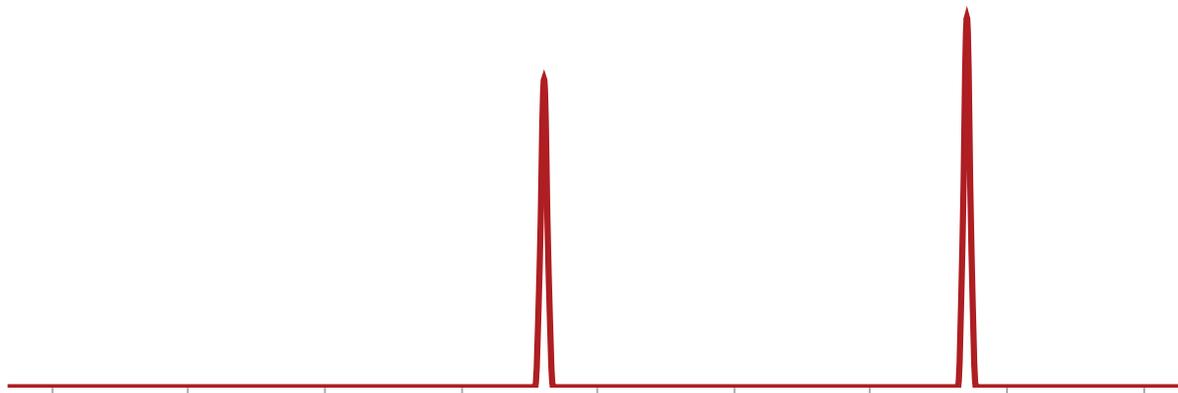
### Terpenoid Profile

Compound	% mass	≈ mg/g
Terpinolene	ND	ND
Linalool	ND	ND
Phytol	ND	ND
Beta Myrcene	ND	ND
Citronellol	ND	ND
Caryophyllene Oxide	ND	ND
Alpha Pinene	ND	ND
Limonene	ND	ND
Beta Caryophyllene	ND	ND
Alpha Humulene	ND	ND

### Fractions of Measured Terpenes

No terpenoids to chart

### Calculated Liquid Chromatogram



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# Appendix C

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## 1. Critical Safety Overview



Throughout these instructions, this symbol is used to indicate that the instructions are critically important to your safety and the safety of your system. Failure to follow the instructions as written can result in a rapid release of high pressure CO<sub>2</sub> potentially causing equipment or personnel damage.



**WARNING**



Subcritical and Supercritical CO<sub>2</sub> systems operate under high pressure. Operators must be fully trained and familiar with the system. Failure to operate the system can result in equipment damage and/or bodily injury.



**WARNING**



Subcritical and Supercritical CO<sub>2</sub> systems use large amounts of CO<sub>2</sub> during operation. Ensure that system is installed in a well-ventilated area to prevent buildup of CO<sub>2</sub> which can cause asphyxiation. Use of a CO<sub>2</sub> monitor is strongly recommended.



**WARNING**



Opening a vessel under pressure can result in a rapid release of pressure and ejection of the material inside the vessel. **DO NOT ATTEMPT TO OPEN A VESSEL UNDER PRESSURE!** Always make sure a vent path for the vessel is opened and the corresponding pressure gage reads zero prior to loosening the vessel closure bolts.



**WARNING**



Subcritical and Supercritical CO<sub>2</sub> systems are designed to operate in doors. Extreme temperatures (below 50°F and above 85°F) will negatively impact the functionality of the system. The environmental temperature range is for the system, chiller, pump and CO<sub>2</sub> bottles.



**WARNING**



Only use Propylene Glycol and distilled water in the chiller and cooling system. Never use Deionized Water in the chiller or cooling system.



**WARNING**



Never turn on the chiller without the thermocouple probe installed and connected to the chiller.



## 2. Unpacking Instructions

CO<sub>2</sub> extraction systems are shipped in three separator crates. One containing the chiller, one containing the air compressor and one containing the botanical extraction system. Following are the steps for removing the system from the crates and making service connections for initial use.

### 2.1. Shipping Crate Inspection

- 2.1.1. Prior to opening the crate(s), verify that that there was no external damage caused to the wood crate. If damage is found, do not accept the delivery from the shipping company without first opening the crate to verify that there was no damage to the system.



Figure 1. Approximate appearance of 1500-5L and 1500-20L Shipping Crate

- 2.1.2. Locate the two TiltWatch Plus sensors on the outside of the crate. Ensure that the crate has not exceeded 30° in any direction. If the crate has exceeded 30°, do not accept the delivery from the shipping company until manufacturer.

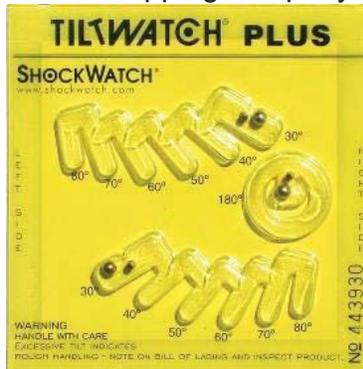


Figure 2. TiltWatch Sensor

## 2.2. Unpacking Instructions

- 2.2.1. Remove the plywood from the all four sides and the top of the crate using a Phillips head screwdriver.



Figure 3. Appearance of crate with top removed

- 2.2.2. Remove the support hardware inside the crate. Support hardware should include a cordless impact wrench, impact wrench socket, 11/16-in open end wrench, 5/8-in ratchet wrench, aluminum funnel, two O-rings, four sanitary gaskets, a flexible metal hose, a vacuum hose, vacuum pump and four rubber coated leveling feet.



Figure 4. Overview image of support hardware

- 2.2.3. Remove the horizontal 2x3s from the top of the crate using a hammer or crowbar.
- 2.2.4. Remove the vertical 2x4s from the four corners of the crate using a hammer or crowbar.
- 2.2.5. Remove the two 2x3s running across the top of the system frame and the two 2x3s running alongside the system frame using a Phillips head screwdriver.



Figure 5. Image of 2x3s support top and sides of system frame



Figure 6. Appearance of crate with 2x3s removed

2.2.1. Using a forklift or pallet jack lift the system off the base of the crate. It may be necessary to tip the system slightly towards the back in order to slide the forks under the stainless steel horizontal frame support members.

2.2.1.1. The system weighs in excess of 600-lbs, take extreme caution when lifting or moving the system. Do not attempt this step without adequate help.

**! WARNING !**

The system weighs over 600-lbs (275-kg), use a minimum of three people to stabilize the system while moving.

2.2.2. Remove the chiller (in cardboard box) from the second crate.

**! WARNING !**

The chiller over 120-lbs, use a minimum of two people or a lift cart when moving the chiller assembly.

2.2.3. Retain the crate and all packing materials for future shipping should the system ever need to be moved to another facility or shipped back to manufacturer.

### 3. System Requirements

#### 3.1. General System Specifications

	1500-5L Extraction System	Chiller/Heater System	Compressor
Vessel Size (liter)	5-L	15-L	80-Gal
Max Pressure (psi)	1500-psi	100-psi	125-PSI
Operating Temperature (F)	14°F - 122°F	14°F - 122°F	N/A
Dimensions (in)	45 X 30 X 77	28 X 15 X 23	54 X 29 X 61
Weight (lbs)	460-lbs	168-LBS	1000-LBS
Power (V/A/Phase)	110/15/1PH	230/12/1PH	230/40/3PH

	1500-20L Extraction System	Chiller/Heater System	Compressor
Vessel Size (liter)	20-L	45-L	80-Gal
Max Pressure (psi)	1500-psi	100-psi	125-PSI
Operating Temperature (F)	14°F - 122°F	14°F - 122°F	N/A
Dimensions (in)	45 X 30 X 77	28 X 15 X 23	54 X 29 X 61
Weight (lbs)	460-lbs	168-LBS	1000-LBS
Power (V/A/Phase)	110/15/1PH	230/12/1PH	230/60/3PH

#### 3.2. Facility

- 3.2.1. Temperature – The 1500-5L and 1500-20L are designed to run in a climate controlled facility, where the temperature is maintained between 50°F and 85°F.
- 3.2.2. Dust Control – The 1500-5L and 1500-20L should not be placed in an environment that has excess dust from other manufacturing operations.
- 3.2.3. Location – The system is designed to be installed on a concrete or similarly stable and flat floor.
- 3.2.4. Compressed Air – Compressed air must be non-lubricated and should be filtered to between 5μ and 40μ and have a dew point between 0°F and 50°F

#### 3.3. Electrical

- 3.3.1. The 1500-5L and 1500-20L have three independent electrical requirements; a 110V, 15A, 60Hz, 1 phase NEMA 5-15 male plug for the systems controller, a 220V, 15A, 60Hz, 1 phase NEMA 6-15 male plug for the chiller/heater, and a hardwired 230-V, 3 phase connection for the air compressor. See chiller and air compressor manuals for additional electrical requirements.
  - 3.3.1.1. Note that the air compressors can also be ordered prewired for 440-V to 480-V circuits.

 **WARNING**   
Do not modify the power connections.

### 3.4. Recirculating Water Chiller/Heater

3.4.1. Recirculating chiller/heater fluid should be a mixture of 50/50 distilled water and propylene glycol.

**⚠ WARNING ⚠**  
Do not use Deionized Water

## 4. Setup and Assembly

1500-5L and 1500-20L system, chiller and air compressor come fully assembled and require only facility hookup and system interconnect installation.

### 4.1. Leveling Feet

- 4.1.1. Use a fork lift or pallet jack to raise the system approximately 6-in off the ground, use clamps or tie down straps to secure the system to the forks/jack to prevent it from tipping.
- 4.1.2. Insert the supplied leveling feet into the four threaded holes on the bottom of the extraction system. Ensure that the leveling feet are not threaded into the scale receiver too far or they will hit the frame and negate scale functionality.



Figure 7. Extraction system leveling feet.

### 4.2. Coolant Connections

**⚠ WARNING ⚠**  
Never turn on the chiller without the remote temperature probe installed and connected to the chiller.

- 4.2.1. Connect the blue cooling lines to the back of the chiller.
  - 4.2.1.1. Connect the free end of the coiled heat exchanger blue cooling line to the outlet port on the back of the chiller. Connect the free end of the upper separator #2 blue cooling line to the inlet port on the back of the chiller.



Figure 8. Location and orientation of coolant lines

4.2.2. The separator side of the extraction system will be pre-assembled. In the event that adjustments need to be made or the system gets taken apart during use, the water flow path should always be from bottom to top in any vertically oriented vessel.

4.2.2.1. For systems with a 4-in separator upgrade. The collection cup has baffles installed that control the coolant flow path. Therefore either cooling line port on the collection cup can be connected to the inlet or outlet.

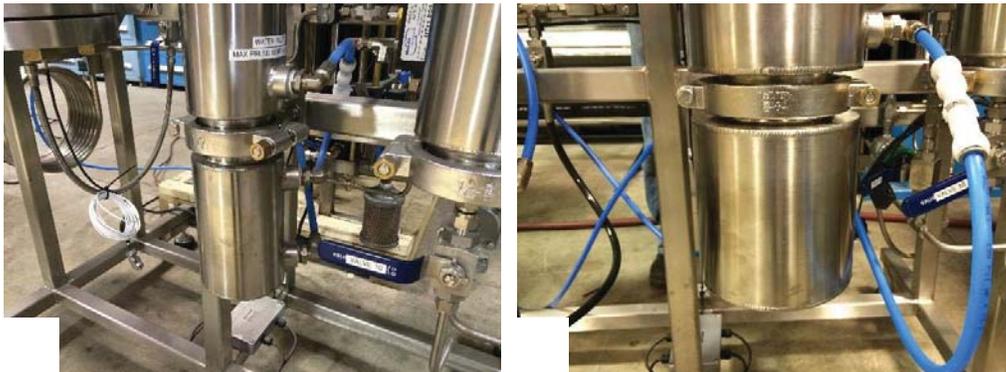


Figure 9. Image of separator coolant lines; a) standard separator b) 4-in separator

4.2.3. The remote temperature probe is typically pre-assembled into the bottom of the 1500-5L and 1500-20L extraction vessels. If it is not installed or it was removed after receipt of the system, install the probe into the tube fitting located off center on the bottom flange of the extraction vessel. The nut on the tube fitting should be tightened 1/8-turn past finger tight or until it is leak free. Additional instructions regarding these tube fittings is available at <http://www.swagelok.com/downloads/webcatalogs/EN/MS-13-151.pdf>



Figure 10. Location of remote temperature probe on bottom of extraction vessel

### 4.3. CO<sub>2</sub> Connections

**⚠ WARNING ⚠**

CO<sub>2</sub> cylinders are under high pressure. Use proper storage and handling procedures to prevent damage and sudden release of CO<sub>2</sub> from the cylinder

- 4.3.1. CO<sub>2</sub> used with the 1500-5L and 1500-20L system should be a 99% purity or better (medical or food grade typically suffice), gas feed, 50-lb, 75-lb or 100-lb high pressure cylinder.
  - 4.3.1.1. The CO<sub>2</sub> cylinder connection is a standard CGA-320 and is provided with the system.
- 4.3.2. The supplied hose should be connected directly to the CO<sub>2</sub> cylinder valve. No regulator is required. A supplied CGA-320 plastic gasket is required to seal the connection between the hose and the CO<sub>2</sub> cylinder.



Figure 11. CO<sub>2</sub> cylinder connection

- 4.3.3. The CO<sub>2</sub> line is typically preassembled on the 1500-5L and 1500-20L systems. If the line was not connected or was removed for cleaning/shipping, reconnect the line to the tube fitting located on top of Valve 12. The connection is a metal-to-metal seal and does not require any thread sealant. Tighten 1/8 turn past finger tight or until leak free. Additional instructions regarding these tube fittings is available at <http://www.swagelok.com/downloads/webcatalogs/EN/MS-13-151.pdf>.

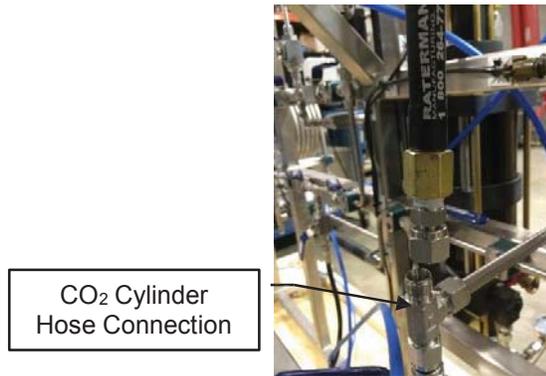


Figure 12. CO<sub>2</sub> Hose Connection

#### 4.4. Air System Connections

4.4.1. The air filter and solenoid valve assembly is typically preassembled on the system. If the assembly was not connected or was removed for cleaning/shipping, reconnect the assembly using two large crescent wrenches. The fittings are brass metal to metal seals. Do not over tighten.



Figure 13. Air filter and solenoid assembly

4.4.2. Connect the air compressor to the blue filter using a 1/2-in male NPT fitting.

- 4.4.2.1. CO<sub>2</sub> system air connection is 1/2" NPT female. Connection to compressed air should be made through a minimum 1/2" inner diameter pipe or flexible hose. Runs longer than 20 feet should be 3/4" minimum inner diameter.
- 4.4.2.2. Always follow the air compressor manufacturer's operating instructions to insure proper performance of the compressed air system.

#### 4.5. Electrical Connections

4.5.1. Hardwire the compressor in accordance with the manufacturer's specifications.

- 4.5.1.1. Ensure that both the compressor and the refrigerant drier are wired correctly.
- 4.5.1.2. The compressor will typically be 230-V or 460-V, 3-Phase. The refrigerant drier is typically 110-V, 1-Phase.

4.5.2. Plug the extraction system control panel into a 110-V, 15-A standard outlet.

4.5.3. Insert and tighten the remote temperature probe's RS232 connection into the back of the chiller in the Remote Probe port.

- 4.5.3.1. The remote temperature probe and the chiller must be connected whenever the chiller's main circuit breaker switch is on. Failure to connect the thermocouple probe will cause the chiller to stop working and require

maintenance from the manufacturer. Damaged caused by operating the chiller without the remote temperature probe installed and connected will not be covered by warranty.

**⚠ WARNING ⚠**

Do not turn plug in or turn on the chiller with remote probe disconnected or disconnect the probe while the chiller is under power



**Figure 14. Chiller/Heater Remote Temperature Probe Connection**  
**DO NOT TURN ON CHILLER WITH REMOTE PROBE DISCONNECTED OR DISCONNECT PROBE WHILE CHILLER IS UNDER POWER!**

#### 4.6. Chiller/Heater Setup

- 4.6.1. Attach the supplied cord to the back of the chiller. See Figure 14.
- 4.6.2. Plug the chiller into a 220-V, 15-A outlet.
- 4.6.3. It may be necessary to adjust the chiller settings for Remote Probe Control mode.
  - 4.6.3.1. To verify chiller is in Remote Probe Control mode, press the Menu button 5 times until the left display shows “P1” or “P2”
  - 4.6.3.2. If left display shows “P1”, then chiller is in Remote Probe Control mode and no other adjustments are necessary. Press menu 1 time so the left display shows water pressure in “psi”.
  - 4.6.3.3. NOTE: When “P1” is displayed on the left screen, the temperature of the water inside the chiller displayed on the right screen.
- 4.6.4. If left display shows “P2”, then press and hold menu button for ~3 seconds, press menu button 6 times until “rP” is displayed on the left, and use the temperature control knob to adjust the right display setting to “rPC”. Wait for 10 seconds for the chiller to reset out of the menu mode.
- 4.6.5. Coolant fluid (50/50 mix of distilled water and propylene glycol) is added to the system through the reservoir cap on the top of the chiller.
  - 4.6.5.1. After the system is operational, recheck the coolant level (while the system is running) and add more coolant as necessary.
- 4.6.6. More detailed operating instructions for the heater/chiller can be found in the manufacturer’s operating instructions.

## 5. System Operation

The following operating instructions are for the 1500-5L and 1500-20L CO<sub>2</sub>-based Botanical Oil Extraction systems. Instructions assume that chiller and CO<sub>2</sub> Booster Pump are OEM supplied. Failure to follow the instructions provided below may void the warranty of the 1500-5L and 1500-20L systems.

### 5.1. 1500-5L and 20L Overview



## 5.2. Automation Systems Overview

- 5.2.1. The Human Machine Interface (HMI) is a touch screen. Almost all of the inputs, outputs and human/machine interactions are managed through the HMI. The features not controlled or reported through the HMI are the Air Compressor maintenance schedule and the chiller/heater temperature setting. Refer to their respective owners manuals for additional operational instructions.
- 5.2.2. The HMI has two functions; 1) to provide information and 2) to accept inputs from the operator. The ways to determine if an action is required by the user are defined below.
  - 5.2.2.1. If a display value or message is colored Red or Orange, an operator must take an action before progressing forward.
    - 5.2.2.1.1. Red indicates messages indicate that a component of the system has either failed to reach the minimum operating pressures or temperatures or that it exceeded the programmed operating limits.
    - 5.2.2.1.2. Orange indicates that an operator activity is required before the Start button can be depressed. Typically, messages highlighted Orange are indicative of a scheduled maintenance interval being reached.
- 5.2.3. Any variable or message that needs to be (or can be) controlled by the operator are graphically raised to illustrate that the “message” is a button. An example of the different graphical representations is shown below.

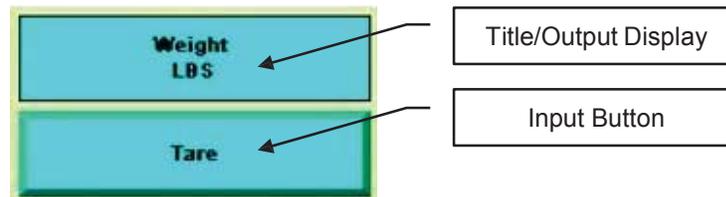


Figure 15. Chiller/Heater Remote Temperature Probe Connection

- 5.2.1. The controller has safety interlocks preprogrammed into it. These safety interlocks prevent unsafe operations from occurring by always monitoring the systems parameters and by removing unsafe action/input control buttons from the HMI. When buttons appear to be missing from the home screen, it is because the system is performing an operation that would be unsafe in combination with the missing button/action.
- 5.2.2. The HMI will provide message popups (in yellow boxes) to instruct the operator what steps are required next in order to complete any action selected. Most message popups are also acknowledgement buttons that must be pressed before any further action can be taken.
- 5.2.3. The primary operating valves on the 1500-5L and 1500-20L are air actuated valves controlled by the systems controller. In the event of an air compressor failure or a power failure all air actuated valve will close automatically.
- 5.2.4. Each air actuated valve has an indicator on the top to inform the operator which valves are open and which ones are closed. The indicator lines correspond with the flow direction. The following figure illustrates both an open and closed valve. Note that it does not matter which way the air actuator is oriented, rather the direction of CO<sub>2</sub> flow is important.

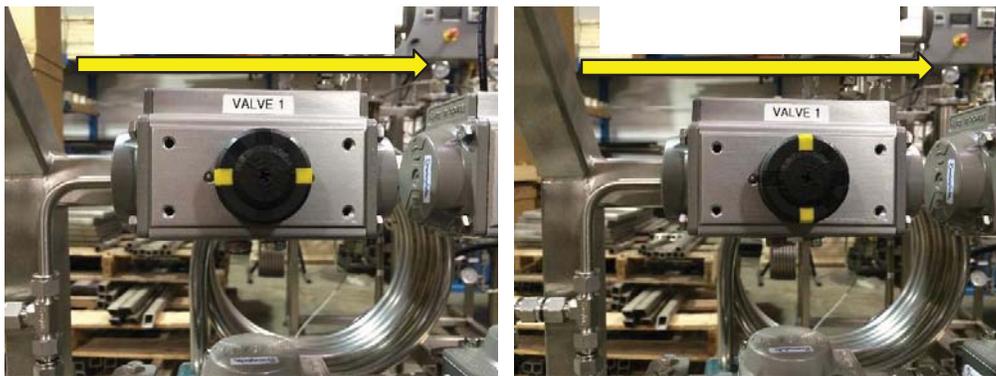


Figure 16. a) Valve 1 in the open position, b) Valve 1 in the closed position

### 5.3. Pre-Cleaning

5.3.1. The 1500-5L and 20L systems are constructed from 304 and 316 stainless steel and can be cleaned with any cleaner that is compatible with both stainless steel and your extracted product. Simple Green cleaner, ethanol and acetone work well for most applications.

5.3.2. The system should be cleaned to the appropriate level (determined by your application and corresponding regulations) prior to processing each batch of botanical material.

5.3.2.1. It is the user's responsibility to ensure that the system meets their required level of cleanliness.

### 5.4. Opening Extraction Vessel



#### **WARNING**



**DO NOT ATTEMPT TO OPEN A VESSEL UNDER PRESSURE!**  
Always make sure a vent path for the vessel is opened and the corresponding pressure gauge(s) reads zero prior to loosening the vessel closure bolts.

5.4.1. This operation cannot be performed during an extraction. The extraction must be stopped prior to opening the Extraction vessel

5.4.2. From the home screen (see Figure 29), press "Go To Manual Screen" button.

5.4.3. From the manual screen (see Figure 30), press the "Open Extractor Vessel" button.

5.4.3.1. If the extractor is under pressure, the system will require the operator to acknowledge that they want to vent all the CO<sub>2</sub> in the extractor.

5.4.4. When the extractor vessel gauge on top of the vessel and on the home screen both read zero, it is safe to move to the next step.

5.4.5. Used the supplied impact wrench to remove the bolts from the top or bottom flange.

5.4.6. Pivot the flange toward the back and let it rest on the integral hinge stops.

5.4.6.1. Use caution not to scratch or otherwise damage the O-ring sealing surfaces on the flanges.



Figure 17. Appearance of extractor vessel in open condition, note bolt can be placed in bolt rack below the flange

## 5.5. Loading Botanical or Other Media

5.5.1. Material to be extracted is loaded directly into the extraction vessel. The supplied funnel can be used to help minimize spillage.

5.5.1.1. Typically botanicals perform best in CO<sub>2</sub> extractions when ground to a particle size between 50 µm and roughly the consistency of coffee grounds.

5.5.1.2. Any amount of material can be loaded into the Extraction Vessel – the vessel does not have to be full in order to operate correctly

5.5.2. Gentle compression or packing can be used to increase the amount of material loaded in the vessel, however heavy compaction should be avoided because it will cause channeling of CO<sub>2</sub> during the extraction process.

## 5.6. Closing Extraction Vessel

5.6.1. Ensure all sealing surfaces are clean and free of debris

5.6.2. Check the O-ring for any visible damage or defects. Replace as necessary

5.6.2.1. The O-ring does not require any lubrication

5.6.3. Close the vessel flange and install each of the closure bolts hand tight

5.6.4. Using the supplied impact wrench and socket, tighten the bolts in a star pattern. Use the supplied impact wrench with 1-2 second bursts to deliver approximately 50 ft-lbs of torque to each bolt. Heavy torquing of the bolts is not required.

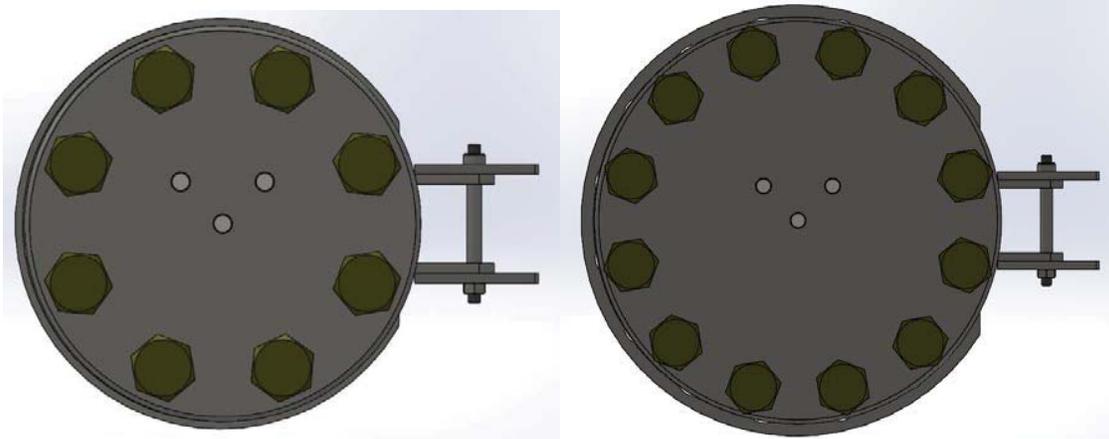


Figure 18. Torque sequence for 1500-5L and 1500-20L extraction vessels

## 5.7. Chiller Start Up

5.7.1. Verify chiller's cooling lines are connected to the extraction system.

- 5.7.2. Turn chiller on
  - 5.7.2.1. The main power switch is located on the back of the chiller see Figure 14
  - 5.7.2.2. The operations power button is located below the black knob on the front of the chiller
- 5.7.3. Set the target temperature to 65°F by quickly depressing the control knob on the chiller and turning it to the appropriate temperature.
  - 5.7.3.1. In the event that the chiller is displaying temperatures in Celsius, turn off the main power switch, press and hold the menu button on the front of the machine and turn on the main power. Then let off the menu button. The chiller will briefly display dF indicating it is set to display temperature in degrees Fahrenheit.

**5.8. Evacuating the System**

- 5.8.1. From the Home Screen (see Figure 29), click the Manual Screen Button.
- 5.8.2. From the Manual Screen (see Figure 30), click the Evacuate Button.
- 5.8.3. Verify that all the gauges on the system display zero pressure.
- 5.8.4. Verify that the supplied vacuum pump is filled with the appropriate oil.
  - 5.8.4.1. Refer to the vacuum pump owners manual for more detailed information.
- 5.8.5. Connect the vacuum gauge, blue vacuum hose and vacuum pump to Valve 10 on the bottom of Separator #2.



**Figure 19. Appearance of correctly connected vacuum gauge, blue vacuum hose and vacuum pump**

- 5.8.1. Open Valve 10.
- 5.8.2. Turn on the vacuum pump.
- 5.8.3. Allow the pump to run for approximately 10-min.
  - 5.8.3.1. If the vacuum gauge does not reach -20 in.Hg, either the pump is faulty or there is a leak in the system.
- 5.8.4. Close Valve 10.
- 5.8.5. Turn off the vacuum pump.
- 5.8.6. Disconnect the vacuum gauge, blue vacuum hose and pump.
- 5.8.7. Press the message button acknowledging that the evacuation is complete
  - 5.8.7.1. The acknowledgement message button will appear on the Manual Screen after pressing the Evacuate Button.
- 5.8.8. Press the Blue Arrow Buttons to select the Go To Home option on the Manual Screen and press the Return button “enter”.

## 5.9. Conducting an Extraction

- 5.9.1. Press the Go To Auto Mode Button on the upper left hand corner of the Home Screen.
  - 5.9.1.1. This resets the controller and enables it to start a new cycle/extraction.
  - 5.9.1.2. The first time you run the system, immediately following a loss of power, or after any abnormal run conditions the system will default to Manual Mode for safety.
- 5.9.2. Verify the chiller is on and target temperature is set to 65°F.
- 5.9.3. Verify that a 50-lb, 75-lb or 100-lb cylinder of CO<sub>2</sub> with a sufficient amount of CO<sub>2</sub> is connected to the system.
- 5.9.4. Verify that material is loaded into extraction vessel and extraction vessel is properly closed
  - 5.9.4.1. The system can be run with no material in the extraction vessel. This can be used as a way to clean the stainless steel tubing upstream of the separation vessel.
- 5.9.5. Verify that the Separator vessels are both closed and sanitary clamps are tight (clamps are considered tight when there is a 1/16-in to 1/8-in between opposing sides of the clamp)

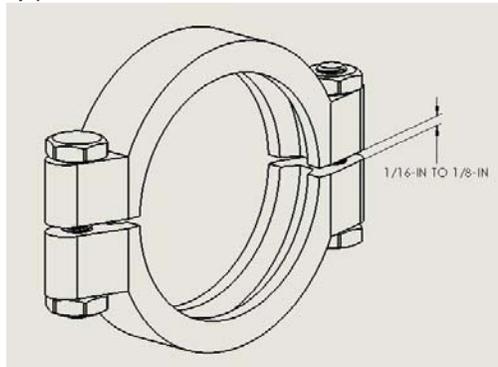


Figure 20. Appearance of tight sanitary clamp

- 5.9.6. Press the Start button on the home screen, Figure 29.
- 5.9.7. After pressing start the system will prompt the operator to;
  - 5.9.7.1. Set Extractor Pressure (between 900-psi and 1400-psi)
    - 5.9.7.1.1. The recommended starting extractor pressure is 1200-psi
  - 5.9.7.2. Set the System Run Time (between 1-hour and 48-hours)
    - 5.9.7.2.1. The recommended run time is 2 hours per pound of botanical
  - 5.9.7.3. Verify the Extractor is properly closed
  - 5.9.7.4. Verify the Separator is properly closed
  - 5.9.7.5. Close Valve 10
  - 5.9.7.6. Open the CO<sub>2</sub> Bottle
- 5.9.8. The system will start filling the vessels with CO<sub>2</sub> to the target extractor pressure.
  - 5.9.8.1. During the filling stage the Home Screen will display a blue box labeled “Filling” to inform the operator of the systems current activities.
- 5.9.9. Once the target extractor pressure is reached, the system information box will change from “Filling” to “Running”. An additional information box will appear indicating the direction of the flow, either “Forward Flow” or “Reverse Flow”.

- 5.9.9.1. The system routinely switches the flow direction to keep the filters from clogging with plant material and to prevent the CO<sub>2</sub> from forming flow channels inside the plant material.
- 5.9.10. The system will continue in run mode until it reaches the target run time, at which point it will begin recovering the CO<sub>2</sub> into the CO<sub>2</sub> cylinder. The information box will switch from “Running” to “Recovering”.
  - 5.9.10.1. The system will prompt the operator to turn up the chiller/heater to 110-F. This helps to speed up the recovery process.
  - 5.9.10.2. It is not a required step, the system will recover without turning up the temperature or acknowledging the message.
    - 5.9.10.2.1. Note that increases the chiller/heater temperature also increases the temperature of the oil in the collection cup.
- 5.9.11. At the end of recovery the system will have approximately 70-psi in all the vessels. The system will provide message boxes to instruct the operator through the final shut down process. The prompts are;
  - 5.9.11.1. Close the CO<sub>2</sub> cylinder
  - 5.9.11.2. Open Valve 10.
- 5.9.12. Once the operator acknowledges that the CO<sub>2</sub> cylinder and Valve 10 are closed, the system will open all valves, vent any trapped CO<sub>2</sub> and wait for the next command.

### 5.10. Removing Spent Botanical

- 5.10.1. From the home screen (see Figure 29), press “Go To Manual Screen” button.
- 5.10.2. From the manual screen (see Figure 30), press the “Open Extractor Vessel” button.
  - 5.10.2.1. If the extractor is under pressure, the system will require the operator to acknowledge that they want to vent all the CO<sub>2</sub> in the extractor.
- 5.10.3. When the extractor vessel gauge on top of the vessel and on the home screen both read zero, it is safe to move to the next step.
- 5.10.4. Used the supplied impact wrench to remove the bolts from the top or bottom flange.
- 5.10.5. Pivot the flange toward the back and let it rest on the integral hinge stops.
  - 5.10.5.1. Use caution not to scratch or otherwise damage the O-ring sealing surfaces on the flanges.
- 5.10.6. Once the extraction vessel is open, the spent botanical material can be removed with a dust collector or stainless steel vacuum.
  - 5.10.6.1. Alternatively, the bottom vessel closure can be opened using the same instructions provided above. With the bottom closure open the botanical will fall out of the vessel and can be collected in a bag or other collection device.

### 5.11. Oil Collection

 **WARNING** 

**DO NOT ATTEMPT TO OPEN A VESSEL UNDER PRESSURE!**  
 Always make sure a vent path for the vessel is opened and the corresponding pressure gauge(s) reads zero prior to loosening the vessel closure bolts.

- 5.11.1. Verify that both Separator vessel gauges read zero and that Valve 10 is open.
- 5.11.2. Remove the flexible metal lines from the top of the separators. Use two wrenches to prevent the NPT fittings from loosening in the separator cap.



Figure 21. Illustration of using two wrenches to remove flexible metal lines

- 5.11.3. Remove the yellow wire connected to the Separator #1 thermocouple.
- 5.11.4. Use the 5/8-in ratchet wrench to remove the high pressure sanitary clamps from the top of both the separator vessels.
- 5.11.5. Remove the caps from the top of both separator vessels.
- 5.11.6. Collect any available oil from the separator caps.
- 5.11.7. Use acetone or alcohol to clean the caps and orifice tube.
  - 5.11.7.1. Separator caps must be cleaned every run.
- 5.11.8. Use the supplied round squeegee to push any residual oil from the sides of the separators down to the bottom of the separators.
- 5.11.9. Use the 5/8-in ratchet wrench to remove the high pressure sanitary clamps from the bottom of the separator vessels.
- 5.11.10. Turn off the chiller/heater
- 5.11.11. Disconnect the two blue water line quick connects on the back of the collection cup.
- 5.11.12. Remove the collection cup from Separator #1 and the bottom cap from Separator #2
- 5.11.13. Collect the oil from inside the collection cup.
  - 5.11.13.1. Note: there is typically residual dry ice in the collection cup mixed in with the oil. The dry ice will sublimate without any additional heat. It is sometimes more efficient to remove the dry ice/oil mixture and place it in collection device (like a Pyrex dish).



Figure 22. Image of collection cup after removal from separator.

- 5.11.14. Use the round squeegee and alcohol or acetone to thoroughly clean the inside of the separators and collection cup.
- 5.11.15. Both separators and the collection cup must be cleaned after each extraction.
- 5.11.16. Reassemble both separators by reversing the steps above.
  - 5.11.16.1. Reconnect the water lines before turning on the chiller/heater.
- 5.11.17. Verify that the system is in its waiting mode and all valves are in the open position.
  - 5.11.17.1. If Valve 11 is not open, skip to the next section.
- 5.11.18. Disconnect the separator outlet line from the cap of Separator #2



Figure 23. Image of separator outlet line after being disconnected.

- 5.11.19. Disconnect the pump inlet line at the tee immediately in front of the pump. Loosen the fitting in the same line (closer to the front of the system so the bent tubing can be pointed downward).



Figure 24. Image of pump inlet line before and after being disconnected.

- 5.11.20. Pour alcohol or acetone into the separator outlet line until the solvent is colorless coming out the end that was connected to the pump inlet. After which use compressed air to blow out the line ensuring that no residual alcohol or acetone remains in the line between the separator and the pump.
- 5.11.21. Reconnect the separator outlet line and pump inlet line.
- 5.11.22. The separator outlet line must be cleaned after each extraction.

## 6. Troubleshooting

### 6.1. Ice On Separator

It is normal for the high pressure clamps and flexible metal lines on the top of the separator to form ice during operation. If ice is forming on the outside of the separator vessels that is an indicator that either the chiller/heater was not connected properly/turned on, the collection cup

water lines were not reconnected, or that the CO<sub>2</sub> cylinders were too cold. If the bottles are below approximately 50°F, it is possible for the chiller/heater to have difficulty maintain system temperature. If ice forms on the outside of the separator vessel, it suggests that the coolant cannot keep up and may be freezing inside the cooling jacket. In either event, the system should be shut down by pressing the Recover CO<sub>2</sub> Button on the Manual. This will put the system into recovery mode so that the cooling system can be inspected or the bottle can warm up. It will take several hours for the ice to thaw if it froze inside the collection cup cooling jacket.

Do not attempt to work on the cooling system while the system is running.

### **6.2. Opened Bottle Too Early**

If the bottle was accidentally opened while the system was in stand by (waiting after previous extraction was completed) there is no way to recover the 100% CO<sub>2</sub>. The only way to correct this event is to slowly open Valve 10 until the separator pressure is below 300-psi. At which point the system can be started and it will operate as normal.

### **6.3. Low Extractor Pressure**

If the extractor pressure is unable to meet the target pressure, first verify that the CO<sub>2</sub> cylinder has sufficient CO<sub>2</sub>. If yes, this is an indicator that the pump seals have reached the end of their life. If the extractor is above 1000-psi, the system will continue producing oil. Adjust the target pressure to 1000-psi and allow it system complete its target run time, it is recommended that the run time be increased by 10% to make up for the reduced extractor pressure. After the system completes the cycle, either rebuild the pump or send it out for a rebuild. Manufacturer can provide contact information for pump rebuild if it is going to be sent out.

### **6.4. Extractor Overpressure – Orifice Clog**

The valveless expansion technology uses a small orifice to regulate pressure. This orifice can become plugged when foreign material is entered into the plumbing between the extraction vessel and separator vessel. Typically, the foreign material is a piece of Teflon tape from the NPT fittings near the orifice.

In the event that separator pressure decreases or extractor pressure increases causing an extractor high pressure fault, it is most likely a plugged orifice. Follow the steps below to clear an orifice clog.

- 6.4.1. From the Home Screen, Press the Manual Screen Button.
- 6.4.2. From the Manual Screen, Press the Clear Clogged Orifice Button.
- 6.4.3. Wait for the system to provide a message popup indicating it is safe to Open Valve 10 and clean the orifice.
- 6.4.4. Open Valve 10
- 6.4.5. Verify that both Separator vessel gauges read zero.
- 6.4.6. Remove the flexible metal lines from the top of the separators. Use two wrenches to prevent the NPT fittings from loosening in the separator cap.
- 6.4.7. Remove the yellow wire connected to the Separator #1 thermocouple.
- 6.4.8. Use the 5/8-in ratchet wrench to remove the high pressure sanitary clamps from the top of Separator #1.
- 6.4.9. Remove the cap from the top of Separator #1.

- 6.4.10. Remove the orifice from the orifice tube using two wrenches to prevent the 45-deg fitting from rotating.
- 6.4.11. Clean the orifice by soaking it in acetone or alcohol and blowing it out with compressed air. Verify the orifice is clear by looking through it.
- 6.4.12. Reassemble the orifice using Teflon tape. Use caution to prevent excess Teflon tape from getting into the orifice. Tighten the orifice assembly such that the orifice is between tangent and +30 degrees from tangent to the separator wall as shown below. This facilitates cyclonic separation and minimizes oil carryover.

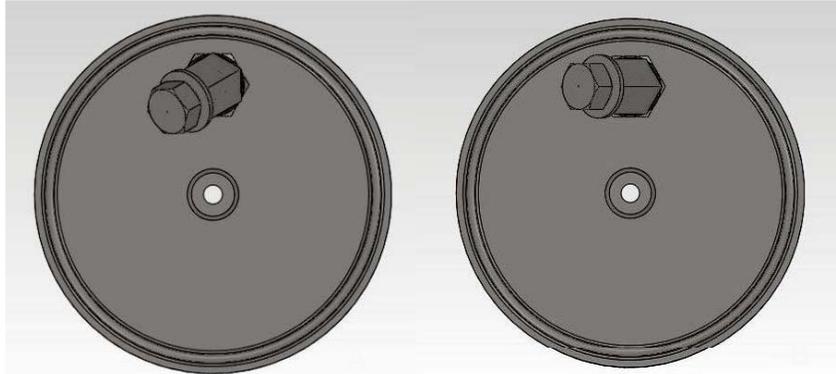


Figure 25. Orifice orientation A) Tangent and B) 30-Deg off tangent

- 6.4.13. Replace the separator cap and tighten the clamp bolts.
- 6.4.14. Reinstall the flexible metal hoses and the thermocouple connection.
- 6.4.15. Close Valve 10.
- 6.4.16. Press the popup message button when orifice is reinstalled, the high pressure clamps are tight and the flexible hoses are reconnected.

### 6.5. Low Separator Pressure – Orifice Clog

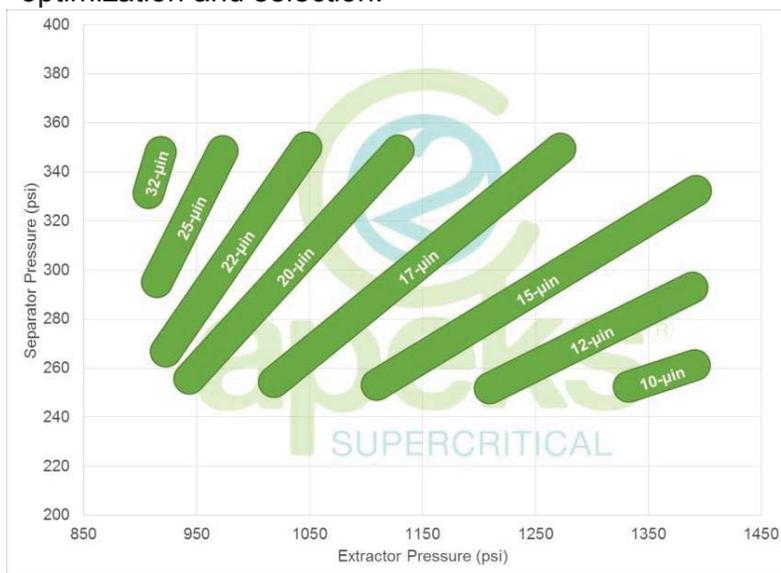
Low Separator pressure is typically caused by one of two things (an orifice clog or the wrong orifice installed). If the system has been operating with the current orifice and consistently maintained a separator pressure between 250-psi and 350-psi, this suggests that the orifice is clogged. To correct an orifice clog refer to the instructions in the section above (Extractor Overpressure).

### 6.6. Low Separator Pressure – Wrong Orifice Size

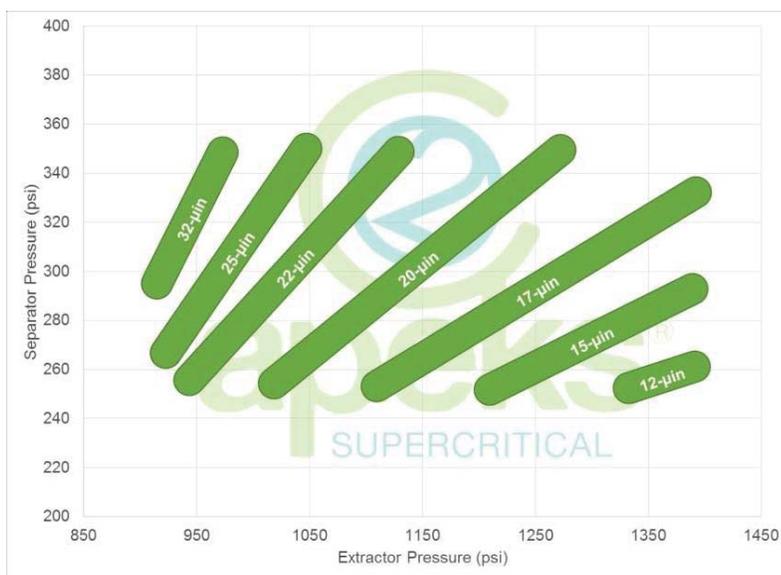
Low Separator pressure is typically caused by one of two things. If the orifice was recently changed or the system was moved to a new location, the low separator pressure is typically an indicator that the installed orifice is too small. To install the correct orifice;

- 6.6.1. From the Home Screen, Press the Manual Screen Button.
- 6.6.2. From the Manual Screen, Press the Clear Clogged Orifice Button.
- 6.6.3. Wait for the system to provide a message popup indicating it is safe to Open Valve 10 and clean the orifice.
- 6.6.4. Open Valve 10
- 6.6.5. Verify that both Separator vessel gauges read zero.
- 6.6.6. Remove the flexible metal lines from the top of Separator #1. Use two wrenches to prevent the NPT fittings from loosening in the separator cap.
- 6.6.7. Remove the yellow wire connected to the Separator #1 thermocouple.
- 6.6.8. Use the 5/8-in ratchet wrench to remove the high pressure sanitary clamps from the top of Separator #1.

- 6.6.9. Remove the cap from the top of Separator #1.
- 6.6.10. Remove the orifice from the orifice tube using two wrenches to prevent the 45-deg fitting from rotating.
- 6.6.11. Use the graphs below to determine which orifice best fits the operating conditions of the system.
  - 6.6.11.1. Note that it is best to run the largest orifice possible to produce the target extractor pressure while maintaining a separator pressure under 350-psi.
  - 6.6.11.2. The graphs are baseline recommendations only, temperature, elevation, and humidity all impact air and CO<sub>2</sub> density—which impact orifice size optimization and selection.



**Figure 26. Orifice selection guide for a 15-hp compressor**



**Figure 27. Orifice selection guide for a 25-hp compressor**

- 6.6.12. Install a larger orifice using Teflon tape. Use caution to prevent excess Teflon tape from getting into the orifice. Tighten the orifice assembly such that the

orifice is between tangent and +30 degrees from tangent to the separator wall as shown below. This facilitates cyclonic separation and minimizes oil carryover.

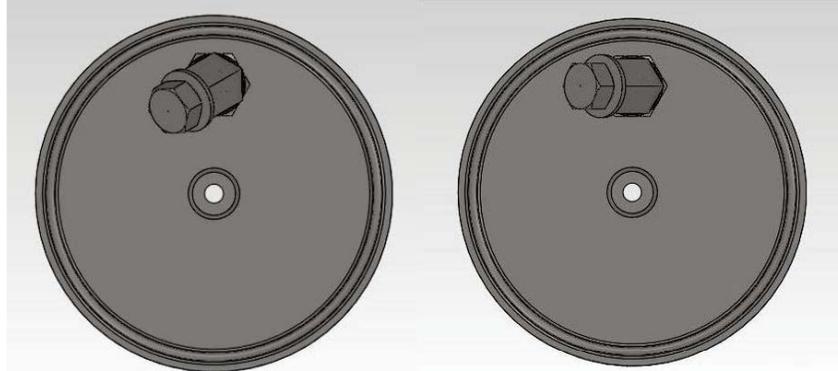


Figure 28. Orifice orientation A) Tangent and B) 30-Deg off tangent

- 6.6.13. Replace the separator cap and tighten the clamp bolts.
- 6.6.14. Reinstall the flexible metal hoses and the thermocouple connection.
- 6.6.15. Close Valve 10.
- 6.6.16. Press the popup message button when orifice is reinstalled, the high pressure clamps are tight and the flexible hoses are reconnected.

#### 6.7. High Separator #1 Pressure (>350-psi) and Low Separator #2 Pressure

High Separator #1 pressure is most often caused by a clog (dry ice or oil) in the flexible line between Separator #1 and Separator #2. Follow the steps below to clean the flexible line.

- 6.7.1. From the Home Screen, Press the Manual Screen Button.
- 6.7.2. From the Manual Screen, Press the Clear Clogged Orifice Button.
- 6.7.3. Wait for the system to provide a message popup indicating it is safe to Open Valve 10 and clean the orifice.
- 6.7.4. Open Valve 10
- 6.7.5. Verify that both Separator vessel gauges read zero.
- 6.7.6. Completely remove the flexible metal lines from the top of both separators. Use two wrenches to prevent the NPT fittings from loosening in the separator cap.
- 6.7.7. Thoroughly clean the flexible metal lines with alcohol or acetone to remove any debris that might be clogging the lines.
- 6.7.8. Blow the flexible metal hoses out with compressed air to verify the clog has been removed.
- 6.7.9. Reinstall the flexible metal hoses.
- 6.7.10. Close Valve 10.
- 6.7.11. Press the popup message button when orifice is reinstalled, the high pressure clamps are tight and the flexible hoses are reconnected.

## 7. System Maintenance

Maintenance on the system is critical to proper operation. Failure to follow these maintenance items can cause premature system failure and void the warranty. The maintenance items below pertain to the CO<sub>2</sub> system only. Follow the manufacturer's recommended maintenance plan for the chiller/heater unit and the air compressor.

This maintenance schedule is based on the maintenance timer on the Maintenance Screen (see Figure 31).

Frequency	Maintenance Item
After Each Extraction	<ul style="list-style-type: none"> <li>• Remove spent material from the extraction vessel by vacuuming it out through the top flange.</li> <li>• Verify the extractor filters are clear and free of debris</li> <li>• Check extraction vessel O-rings and O-rings groove sealing surfaces for damage – replace if necessary</li> <li>• Remove extracted oil from separator vessels and clean entire vessel and cup with acetone or alcohol.</li> <li>• Clean the separator outlet line/pump inlet line with acetone or alcohol.</li> <li>• Check separator vessel gaskets for damage – replace if necessary</li> </ul>
Weekly	<ul style="list-style-type: none"> <li>• Lubricate CO<sub>2</sub> pump spool valve O-rings. Replace if necessary.</li> <li>• Clean all flexible metal lines going into and out of both separators</li> <li>• Check chiller/heater water level is between min and max</li> <li>• Clean CO<sub>2</sub> flow lines between the pump and the coiled heat exchanger with acetone or alcohol. Flowlines must be disconnected from pump and extraction system to thoroughly clean.</li> </ul>
Monthly	<ul style="list-style-type: none"> <li>• Remove the CO<sub>2</sub> pump heads and clean with alcohol or acetone. Do not remove the seals from the head unless they show visible signs of wear. In which case, replace the seals before reassembly.</li> </ul>
Every 500 Hours	<ul style="list-style-type: none"> <li>• Replace all seals on the CO<sub>2</sub> Pump. The pump seal life is highly dependent on cleanliness. Lack of performing scheduled maintenance will decrease seal life.</li> </ul>

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**Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])**  
**NOT FOR DISTRIBUTION**

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Redacted pursuant to N.Y. Public Officers Law, Art. 6

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Redacted pursuant to N.Y. Public Officers Law, Art. 6

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**NOT FOR DISTRIBUTION**

**Attachment D.6.8: Standard Operating Procedures: Security Plan**  
Redacted pursuant to N.Y. Public Officers Law, Art. 6

**REQUEST FOR EXEMPTION FROM FOIL**  
**Critical Infrastructure (POL § 86[5])**  
**NOT FOR DISTRIBUTION**

**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5])  
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**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5])  
NOT FOR DISTRIBUTION**

**Attachment D.6.9: Standard Operating Procedures: Returns, Complaints, Adverse Events  
and Recalls**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])  
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**REQUEST FOR EXEMPTION FROM FOIL**  
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**NOT FOR DISTRIBUTION**

# **Exhibit A: Patient Complaint Log**

**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])  
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**REQUEST FOR EXEMPTION FROM FOIL**  
**Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])**  
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**NOT FOR DISTRIBUTION**

# **Exhibit B: Returned Product Log**

**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])  
NOT FOR DISTRIBUTION**

**REQUEST FOR EXEMPTION FROM FOIL**  
**Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])**  
**NOT FOR DISTRIBUTION**

**Attachment D.6.10: Standard Operating Procedures: Compliance**  
Redacted pursuant to N.Y. Public Officers Law, Art. 6

**REQUEST FOR EXEMPTION FROM FOIL**  
**Critical Infrastructure (POL § 86[5])**  
**NOT FOR DISTRIBUTION**

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**Critical Infrastructure (POL § 86[5])**  
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**Attachment D Section 8: Returns, Complaints, Adverse Events and Recalls**

**(§ 1004.5(b)(4)(v))**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])  
NOT FOR DISTRIBUTION**

**Attachment D Section 8: Returns, Complaints, Adverse Events and Recalls**

(§ 1004.5(b)(4)(v))

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])  
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# **Exhibit A: Patient Complaint Log**

**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])  
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**Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])**  
**NOT FOR DISTRIBUTION**

# **Exhibit B: Returned Product Log**

**REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])  
NOT FOR DISTRIBUTION**

**REQUEST FOR EXEMPTION FROM FOIL**  
**Critical Infrastructure (POL § 86[5]) - Trade Secret (POL § 87(2)[d])**  
**NOT FOR DISTRIBUTION**

**Attachment D Section 9: Product Quality Assurance (§ 1004.5(b)(4)(vi))**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

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Critical Infrastructure (POL § 86[5])  
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**Attachment D Section 10: Record Keeping (§ 1004.5(b)(4)(vii))**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

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# **Exhibit A: Patient Complaint Log**

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NOT FOR DISTRIBUTION**

**REQUEST FOR EXEMPTION FROM FOIL**  
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## **Exhibit B: Returned Product Log**

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## **Attachment E: Organizational Documents**

# STATE OF NEW YORK

## DEPARTMENT OF STATE

I hereby certify that the annexed copy has been compared with the original document in the custody of the Secretary of State and that the same is true copy of said original.



WITNESS my hand and official seal of the Department of State, at the City of Albany, on May 29, 2015.

A handwritten signature in cursive script that reads "Anthony Giardina".

Anthony Giardina  
Executive Deputy Secretary of State

**ARTICLES OF ORGANIZATION  
OF  
Salus Scientific, LLC**

Under Section 203 of the Limited Liability Company Law

THE UNDERSIGNED, being a natural person of at least eighteen (18) years of age, and acting as the organizer of the limited liability company hereby being formed under Section 203 of the Limited Liability Company Law of the State of New York certifies that:

**FIRST:** The name of the limited liability company is:

**Salus Scientific, LLC**

**SECOND:** The county, within this state, in which the office of the limited liability company is to be located is ONONDAGA.

**THIRD:** The Secretary of State is designated as agent of the limited liability company upon whom process against it may be served. The address within or without this state to which the Secretary of State shall mail a copy of any process against the limited liability company served upon him or her is:

Michael P. Falcone  
333 West Washington Street  
Syracuse, NY 13202

**FOURTH:** The limited liability company is to be managed by: ONE OR MORE MANAGERS.

I certify that I have read the above statements, I am authorized to sign these Articles of Organization, that the above statements are true and correct to the best of my knowledge and belief and that my signature typed below constitutes my signature.

Gerald F. Stack, Esq., Authorized Person (signature)

\_\_\_\_\_  
Gerald F. Stack, Esq. , ORGANIZER  
Hiscock & Barclay, LLP  
One Park Pl, 300 S State St  
Syracuse, NY 13202

**Filed by:**

Lauren A. Pistell

Hiscock & Barclay, LLP

One Park Pl, 300 S State St

Syracuse, NY 13202

**FILED WITH THE NYS DEPARTMENT OF STATE ON: 05/29/2015  
FILE NUMBER: 150529010011; DOS ID: 4765998**

**OPERATING AGREEMENT**  
**of**  
**SALUS SCIENTIFIC, LLC**































































































**Attachment F: Labor Peace Agreement**

**LABOR PEACE / NEUTRALITY AGREEMENT**  
**BY AND BETWEEN**  
**SALUS SCIENTIFIC, LLC**  
**AND**  
**LOCAL 338, RWDSU/UFCW**

By this Agreement dated May 29, 2015, Salus Scientific, LLC (the "Employer") and Local 338, RWDSU/UFCW, 1505 Kellum Place, Mineola, New York (the "Union") (and collectively the "parties") hereby establish the following procedure to address the Union's efforts to organize employees in any existing or new facility owned or operated by the Employer in which the employees are not represented by a labor organization:

1. The term, "employees," used herein shall include all full time and part-time employees, including, but not limited to, pharmacists, pharmacy technicians, dispensaries, consultants, drivers, growers, retail, manufacturers, trimmers, and anyone else performing work for or on behalf of the Employer, and shall exclude only those who are statutorily excluded by the National Labor Relations Act ("NLRA").
2. Within ten (10) days after receiving written notice of the Union's intent to organize the employees, the Employer agrees to furnish the Union with a complete list of employees in the shop designated in the notice, including job classifications, departments, street addresses, telephone numbers and e-mail addresses. The Employer agrees to thereafter provide updated lists as reasonably requested. The Employer waives the right under the NLRA to file any petition with the National Labor Relations Board for any election in connection with the invocation of this Agreement and agrees to refrain from directly or indirectly supporting any such petition.
3. The Employer agrees to take a neutral approach to unionization of employees. Neutrality means that the Employer will neither help nor hinder the Union's organizing effort by, for example, directly or indirectly demeaning by word or deed the Union or its representatives, or directly or indirectly supporting or assisting in any way any person or group who may oppose the Union. The Employer agrees not to communicate to any employee that it disfavors the Union or the signing of authorization cards, or that they may suffer adverse consequences for supporting the Union or signing cards. The Employer also agrees that it, and its managers, supervisors and other representatives will refer to the Union by name and not as "third party," "outsider" or in similar manner. The parties will conduct themselves with mutual respect for each other during any organizing effort.
4. During organizing efforts, the Employer's managers, supervisors and other representatives will remain neutral and will refrain from communicating with employees about how they should respond to the Union. The Employer agrees to inform all of its managers, supervisors and representatives of this obligation and that the Employer has no objection to employees supporting the Union or engaging in union activities, including meeting with Union representatives or signing authorization cards. The Employer will promptly take reasonable action to terminate any violation of this provision and immediately act to discourage any additional violation, including disciplining any manager or supervisor or including terminating

its relationship with any independent contractor representative who violates it. For purposes of this paragraph, "independent contractor representative" shall mean a manager, supervisor or officer of such contractor but shall not include any employee or laborer. The Employer agrees to take prompt action to mitigate the effects of any violation, including informing employees of the Employer's position on organizing and the rights of employees to organize.

5. The Employer agrees to permit Union representatives access to the workplace to communicate with employees, including through the distribution of materials. Union representatives will not disrupt the Employer's operations or unreasonably interfere with employee production. At no time will the Union hold group meetings (3 or more employees) during work hours without Employer's consent.

6. The facility's highest level manager will meet with and tell employees that the Employer has no objection to employees meeting with Union representatives, supporting the Union or signing authorization cards. That manager will also tell employees that the Employer is neutral in their selection of union representation.

7. If the Union provides evidence in support of its claim that a majority of employees have designated the Union as their collective bargaining representative, the Employer will recognize the Union as such representative of the employees in the bargaining unit described in the Union's notice invoking this provision and will extend this Agreement to them.

8. If both the Union and the Employer mutually agree that additional Agreement provisions are necessary for the new unit or if the National Labor Relations Board or a court determines that the parties may not lawfully extend this Agreement to the unit, the parties agree to bargain in good faith over a collective bargaining agreement to cover the employees. The parties agree to commence bargaining within 20 business days from the date the neutral verifies the Union's majority. If they are unable to agree to a collective bargaining agreement, the parties agree to submit all open provisions and issues to final and binding interest arbitration. If they are unable to select an arbitrator, the parties shall select an arbitrator to set the open provisions and resolve any other issues in accordance with the procedures of this Agreement's arbitration provision.

9. The parties agree to resolve any dispute over the interpretation of any provision of this Agreement through expedited arbitration. The parties will invoke expedited arbitration by requesting an arbitrators list from the American Arbitration Association. Within 10 days of receiving AAA's arbitrators' list, the parties will submit their struck lists to the AAA. The parties agree that AAA will follow its labor arbitration rules to select an arbitrator based on the list or lists the parties submit. The AAA will strictly apply its rule requiring struck lists to be timely submitted in accordance with this provision. The arbitrator will hear the dispute on either the first or second date the arbitrator is available and issue an award within 20 days thereafter. The parties will equally share the arbitrator's fees and costs.

10. The parties agree that the arbitrator has the authority to direct the breaching party to specifically perform its obligations under this provision. The arbitrator may award a penalty of up to \$10,000 for willful breaches. A willful breach is one that clearly violates this Agreement

and for which remediation was not undertaken within a reasonable period of time after the aggrieved party provided notice of it to the violating party. The parties consent to the entry of the arbitrator's award as the order of judgment of a United States District Court, without notice.

11. The Union and the Employer recognize that this Agreement is in their mutual best interests and therefore agree to prevent evasion of the terms of this Agreement through the use of contractors and/or subcontractors. To comply with the spirit of this Agreement, the Employer shall, as a condition of its relationship with any contractor and/or subcontractor require that: (a) the contractor and/or subcontractor enter into a neutrality agreement with the Union; and (b) immediately notify the Union when seeking to form a business relationship with the contractor and/or subcontractor.

12. Labor Peace Agreement: In the event that Local 338 attempts to organize the Employer's employees or actually represents the Employer's employees at any particular location, then Local 338 hereby promises that it will not at any time covered by this agreement engage in any picketing, work stoppages, boycotts or any other economic interference with the Employer's business at that location, provided the employer has not violated any of the terms of this agreement.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed this 29<sup>th</sup> day of May, 2015, by their duly authorized representatives.

LOCAL 338, RWSU/UFCW

By: [Signature]

Date: 5/29/15

Name: Joseph Fontano

Title: Secretary-Treasurer

SALUS SCIENTIFIC, LLC

By: [Signature]

Date: 6/3/15

Name: MICHAEL P. FALCONE

Title: MEMBER

Witness: [Signature]

State of New York  
County of Nassau  
Subscribed to and sworn before me this 29th day  
of May, 2015, by Joseph Fontano.

[Signature]  
Notary Public

MARIA D SCHEFFLER  
Notary Public - State of New York  
NO. 01SC6074446  
Qualified in Nassau County  
My Commission Expires 5/30/2018

**Local 338**

**JOHN R. DURSO**  
President

**JOSEPH FONTANO**  
Secretary-Treasurer



**RWDSU/UFCW**

**JACK CAFFEY JR.**  
Executive Vice President

**DEBRA BOLLBACH**  
Recorder

Howard Zucker  
Commissioner  
New York State Department of Health  
Corning Tower  
Empire State Plaza  
Albany, New York 12237

June 1, 2015

Re: Labor Peace Agreement between Local 338, RWDSU/UFCW and Salus Scientific, LLC

Dear Commissioner Zucker,

Local 338, RWDSU/UFCW ("Local 338") is a labor organization, as defined in 29 U.S.C. § 402(i) and 29 U.S.C. § 152(5), representing close to 20,000 employees in New York State and its environs.

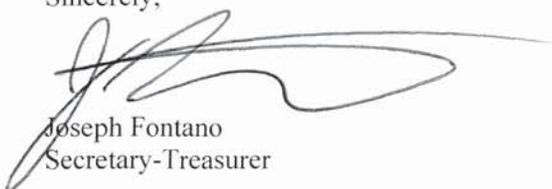
The enclosed document entitled, Neutrality Agreement, is intended in part to satisfy and comply with the requirement, under the New York Public Health Law, that an applicant (Salus Scientific, LLC) seeking a license to conduct business relating to the use of medical marijuana in New York State submit proof that it has entered into a labor peace agreement with a bona-fide labor organization that is actively engaged in representing or attempting to represent the applicant's employees. See Public Health Law §§ 3360(14), 3365(1)(III), 3365(3)(VII), 3365(6)(IV), and 3365(7).

The Neutrality Agreement contains explicit language which protects the State's proprietary interests by prohibiting Local 338 from engaging in picketing, work stoppages, boycotts, and any other economic interference with the business of an entity licensed to engage in the business relating to the use of medical marijuana in New York State.

Should any changes in the Neutrality Agreement be necessary for an applicant to comply with the Public Health Law, please feel free to communicate with us directly.

Thank you for your consideration.

Sincerely,

  
Joseph Fontano  
Secretary-Treasurer

**STRONGER | TOGETHER**

*Our Mission: To Better The Lives Of Our Members And All Working People.*  
1505 Kellum Place • Mineola, NY 11501 • (516) 294-1338 • [www.local338.org](http://www.local338.org)

**Attachment G: Financial Statement of Business Transactions Connected with Preparation of Application**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**REQUEST FOR EXEMPTION FROM FOIL  
Trade Secret (POL § 87(2)(d))  
NOT FOR DISTRIBUTION**

**Attachment G: Financial Statement of Business Transactions Connected with Preparation of Application**

Redacted pursuant to N.Y. Public Officers Law, Art. 6



























































**Attachment H: Security Plan**  
Redacted pursuant to N.Y. Public Officers Law, Art. 6

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Attachment I: Financial Statements

**Salus Scientific, LLC**  
(A Limited Liability Company)

**Financial Statements**

**For the Period**  
**May 29, 2015 Through June 5, 2015**

**REQUEST FOR EXEMPTION FROM FOIL**  
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SALUS SCIENTIFIC, LLC  
(A LIMITED LIABILITY COMPANY)

FINANCIAL STATEMENTS

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INDEPENDENT ACCOUNTANTS' REVIEW REPORT

To The Members'  
Salus Scientific, LLC  
Syracuse, New York

We have reviewed the accompanying balance sheet of Salus Scientific, LLC (a Limited Liability Company) as of June 5, 2015, and the related statements of income, members' equity, and cash flows for the period May 29, 2015 through June 5, 2015. A review includes primarily applying analytical procedures to management's financial data and making inquiries of Company management. A review is substantially less in scope than an audit, the objective of which is the expression of an opinion regarding the financial statements as a whole. Accordingly, we do not express such an opinion.

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America and for designing, implementing, and maintaining internal control relevant to the preparation and fair presentation of the financial statements.

Our responsibility is to conduct the review in accordance with Statements on Standards for Accounting and Review Services issued by the American Institute of Certified Public Accountants. The objective of a compilation is to assist management in presenting financial information in the form of financial statements without undertaking to obtain or provide any assurance that there are no material modifications that should be made to the financial statements.

Based on our review, we are not aware of any material modifications that should be made to the accompanying financial statements in order for them to be in conformity with accounting principles generally accepted in the United States of America.

DiMARCO, ABIUSI & PASCARELLA, P.C.

*DiMarco, Abiusi & Pascarella, P.C.*

Syracuse, New York  
June 5, 2015

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## **Attachment J: Staffing Plan**

### **Organizational Structure**

#### **Introduction**

1004.6(b)(9) As part of creating a professional team of the utmost integrity and caliber, Salus Scientific has assembled professionals of respected moral character and competence to serve as board members, officers, owners, partners, principal stakeholders, directors, and staff. The following document is a general outline of our staffing plan, and in meeting with regulation §1004.5(b)(18)(i)-(v), this section includes the following:

1. An overview of Salus Scientific's mission, vision, and goals
2. General organizational staff summation including:
  - a. General staffing regulation compliance
  - b. An organizational chart in accordance with our staffing plan
  - c. A general staffing timeline
3. A breakdown of our departments and our key personnel including:
  - a. An outline of the total number of anticipated staff to support Salus Scientific
  - b. Descriptions for a listing of our key staff members with oversight responsibilities
4. Other general positions and responsibilities (anticipated to be filled)

# 1. Overview

## Salus Scientific, LLC - Executive Summary

### *Company Mission:*

*Cultivating global medical breakthroughs in New York.*

### **Company Vision**

Combining over 200 years of pioneering scientific research, industry safety, and security benchmarks with a collaborative community of world-class innovators, Salus Scientific will provide pure, safe, and consistent cannabinoid medicines to New York's qualified patients. We aim to employ good manufacturing practices, perform standardized extractions, and formulate consistent cannabinoid medicine.

Salus Scientific is at the forefront of medical cannabis research and delivery. Our comprehensive team of researchers, physicians, cultivators, manufacturers and patient care specialists has the unique expertise to produce a safe, consistent and sustainable supply of cannabis-derived, pharmaceutical-grade medicines. Through integrity, transparency, reliability and stewardship, we will provide efficient and affordable access for the relief of New York's countless qualifying patients in need.

### **Our Team and Inspiration**

At its core, Salus Scientific's culture comes from its most valued asset – its people. By strategically partnering extensive scientific research and industry knowledge from around the nation and the globe, Salus Scientific is able to empower local New York resources to match passion with relevant expertise, compassion with global teamwork and responsible science with innovative products to move New York State into the forefront of all aspects of this nascent industry. Salus Scientific provides a unique, made-in-New-York solution: global in reach, but clearly local in economic and social impact.

Salus Scientific cofounder and Chairman of the Board Michael P. Falcone, [REDACTED] [REDACTED] contributes his passion for community development in New York State to the opportunities created by the region's emerging medical cannabis industry. [REDACTED] [REDACTED], Mr. Falcone sees the potential for 200 medical marijuana manufacturing and retail jobs to be created by Salus Scientific and its partners in New York. Creating economic development while providing innovative, research-oriented patient solutions will compound the local benefit where it is needed most.

[REDACTED] [REDACTED] Salus Scientific cofounder and CEO Nicole Ruvo Falcone has become passionate about the use of medical cannabis to treat devastating conditions. [REDACTED] has dedicated themselves to the treatment of neurological conditions like Alzheimer's, Huntington's disease, Parkinson's disease and amyotrophic lateral sclerosis (ALS) through the fundraising of over \$200 million for the [REDACTED] to operate the clinic. Ms. Ruvo Falcone brings a unique business-minded desire for clinical research in neurology and has a successful career of bringing highly regulated products to market.

The lynchpin to the recent move to regulated marijuana access across much of the nation stems from the compounding effect of brilliant scientific research from Israel, formulated by Salus Scientific team members over decades of isolated study with the move to demonstrable efficacy in usage. This is embodied by Salus Scientific team members' involvement in the forwarding of medicinal marijuana usage by children in Colorado. Chris Stubbs, long passionate about proper dosage and the responsible labelling of cannabis-related products, [REDACTED] [REDACTED], sourced the high cannabidiol (CBD) cultivars from locals, and helped to formulate and test the first delivery systems in this nationally significant case. His recent work, embodied in the rigorous devotion to detailed production protocols [REDACTED] has enabled the leading industrial hemp producer in Kentucky to provide jobs in production, laboratory testing, processing, formulation, product development and branding.

The most exciting discoveries relating to the application of cannabis-derived medicines to various disease-states have yet to be scientifically demonstrated. This has led Dr. Perry Fine, [REDACTED] to bring to Salus Scientific his considerable efforts as a new breed of clinicians slowly begin to embrace this new treatment modality. With his ability to bridge the gap between global research and the clinical proof of efficacy, Dr. Fine inspires growing confidence in new treatment modalities. [REDACTED] [REDACTED] Dr. Mark Rosenfeld, has done an outstanding job of securing intellectual property and technological market solutions for the delivery of CBD in relevant disease states.

Hugh Hempel, [REDACTED], and [REDACTED] Chris, know [REDACTED] the power of cannabis to treat epilepsy. [REDACTED] [REDACTED] [REDACTED]; [REDACTED], their work with top Food and Drug Administration (FDA) officials to create an experimental pharmaceutical medicine [REDACTED] resulted in the initiation of current clinical trials at the National Institutes of Health (NIH). This medicine has been used to treat terminally ill children around the world.

In order to achieve the goal of finding a cure for serious public health epidemics such as diabetes, chronic pain, cancer, and immunological and neurological disorders including adult and childhood onset Alzheimer's through medical cannabis research, Salus Scientific depends on the crucial ingredient of a highly skilled team of professionals with hands on experience in the cannabis industry. Salus Scientific has assembled many of the most recognized professionals from the global cannabis industry including chemists, clinicians, agronomists, leading cannabinoid researchers, world-class botanists and operators from several western states and New York's leading physicians. Salus Scientific also intends to pursue research relationships with the new Binghamton University School of Pharmacy and Pharmaceutical Sciences. In each instance, these professionals are recognized as leading experts in their field, and their portfolio of patents, proprietary processes, publications and trials prove it.

Jim Rice, Vice President of Operations for Salus Scientific, [REDACTED]  
Redacted pursuant to N.Y. Public Officers Law, Art. 6

Salus Scientific has embraced all aspects of its security footprint because the new industry requires top-down compliance in every regard. The ability to bring forward decades of experience from the DEA, ATF, TSA, NYPD and NYSP to internalize this in Salus Scientific's culture is a testament to the organization's broad strength through its people and the clear path towards assuaging any and all fears that this new industry is anything other than completely transparent. Salus Scientific also intends to employ security personnel from the pool of local retired law enforcement officers who are familiar with not only law enforcement, but the local communities Salus Scientific will be working in.

### **Company Values**

**Integrity:** A sense of follow-through is sorely lacking in the medical cannabis industry. Our team has been dedicated, for many years now, to truth in dosing and labeling, community involvement, training, providing jobs, and positively impacting the lives of patients that need palliative care involving cannabis therapies.

**Transparency:** A sense of transparency in our operational motivations means that Salus Scientific can have meaningful implications on industry and research surrounding the medical cannabis program in New York by sharing data and intellectual property while keeping employees and patients safe. Paramount to our success is providing transparency in production methods so that the lives of patients are positively impacted. Furthermore, our security team lends a sense of regulatory importance with respect to compliance that is top-notch.

**Reliability:** Our spectrum of care is predicated on guaranteed dosing levels and testing standardization, safe methods of administration, and a commitment to expanding our capabilities to best educate and serve patients in need. Simply put, being able to serve a patient population that has found something that works for them is extremely important. We firmly believe it is unethical to provide a beneficial treatment that works, then not have it available in the future. This problem is widespread in the cannabis industry; patients often find a product that works for them, but cannot reproduce the result because the product line is erratic in its formulated content.

**Community Stewardship:** Developing a sense of responsibility in the community is key to the success of any business. The controversial nature of medical cannabis necessitates responsibility through scientific knowledge. We intend to lead our community involvement efforts through a series of outreach mechanisms and research endeavors that help inform and educate the public in a positive and responsible manner.

In support of these values, Salus Scientific has created four critical advisory boards: Advisory Board, Physician Advisory Board, Science Advisory Board and Security Advisory Board. This ensures that everything we do is grounded in decades of specifically relevant experience and in the best interest of our patients. Once Salus Scientific becomes operational, a Community Advisory Board will be created and local community leaders will be appointed as members. As Salus Scientific begins serving certified patients, we will also establish an advisory board specifically for the individuals we directly serve.

### **Company Goals**

- Salus Scientific will meet an aggressive operational timeline of six (6) months without issue due to the experience of our team's operational fortitude.
- Salus Scientific estimates an ability to provide 200 local jobs and begin local and statewide public education programs in the cannabinoid clinical and research sciences.
- Salus Scientific will pursue research partnerships with Cornell University, as well as programmatic and educational opportunities with the new Binghamton University School of Pharmacy and Pharmaceutical Sciences.
- Standardize cannabinoid dosing, testing and labeling practices through internal testing and external collaboration with labs and other industry partners.

- Develop products more familiar to patients and physicians to increase acceptance and emphasize New York State's evolution of cannabis-derived medicine delivery.
- Develop responsive formularies and delivery innovations for specific ailments with the intent of carrying out clinical trials with existing clinical networks.
- Support the Department of Health in the thoughtful consideration of expanding the list of recognized conditions to eventually include Alzheimer's, PTSD, chronic pain, and a host of other illnesses shown clinically to respond to cannabinoid therapies.
- Impact the agronomic side of research and development through future participation in the New York hemp program with industry experts GenCanna Global.

### **Salus Scientific Research Advantage**

Mankind has used the cannabis plant as both food and medicine for centuries. In recent decades the plant has been exhaustively studied by our partners and advisers who have created a significant and industry-renowned body of evidence regarding cannabis's potential as a treatment for some of humanity's most devastating conditions, such as diabetes, chronic pain and numerous neurological conditions.

Salus Scientific, through its partners, owns, controls and/or otherwise has exclusive rights to:

- An extensive cannabis-specific patent library from decades of research and development, many of which are specific for the use of CBD to treat diabetes, cancer, and cancer-related pain.
- Next generation technology for bioavailability, extraction, and related processes.
- Four patents pending on phytocannabinoid extraction and purification.
- Proprietary patents based on water soluble liquids and powder technology of CBDiol™.
- A number of patents related to biomarker availability and proprietary ingredients and formulations that are currently used in many products for anti-inflammatory pain, osteoporosis, sports performance, and type II diabetes.
- Technology to make numerous fat soluble compounds more easily absorbed as a new natural process that makes beneficial oils such as fish oil omega-3 more stable and less resistant to spoilage.

The Salus Scientific team of advisers and partners also owns trade secrets for:

- Improved quality management systems for natural products development.
- Improved manufacturing processes for developing commercially viable natural products.
- Marketing and product development processes for developing natural products.
- Improved extraction methods offering better yield, better control of finished product.
- Improved dose delivery systems offering greater bioavailability and efficacy.
- Compositions treating diseases and/or having a specific effect on the body.
- Processes for producing compositions treating diseases.

Significant rigorous clinical research is still required to confirm evidence and, more importantly, to provide solid data that helps to optimize cannabis use efficacy and safety. To that end, Salus Scientific is committed to facilitating broad public and private clinical research efforts in medical cannabis.

Oversight of public research by Salus Scientific will be led by advisory board members Dr. Gloria Meredith, Founding Dean for the Binghamton University School of Pharmacy and Pharmaceutical Sciences, and Dr. Flint Beal, [REDACTED]

[REDACTED]  
[REDACTED]. Private research will be facilitated with non-profit research institutions including the Nicole Ruvo-Falcone-supported and family-founded Cleveland Clinic Lou Ruvo Center for Brain Health.

With our partners, and with the support of the State of New York, Salus Scientific will answer the call for non-psychoactive and non-abusable oral cannabinoid products, paving the way for substantive potential improvements in treating debilitating and even life-threatening health conditions afflicting many New Yorkers.

## **2. General Organization**

### **a. Staffing Summation and Regulatory Compliance**

At Salus Scientific it is our imperative to hire, train, and ensure that our staff provides the highest caliber of product, quality control, security, management, and customer service. In adherence of New York state regulations, we commit to the following in our staffing plan:

Per regulation 10 NYCRR § 1004.5(b)(18)(iii), all staff hired by Salus Scientific will be 21 years or older.

In accordance with regulation 10 NYCRR § 1004.5(b)(18)(iv), our staff will be trained and conformed to general sanitary practices. Salus Scientific guarantees to train employees on general sanitary practices (see Employee Training Manual of the Standard Operating Procedures). All employees of Salus Scientific will be trained to company policies and procedures (see Employee Training Manual of the Standard Operating Procedures), including all workplace and personal safety and OSHA training, sanitation training, workers' rights, reporting and documentation procedures, human resources practices, mandatory background checks driver safety, harassment policy issues, workplace media training, communication, disciplinary and termination procedures, customer service measures, and health insurance portability and accountability.

Per regulation 10 NYCRR § 1004.5(b)(18)(v), Salus Scientific guarantees policies and procedures to ensure employees who come into contact with marijuana have not been convicted on any drug-related felonies. Employees will be required to have privately contracted background checks to maintain that they are in compliance with this regulation.

Finally, following 10 NYCRR § 1004.5(b)(18)(i), one senior staffer has more than the requisite one year of experience required in good agricultural practices.

## **General staffing timeline:**

### **Spring 2015 - May 31, 2015:**

- Determine all senior staff with ownership interest including advisory board members, VPs, and managers
- Identify senior staff positions to be filled by non-owners

### **May 1, 2015 - 2 weeks post-licensing:**

- Determine all necessary non-senior, non-owner positions for manufacturing facility and fill those positions (head grower, grower, etc.)

### **May 1, 2015 - five months post-licensing:**

- Determine all necessary non-senior, non-owner positions for dispensing facilities and fill those positions (pharmacists, dispensary agents, etc.)

### **Six months post-licensing and annually thereafter:**

- Individual performance reviews for all staff and review of overall staffing plan
- Identification of staffing needs and necessary changes, followed by terminations and hiring to implement changes /meet needs

### **3. Departments and Organizational Overview**

#### **Functional Overview**

##### **1. Business Advisory Board**

- a. Chairperson: Michael Falcone**
- b. Dr. Gloria E. Meredith**
- c. Louise T. Callahan**
- d. Nicole Ruvo Falcone**
- e. Louis A. Pharao**
- f. William DeBlock**
- g. Dr. Pritesh Kumar**
- h. Hugh Hempel**

##### **2. Salus Scientific, LLC**

- a. CEO: Nicole Ruvo Falcone**
- b. CFO / COO: Darren Moore**
- c. VP Security: Darrell O'Connor**
- d. VP Regulatory Affairs: Darrell O'Connor**
- e. VP Science and Research: Dr. Mark Rosenfeld**
- f. VP Cultivation: Dan Harder**
- g. VP Production: David Pate**
- h. VP Quality: Blake Ebersole**
- i. VP Dispensary Ops: Jim Rice**
- j. VP Community Services: Hugh Hempel**

##### **3. Physician Advisory Board**

- a. Chairperson: Dr. Edward S. Rubin**
- b. Dr. Perry Fine**
- c. Dr. Grace Forde**
- d. Dr. Michael Dor**
- e. D. Flint Beal**

##### **4. Scientific Advisory Board**

- a. Chairperson: Dr. Mark Rosenfeld**

- b. Kevin McKernan**
- c. Dr. Yahuda Baruch**
- d. Ruth Gallily, Ph.D.**
- e. Lumir Hanus, DSc.**
- f. Dr. Flint Beal**

**5. Security Advisory Board**

- a. Chairperson: Louis A. Pharao**
- b. Darrell O'Connor**
- c. Terrance Gainer**
- d. William DeBlock**

**6. Cultivation**

- a. VP: Dan Harder**

**7. Production**

- a. VP: David Pate**

**8. Quality**

- a. VP: Blake Ebersole**
- b. Chris Stubbs with The GenCanna Production Platform™**

**9. Dispensary Operations**

- a. VP: Jim Rice**
- b. Operations: Brad Francis**
- c. Onsite pharmacists**

**10. Community Services**

- a. VP: Hugh Hempel**
- b. Patient Advisory Board**

**11. Equity Holders:**

- a. MNF Holdings**

## **1. Board of Advisors**

Our board of directors is comprised of outstanding individuals in the field of medical marijuana and professionals from an array of backgrounds and expertise to create a solid business foundation for Salus Scientific. Our business advisory board will oversee all financial and business-related aspects of the company.

## **2. Senior Management Team**

### **CEO – Nicole Ruvo Falcone**

Led by our CEO, the senior team applies specific expertise to lead individual departments that create a collective, clinical approach to Salus Scientific's work. The CEO reports to the Board and is responsible for implementing strategic goals and objectives for the Company. The CEO will give direction and leadership toward the achievement of the organization's philosophy, mission, strategy and goals.

### **CFO: Darren Moore**

The CFO will be in charge of financial management practices and monitor finances, focusing on Key Performance Indicators. He will align spending with business objectives and maintain a healthy cash flow to meet budget constraints. The CFO will also be responsible for:

- Monthly financial reports - Balance Sheets & Income Statements prepared and reviewed by ownership on at least a monthly basis.
- Budget preparation and variance control. They must set aside funds to be maintained and used wisely. In order for any moneys to be spent on building improvements, grow management must develop a cost benefit analysis
- Paying bills, processing payment of property taxes, mortgages, insurance, and maintenance vendors.
- Collecting rents and bank deposits posting to correct ledgers
- Bank Reconciliation

### **VP Security: Darrel O'Conner**

The VP of Security will be in charge of all aspects of overseeing security for the entire operation.

**VP Regulatory Affairs: Darrell O'Connor**

The VP of Regulatory Affairs will oversee local and government relations, including business regulatory compliance.

**VP Science and Research: Dr. Mark Rosenfeld**

The VP of Science and Research leads this division and oversees the following areas:

- Botany
- Facilities
- Growers
- Testing

Per regulation 10 NYCRR § 1004.5(b)(18)(i) this senior staff member meets the requirement of having at least one year experience in good agricultural practices.

Our scientific research department is formed by ISA Scientific, Inc., an American biopharmaceutical company focused on legally developing and selling cannabinoids as real human medicine. Focusing efforts on effectively and with the highest quality available developing the non-psychoactive cannabinoid, cannabidiol (CBD), our science team constantly researches the way CBD can be used for treating serious medical conditions such as diabetes, neuropathic pain, inflammatory diseases, and cardiovascular disorders. Our team strives to understand and research the following aspects of medical marijuana:

- Formidable patent collection limiting market entry by competitors
- ISA Particulate Technology™ for uniquely and greatly enhancing CBD's entry into the blood
- Worldwide exclusive rights to CBD for treating diabetes, inflammatory diseases (atherosclerosis, arthritis, ulcerative colitis and Crohn's disease) and cardiovascular disorders (cardiac infarction or heart attack)
- Faster, less costly and otherwise more efficient ways to extract and purify CBD

- Proprietary, exclusive plants with exceptional amounts of CBD

### **VP Cultivation: Dan Harder**

The VP of Cultivation leads this division and oversees the following areas:

- Botany
- Facilities
- Growers
- Testing

The VP will coordinate overall operations between the cultivation and transfer to manufacturing.

### **VP Production: David Pate**

The VP of Production leads this division and oversees the following areas:

- Pharmacology (led by Eric Kurhts)
- Extractions
- Formulations
- Packaging
- Testing

### **VP Quality: Blake Ebersole**

The VP of Quality leads this division and oversees the following areas:

- Chris Stubbs, GennCanna
- GMP
- QA
- QC
- Compliance

Per regulation 10 NYCRR § 1004.5(b)(18)(ii) our VP of Quality Assurance and Quality Control meets the requirement of a designated quality assurance officer and will serve as such until and unless a staff member to be hired is promoted to Quality Assurance Officer.

### **VP Dispensary Ops: Jim Rice**

The VP of Dispensary Operations leads this division and oversees the following areas:

- Brad Francis: Operations
- Facilities
- Training
- Logistics
- Security

The VP, in conjunction with Operations, will oversee non-contractors (IE: towing, real estate agents), coordination of a monthly building exclusive meeting between any/all employees/principles, as well as maintenance of controls. Basic financial oversight, contractor and labor relation, and handling the supervision of any building improvements, etc. Overall building work plan reviews and maintenance, construction oversight, budget maintenance, and attaining multiple bids. Finally, compliance with local, state, and federal government permits requirements, fire code, building code, etc.

#### **VP Community Services: Hugh Hempel**

The VP of Community Outreach leads this division and oversees the following areas:

- Patient Advisory Board
- Patient Services
- Community Education
- Physician Outreach

### **3. Equity Holdings**

MNF Holdings owns the entire equity stake in Salus Scientific and will be responsible for all financial outlays.

#### 4. Other general positions and responsibilities to be filled

##### I. Overall Staffing Projections

Salus Scientific projects that by establishing their facilities they will create █ security jobs, 50 dispensary jobs, and 126 manufacturing jobs, totaling 200 new jobs across the state.

**Johnson City Manufacturing Plant.** Salus Scientific anticipates that it will initially create 126 manufacturing jobs █ security jobs at the manufacturing plant, with the potential to add more manufacturing jobs and dedicated transportation positions.

**Vestal Dispensary.** The Vestal dispensary would bring an additional 12-15 dispensary staff jobs and █ security jobs, with the potential for expansion as the patient base expands and if Salus Scientific is eventually permitted to deliver medical marijuana products directly to patients.

**Evans Mills.** Salus Scientific anticipates an initial staff of 12-15 as dispensary staff and █ as security staff.

**East Syracuse.** Salus Scientific anticipates an initial staff of 12-15 as dispensary staff and █ as security staff.

**Maspeth (Queens).** Salus Scientific anticipates an initial staff of 12-15 as dispensary staff and █ as security staff.

What follows are general positions within Salus Scientific to be filled in accordance with the staffing timeline. Salus Scientific may create additional and specialized roles as needed.

##### II. Essential Managerial Positions

**Cultivation Manager.** This individual is responsible for managing and training cultivation staff, following local and state regulations, managing pest control and maintaining all aspects of the production process ensuring a safe environment and high quality product. Status: To Be Hired.

Qualifications/Experience: 3+ years of professional experience managing horticultural operations; training in pest management; ability to comply with regulatory framework; ability to manage and train staff to achieve production goals.

**Processing Manager.** Set-up and maintain all processes and procedures to properly track and manage all plants, seeds and product (both usable and non-useable) from harvest to final receiving at all retail locations according to State Law and Company Policy. Compile, track and organize all collected data into various comprehensive reports for upper management and other department heads. These reports are compiled to provide upper management and other departments with correct and up-to-date information daily, bi-weekly, weekly, monthly quarterly and annually. Manage internal resources, develop and review standard operating procedures; policies and operational guidelines. Create and implement new procedures and operational guidelines as both state laws and company policy change in an attempt to adapt and stay compliant in an ever-changing environment. Participate in the training/development and education of Processing and Pre-Pack managers, as well as members of their staff. Inventory management to ensure consistent production, proper packaging and distribution, and quality product. Status: To Be Hired. Qualifications/Experience: Knowledge in areas related to harvesting, drying, trimming and curing; knowledge and enforcement of the policies, procedures and goals; knowledge and enforcement of all local and state laws; knowledge of general management principles and practices, including budget, policy and procedure development, personnel management, supervision and finance; ability to use standard office equipment, computer equipment and software including word processing, data base management, spreadsheet applications and electronic mail.

**Extraction Manager.** This individual is responsible for developing protocols and quality assessment of raw materials; systematization of raw material collection, weighing and inventory control; ensuring sufficient supply of extract forms for edibles and usable extracts; purchasing and maintenance of all equipment required for extraction and production and ensuring safe methodologies for extraction. Status: To Be Hired. Qualifications/Experience: Extensive experience (3+ years) in commercial scale cannabinoid extraction or compound specific laboratory practices required; knowledge and enforcement of all local and state laws.

**Dispensary Manager.** Direct, manage, motivate and provide administrative support to the activities and operations of retail department. Manage internal resources, develop and review standard operating procedures; policies and operational guidelines to ensure district-wide patient satisfaction and employee productivity. Participate in the training/ development and education of retail staff members. Inventory management to ensure proper distribution, monthly sales objectives and financial performance of all retail locations. Status: To Be Hired. Qualifications/Experience: Extensive experience (3+ years) in fast paced, service oriented environment; experience managing inventories.

**Facility Security Officer.** The Facility Security Officer (FSO) will be one the first two individuals on site at the Dispensary. The Dispensary will not open without the FSO or a Manager with equal security oversight present. The FSO is responsible for ensuring that all security policies are successfully implemented, including training of security personnel.

**HR Manager (Part-time).** This individual is responsible for employee orientation, payroll, record keeping and compliance. The Herbst Companies will be providing these services as the backbone is in place for existing gaming, convenience and gas operations. Status: To be hired. Qualifications/Experience: 3+ years provisioning HR services, policies and training programs (healthcare industry preferred).

**Compliance Manager.** This individual is responsible for ensuring full compliance with all local and state codes and regulations. Additionally, he/she is responsible for establishing a safe environment by monitoring cameras, testing equipment, providing proper safety and security training to staff and communicating with law enforcement and emergency response personnel. Status: To Be Hired. Qualifications/Experience: Professional experience in law enforcement (preferred); managerial experience; analytical ability to follow and track regulations; communication skills and ability to implement and manage the security plan.

**Bookkeeper.** Direct, manage and provide administrative support to the activities and operations of the accounting department. Manage resources, develop and review standard operating procedures, policies and operational guidelines. Participate in the training and educating employees. Give advice and provide financial strategy options. Status: To Be Hired.

Qualifications/Experience: General accounting experience (5+ years); familiarity with marijuana tax reporting obligations.

### **III. Manufacturing Staffing**

#### **Manufacturing Staffing Projections and Responsibilities Generally.**

- i. In general, two full time employees per 100 flowering lights.
- ii. Seven days a week need to be covered.
- iii. Minimum 40 hour weeks, but more likely 48-50, especially during initial operations.
- iv. At least one Cultivation Manager is necessary. This person should have knowledge of grow techniques and plant biology and ideally has completed one year of related work in accordance with Good Agricultural Practices.
- v. Manufacturing Employees are responsible for all jobs involved with growing a plant from cutting to harvest including but not limited to: taking cuttings, watering, mixing nutrients, spraying pesticides, vegetative plant maintenance, flowering plant maintenance, harvesting, batching, big leafing, coco recycling and potting.

**Quality Assurance Department.** Salus Scientific's facility is used to manufacture and package medical marijuana products and has been properly designed and fit for this specific and intended use. This section outlines the design of the facility that has potential quality impact. It also outlines facility layout considerations such as personnel and product flow. These standards will also apply to new facilities, renovations and upgrades. The Quality Assurance Department has a responsibility to:

- i. Develop and maintain procedures for cleaning and maintenance of facilities.
- ii. Ensure all personnel supporting the cleaning; housekeeping, and maintenance of facilities are trained in established procedures.

- iii. Maintain applicable logs for manufacturing and/or packaging areas.
- iv. Review list of products manufactured and packaged to ensure proper separation and control is in place to eliminate the potential for cross- contamination
- v. Establish procedures for cleaning and maintenance of all areas within the facility.
- vi. Establish and approve all cleaning and disinfection agents (with Environmental and Safety).
- vii. Approve logs for manufacturing and/or packaging areas.

**Quality Assurance Manager (QAM).** A qualified QAM provides ongoing oversight and documentation carried out throughout the entire cultivation process. The QAM is responsible for ensuring that all sanitation, production, processing, packaging, testing, storage procedures are in full compliance with New York Department of Health Regulations and with the standards and practices set forth in this manual.

The QAM consistently maintains a hospital or laboratory grade cleanliness through the execution and enforcement of the Sanitation Operation Procedures, Good Production Practices, Standard Operating Procedures, Quality Assurance Protocols, Security Operating Procedures and compliant to ISO 17025 standards. The QAM enforces all procedures for production environments assuring all marijuana products are tested for the presence of microbial (e.g., Yeast, mold, E. Coli, Salmonella, Aflatoxins B1, B2, O1, O2 and ochratoxin A) and chemical contaminants (e.g., Heavy metals) in compliance with the New York Department of Health Regulations.

**Quality Assurance and Quality Control (QA/QC) Personnel.** Quality Assurance/Quality Control (QA/QC) personnel are responsible for the ultimate integrity of Salus Scientific products. QA/QC employees have the authority to remove plants and products for disposal, and may make this determination at any stage of cultivation or production. Reasons for disposing of a product or plant include presence of pests, contamination, or failed chemical tests. Records of all tests and inspections will be kept to enable auditing of the QA/QC department.

QA/QC personnel will receive extensive hands on training at the facility, particularly regarding procedures to obtain or inspect representative samples and the individual steps required for each type of test.

QA/QC personnel are the liaison to independent laboratories to facilitate final testing. While QA/QC tests the same batches of products for the same contaminants and cannabinoid profiles, those results are for internal use and monitoring only. An independent laboratory makes the final determination regarding the safety and cannabinoid profile of all products, and only results from a laboratory approved by the Department of Health will appear product labels. QA/QC will enable the approved laboratory to conduct all tests. QA/QC will give the approved laboratory inventory information (such as lot numbers) to allow proper sampling, and will assist the independent laboratory in any request reasonably related to sampling and testing.

**Equipment Owner (EO) (or Equipment Designee).** Equipment Owner responsibilities include:

1. Approval of the Maintenance Plan (PMs and Frequencies) for their equipment.
2. Approval of all completed maintenance work orders.
3. Review of maintenance requirements in advance of work being conducted to determine any impact to the status of the equipment and whether change control is necessary.
4. Emergency work can be conducted immediately, but the work order must be generated in the maintenance system and the EO notified.

**The Processing Department.** The Processing Department is responsible for manicuring, curing and packaging cured marijuana, and making sure that all marijuana product is processed and tracked according to Salus Scientific standards as well as all applicable state laws and regulations. The Processing Department is an integral part of the Salus Scientific's operation and production. Once a marijuana plant reaches maturation and is harvested by the grow staff the plant has reached its highest potency levels. From this point on there is nothing that the Processing Department can do to make the plant more potent in THC or any other cannabinoid. The main goal of the department is to maintain this high quality and potency of the plant without degrading it through various stages of processing.

The Processing Department is tasked with the responsibility of tracking each plant/batch from

the moment it is harvested, accounting for every aspect of a plant or batch including (but not limited to):

- i. Plant/Batch Weights
- ii. Waste (Stems and Fan Leaves)
- iii. Useable-Byproduct (Trim)
- iv. Processed Product (Cured Flower)
- v. Product loss (Moisture, Shake, etc...)
- vi. Net and Gross Weights

Additionally, it is the Processing Departments responsibility to make sure that all plants/batches are rotated, dried and cured properly. Processing Managers are well trained in these methods, however new techniques are always being experimented with so that the highest quality and best product is produced. Salus Scientific will obtain prior written approval of the Department for modifications or revisions to its operating plan, including policies and procedures related to processing policies or procedures.

**Trimmers.** Trimmers are responsible for the following each day:

- i. Trimming quality marijuana at a rate that is consistent with expected quantities/quotas.
- ii. Keeping track of all product, waste and trim per batch they are trimming.
- iii. Fill out a personal “Trim Tracker Form” every day detailing the following:
- iv. Strain/Batch #
- v. Amount of Product trimmed
- vi. Date
- vii. Number of hours it took to trim that batch.
- viii. Any comments on the strain or batch (i.e., leafy, seeds, etc...)

- ix. Keep up with Daily and Weekly Cleaning/Chores

**The Extraction Department.** The Extraction Department at Salus Scientific is responsible for the production of all concentrates. The Extraction Team is responsible for tracking raw marijuana leaves and flowers throughout the extraction process to create a variety of marijuana concentrates for use in final approved marijuana products of all forms. Required tasks include but are not limited to:

- i. Checking in Trim and Flower products
- ii. Maintaining inventory (Daily Inventory) and in compliance with Inventory Control Software
- iii. Cleaning and maintenance of machines and laboratory
- iv. Identify and prepare all products ready to be processed by checking in and confirming weights through the Daily Inventory Tracker
- v. Determine the final concentrate products that will be created from the identified raw products marking it with the proper batch number according the Daily Inventory Tracker
- vi. Set up the workstations with proper tools and required equipment so it is ready for extraction
- vii. After extraction, identify the products made with proper initial weights and batch numbers into the Daily Inventory Tracker
- viii. Break down and clean up all necessary equipment and area, ensuring all tools and put back into its proper locations
- ix. Clean up and wipe down all stainless steel areas and equipment with 99% alcohol and throw away all trash
- x. Mop the floors with limonene
- xi. Ensure proper maintenance and presentation of the Extraction Lab at all times

**The Lead Extractor.** The Lead Extractor will be responsible for ensuring that other employees on the Extraction Team are following all company policies and all governing laws and regulations. The Lead Extractor will be responsible for arranging the transportation and all accompanying documents for drivers to bring extracts to the Testing Facilities, including the Wadworth Center, and other facilities as they are approved to test medical marijuana products. The Lead Extractor will also be responsible for arranging the transportation and all accompanying documents for drivers to bring extracts to Dispensaries. Any product sent for testing, transferred or shipped out of the Extraction Facility will be recorded in the Inventory Control System.

#### **IV. Dispensary Facility Staffing**

**Pharmacist(s).** No dispensing may occur without a pharmacist on site to counsel patients or to directly supervise the counseling of patients. The Pharmacist or the Facility Security Officer (FSO) will be one of the first two individuals on site at the Dispensary. The Dispensary will not open without a Pharmacist present. The Pharmacist or the Manager will set up the entire medical marijuana product necessary for the day before employees are allowed into the facility.

The Dispensary will have a Pharmacist present during all hours of public operation. This pharmacist, in conjunction with any pharmacy assistants or pharmacy interns, will handle and distribute all medical marijuana products to patients. The Pharmacist or pharmacist-supervised assistant or intern will make sure that all packaging is correct, all labeling is correct, that the proper product is being given to the patient or designated caregiver, and that all necessary and optional inserts and pamphlets are included with the medical marijuana. If it is at all possible, pharmacists will try to give to the patient or designated caregiver medical marijuana products from the same lot as the medical marijuana product dispensed to the patient previously. If that is not possible then the Pharmacists will make sure that each patient receives approved medical marijuana product from no more than two distinct lots for any 30-day supply dispensed.

Only the Pharmacist, or the Pharmacy Assistant or Intern (under direct supervision of the Pharmacist) will consult with the patient or designated caregiver about the product and offer suggestions about the product, its use and other information about the medical marijuana product that the Pharmacist is legally required to tell the patient or that the Pharmacists believe the patient should know and any answers to questions the patient or caregiver may have. Patients may request time to sit down with the Pharmacist and have a more in-depth consultation than may be available with the average medical marijuana dispensing. Check-In employees will make sure that any such patients or designated caregivers get as much attention as possible while still maintaining patient flow within the Dispensary.

Once the Pharmacists and the patient or designated caregiver feel that the consultation is completed, Pharmacists will notify the employees and the employee will bring the patient or designated caregiver to the area where the sale will be completed.

**Red Zone Manager.** The dispensing staff will include a Red Zone Manager with access to the most secure and restricted areas of the facilities (Red Zones). The Red Zone Manager role will be filled by the Dispensary Manager on duty with the highest level of security access granted until expansion of the security plan requires promoting a unique manager to the Red Zone Manager position. This Dispensary Manager will be required to perform additional security and dispensary oversight tasks.

**Facility Security Officer.** The Facility Security Officer (FSO) will be one the first two individuals on site at the Dispensary. The Dispensary will not open without the FSO or a Manager with equal security oversight present. The FSO is responsible for ensuring that all security policies are successfully implemented, including training of security personnel.

**Retail Security Team.** [REDACTED] of the security team will be present at the Dispensary  
Redacted pursuant to N.Y. Public Officers Law, Art. 6

## Redacted pursuant to N.Y. Public Officers Law, Art. 6

**Opening Manager.** The Pharmacist or Red Zone Manager, collectively Opening Manager, who arrives at the Dispensary first, will walk the perimeter of the building to look for any potential problems with the building. If the Opening Manager finds that there is a problem with the building they will call another Manager. Then the Opening Manager will notify local law enforcement, if necessary, and notify the Department. If the damage to the building or the products inside is such that opening would not be possible then the Opening Managers will call the Owners and alert the staff. When possible a message will be sent, via automated e-mail or phone message, to alert patients that the Dispensary will not be open that day.

If the Opening Manager surveys the building and finds everything in order they will enter the building and disarm the motion detectors, alarms and other security devices that may be present. Opening Manager will make sure that the door is locked after they enter and is not opened again, unless by another manager, until the employees arrive. The Opening Manager will prepare the Dispensary for the day. They are responsible for counting cash drawers, completing opening paperwork, answering e-mails, and taking medical marijuana products out of storage and making them accessible for use during the business day. Test checks on all security systems will be checked regularly, during the morning hours before opening. If there is a problem with an alarm system, for example a panic button or a camera has stopped working, immediate notification will be sent to the company responsible for their repair and a notice will be sent to the Department. The Opening Manager will have all of this completed before employees arrive for their shift.

The Opening Manager will then prepare for Employees to arrive. They will give out the ID badges to employees, check their bags and make sure that no one without a badge is permitted to work and make sure that no employee brought to the facility anything that is prohibited. After employees have had time to put their things away, Opening Managers will review with employees their duties for the day, any record of returns or complaints from the week, any

scheduled visitors and any other information that will be essential for the employee to know for them to be properly prepared for the Dispensary to run that day.

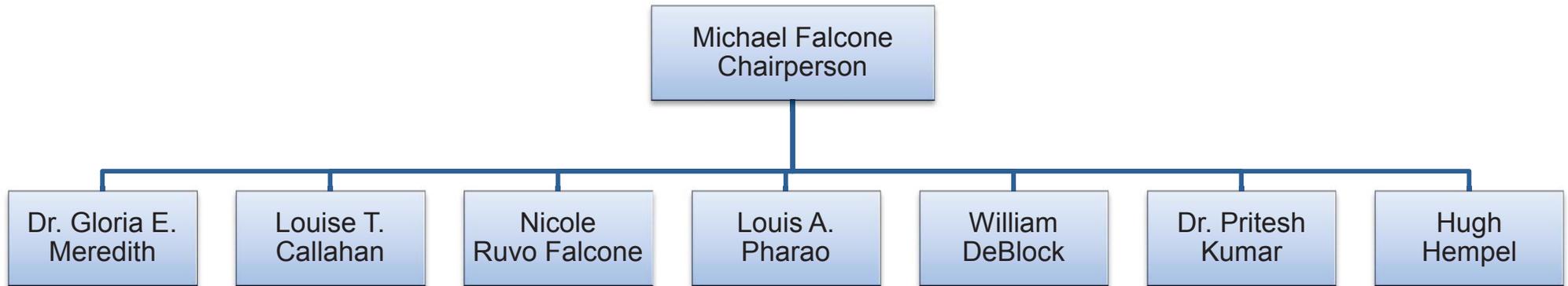
**Closing Manager.** When all employees have left the Dispensary, two Red Zone Managers or a Red Zone Manager and a Pharmacist, collectively Closing Managers, will close down the Dispensary. All doors will be locked and then the closing procedures will begin. Closing Managers will need to count the cash drawers and reconcile the discrepancies in the drawers. They will need to put away all medical marijuana products in their proper storage places and ensure that these storage areas are locked. A thorough walk through of the facility will be undertaken. Any appropriate paperwork that is required will be completed at the end of day. When all the closing procedures are finished the Closing Managers will lock and alarm the Dispensary. If the Closing Managers are taking a deposit to the bank after hours they will call another Manager or an Owner when they are leaving the facility, to alert them that they are making a deposit. Both Closing Managers will travel together and they will call the other Manager or Owner to let them know when the deposit has been made.

**Retail Employees.** Retail employees' primary responsibility is to provide excellent customer service and care to patients. In order to achieve this, Salus Scientific requires a high level of detail and organization in creating the environment patients and staff are accustomed to. Outlined below are daily responsibilities employees can do to ensure all responsibilities are completed and patients continue to receive the level of service and quality of product they expect from Salus Scientific.

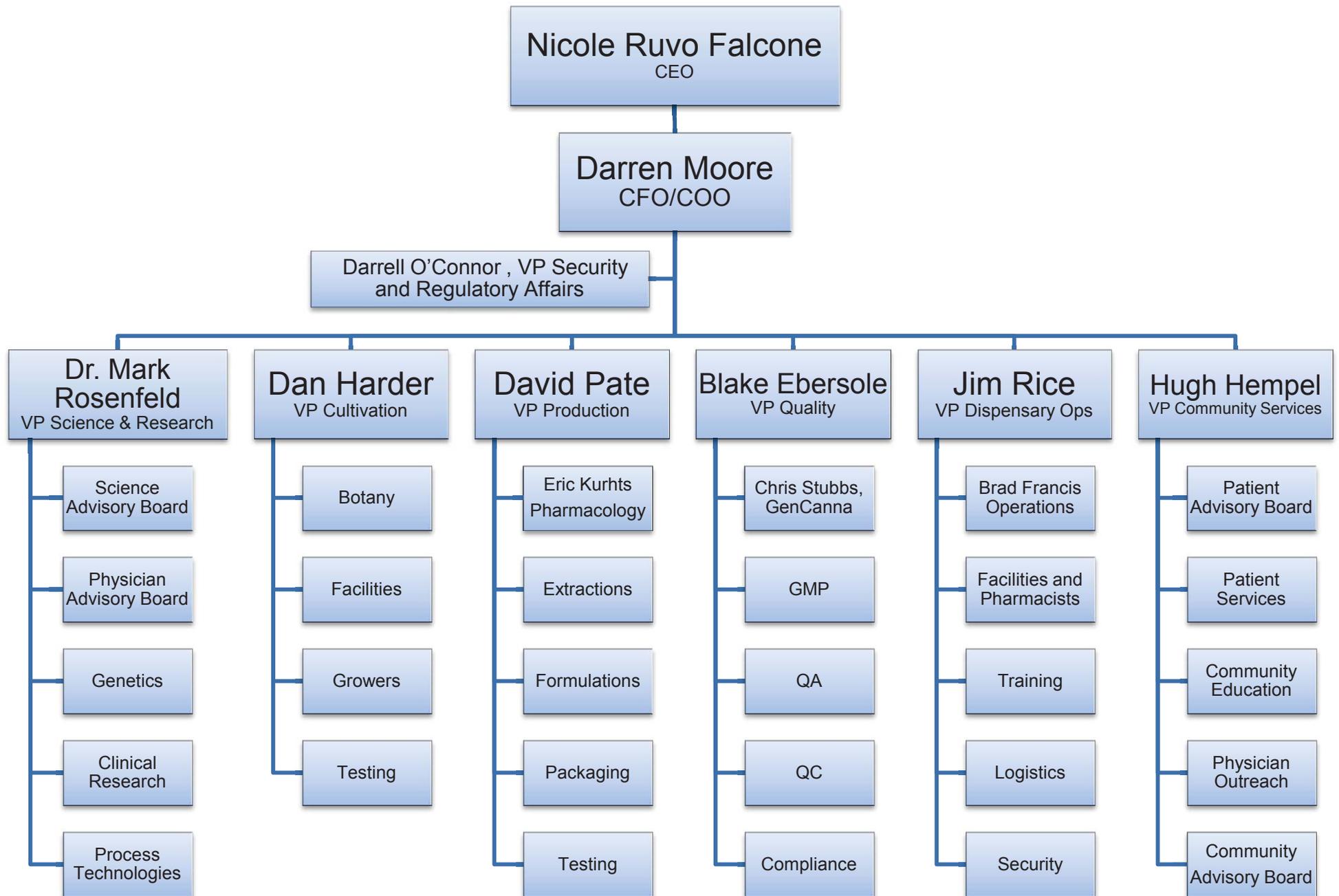
Employees will keep the Dispensary clean and organized during the day. Employees will also monitor the lobby to make sure that no food or beverages are being consumed by certified patients or designated caregivers in the Dispensary, unless necessary for medical reasons. They will assist the pharmacists and the managers in their duties. Employees will be knowledgeable about product. All employees will be trained to check patients in, complete the sale of medical marijuana products and accessories using the point of sale system, check the patient out and update any necessary logs, file any necessary paperwork and update the department with any necessary information.

Employees will remember that they are not to counsel patients or caregivers about the use, administration of, and the risks associated with approved medical marijuana products. The only individuals allowed to give counsel to patients or caregivers about use, administration and risks are the pharmacists or employees under the direct supervision of, and in consultation with, the pharmacist on-site in the dispensing facility.

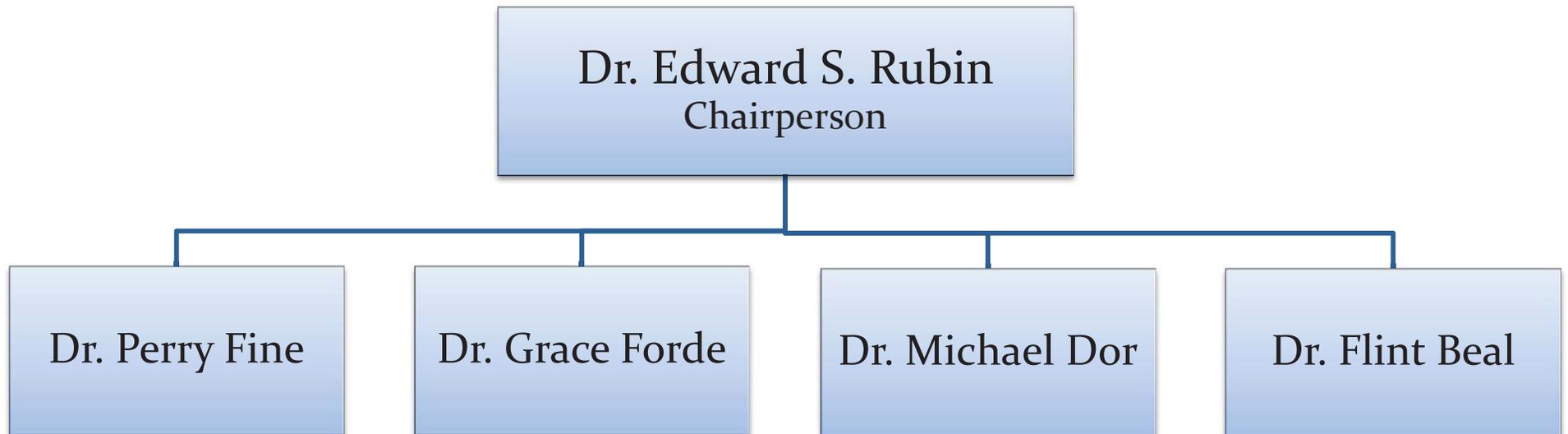
# Salus Scientific, LLC Advisory Board



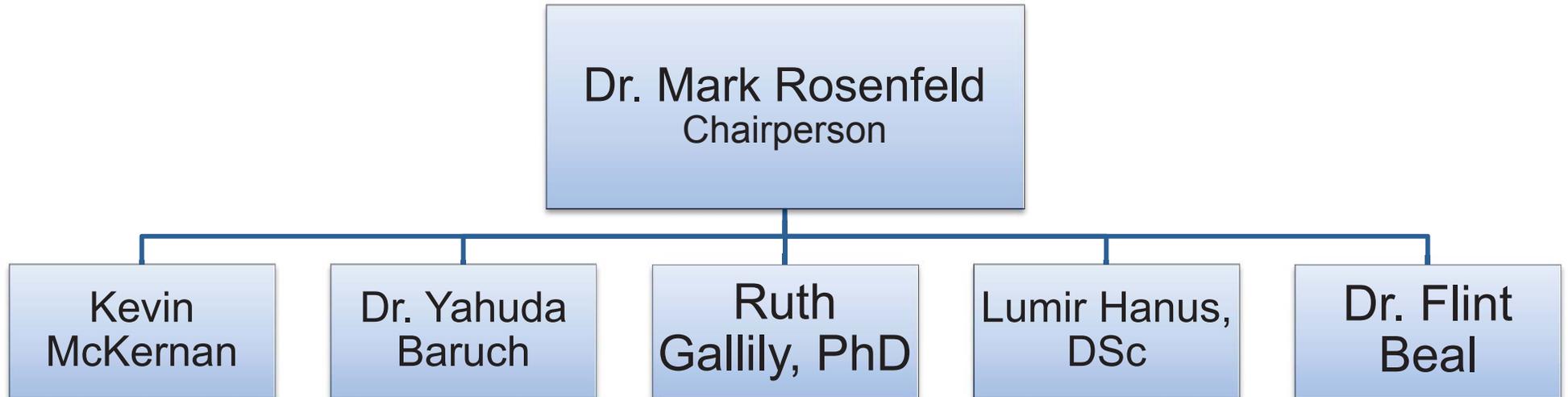
# Salus Scientific, LLC



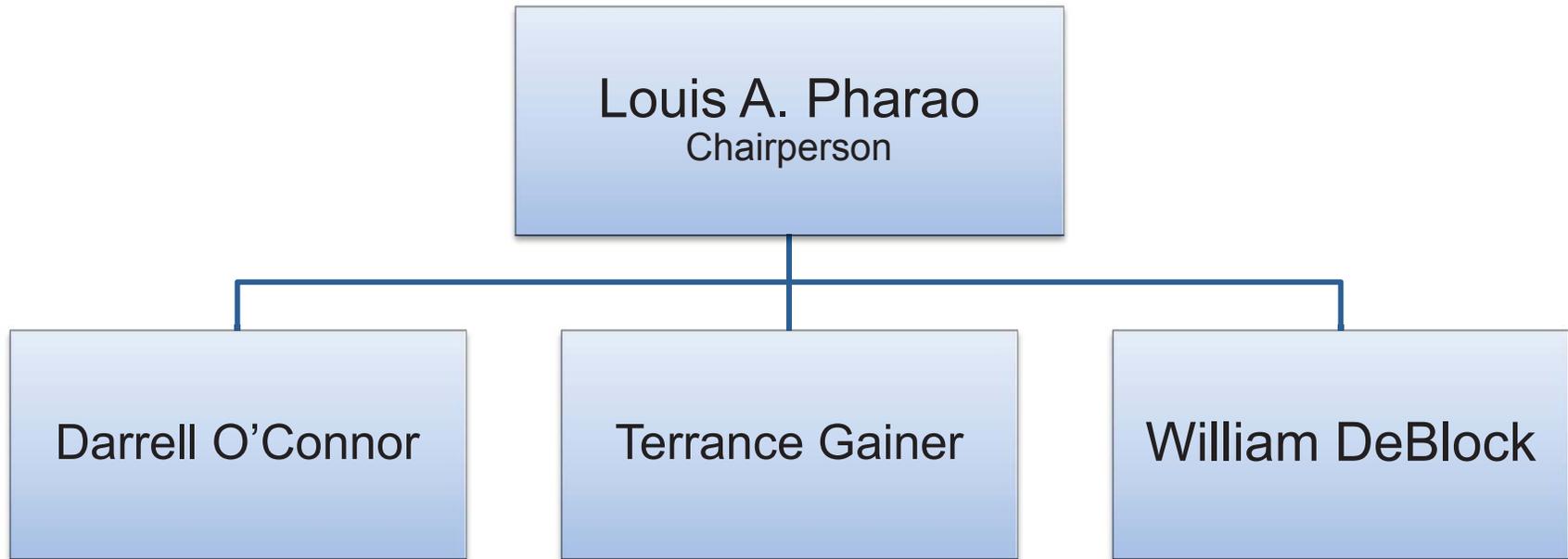
# Physician Advisory Board



# Science Advisory Board



# Security Advisory Board



# **Business Advisory Board**

NICOLE RUVO FALCONE, [REDACTED]

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Ms. Ruvo avidly works to bring cutting-edge health solutions to [REDACTED] New Yorker's, and continually interfaces with top scientists and doctors from around the world to further not only the [REDACTED], but to promote and fund leading research into degenerative brain diseases that impact millions of people worldwide.

Ms. Ruvo has been [REDACTED]

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Ms. Ruvo has been named to multiple boards and has co-chaired a variety of New York-based charity events, including the Breast Cancer Research Foundation's famed Hampton's "Paddle for Pink" event, NYC Meals on Wheels, Free Arts NYC and the New York City chapter of the Police Athletic League. Ms. Ruvo is currently a co-chair to New York's Art Production Fund, a non-profit organization dedicated to commissioning and producing ambitious public art projects, reaching new audiences and expanding awareness through contemporary art.

Ms. Ruvo graduated from the University of San Diego, receiving a Bachelor's Degree in Marketing and Communications.

**Gloria E. Meredith, BS, MS, PhD**

In early 2015, Dr. Meredith is the Founding Dean for the Binghamton University School of Pharmacy and Pharmaceutical Sciences. Binghamton University has built a reputation as a world-class institution that combines a broadly interdisciplinary, international education with one of the most vibrant research programs in the nation. The new School of Pharmacy and Pharmaceutical Sciences is Binghamton University's first new professional school in nearly a decade. The university is making a substantial investment to build this quality professional school that will become a leader in pharmacy practice and pharmaceutical research. Dean Meredith is already working with architects to design a new state-of-the-art building and is presently assembling her leadership team. She is focused on building a research-intensive Pharmacy School, which will welcome its first class of students in 2017, pending pre-candidate status being awarded by the Accreditation Council for Pharmacy Education (ACPE). These students will work one-on-one with an exceptional faculty that will include innovative scientists and exceptional pharmacists.

Dean Meredith obtained her Bachelors and Masters degrees from Southern Methodist University (SMU) in Dallas, Texas. She held a National Science Foundation Fellowship during her final year of study at SMU. In 1983, she completed her PhD at Georgetown University School of Medicine. Her thesis focused on the auditory system. She held an individual National Institutes of Health (NIH-NIMH) pre-doctoral fellowship during years at Georgetown. She was then awarded an individual postdoctoral fellowship from NIH (NINDS) to work at the University of Amsterdam in the Netherlands. In 1987, she became an assistant professor at the Vrije (pronounced 'Free') University in Amsterdam.

. She returned to the United States in 1999, becoming an associate professor of neuroscience at the University of Missouri Kansas City (UMKC) School of Medicine, and served as an adjunct faculty member in the Pharmacology

motivation, and leadership has lead to a vibrant community of students, faculty and staff, who contribute to the success and advancement of the pharmacy profession. She delivered a "State of the College" address annually for faculty, staff, students, preceptors and Advisory Council. She has given several continuing education presentations, not only for the College faculty and preceptors but also for other organizations, e.g., Big Y Foods in Massachusetts.



**LOUIS A. PHARAO**  
Redacted pursuant to N.Y. Public  
Officers Law, Art. 6

**EXPERIENCE**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**Federal Service**

1980-2002, retired June 30, 2002

- **Drug Enforcement Administration's (DEA) Washington Field Division, Associate Special Agent in Charge.**  
Responsible for the oversight, management and supervision of approximately 300 law enforcement and administrative personnel. (2001-2002)
- **Assigned to the Executive Office of President in Office of National Drug Control Policy in Washington, D.C. as Special Advisor to Director.**  
Responsible for advising Director and staff on all matters pertaining to drug enforcement, demand reduction and drug intelligence trends. (2001)
- **Chief, Drug Enforcement Administration's Office of Operations Management (Senior Executive Service) at DEA headquarters, Arlington, Virginia.**  
Responsible for management and oversight of DEA's \$400,000,000 operational budget. Supervision and management of the strategic planning, liaison, command center, confidential informant and policy units. (2000-2001)
- **Acting Chief, DEA Office of Domestic Operations and Executive Assistant to DEA Chief of Operations DEA headquarters, Arlington, Virginia.**  
Responsible for management and supervision of DEA's Domestic offices and provide assistance to the Chief of Operations in domestic and international issues. Also provide support to headquarters and field offices of Diversion Control, Operations Management, Office of Domestic Operations, Office of International Operations, Office of Aviation Operations and the Special Operations Division, in all enforcement and administrative issues. (1999-2000)

- **Special Assistant to the Chief of DEA's Office of Domestic Operations, DEA headquarters, Arlington, Virginia.**  
Responsible for ensuring that all domestic DEA offices receive authorization, funding, guidance and advice on all procedural requirements regarding enforcement actions. Prepared briefings and studies for the executive staff, Administrator and Attorney General's Office. Briefed various groups on matters pertaining to narcotics flow and trends nationally and internationally. (1998-1999)
- **Assistant Special Agent in Charge for DEA's Office of Training, FBI Academy, Quantico, Virginia.**  
Supervised more than 150 employees to include six first line supervisors. Responsible for liaison with other federal agencies and the attorney general's office. Prepared numerous memorandums, letters, decision papers and correspondence on behalf of the Drug Enforcement Administration. Provided instruction and guidance for FBI, DEA and other federal, state and local law enforcement agencies. Ensured that all programs within the Office of Training met budgetary constraints. Administered discipline and punishment as well as awards and commendations for staff and trainees. (1995-1998)
- **Inspector, DEA Office of Inspection, Arlington, Virginia.**  
Responsible for ensuring that all DEA's domestic and international offices complied with policy. Assigned to DEA's Shooting Response Team which was responsible for investigating all shooting incidents. (1994-1995)
- **Unit Chief for Practical Applications Unit, DEA's Office of Training, Quantico, Virginia.**  
Duties included: the supervision of 15 instructor/course developers who were responsible for providing training in the area of case development, report writing, surveillance, undercover, court testimony, defensive tactics and physical training to new Agents as well as in-service training for veteran Agents. Also instructed, developed lesson plans and provided this type of training on an international level. (1992-1994)
- **Supervisor, DEA's Fort Lauderdale, Florida district office.**  
Responsible for supervising and managing 14 special agents, detectives and police officers providing guidance, motivation and assistance as they investigated major drug traffickers. Planned enforcement operations, conducted wire tap investigations, made arrests and seizures of money, property and drugs. Reviewed and certified all written documentation prepared by agents and officers regarding their enforcement activity and/or property/drug seizures. Worked closely with the United States Attorney's Office during the prosecution of criminal cases. Presented briefings to community groups and schools regarding drug enforcement and prevention. (1988-1992)

- **Special Agent, DEA's New York Field Division and West Palm Beach, Florida resident office.**

Responsible for enforcing the federal narcotics laws. Conducted investigations directed at domestic and international drug trafficking, and money laundering criminal organizations. Provided testimony in federal and state court numerous times and worked in an undercover capacity. (1980-1988)

**New York City Police Officer and Narcotics Investigator.**

Responsible for the enforcement of New York State Penal Laws.

Worked in high crime areas of New York City to maintain order, enforce the laws, and investigate vice, gambling and narcotic violations. Initiated numerous investigations, including electronic intercepts against major organized crime families. Testified numerous times in grand juries, state and federal court. (1968-1980)

**MILITARY SERVICE**

1965-1967

United States Army, assigned to Seventh Army Division in Europe.

Recipient of the Good Conduct Medal, National Defense Medal and Honorable Discharge.

Attained the rank of Specialist Fifth Class.

**EDUCATION**

1973-1976

New York Institute of Technology, Old Westbury, N.Y.

*B.S. Police Science (cum laude)*

University of Virginia, Charlottesville, VA.

1991-1993

*Masters, Social Foundations of Education*

George Mason University, Fairfax, VA and Cambridge, England

2001-2005

*M.A., American History*

**ADDITIONAL TRAINING**

Brookings Institute on Executive Leadership in a Changing Environment. May 1998

Numerous additional schools regarding instruction in management principles and other police related functions.

Harvard Management Course, strategic planning in a changing environment.

November 2001

## **AWARDS**

During my tenure as a New York City Police Officer and Narcotics Investigator:

***Chief Inspector's Trophy***, for outstanding all around student at the Police Academy.

Nine ***Excellent police duty citations***.

Two ***Meritorious police duty citations***.

Four ***Commendations***.

Two ***Educational Achievement Certificates***.

Member of the ***Police Honor Legion***.

During my tenure as a Special Agent, first and second line supervisor for the Drug Enforcement Administration:

Two ***Administrator's Awards***.

One ***Excellence of Performance Award***.

Six ***Performance Awards***.

One ***Special Act Award***.

One ***Employee Suggestion Award***.

One ***On-the-Spot Award***.

One ***Distinguished Service Award***.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Published author, "***A Dying Breed***."

## LOUIS A. PHARAO REFERENCES

[REDACTED]  
CONFIDENTIAL

[REDACTED]  
CONFIDENTIAL

[REDACTED]  
CONFIDENTIAL

[REDACTED]  
CONFIDENTIAL

[REDACTED]  
[REDACTED]. In addition, he has overseen all non-real estate investments made on behalf of [REDACTED] and by the company. He is now the primary contact for sourcing equity and joint venture partners and oversees all aspects of design for the firm.

[REDACTED] Falcone has seen first-hand the decline in economy and has made it a personal mission to revitalize the area. He looks at Salus Scientific as a vital cog in creating a center for cannabis and hemp research that will not only benefit New York, making it the epicenter for growth and research, but the rest of the country as well.

Currently he is an Executive Committee member of the Syracuse University School of Architecture Advisory Board, a member of the Advisory Board of Syracuse University School of Visual and Performing Arts and a member of the Board of the Everson Museum of Art in Syracuse, NY. [REDACTED], a

[REDACTED] Falcone serves as a guest lecturer at Syracuse University, speaking to real estate development and the importance of good design in private enterprise.

Mr. Falcone holds a BA degree in English with a minor in Sociology from Georgetown University.

WILLIAM J. DeBLOCK completed a 30 year career with the New York State Police as Deputy Superintendent - Field Commander at State Police Headquarters in Albany from 2000 – 2007. After having started as a Trooper in 1977, Mr. DeBlock rose through the ranks to retain supervision for approximately 4,500 uniform and BCI personnel statewide, gathering extensive experience in terrorism, narcotics and organized crime investigation, as well as advocating for highway safety. His career included time spent as a New Jersey State Police Trooper and [REDACTED]

Mr. DeBlock's career specifically included:

- Deputy Superintendent - Field Commander, Colonel (2000-2007)
- Assistant Deputy Superintendent - Bureau of Criminal Investigation, Lieutenant Colonel (1999-2000)
- Staff Inspector Narcotics and Organized Crime (1998-1999)
- Staff Inspector in Internal Affairs Bureau (1997-1998)
- Troop F Commander - Major, Troop F Middletown (1994-1997)
- Troop NYC Commander - Major, New York City (1992-1994)
- Bureau of Criminal Investigation - Captain, Troop K Poughkeepsie (1990-1992)
- Bureau of Criminal Investigation - Captain, New York Drug Enforcement Task Force - Deputy Chief (1989-1990)
- Bureau of Criminal Investigation - Lieutenant, New York Drug Enforcement Task Force - Division Chief (1988-1989)
- Lieutenant - Special Narcotics Prosecutor, New York City (1986-1988)
- Investigator - Troop F Middletown (1981-1986)
- Trooper in Troop F Middletown and Troop T Tarrytown (1977-1981)

Mr. DeBlock recently spent time in the field of private investigation concentrating on Workers Compensation Fraud, and currently serves as Adjunct Instructor in Criminal Justice as part of the SUNY Delhi program offered at Schenectady County Community College.

[REDACTED] and during his career was proudly affiliated with the New York State Association of Chiefs of Police, FBI National Academy Associates, and Henry William Associates.

DeBlock attended the FBI National Academy, Quantico, Virginia, achieved a BS in Law Enforcement Administration from Michigan State University, and graduated with an MA in Criminal Justice from the State University of New York at Albany.

Louise T Callahan

Louise Callahan is a [REDACTED]  
[REDACTED] Ms. Callahan graduated with honors from the State University of New York at Cortland in Childhood Education. Louise is a [REDACTED] [REDACTED] and has worked in her [REDACTED] business for 36 years. She is involved with a number of financial aspects of the business and is also responsible for all of the company's community outreach and corporate giving.

Her company is a major sponsor of many charitable events in [REDACTED] and surrounding communities. As a [REDACTED] and employee, Louise has worked with the Make-A-Wish Foundation, The American Cancer Society, Catholic Charities of [REDACTED] County and many other charitable organizations. She is a patron of the Catholic Schools of [REDACTED] and an active community [REDACTED]. Louise and [REDACTED] [REDACTED] currently reside in [REDACTED] and are the [REDACTED]. Her deep community roots and demonstrated interest in the well-being of the [REDACTED] make her uniquely qualified to advocate for her community while serving as a board adviser.

## Hugh Hempel Narrative

### Business Experience

Hugh Hempel, a [REDACTED], is a former [REDACTED] technology industry veteran turned healthcare entrepreneur. During his 30-year career in high technology, Mr. Hempel has held numerous senior management positions in many innovative and pioneering technology companies [REDACTED]

Mr. Hempel currently runs a biotechnology startup and is working with the FDA to develop a new drug for [REDACTED]

[REDACTED] Mr. Hempel and [REDACTED] discovered through their own medical research that a simple sugar compound called cyclodextrin could save [REDACTED] lives.

The Hempels' journey to develop cyclodextrin into a new pharmaceutical drug made international headlines and was featured on the front page of *The Wall Street Journal* in a 10-chapter online story entitled, "A Desperate Fight to Save Kids and Change Science," as well as in a documentary called "Here. Us. Now." As [REDACTED] "citizen scientists," the Hempels successfully filed drug applications with the U.S. Food and Drug Administration (FDA) and received unprecedented approval from the FDA to start cyclodextrin treatment [REDACTED]

As a result of developing this novel drug [REDACTED] Niemann Pick Type C patients worldwide, Mr. Hempel [REDACTED] have become nationally recognized healthcare advocates who are frequent speakers on a variety of topics including small clinical trial design, new drug discovery, and patient reported outcome systems.

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### Community and Non-Profit Involvement

Mr. Hempel is involved in numerous community and non-profit healthcare organizations. In addition to founding and running his own non-profit foundation, [REDACTED]

[REDACTED], Mr. Hempel sits on Board of Directors for The Global Genes Project, a leading rare and genetic disease non-profit advocacy organization based in [REDACTED]

### **Working with Government Agencies**

Mr. Hempel has extensive experience working with our nation's leading federal health agencies, making him uniquely qualified to operate a statewide medical marijuana business. He has spent six years working closely with the Food and Drug Administration (FDA), a U.S. Department of Health and Human Services (HHS) agency. Specifically, he works with FDA's Center for Drug Evaluation and Research (CDER), the largest of FDA's five centers, to ensure that the drug he developed is safe and effective to provide [REDACTED] NPC patients worldwide. He has worked extensively with CDER physicians, chemists, pharmacologists, and other scientists, and understands the strict regulations involved in manufacturing pharmaceutical-grade medications under carefully monitored conditions to create the best dose and route of delivery for patients with debilitating medical conditions.

He has also worked with the National Institutes of Health (NIH), the primary agency of the United States government responsible for investing nearly \$30 billion annually in biomedical and health-related research. His experience in working with leading federal health agencies and conducting clinical trials is a major asset to The Clinic Nevada.

### **Medical Marijuana Knowledge**

Mr. Hempel is a licensed and registered medical marijuana caregiver in Nevada (#C140400756).

[REDACTED]  
[REDACTED]. As a licensed caregiver, Mr. Hempel is extremely knowledgeable about the benefits of medical marijuana and has been researching the endocannabinoid receptors system since 2009.

Mr. Hempel decided to create a Nevada-based "cannabusiness" focused on legally developing and distributing pharmaceutical-grade cannabis products (high-quality flowers, extracts and concentrates) at competitive prices for Nevada patients. Mr. Hempel aims to create a statewide cannabis research program in Nevada to better elucidate the potential benefits of the cannabis plant. The creation of a pharmaceutical-quality cannabis supply network is the first step towards this larger goal of building knowledge about using cannabis to improve health.

DR. PRITESCH KUMAR is a cannabinoid research scientist and consultant trained in ensuring Quality Assurance/Quality Control (QA/QC), current Good Manufacturing Practices (cGMP), current Good Production Practices (GPP), and current Good Laboratory Practices (cGLP) of pharmaceutical products and Active Pharmaceutical Ingredients (APIs). As Cannabinoid Pharmacologist and Laboratory Manager since 2009 at the University of Louisville in Kentucky, Pritesh has conducted medical cannabinoid research as it pertains to the cannabinoid receptor 2 (CB2). He has received honors and awards including Best Oral Presentation from the International Cannabinoid Research Society (ICRS) Conference in Vancouver and fellowships from Drug Discovery and Target in Boston and Integrated Programs in Biomedical Sciences (IPIBS) as well as travel awards from the National Institute on Drug Abuse and University of Louisville School of Medicine for his presentations in the U.S., Canada, Italy, and Germany.

Mr. Kumar has been published in numerous scientific journals including the European Journal of Pharmacology, Pharmacology and Physiology, Journal of Medicinal Chemistry, Investigative Ophthalmology & Visual Science and Biochemical and Biophysical Research Communications. He is an active member of the International Association for Cannabis as Medicine (IACM), National Cannabis Industry Association (NCIA) and Liaison Committee on Medical Education (LCME) of the University Of Louisville School Of Medicine. In addition, Mr. Kumar is a member of the International Cannabinoid Research Society (ICRS), American Society of Cell Biology (ASCB) and National Glaucoma Society (NGS) and was a member of the University of Louisville's Technology Sub-committee.

In addition to his publications, he has presented his research at several international conferences and has co-authored a book chapter pertaining to polymorphisms in the cannabinoid receptor 2 and related impacts to certain pathologies.

Dr. Kumar's research pertains to the pharmacological testing of FDA approved drugs as potential ligands for CB2, investigates the pharmacology of cannabidiol (CBD) for CB2 and is responsible for all aspects of managing the laboratory as well as QA as it pertains to sampling, handling, storage, managing complaints, recalls, and testing of cannabinoid drugs.

Currently, Dr. Kumar is the [REDACTED] [REDACTED] [REDACTED] with a primary focus of developing safe, consistent, and pure medicinal cannabinoid-based therapeutics. Dr. Kumar currently performs QC studies on a variety of synthetic cannabinoid compounds (*e.g.* CP-55,940, HU-210, WIN55212-2) to ensure purity which he uses for his research. In addition to his current research, Dr. Kumar was one of a handful of individuals to be awarded a fellowship from the National Institute of Environmental Health Sciences (NIEHS) in 2012 and since then has been investigating

the role of environmental agents and their possible effect on the endocannabinoid system using the cannabinoids (CP-55,940, HU-210, WIN55212-2) as validated standards.

Dr. Kumar has developed and implemented a QA system and Standard Operating Procedures (SOPs) as it pertains to the sampling, handling, storage, and testing of cannabinoid compounds in the laboratory. Furthermore, Dr. Kumar is responsible for all equipment maintenance and oversees the sanitation program in the laboratory. Dr. Kumar is currently responsible for the conducting weekly tests for hazardous waste, internal inspections, biosafety checks, and radiation safety checks as it pertains to synthetic cannabinoid drugs. Dr. Kumar's specific responsibilities include writing, reviewing, and revising department and facility SOPs; reviewing cGMP/GLP documentation and certificates of analysis (COA) for compliance; performing instrument calibrations, verifications, and maintenance. In addition, Dr. Kumar is responsible for generating SOPs for initiating recalls from drug manufacturers of compound chemical libraries pursuant to 21 CFR 7.46. Specifically, Dr. Kumar is responsible for initiating/investigating all cannabinoid purity related complaints in compliance with ISO 10002. Dr. Kumar oversees the establishment of a Corrective and Preventative Actions (CAPA) Program for conducting and documenting internal activities for continual assessment of compliance with SOPs and departmental regulations.

In addition to his role at the University of Louisville, Dr. Kumar is also a Cannabinoid Consultant to the University of North Carolina in Greensboro, North Carolina. Previously, Dr. Kumar has used his expertise to test and validate novel cannabinoid receptor antagonists using a variety of pharmacological techniques (*e.g.* purity testing, competition binding assays, cell-based assays) to determine the efficacy of these compounds. In addition, Dr. Kumar is responsible for developing and issuing a Certificate of Analysis (COA) for each batch tested and reporting this to the manufacturer.

Previously, Dr. Kumar served as a Research Assistant with the Department of Nutritional Biochemistry at the University of Kentucky. While at the University of Kentucky, Dr. Kumar conducted research to investigate the role nutrition plays in preventing vascular toxicity induced by polychlorinated biphenyls (PCBs). Furthermore, Dr. Kumar was responsible for ensuring QA as it pertained to the maintenance of cell culture media in the laboratory. Dr. Kumar was also responsible for maintaining the laboratory ensuring

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His current research focus on cannabinoid pharmacology and experience managing laboratories combined with his extensive quality control skill set are ideally suited to assist [REDACTED] in the development of the formulation and product development areas.

Dr. Kumar has extensive experience preparing documentation pertaining to medical marijuana license acquisition in both Canada and the United States and advises clients on issues regarding laboratory facility design/optimization, proper laboratory equipment for cannabis testing, analytical methodology for cannabinoid analysis and separation, pharmacology of cannabis-based therapeutics, maintaining a QA system to ensure compliance.

Overall, Dr. Kumar's experience and expertise will be utilized to lead the product development operations at [REDACTED].

# **Senior Management Team**

DARREN MOORE has been around business his entire life. From growing up in a [REDACTED] owned forklift material handling business and learning the principles of service and sales, Darren always knew that the entrepreneurial spirit lived inside him and that one day he would build opportunities. Once graduating from The University of San Diego, Darren began [REDACTED]  
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[REDACTED]. Darren is known for his strong work ethic, integrity, and his ability to deliver honest communication.

NICOLE RUVO FALCONE, a [REDACTED]

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Ms. Ruvo avidly works to bring cutting-edge health solutions to [REDACTED] New Yorker's, and continually interfaces with top scientists and doctors from around the world to further not only [REDACTED] but to promote and fund leading research into degenerative brain diseases that impact millions of people worldwide.

Ms. Ruvo has been a [REDACTED] [REDACTED] and has been working for the [REDACTED]  
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Ms. Ruvo has been named to multiple boards and has co-chaired a variety of New York-based charity events, including the Breast Cancer Research Foundation's famed Hampton's "Paddle for Pink" event, NYC Meals on Wheels, Free Arts NYC and the New York City chapter of the Police Athletic League. Ms. Ruvo is currently a co-chair to New York's Art Production Fund, a non-profit organization dedicated to commissioning and producing ambitious public art projects, reaching new audiences and expanding awareness through contemporary art.

Ms. Ruvo graduated from the University of San Diego, receiving a Bachelor's Degree in Marketing and Communications.

REBECCA GASCA, Salus Scientific VP of Regulatory Affairs, [REDACTED]  
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In addition to a B.A. in Economics and a B.S. in International Business, Ms. Gasca holds two certificates in mediation and conflict resolution and a separate certificate in grant writing. [REDACTED]  
[REDACTED] Her travels to Nepal and Turkey on behalf of the US Department of State, Bureau of Education and Cultural Affairs, as an Ambassador of Goodwill on behalf of Rotary International to Chile, Brazil, and Thailand, and as a citizen diplomat to Bhutan, along with her longstanding public policy experience, has laid the groundwork for her commitment to purposeful engagement and problem solving.

**RESUME:** Darrell G. O'Connor

**Licensed Private Investigator – Commonwealth of Pennsylvania - 7/10/2011 to Present**

**Education:** B.A./Criminal Justice - John Jay College of Criminal Justice, NY, NY

**Employment:**

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**Special Agent/Criminal Investigator, Office of the Inspector General - (01/2012 to 9/2012)**

**Environmental Protection Agency, Philadelphia, Pennsylvania**

Conducted nationwide waste, fraud and abuse reviews and proactive investigations to determine compliance with EPA Superfund and State Revolving Fund programs and procedures.

**Senior Safety and Security Advisor, U. S. House of Representatives, Washington, DC - (11/07 to 01/2011)**

Held weekly meetings on budget, waste, fraud and abuse issues with the senior management of the United States Capitol Police (USCP), the House Sergeant at Arms (HSAA) and USCP Inspector General. Conduct assessments of safety, security, threats, evacuation, business continuity preparedness and disaster recovery operations for the U.S. House of Representatives, House Staff, Capitol Hill properties, District Office locations and assets.

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**Special Agent/Criminal Investigator – Transportation Security Administration, (6/02 to 6/07)**

**Office of Internal Affairs and Inspection – United States Department of Homeland Security**

Participate in impartial investigations, inspections and covert testing of TSA personnel, programs and operations to ensure the safety and security of national and local air, rail and surface transportation systems.

**Special Agent/Criminal Investigator/PIO – Bureau of Alcohol, Firearms and Explosives – (5/77 to 6/02)**

Coordinated numerous and complex criminal conspiracy investigations of violations of federal firearms, explosives and arson laws. Served as ATF PIO, National Composite Artist and National Response Team Member. Assisted in the 1996 Atlanta Olympics Centennial Park Bombing and the 9/11/2001 World Trade Center Terrorist Attack. Participated in numerous U.S. Secret Service and U.S. State Department protection details for the President of the United States, Presidential Candidates and Foreign Dignitaries. Served as an Instructor in numerous ATF training seminars for law enforcement personnel and civilian organizations.

**Special Investigator, Office of the Special Prosecutor, State of New York – (1976 to 1977)**

Participated in internal affairs and criminal investigations relating to corruption within the New York City Police Department and the NYC Criminal Justice system.

**Associations:** Member of the National Organization of Black Law Enforcement Executives (NOBLE).

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**Mark Jay Rosenfeld, M.S., Ph.D.**  
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**PROFESSIONAL EXPERIENCE:**

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**Board of Directors**

2009-2010

**NanoDygm, Inc.**

383 Colorow Drive Salt Lake City, Utah 84108 USA

*Detecting agents of bioterror with surface-enhanced Raman spectroscopy*

**US Representative**

2007-2010

**Coordinated Research Programme on the Early and Rapid Diagnosis of Transboundary Diseases, Joint Committee of the Food and Agriculture Organization / International Atomic Energy Agency of the United Nations**

Vienna International Centre, A-1400 Vienna, Austria

*Bird Flu (H5N1 Avian Influenza) early detection*

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**Advisor -- Subcommittee on Health**

2005 – 2009

**U.S. House of Representatives**

Washington, D.C. USA

**Advisor -- China State Council on Medical Reform**

2005 – 2006

**China Ministry of Health**

1 Xizhimenwai Nanlu, Xi Cheng District, Beijing 100044, China

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

**REGULATORY EXPERIENCE**

FDA EUA, DxNA GeneSTAT 2009 A/H1N1 Swine Influenza Test, 14 December 2009

UN Food and Agriculture Organization Certification, DxNA GeneSTAT Highly-Pathogenic H5N1 Avian Influenza (Bird Flu) Test

11 Institutional Review Board Human Research Approvals, United States and United Nations World Health Organization

**GOVERNMENT TESTIMONY:**

"Phytocannabinoids in Human Medicine", Testimony to the Oklahoma, Pennsylvania and Utah State Legislatures, 2013-2014

"Women and Cancer: Where Are We in Prevention, Early Detection and Treatment of Gynecologic Cancers", Subcommittee on Criminal Justice, Drug Policy and Human Resources, U.S. House of Representatives, Washington, D.C., 7 September 2005

"U.S. Food and Drug Administration, Cervical Cancer Special Meeting", US Food and Drug Administration, Washington, D.C., 21 January 2002

**EDUCATION:**

**Ph.D.** 1991, University of Utah (Molecular Genetics)

**M.Sc.** 1983, First Class Honors, University of British Columbia (Molecular Genetics)

**B.Sc.** 1976, University of Utah (Biology)

## **ADDITIONAL POSITIONS:**

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**Scientific Consultant**, Council of Agriculture, Taiwan (H5N1 Avian Influenza), 1998-1999.

**Research Assistant Professor and Post-Doctoral Fellow**, University of Utah School of Medicine and Veterans Administration Medical Center, 1991-1993.

**Research Assistant Professor**, Department of Geography, University of Utah, (Biogeography -- using genetical, biochemical and molecular biological techniques), 1991-1993.

**Curator and Staff Biologist**, Utah Museum of Natural History, University of Utah (Ecology and Reproductive Biology), 1985-1991.

**Scientific and Technical Consultant**, U.S. Fish and Wildlife Service and Utah Division of Wildlife Resources, (Genetics of Threatened and Endangered Species), 1981-1993.

## **PUBLICATIONS, PATENTS & SEMINAR PRESENTATIONS:**

22 published articles

Latest article: The Endocannabinoid System, Cannabinoids, and Pain. 2013. Rambam Maimonides Med J. 4(4): e0022

1 book chapter

Patents

- Four patents on phytocannabinoid extraction and purification applied for under ISA Scientific
- Issued US pharmaceutical patents: 7507731, 7521467, 7521468, 7524877, 7536363, 7541356, 7794761
- Issued US molecular biology patents: 6933123, 7267961
- Filed US pharmacology patent: 20040209877

More than 25 invited seminars across the United States and in Austria, China, Sweden, Denmark, Vietnam, Malaysia and Canada

## **TEACHING AWARDS:**

University of Utah John R. Park Teachers' Fellowship

University of British Columbia Teaching Fellowship

## CURRICULUM VITAE

**Daniel Kenneth Harder**

### Personal

CONFIDENTIAL

### Education

Gustavus Adolphus College, St. Peter, Minnesota. Fall 1978 and Spring 1979.

University of Wisconsin, Madison, Wisconsin. Bachelor of Science degree in Botany, Spring 1982.

University of California, Berkeley, California. Doctor of Philosophy degree in Botany, May 1990. Dissertation title: Developmental Physiology of the Cultivated Winged Bean, *Psophocarpus tetragonolobus*, L. (DC).

### Primary Professional Roles

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### Past Professional Roles

Wo/Men's Alliance for Medical Marijuana, Vice-President, Board of Directors, January 2010-2013.

Executive Director, Arboretum at the University of California, Santa Cruz Oct. 2001 - Oct. 2009

Adjunct Professor, Department of Ecology and Evolutionary Biology, University of California, Santa Cruz Oct. 2001.

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Odell Wilson Research Fellow, University of California, Berkeley. Fall 1986, spring and summer 1988.

Graduate Student, Department of Botany, University of California, Berkeley 1984-1990.

Doctorate of Philosophy degree conferred Fall 1990. Dissertation: Harder, D. K. 1990.

Developmental Physiology of the Cultivated Winged Bean, *Psophocarpus tetragonolobus* (L.) DC.: Growth Attributes and Mineral Contents. University of California, Berkeley.

**Professional Experience**

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

Panel Expert for legislative hearings regarding the Light Brown Apple Moth in California.

California State Senator Joe Simitian, Environmental Quality Committee, May 13, 2008.

US Congresswoman Jackie Speier, Roundtable; Anatomy of a Decision, September 30, 2008.

California State Senator Dean Florez, Senate Committee on Food and Agriculture, Evaluating CDFA's LBAM EIR; Is It Supported by the Facts? August 25, 2009.

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

Lecturer in Botany, University of Missouri, St. Louis. 1992 – 2001.

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

Scientific Expert and Chief Botanical Consultant for U.S. Food and Drug Administration, Division of Drug Testing and Analytical Analysis, tobacco litigation and pharmacopeia quality standards. St. Louis, Missouri. 1997 – 1999.

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Redacted pursuant to N.Y. Public Officers Law, Art. 6

Visiting Scientist to St Louis Public Schools, lectures, workshops, and implementing a hands-on science education program. 1992 – 1999.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Field research for the Ph.D. Thesis on the cultivated winged bean, *Psophocarpus tetragonolobus* (L.) DC. at National Tropical Botanical Garden at Lawai, Kauai, Hawaii and Universities of California Berkeley and Davis 1986, 1987, 1988

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Teaching Assistant in the Botany Department at the University of California, Berkeley in Basic Biology, Plants and Civilization, Plant Physiology, Flora of California, and Evolutionary Morphology.

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#### **Professional Societies**

American Horticultural Society  
American Public Garden Association  
American Institute of Biological Sciences  
Association Pour l'Etude Taxonomique de la Flore d'Afrique Tropicale (AETFAT)  
Botanical Society of America  
California Association of Museums  
California Native Plant Society, local and state chapters  
Northern California Botanists  
Society for Economic Botany  
Society of Ethnobotany

#### **Languages**

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## Awards, Grants and Fellowships

- The David and Lucile Packard Foundation, Organizational Effectiveness, Oct. 2013-Oct. 2014.
- The David and Lucile Packard Foundation, Local Grantmaking, Nov. 2013-Oct. 2015.
- San Lorenzo Valley Water District Classic Watershed Education Grant 2013. Oct. 2013-Oct 2014.
- Heritage Preservation, 2012 Conservation Assessment Program, Jan. 2012-Dec. 2013.
- San Francisco Bay Guardian, Best of the Bay, Local Heroes, 07/05/2008, with James Carey and Jeff Rosendale. Recognition of bringing opposing scientific data and perspective into the eradication attempt of the Light Brown Apple Moth.
- Elvenia J. Slosson Endowment, *Central Coast Native Plant Horticulture*. July 1, 2009 – June 30, 2010.
- The David and Lucile Packard Foundation, *Collection Stewardship* grant. Local Grantmaking in Conservation Science. January through December 2009.
- California Department of Parks and Recreation Contracts: 1) Growing for the *Laguna Lagoons Uplands Coastal Scrub Restoration Project at Coast Dairies Property on the North Coast of Santa Cruz County* (a seed collection and growing contract for 120,000 native plants), May 14 2007 – December 31, 2008, 2) Planting for the *Laguna Lagoons Uplands coastal Scrub Restoration Project at Coast Dairies Property on the North Coast of Santa Cruz County*, November 14, 2008 – April 1, 2009, and 3) Growing for two sites within the *Santa Cruz District of California State Parks within the Henry Cowell Sandhills Restoration and Laguna Lagoons Uplands Coastal Scrub Restoration Project at Coast Dairies Property on the North Coast of Santa Cruz County*, from April 2009 until March 15<sup>th</sup>, 2011.
- Saratoga Horticultural Research Endowment, *Collection Security for Rare Cultivars and Succulent Plant Introductions*. January – December 2009.
- Institute for Museums and Library Services, Museums for America Collections Stewardship Award. *Enhanced Stewardship: Collections Data, Seed Storage, and Herbarium*. Beginning October 1, 2008.
- The Christensen Fund. *Culture in the Collections*. 18 month project, Awarded 2007.
- The David and Lucile Packard Foundation, Organizational Effectiveness grant. Awarded 2005.
- Elvenia J. Slosson Endowment, The Creation of an Australian Rock Garden. One-year project. Awarded February 2006.
- Elvenia J. Slosson Endowment, The Cultivation of Species Growing in Natural Rock Gardens. One-year project. Awarded February 2005.
- Stanley Smith Horticultural Trust. Interpretation Along the Taxonomy Trail. Awarded 2005.
- Institute for Museums and Library Services, Office of Museum Services. Conservation Project Support and Educational Component. Awarded July 2005, completed July 2007.
- US Fish and Wildlife Service/National Park Service, *Dudleya* Conservation. One year project, awarded Oct. 2004.
- The David and Lucile Packard Foundation, Plant Conservation Program of the Arboretum at the University of California, Santa Cruz. Three-year, awarded October 2001.
- The Henry Luce Foundation, Inc., Natural Resources Management, An Integrated Botanical Training and Conservation Program in Viet Nam. Four-year program, awarded, January 2001.
- National Geographic Society – Grant No. 6733-00 – “Botanical Inventory of Unexplored Areas in Viet Nam : The North” Two Year Project beginning spring 2000.
- National Science Foundation, Directorate for Biological Sciences, Division of Environmental Sciences, Biotic Surveys and Inventories, "A Multi-taxa Inventory of Threatened Conservation Areas in Viet Nam. Three year project beginning Fall, 1998.
- Anonymous support for building reference collections in association with the Missouri Botanical Garden’s Viet Nam Botanical Conservation Program. Spring, 2000.

Global Environmental Facility (GEF), United Nations Environment Program (UNEP), United Nations Development Programme (UNDP), and World Bank, Congo, Brazzaville. Four year project beginning Spring 1996.

Dana Brown Charitable Trust, "An Integrated Program for Zambia: Botanical Diversity, Professional Training and Conservation." Three-year project beginning Spring 1996.

United States Agency for International Development (USAID), Program in Science and Technology Cooperation (PSTC), Project 11.077; The Plant Genetic Resources of the Zambebian Domain of Zambia within Remote Sensing for Natural Resources Analysis. A three-year project beginning fall 1993.

National Geographic Society - Grant No. 4666-91. "Ethnobotanical Survey of the Zambebian Woodland of Northern Zambia." Four-month project beginning spring 1994.

National Geographic Society - Grant No. 4145-92. "Southern Migration Route" Three-month project in Western Tanzania, beginning Fall 1992.

Odell Wilson Fellowship for Outstanding Academic Achievement from the University of California, Berkeley. Granted for the Fall of 1989 and Spring of 1990.

Outstanding Graduate Student Instructor. Granted from the University of California, Berkeley, for Fall 1987 (Plants and Civilization with Herbert Baker) and Fall 1988 (Plant Physiology with Lewis Feldman).

International Board for Plant Genetic Resources Contract Grant to collect the wild species in the genus *Psophocarpus* from Zaire (Democratic Republic of Congo) and Kenya. Six months, Spring and Summer 1987.

Sigma Xi, Grant-in-Aid of Research, 1987, 1988, 1989.

## Publications

- Harder, D. K. 1987. Report on the collection of *Psophocarpus* species in Zaire (reference No. 86/74). International Board for Plant Genetic Resources. Rome, Italy.
- Harder, D. K., P. M. L. Onyembe & T. Musasa. 1990. The uses, nutritional composition and ecogeography of four species of *Psophocarpus* (*Leguminosae*, *Phaseoleae*) in Zaire. *Economic Botany* 44: 391-409.
- Harder, D. K. 1991. Indigenous uses of *Psophocarpus* (*Leguminosae*, *Phaseoleae*) in Zaire. Proceedings of the XIII A.E.T.F.A.T. Congress held in Zomba, Malawi, 2-11 April.
- Harder, D. K. & J. Smartt. 1992. Further evidence on the origin of the cultivated winged bean: chromosome numbers and the presence of a fungal disease. *Economic Botany* 46(2): 187-191.
- Harder, D. K. 1992. Temporal mineral allocation in tubers of the cultivated winged bean, *Psophocarpus tetragonolobus* (L.) DC.: implication to selective breeding. First International Symposium on Tuber Legumes, Guadeloupe, F.W.I., 1-24 April.
- Harder, D. K. 1992. Chromosome counts in *Psophocarpus* (*Fabaceae*) June 1992. *Kew Bull.* 47(2): 529-534.
- Harder, D. K. 1994. Aluminum content of the edible portions of the winged bean: field study and caveat. *Plant Foods for Human Nutrition* 45: 127-137.
- Harder, D. K. & J. Smartt. 1995. Winged bean, *Psophocarpus tetragonolobus*, (*Fabaceae*, *Phaseoleae*). In: N. W. Simmonds & J. Smartt (eds.), *Evolution of Crop Plants*. 2nd Edition.
- Harder, D. K. 1996. Evolution and speciation within *Psophocarpus* and the origin of the cultivated winged bean (*Psophocarpus tetragonolobus* (L.) DC.). *Evolution of the Leguminosae. Advances in Legume in Legume Systematics; part 8, Legumes of Economic Importance*. B. Pickersgill & M. Locke (eds.), Proceedings of the Third International Legume Conference, Royal Botanic Gardens, Kew, U.K.
- Harder, D. K. *Mucuna* (*Fabaceae*). In: W. D. Stevens (ed.), *Flora de Nicaragua*. Monogr. Syst. Bot. Missouri Bot. Gard. (accepted).
- Harder, D. K. *Stizolobium* (*Fabaceae*). In: W. D. Stevens (ed.), *Flora de Nicaragua*. Monogr. Syst. Bot. Missouri Bot. Gard. (accepted).

- Miller, J. S. and D. K. Harder. 1994. Models for Ethical Collaboration in Biodiversity Prospecting. In: R. P. Adams, J. S. Miller, E. M. Golenberg and J. E. Adams, Conservation of Plant Genes II: Utilization of Ancient and Modern DNA. Monogr. Syst. Bot. Missouri Bot. Gard. 48:238-243.
- Miller, J. S. and D. K. Harder (eds.), Round Table Discussion of Intellectual Property Rights. Proceedings of XIV A.E.T.F.A.T. Congress Held in Wageningen, The Netherlands. 22-27 Aug. 1994.
- Thin, N. N. and D. K. Harder 1996. Diversity of Flora of Fansipan-The Highest Mountain in Vietnam. Ann. Missouri Bot. Gard. 83: 404 - 408.
- Harder, D. K. 1995. Ethnobotany, botanical inventory and conservation: an integrated approach in Zambia. Abstracts of the 46th Annual Meeting of the American Institute of Biological Sciences, August.
- Harder, D. K. 1997. Forest Threats Initiative; Protected Area Status. Report to USAID/Zambia.
- Harder, D. K. 1999. Abstract for the Botanical Society of America, Economic Botany Section. International Botanical Congress.
- Harder, D.K. 1999. Botanical Diversity, Professional Training and Conservation: An Integrated Approach in Zambia. In: Timberlake, J. & Kativu, S. African Plant Diversity, Taxonomy and Uses, pp. 283-287. Royal Botanic Gardens, Kew.
- Harder, D.K. Abreae. In: G.V. Pope (ed.), *Flora Zambesiaca*. Royal Botanic Gardens, Kew. (accepted).
- Harder, D.K. 2000. Typification and New Combinations in *Abrus* Adans. (Fabaceae, Faboideae, Abreae). Novon 10(2).
- Nguyen Khanh Van, T.H. Nguyen, K.L. Phan, T.H. Nguyen. 2000. Cac Bieu Do Sinh Khi Hau, Viet Nam (Bioclimatic Diagrams of Viet Nam) (English version of manuscript by DKH). Nha Xuat Ban Dai Hoc Quoc Gia Ha Noi (Viet Nam National University Publishing House, Hanoi), 126 pp.
- Harder, D.K. 2001. Director's Note. Bulletin of the UCSC Arboretum Associates 25(4):3,5.
- Phan Ke Loc, D.K. Harder, Tran Dinh Dai, Duong Thi Hoan, Nguyen Tien Hiep 2001. Tinh da dang cua he thuc vat Viet Nam 8. *Koelreuteria bipinnata* Franch. Tam phong go kep long chim hai lan (Ho Bo Hon Sapindaceae) Loai moi cho he thuc vat Viet Nam. Di Truyen hoc & ung dung (Genetics and Applications) 4:27-31.
- Hiep, Nguyen Tien, D.K. Harder, L.V. Averyanov, A. Farjon, K.D. Hill, D.D. Soejarto, Phan Ke Loc. 2001. Highlights on results of collaborative research on selected plant taxa and of the flora of Cuc Phuong national park, Viet Nam, 1991-2000. Proceedings of International Symposium on Plant Biodiversity and Development of Bioactive Natural Products, National Museum of Natural Science, Taichung. November 18-20. pp. 67-74.
- Farjon, A., Nguyen Tien Hiep, D.K. Harder, Phan Ke Loc, L. Averyanov. 2002. A new genus and species in Cupressaceae (Coniferales) from northern Vietnam, *Xanthocyparis vietnamensis*. Novon 12(2):179-189.
- Harder, D.K. 2002. The Golden Vietnamese Cypress. Bulletin of the UCSC Arboretum Associates 26(1):1,7.
- Harder, D.K. 2002. The Golden Vietnamese Cypress, *Xanthocyparis vietnamensis*; a new genus and species for science. American Conifer Society Bulletin 19(2):54-57.
- Averyanov, L., Nguyen Tien Hiep, Phan Ke Loc, D.K. Harder 2002. The history of discovery and natural habitats of *Xanthocyparis vietnamensis* (Cupressaceae). Turczaninowia 5(4):31-39.
- Averyanov, L., Nguyen, T.N., Phan, K.L. and Harder, D.K. Natural habitat and associated species of *Xanthocyparis vietnamensis* A. Farjon, Nguyen Tien Hiep (Cupressaceae) in the limestone mountains of Ha Giang Province of northern Vietnam. (Submitted)
- Averyanov, L., Phan Ke Loc, Nguyen Tien Hiep, D.K. Harder 2003. Phytogeographic Review of Viet Nam and Adjacent Areas of Eastern Indochina. Komarovia 3:1-83.
- Regalado Jr., J., D.K. Harder, Nguyen Tien Hiep, Nguyen T. Thanh Hu'ong, L. Averyanov, Phan Ke Loc 2003. Cac Taxon Thuc Vat Bac Cao Co Mach Moi Cho Khoa Hoc Va/Hoac Bo Sung Cho He Thuc Vat Viet Nam (1993-2002) (New Discoveries for the Flora of Viet Nam, 1993-2003). Nhung Van De Nghien Cuu Co Ban Trong Khoa Hoc Su Song (Problems of Basic Research in

- Life Sciences, Proceedings of the Second National Conference in Life Sciences, Hue, July 25-26, 2003). Pp. 145-149.
- Harder, D.K. editor, *The Bulletin, A quarterly publication of the Arboretum Associates* published quarterly since 2003.
- Regalado Jr., J., Nguyen Tien Hiep, Phan Ke Loc, L. Averyanov, D.K. Harder 2005. New Insights into the Diversity of the Flora of Viet Nam. *Biol. Skr.* **55**: 189-197.
- Harder, D.K. and Jeff Rosendale 2008. Integrated Pest Management Practices for the Light Brown Apple Moth in New Zealand: Implications for California. Submitted on March 6, 2008 through Representative J. Laird's website
- Harder, D.K., K. Kimes, J. Rosendale 2008. Light Brown Apple Moth: Implications for California Agriculture. Released through Representative J. Laird's website on March 25, 2008.
- Harder, D.K., K. Kimes, R. Upton, and L. Casper 2008. Light Brown Apple Moth (LBAM) Eradication Program: Formal Petition to Reclassify LBAM as a Non-Actionable Pest. Submitted September 12, 2008 to the California Department of Food and Agriculture and the United States Department of Agriculture.
- Harder, D.K. (contributing editor) 2011. American Herbal Pharmacopoeia: Botanical Pharmacognosy – Microscopic Characterization of Botanical Medicines. Edited by Roy Upton. CRC Press, Boca Raton, FL.
- Harder, D.K. 2013 Botanical Identification, In: *Cannabis Monograph and Therapeutic Compendium; Cannabis sativa L., C. indica Lam.; Standards of Analysis, Quality Control, and Therapeutics*. Roy Upton, Aviva Romm, and Lyle Craker (eds.). American Herbal Pharmacopoeia. Scotts Valley, CA
- Harder, D.K. 2013 Macroscopic Identification, In: *Cannabis Monograph and Therapeutic Compendium; Cannabis sativa L., C. indica Lam.; Standards of Analysis, Quality Control, and Therapeutics*. Roy Upton, Aviva Romm, and Lyle Craker (eds.). American Herbal Pharmacopoeia. Scotts Valley, CA.
- Harder, D.K. 2013 Commercial Sources and Handling, In: *Cannabis Monograph and Therapeutic Compendium; Cannabis sativa L., C. indica Lam.; Standards of Analysis, Quality Control, and Therapeutics*. Roy Upton, Aviva Romm, and Lyle Craker (eds.). American Herbal Pharmacopoeia. Scotts Valley, CA.
- Harder, D. K. et al. The description of two new species of *Arisaema* and one new species of Zingiberaceae from Northern Viet Nam. (In preparation).
- Harder, D. K. et al. The description and taxonomic clarification of new taxa of *Viola* from the Santa Cruz Mountains. (In preparation).

## Reviews

- J. Smartt. 1990. *Grain Legumes: Evolution and Genetic Resources for Biochemical Systematics and Ecology* 19(2): 178-179.
- Reviewer for National Science Foundation, Directorate for Biological Sciences, Division of Environmental Sciences, Biotic Surveys and Inventories and National Geographic, Research and Exploration.
- Reviewer for *Novon, Madrono, Annals of the Missouri Botanical Garden, Journal of the Society for Economic Botany, Haseltonia, Yearbook of the Cactus and Succulent Society of America, SIDA*, and for the Grant Agency of the Academy of Sciences of the Czech Republic (proposals)

## Interests / Hobbies

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# Blake Ebersole

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CV



“Humans have used natural products as medicine for at least 10,000 years. Today, a new wave of interest in natural products is here, representing an enormous opportunity to improve people’s lives.

On this foundation, my life’s goal is to apply the highest level of scientific rigor, transparency and care to fulfill the true potential of natural products.

To this aim, I have committed to a life of learning and expertise in research, development, manufacturing, regulation, quality assurance and marketing of natural products.”

## Professional Experience:

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**Leadership**

- Planned and implemented numerous corporate-level strategic and tactical plans, processes and policies which improved performance in research, quality, supply chain, sales/marketing, finance and legal departments
- Managed projects and budgets for research, marketing, legal and quality departments
- Department supervisor with 5+ direct reports, experienced in HR practices and requirements
- Led training sessions for corporate, sales/marketing and quality departments
- Serve as principal liaison to trade associations and standards-setting agencies such as USP
- Computer-savvy (PC, Mac, MS Office/Excel, Adobe, CRM, ERP)

**Diplomas:**

**2010 Masters, Business Administration**

***Butler University***  
Indianapolis, IN, USA

**2000 Bachelor of Science, Forensic Chemistry (ACS)**

***West Chester University***  
West Chester, PA, USA

**Positions held:**

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Redacted pursuant to N.Y. Public Officers Law, Art. 6

2001-2002

*Chemistry Teacher*, Honolulu School District, Honolulu, HI, USA

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## Training, Honors and Awards:

- **Best Presentation**, Purdue Research Park, Butler University, 2010
- **Adhering to Good Manufacturing Practices**, American Herbal Products Association, 2010
- **Gateway Competition Prize**, Butler University, 2008
- **Dietary Supplement Health Claim Substantiation under DSHEA**, American Herbal Products Association, 2006
- **Outstanding Chemistry Seminar**, West Chester University, 2000:  
*Pharmacology and binding of ligands at the serotonin receptor*
- **Honors Merit Scholarship**, West Chester University, 1996-1997

## Professional Organizations and Contributions:

- **American Herbal Products Association**, Committee Member: Labs, Methods and Standards Committee, International Committee, Ayurveda Committee
- **American Botanical Council**, Member
- **American Botanical Council/American Herbal Pharmacopoeia/National Center for Natural Products Research**, Peer reviewer, Lab Guidance on Black Cohosh, Lab Guidance on Skullcap
- **Association of Official Analytical Chemists (AOAC)**, Member and Peer Reviewer for *Journal of AOAC*
- **Journal of Medicinal Food**, Peer-reviewer
- **American Chemical Society**, Member (Agricultural and Food Chemistry Division)
- **U.S. Pharmacopoeia (USP)**, Monograph development liaison
- **NIH**, Research liaison
- **USDA**, Research liaison
- **National Center for Natural Products Research (NCNPR), University of Mississippi**, Research liaison

## Scientific Publications (Author/Advisor):

1. Lymphatic transport and human pharmacokinetics of a solid-lipid curcumin particle product, Eidenberger T, **Ebersole B**. Manuscript
2. Curcumin ameliorates neuroinflammation, tau hyperphosphorylation, amyloid accumulation and memory deficits in p25 transgenic mice. Sundaram JR, Poore CP, Sulaimi NH, Pareek T, Pant HC, **Ebersole B**, Frautschy SA, Low CM Kesavapany S. *Current Alzheimer's Research*, Submitted.

3. Investigation of the effects of solid lipid curcumin on cognition and mood in a healthy older population. Cox KH, Pipingas A, Scholey AB. *Journal of Psychopharmacology*. 2014 Oct 2 pii:0269881114552744
4. Anti-inflammatory effects of novel standardized solid lipid curcumin formulations. Nahar PP, Slit AL, Seeram NP. *Journal of Medicinal Food*. Accepted for publication, 2014 DOI:10.1089/jmf.2014.0053
5. Pomegranate phenolics inhibit formation of advanced glycation endproducts by scavenging reactive carbonyl species. Liu W1, Ma H, Frost L, Yuan T, Dain JA, Seeram NP. *Food and Function*. 2014 Oct 22;5(11):2996-3004.
6. Indazole-Type Alkaloids from *Nigella sativa* Seeds Exhibit Antihyperglycemic Effects via AMPK Activation in Vitro. Yuan T, Nahar P, Sharma M, Liu K, Slitt A, Aisa HA, Seeram NP. *Journal of Natural Products*. 2014 Oct 24;77(10):2316-20.
7. Skullcap (*Scutellaria baicalensis*) Laboratory Guidance. ABC-AHP-NCNPR Botanical Adulterants Program. Manuscript in publication, 2014.
8. Pomegranate Extract Modulates Processing of Amyloid- $\beta$  Precursor Protein in an Aged Alzheimer's Disease Animal Model. Ahmed AA, Subaiea MG, Eid A, Li L, Seeram PN1, Zawia HN. *Current Alzheimer's Research*. 2014 Oct 1.
9. Retinal amyloid fluorescence imaging predicts cerebral amyloid burden and Alzheimer's disease. Frost S, Kanagasingam Y, Macaulay L, Koronyo-Hamaoui M, Koronyo Y, Biggs D, Verdooner S, Black KL, et al. *Alzheimer's and Dementia* 2014; 10(4) S234-235
10. Pomegranate extracts impact the androgen biosynthesis pathways in prostate cancer models in vitro and in vivo . Ming DS, Pham S, Deb S, Chin MY, Kharmate G, Adomat H, Beheshti EH, Locke J, Guns ET. *Journal of Steroid Biochemistry and Molecular Biology*. 2014 Sep;143:19-28.
11. Bitter melon extract attenuating hepatic steatosis may be mediated by FGF21 and AMPK/Sirt1 signaling in mice. Yu Y, Zhang XH, **Ebersole B**, Ribnicky D, Wang ZQ. *Scientific Reports (Nature)*. 2013 Nov 5;3:3142. doi: 10.1038/srep03142.
12. Inhibitory effect of a standardized pomegranate fruit extract on Wnt signalling in 1, 2-dimethylhydrazine induced rat colon carcinogenesis. Sadik NA, Shaker OG. *Digestive Diseases and Sciences*. 2013 Sep;58(9):2507-17.
13. Curcumin suppresses soluble tau dimers and corrects molecular chaperone, synaptic, and behavioral deficits in aged human tau transgenic mice. Ma QL, Zuo X, Yang F, Ubeda OJ, et al. *Journal of Biological Chemistry*. 2013 Feb 8;288(6):4056-65.
14. Optimization of an analytical method for the determination of punicalagins in pomegranate extracts by HPLC. Brown PN, **Ebersole B**, Seeram NP 2013. Manuscript.
15. Curcumin and Yoga Therapy for Those at Risk for Alzheimer's Disease. Frautschy S. et al. Ongoing, clinicaltrials.gov # NCT01811381
16. Effects of *Withania somnifera* in patients of schizophrenia: A randomized, double blind, placebo controlled pilot trial study. Agnihotri AP, Sontakke SD, Thawani VR, Saoji A, and Goswami VS. *Indian Journal of Pharmacology*. 2013 Jul-Aug; 45(4): 417-418.
17. *Withania somnifera* root extract inhibits mammary cancer metastasis and epithelial to mesenchymal transition. Yang Z1, Garcia A, Xu S, Powell DR, Vertino PM, Singh S, Marcus AI. *PLoS One*. 2013 Sep 12;8(9) doi: 10.1371/journal.pone.0075069
18. New phenolics from the flowers of *Punica granatum* and their in vitro  $\alpha$ -glucosidase inhibitory activities. Yuan T, Wan C, Ma H, Seeram NP. *Planta Medica*. 2013 Nov;79(17):1674-9.
19. Optimization and validation of ursolic acid by HPLC in *Ocimum sanctum*. Shah J, Patel S, **Ebersole B**, Hingorani L. *Planta Medica* 2012 DOI: 10.1055/s-0032-1321177
20. Acute human pharmacokinetics of a lipid-dissolved turmeric extract, Shah J, Patel S, **Ebersole B**, Hingorani L. *Planta Medica* 2012 DOI: 10.1055/s-0032-1320664
21. Sustained cognitive effects and safety of HPLC-standardized *Bacopa monnieri* extract: A randomized, placebo controlled clinical trial. Hingorani, Patel 1, Ebersole B. *Planta Medica* 2012; DOI: 10.1055/s-0032-1320681

22. Safety assessment of a solid lipid curcumin particle preparation (LONGVIDA®): acute and subchronic toxicity studies. Dadhaniya P, Patel C, Muchhara V, Bhadja N, Mathuria N, Vachhani K, Soni MG. *Food and Chemical Toxicology*. 2011 Aug;49(8):1834-42.
23. Safety and pharmacokinetics of a solid lipid curcumin particle formulation (LONGVIDA®) in osteosarcoma patients and healthy volunteers. Gota VS, Maru GB, Soni TG, Gandhi TR, Kochar N, Agarwal MG. *Journal of Agricultural and Food Chemistry*. 2010 Feb 24;58(4):2095-9
24. Effects of fruit ellagitannin extracts, ellagic acid, and their colonic metabolite, urolithin A, on Wnt signaling. Sharma M, Li L, Celver J, Killian C, Kovoov A, Seeram NP. *Journal of Agricultural and Food Chemistry*. 2010 Apr 14;58(7):3965-9
25. *Eugenia jambolana* Lam. berry extract inhibits growth and induces apoptosis of human breast cancer but not non-tumorigenic breast cells. Li L, Adams LS, Chen S, Killian C, Ahmed A, Seeram NP. *Journal of Agricultural and Food Chemistry*. 2009 Feb 11;57(3):826-31
26. Pomegranate extract mouth rinsing effects on saliva measures relevant to gingivitis risk. DiSilvestro RA, DiSilvestro DJ, DiSilvestro DJ. *Phytotherapy Research*. 2009 Aug;23(8):1123-7
27. Protective effects of standardized pomegranate (*Punica granatum* L.) polyphenolic extract in ultraviolet-irradiated human skin fibroblasts. Pacheco-Palencia LA, Noratto G, Hingorani L, Talcott ST, Mertens-Talcott SU. *Journal of Agricultural and Food Chemistry*. 2008 Sep 24;56(18):8434-41.
28. Safety assessment of pomegranate fruit extract: acute and subchronic toxicity studies. Patel C, Dadhaniya P, Hingorani L, Soni MG. *Food and Chemical Toxicology*. 2008 Aug;46(8):2728-35.
29. Curcumin structure-function, bioavailability, and efficacy in models of neuroinflammation and Alzheimer's disease. Begum A et al . *Journal of Pharmacology and Experimental Therapeutics*. 2008 Jul;326(1):196-208.
30. In vitro determination of absorption of pomegranate extract into CACO-2 cells. Mertens-Talcott SU, **Ebersole B**. Unpublished.
31. Absorption, metabolism, and antioxidant effects of pomegranate (*Punica granatum* L.) polyphenols after ingestion of a standardized extract in healthy human volunteers. Mertens-Talcott SU, Jilma-Stohlawetz P, Rios J, Hingorani L, Derendorf H. *Journal of Agricultural and Food Chemistry*. 2006 Nov 15;54(23):8956-61

## **Inventorship, Licensing and Execution of Patent Applications:**

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## Scientific Conference Presentations (Author/Advisor):

1. Acute human pharmacokinetics of a lipid-dissolved turmeric extract. Shah J, Patel S, **Ebersole B**, Hingorani L. *2012 International Congress on Natural Products Research*, New York, NY. July 31, 2012. *Planta Med* 2012; 78 - PH5 DOI: 10.1055/s-0032-1320664
2. High-throughput screening program for commercial single-herb extracts. Hingorani L, Seeram NP, **Ebersole B**. *2012 International Congress on Natural Products Research*, New York, NY. July 31, 2012. *Planta Med* 2012; 78 - PF85 DOI: 10.1055/s-0032-1320632
3. Optimization and validation of ursolic acid by HPLC in *Ocimum sanctum*. Hingorani L, **Ebersole B**, Patel S. *2012 International Congress on Natural Products Research*, New York, NY. July 31, 2012.
4. Orthogonal validation of analytical and quality systems for botanical products. Hingorani L, Patel S, Darji B, **Ebersole B**. *2012 International Congress on Natural Products Research*, New York, NY. July 31, 2012. *Planta Med* 2012; 78 - PJ156 DOI: 10.1055/s-0032-1321316
5. Sustained cognitive effects and safety of HPLC-standardized *Bacopa monnieri* extract: a randomized, placebo-controlled trial. Hingorani L, Patel S, **Ebersole B**. *2012 International Congress on Natural Products Research*, New York, NY. July 31, 2012.
6. Anti-inflammatory effects of a standardized SLCP preparation (Longvida®) against generic curcumin extract in LPS-stimulated RAW 264.7 macrophages. *244<sup>th</sup> ACS National Meeting and Exposition*, Philadelphia, PA, August 2012
7. Bitter melon extract enhances insulin sensitivity by modulating FGF21 signaling in high-fat diet fed mice. Wang ZQ, Yu Y, Zhang XH, Li H, Qin J, **Ebersole B**, Cefalu WT. *7<sup>th</sup> International Conference for Functional Foods in the Prevention and Management of Metabolic Syndrome*, Southern Methodist University, Dallas, TX, USA, December 3-4, 2010.
8. Optimization of an analytical method for the determination of punicalagins in pomegranate extracts by HPLC. Zhu J, Chan M, Brown PN, Guns ET. *Annual Natural Health Products Research Conference*, Vancouver, Canada, 2009
9. Efficacy of curcumin formulations in relation to systemic availability in the brain and different blood compartments in neuroinflammatory and AD models. Frautschy SA et al, *39th Annual Meeting of the Society of Neuroscience*, Chicago, October 2009.
10. Can daily pomegranate extract impact the growth of prostate cancer in a cohort of men awaiting radical prostatectomy? A randomized placebo-controlled clinical trial underway. Guns ET, Brown PN, Balneaves L, Van Patten C, Goldenberg L, So A. *Annual Natural Health Products Research Conference*, Vancouver, Canada, 2009
11. Improving bioavailability of curcumin by solid lipid particle for treatment of Alzheimer's (AD). Frautschy, SF. *38th Annual Meeting of the Society of Neuroscience*, Washington DC, November 15, 2008.
12. Evaluation of pomegranate fruit extracts in prostate cancer cell lines and with specific cytochrome P450 enzymes. Brown PN, Guns E, Wood CA, Chan M, Lo A, Garg P, Khelifi D. *Annual Natural Health Products Research Conference*, Saskatoon, Canada, 2007.
13. Pharmacology of *Bacopa monnieri* at 5HT1a receptors, Hall B, Burnett A, Halley C, Christians A, Parker LA, Medora R, and Parker KK. *Annual Meeting of the American Society of Pharmacognosy*, Corvallis, OR, 2005.

## Invited Presentations (Speaker):

1. "Natural Products Research for Neurodegenerative Diseases", NIH/NINDS, Bethesda, MD, March 3, 2015
2. "Optimized Curcumin and the Aging Brain", Amway/Nutriline Lunch & Learn, October 29, 2014
3. "Curcumin Advancements: The Aging Brain with Longvida® Curcumin", Douglas Labs, April 23, 2014. Source: <https://www.youtube.com/watch?v=UdpU9BSi2Zc>
4. "Longvida: The Brain Curcumin". *Vitafoods International Conference*, Geneva, Switzerland, May 24, 2012
5. "100% Ingredient Identity". *SupplySide Marketplace Good Manufacturing Practices Workshop*, NY, NY, May 8, 2012
6. "Nutraceuticals: An Overview". Department of Nutrition and Food Science, Texas A&M University, April 6, 2012.
7. "Fortification of Polyphenols into Functional Foods". *Prepared Foods R&D Applications Seminar*, Chicago, IL, USA, August 3, 2011.
8. "Science-based Curcumin", 16<sup>th</sup> *International Food Ingredients and Additives (IFIA) Conference*, Tokyo Japan, May 19, 2011
9. "Bioavailability of Botanical Supplements: Challenges and Opportunities". Department of Nutrition and Food Science, Texas A&M University, March 31, 2011.
10. "Foods Designed for Health, Functional Foods, and Nutraceuticals". Department of Nutrition and Food Science, Texas A&M University, March 20, 2008.
11. "Overview of Research-Validated Pomegranate: Focus on Prostate Health". *US Too Prostate Cancer Group Patient Education Symposium*, Chicago, IL, USA, November 2, 2007.
12. "Science-based Nutrition: Finding the Right Pomegranate". *US Too Prostate Cancer Group Regional Meeting*, Chicago, IL, USA, July 24, 2007.

## Published Articles and Quotes in Non-Academic Press:

1. Article, "[Extracts: More than a Cup of Tea](#)", *Natural Products Insider*, February 2015
2. Article, "[Certifications are Fine, But...](#)", *Natural Products Insider*, January 2015
3. Article, "[Supplement Trends of 2014 and the Future](#)", *Natural Products Insider*, December 2014
4. Article, "[Traceability: What's the Point?](#)" *Natural Products Insider*, November 2014
5. Article, "[R&D: The Key Disciplines](#)", *Supplement Perspectives*, November 2014
6. Article, "[Dose Delivery: Oil into Water](#)", *Natural Products Insider*, August 2014
7. Article, "[Advances in Brain Health Research](#)", *Natural Products Insider*, July 2014
8. Article, "[Next-Gen Blood Sugar Management](#)", *Natural Products Insider*, June 2014
9. Article, "[Emerging Carotenoid Research](#)", *Natural Products Insider*, April 2014
10. Special Issue, "[Beyond Lutein](#)", *Natural Products Insider*, April 2014
11. Article, "[Sci-Fi, QC and Botanicals](#)", *Natural Products Insider*, March 2014
12. Article, "[Dose Delivery, Old & New](#)", *Natural Products Insider*, March 2014
13. Article, "[Beyond the Test Tube: Superfruit Science](#)", *Natural Products Insider*, Feb 2014
14. Article, "[Joint Health: Alternative Now Mainstream](#)", *Natural Products Insider*, Feb 2014
15. Article, "[Advancement Depends on Going Back to Basics](#)", *Natural Products Insider*, Dec 2013
16. Article, "[Consume Your Political News Frequently--and Calmly](#)", *Natural Products Insider*, November 2013
17. Article, "[The Eyes Are the Window to Our Health](#)", *Natural Products Insider*, October 2013
18. Article, "[Weighting to Lose](#)", *SupplySide Community*, October 2012,
19. Article, "[Eyes Wide Open: Eye Health Supplements](#)", *Natural Products Insider*, August 2013
20. Article, "[The Gut-Brain Axis](#)", *Natural Products Insider*, August 2013
21. Article, "[Five Great Apps for Supplement Science](#)", *Natural Products Insider*, July 2013
22. Article, "[Scientific Validity Keys for Supplement GMPs](#)", *Natural Products Insider*, June 2013
23. Article, "[Sports Supplements: OK for Kids?](#)", *Natural Products Insider*, May 2013
24. Article, "[Your Trade Show Physical and Mental Health Checklist](#)", *Natural Products Insider*, April 2013
25. Article, "[Tips for Hiring the Right Contract Ingredient Manufacturer](#)", *Natural Products Insider*, March 2013

26. Article, "[Politics, Religion and Organic Farming](#)", *Natural Products Insider*, February 2013
27. Article, "[The Eyes Are the Window to.. Our Health](#)", *Natural Products Insider*, January 2013
28. Article, "[Silver Linings in Omega-3 Research](#)", *Natural Products Insider*, December 2012
29. Article, "[Why Antioxidants Are Useful](#)", *Natural Products Insider*, November 2012
30. Article, "[Weighting to Lose](#)", *Natural Products Insider*, October 2012
31. Article, "[The Bugs Are Taking Over](#)", *SupplySide Community*, September 2012,
32. Quoted in "Encouraging Natural Bone Health", *Natural Practitioner*, July/August 2012.
33. Quoted in "Boosting the Brain", *Nutrition Industry Executive*, July/August 2012
34. Article, "[The Research Says It All: Omegas Do a Body Good](#)", *SupplySide Community*, August 2012,
35. Article, "[Ensuring Purity for Prenatal Supplements](#)," *SupplySide Community*, July 2012,
36. Article, "[Are You in the 59 Percent?](#)", *SupplySide Community*, May 2012,
37. Article, "[The Omnivore's Inflammatory Dilemma](#)", *SupplySide Community*, April 2012,
38. Article, "[New Frontiers in Digestive Health](#)", *SupplySide Community*, March 2012,
39. Article, "[Ch-ch changes in Senior Supplements](#)", *SupplySide Community*, February 2012,
40. Quoted in "[Help for Healthy Joints](#)", *Nutrition Industry Executive*, October 2011.
41. Interviewed for three nutrition trade media articles in Tokyo, Japan, May 2011
42. Quoted in "[Superior or Superfluous](#)", *Natural Products Insider Magazine*, March 2011.
43. Quoted in "[Dietary Supplements and Bioavailability: Suppliers Improve Ingredient Bioavailability](#)", *Nutritional Outlook Magazine*, January 27, 2011
44. Quoted in "[The Promise of Pomegranate](#)", *Indianapolis Business Journal*, April 12, 2010
45. Quoted in "[Bioavailability of \*Boswellia serrata\*](#)", *Natural Products Insider*, June 2009
46. Quoted in "[Supplier claims pomegranate functional fortification breakthrough](#)", *Nutraingredients-USA.com*, May 6, 2009.
47. Quoted in "[Verdure Sciences Introduces Pomella® FG for functional foods](#)", *NPI Center*, April 27, 2009.
48. Quoted in "[New findings on bioavailability of 11-keto-B-boswellic acid from \*Boswellia serrata\*](#)," *NPI Center*, March 9, 2009.
49. Quoted in "[Clinical trial shows Pomella® pomegranate extract may benefit oral health](#)", *NPI Center*, February 5, 2009.
50. Quoted in "Striking a balance with immune health ingredients," *Nutrition Industry Executive Magazine*, December 2008.
51. Quoted in "[Verdure launches organic botanical extracts](#)", *Nutraingredients-USA.com*, December 4, 2008.
52. Quoted in "[Verdure Sciences expands sustainability program with certified organic offerings](#)," *NPI Center*, December 2, 2008.
53. Quoted in "[Safety of pomegranate revealed](#)", *NPI Center*, September 17, 2008.
54. Quoted in "[University study finds POMELLA® pomegranate extract may reverse skin aging](#)", *NPI Center*, September 9, 2008
55. Quoted in "[Verdure Sciences enhances serotonin profile of Bacognize®](#)", *Nutraingredients-USA.com*, October 19, 2007
56. Quoted in "[Clinically researched \*Bacopa\* extract redefined; Bacognize® now HPLC-standardized to serotonin-active compounds](#)," *NPI Center*, October 17, 2007.
57. Interviewed for Health Notes Radio Show, "Pomegranate Q+A", British Columbia, Canada, September 24, 2007.
58. Quoted in "[Pomella® extract gains Australian TGA approval](#)," *NPI Center*, August 13, 2007.
59. Quoted in "[Cosmeceuticals: At the Intersection of Nutrition and Beauty](#)", *Inside Cosmeceuticals Magazine*, June 4, 2007.
60. Quoted in "[Pomegranate juice a victim of its own success](#)", *Functional Ingredients Magazine*, May 1, 2007.
61. Quoted in "[Geni shifts strategy with Stauber](#)", *Nutraingredients-USA.com*, September 13, 2006.
62. Quoted in "[The Gold Standard: Superfruits](#)", *Functional Ingredients Magazine*, June 1, 2006.
63. Quoted in "[Geni Herbs takes Pomella into beverages](#)", *Nutraingredients-USA.com*, November 22, 2005.
64. Quoted in "Pomegranate: Red-Hot Fruit", *Natural Products Insider Magazine*, August 2005.
65. Quoted in "Fruits from the Tree of Life", *Prepared Foods Magazine*, August 2005.

## CURRICULUM VITAE

David W. Pate PhD, MSc

### Education and Training:

- 1999 Doctor of Philosophy degree in Pharmaceutical Chemistry, University of Kuopio, Finland. Nominated by the Faculty of Pharmacy as author of the "Best Dissertation on Campus" for 1999. Dissertation defense opposition provided by Raphael Mechoulam.
- 1981-83 Participated in Pharmacognosy (Natural Products Chemistry) Program, University of Mississippi, University, MS. Awarded a University Non-Service Fellowship (1981-82) and a Teaching Assistantship (1982-83).
- 1979-81 Assisted curation of the H.H. Rusby collection of economic plants and completed courses under Richard Evans Schultes at the Harvard Botanical Museum, Cambridge, MA.
- 1979 Master of Science degree in Biology, University of Missouri-St. Louis, St. Louis, MO. Awarded a Teaching Assistantship (1976-78).
- 1974 Bachelor of Arts degree in Science, Biology major/Chemistry minor, Webster College, St. Louis, MO.
- 1972-73 Attended Harris-Stowe State College, St. Louis, MO.
- 1972 Associate of Arts degree in Liberal Arts, St. Louis Community College-Forest Park, St. Louis, MO.

**Professional Appointments:**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

1986-92 Staff Research Associate II, University of California-San Francisco

1985-86 Research Associate, University of Missouri-St. Louis  
Redacted pursuant to N.Y. Public Officers Law, Art. 6

**Research Grants:** US NIH grant co-author, 1985 (\$207,000)

**Memberships in Scientific Societies, Past and Present:**

Canadian Consortium for the Investigation of Cannabinoids

International Association for Cannabis as Medicine

International Cannabinoid Research Society

International Hemp Association

**Research Interests:**

Pharmaceutical Chemistry

- Ophthalmic endocannabinoids
- Glaucoma pathophysiology
- Cyclodextrin technology
- Prodrug strategies

Biological Sciences

- Nutritional value of hemp seed
- Medicinal use of marijuana
- Chemical ecology of *Cannabis*

**Other Academic and Professional Activities, Past and Present:**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Author of US FDA Drug Master File (IND 43,542) for medical *Cannabis*

Principal author of first license application granted by the Dutch government for commercial development of medical *Cannabis*

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Invited speaker, and provided adjunct scientific counsel, to the US Institute of Medicine/National Academy of Sciences medical marijuana study - Marijuana and Medicine: Assessing the Science Base, J.E. Joy, S.J. Watson Jr. and J.A. Bensen Jr., Eds., National Academy Press, Washington D.C., 1999

Coined the term “phytocannabinoid” now used commonly in scientific parlance.  
J.M. McPartland, G. Guy. The evolution of *Cannabis* and coevolution with the cannabinoid receptor – a hypothesis. *In: The Medicinal Use of Cannabis*, G. Guy, R. Robson, K. Strong, B. Whittle, Eds. pp. 71-102. Royal Society of Pharmacists, London, 2004.

Member of international scientific committee submitting a report to Alan Rock, Canadian Federal Minister of Health, in support of his decision to legalize hemp foods, 2001 (“THC in Hemp Foods and Cosmetics: The Appropriate Risk Assessment”) [http://www.hempreport.com/response/response\\_january\\_2001.doc](http://www.hempreport.com/response/response_january_2001.doc)

Contributor to Medical Botany, 2<sup>nd</sup> Edition, W.H. Lewis and M.P.F. Elvin-Lewis, Wiley-Interscience, New York, 2003

Co-editor of policy discussion paper by the Health Officers Council of British Columbia, 2005 (“A Public Health Approach to Drug Control in Canada”) <http://www.cfdp.ca/bchoc.pdf>

## Hugh Hempel Narrative

### Business Experience

Hugh Hempel, a [REDACTED], is a former [REDACTED] technology industry veteran turned healthcare entrepreneur. During his 30-year career in high technology, Mr. Hempel has held numerous senior management positions in many innovative and pioneering technology companies [REDACTED]

Mr. Hempel currently runs a biotechnology startup and is working with the FDA to develop a new drug [REDACTED]

[REDACTED] Mr. Hempel and [REDACTED] discovered through their own medical research that a simple sugar compound called cyclodextrin could save [REDACTED] lives.

The Hempels' journey to develop cyclodextrin into a new pharmaceutical drug made international headlines and was featured on the front page of *The Wall Street Journal* in a 10-chapter online story entitled, "A Desperate Fight to Save Kids and Change Science," as well as in a documentary called "Here. Us. Now." As [REDACTED] or "citizen scientists," the Hempels successfully filed drug applications with the U.S. Food and Drug Administration (FDA) and received unprecedented approval from the FDA to start cyclodextrin treatment [REDACTED]

As a result of developing this novel drug [REDACTED] [REDACTED] Niemann Pick Type C patients worldwide, Mr. Hempel [REDACTED] have become nationally recognized healthcare advocates who are frequent speakers on a variety of topics including small clinical trial design, new drug discovery, and patient reported outcome systems.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

### Community and Non-Profit Involvement

Mr. Hempel is involved in numerous community and non-profit healthcare organizations. In addition to founding and running his own non-profit foundation, [REDACTED] in



**James Logan Rice III:** Jim has  
18 years of experience: including

with over

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Jim earned a Bachelor of Arts degree with honors in finance from Michigan State University and a Master of Business Administration from the University of Michigan.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

## Hugh Hempel Narrative

### Business Experience

Hugh Hempel, a [REDACTED] is a former [REDACTED] technology industry veteran turned healthcare entrepreneur. During his 30-year career in high technology, Mr. Hempel has held numerous senior management positions in many innovative and pioneering technology companies [REDACTED]

Mr. Hempel currently runs a biotechnology startup and is working with the FDA to develop a new drug [REDACTED]

[REDACTED] Mr. Hempel [REDACTED] discovered through their own medical research that a simple sugar compound called cyclodextrin could save [REDACTED] lives.

The Hempels' journey to develop cyclodextrin into a new pharmaceutical drug made international headlines and was featured on the front page of *The Wall Street Journal* in a 10-chapter online story entitled, "A Desperate Fight to Save Kids and Change Science," as well as in a documentary called "Here. Us. Now." As [REDACTED] "citizen scientists," the Hempels successfully filed drug applications with the U.S. Food and Drug Administration (FDA) and received unprecedented approval from the FDA to start cyclodextrin treatment [REDACTED]

As a result of developing this novel drug [REDACTED] and Niemann Pick Type C patients worldwide, Mr. Hempel [REDACTED] have become nationally recognized healthcare advocates who are frequent speakers on a variety of topics including small clinical trial design, new drug discovery, and patient reported outcome systems.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

### Community and Non-Profit Involvement

Mr. Hempel is involved in numerous community and non-profit healthcare organizations. In addition to founding and running his own non-profit foundation, [REDACTED] in

[REDACTED], Mr. Hempel sits on Board of Directors for The Global Genes Project, a leading rare and genetic disease non-profit advocacy organization based in [REDACTED]

### **Working with Government Agencies**

Mr. Hempel has extensive experience working with our nation's leading federal health agencies, making him uniquely qualified to operate a statewide medical marijuana business. He has spent six years working closely with the Food and Drug Administration (FDA), a U.S. Department of Health and Human Services (HHS) agency. Specifically, he works with FDA's Center for Drug Evaluation and Research (CDER), the largest of FDA's five centers, to ensure that the drug he developed is safe and effective to provide [REDACTED] NPC patients worldwide. He has worked extensively with CDER physicians, chemists, pharmacologists, and other scientists, and understands the strict regulations involved in manufacturing pharmaceutical-grade medications under carefully monitored conditions to create the best dose and route of delivery for patients with debilitating medical conditions.

He has also worked with the National Institutes of Health (NIH), the primary agency of the United States government responsible for investing nearly \$30 billion annually in biomedical and health-related research. His experience in working with leading federal health agencies and conducting clinical trials is a major asset to The Clinic Nevada.

### **Medical Marijuana Knowledge**

Mr. Hempel is a licensed and registered medical marijuana caregiver in Nevada (#C140400756).

[REDACTED]  
[REDACTED]. As a licensed caregiver, Mr. Hempel is extremely knowledgeable about the benefits of medical marijuana and has been researching the endocannabinoid receptors system since 2009.

Mr. Hempel decided to create a Nevada-based "cannabusiness" focused on legally developing and distributing pharmaceutical-grade cannabis products (high-quality flowers, extracts and concentrates) at competitive prices for Nevada patients. Mr. Hempel aims to create a statewide cannabis research program in Nevada to better elucidate the potential benefits of the cannabis plant. The creation of a pharmaceutical-quality cannabis supply network is the first step towards this larger goal of building knowledge about using cannabis to improve health.

# **Physician Advisory Board**

## CURRICULUM VITAE

Edward S. Rubin, M.D.

Date revised: May 28, 2014

### A. GENERAL INFORMATION

#### **Primary**

**Office Address:** 1991 Marcus Ave M217  
Lake Success, NY 11042

Office telephone: (516) 492-3100

Office fax: (516) 492-3097

Email: [REDACTED]

**Secondary Office:** Winthrop Pain Management  
1300 Franklin Ave UL 3A  
Garden City, NY 11530

#### **Research**

**Office Address:** Long Island Gastrointestinal Research Group LLP  
1/2008-present  
310 East Shore Road Suite 208  
Great Neck, NY 11023

Office telephone: (516) 482-5976

Office fax: (516) 487-2868

### B. PROFESSIONAL POSITIONS AND EMPLOYMENT

#### Post-doctoral training including residency/fellowship

Fellowship	<u>Quad-Institute Fellowship Program</u>	7/2005-6/2006
Division of Pain Medicine	New York Presbyterian Cornell New York Presbyterian Columbia Hospital for Special Surgery and Memorial Sloan-Kettering	
Resident in Anesthesiology	New York Presbyterian Hospital Cornell Medical Center	7/2002-6/2005
Intern	Department of Medicine Maimonides Medical College	7/2001-6/2002

**Academic positions**

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**Hospital positions**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**C. EDUCATIONAL BACKGROUND**

<i>Degree</i>	<i>Institution name, city and state</i>	<i>Awarded</i>
M.D.	St. George's University School of Medicine Grenada	9/1997-6/2001
B.S.	University of California, Los Angeles Los Angeles, CA	9/1992-4/1997

**D. LICENSURE and BOARD CERTIFICATION**

**Licensure**

<i>State</i>	<i>Dates Active</i>
California	6/2006-11/2013
New York	2008-10/2014
New Jersey	2007-2012—inactive status 6/2011

**Board Certification**

<i>Name of Specialty</i>	<i>Board Certificate</i>	<i>Date of Certification</i>
Anesthesiology	Passed	4/2006-12/2016
Pain Medicine	Passed	9/2006-12/2016

## **E. PROFESSIONAL MEMBERSHIPS**

<i>Member/Officer</i>	<i>Name of Organization</i>
Member	American Society of Anesthesiologists
Member	New York State Society of Anesthesiologists
Member	Nassau County Medical Society
Member	Medical Society of the State of New York
Member	American Society for Interventional Pain Management
Member	New York State Pain Society
Treasurer (2013- present)	New York Society for Interventional Pain Physicians

## **G. INSTITUTIONAL/HOSPITAL AFFILIATION**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

## **H. Lectures**

	<b>Dates</b>
Acute & Chronic Pain Management	2006
Arthritis and Aging	2006
Low Back Pain	2007
HIV and Neuropathic Pain	2007
Implantable Drug Delivery Systems	2007
Opioids and Drug Diversion	2007
Methadone Management	2007
Evidence Practice of Pain Medicine (Cornell Pain Symposium)	2007
Imaging in Low Back Pain	2008
Sickle Cell management	2009
Non Narcotic Treatment of Post Op Abdominal Pain	2009
Billing Compliance	2010
Complex Regional Pain Syndrome	2010
Rational Opioid Prescribing	2012

### **Research**

Methyl-naltrexone for opioid induced constipation

Placebo Controlled randomized double Blind single Dummy Parallel Ongoing Group Ratio Finding Study in Constipated Patients to establish an optimal Opioid/ Antagonist Ratio With an Improved Bowel function in a comparable Analgesic efficacy compared to an opiate alone.

# Laser Therapy for Post-Thoracotomy Pain

## I. BIBLIOGRAPHY

Books, Book Chapters and Reviews

**Rubin E**, *the Importance of Being Cited*, in Anesthesiology News, March 2001

Diwan S, **Rubin E**. Complex Regional Pain Syndrome. Yao and Artusio. 2007

Diwan S, and **Rubin E**. Zoster and Postherpetic Neuralgia: for New  
Encyclopedia of Neuroscience 2007 Elsevier, London

Dr. Edward Rubin is a board certified anesthesiologist and pain medicine specialist living in

Dr. Rubin specializes in the treatment of chronic pain of the low back and neck, and muscle pain related to sports injuries. He works in collaboration with orthopedic surgeons in managing pain in the joints and spine.

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American Board of Anesthesiologists, and completed his residency in anesthesiology at New York Presbyterian Hospital at the Weill Cornell campus. Dr. Rubin received his Medical Degree from St. George's University School of Medicine, Grenada in 2001.

**Curriculum Vitae: Perry G. Fine, MD**  
Updated May 1, 2015

**PERSONAL DATA**

CONFIDENTIAL

**EDUCATION**

1973	Bachelor of Arts, Biology University of California at Santa Cruz, Santa Cruz, California
1976-1977	Graduate Studies, Biophysics and Physiology Georgetown University, Washington, D.C.
8/77 - 5/81	Doctor of Medicine (M.D.), Medical College of Virginia Richmond, Virginia
7/81 - 6/82	Internship, Community Hospital of Sonoma County University of California Postgraduate Medical Programs Santa Rosa, California
7/82 - 6/84	Residency, Department of Anesthesiology University of Utah Health Sciences Center Salt Lake City, Utah
9/84 - 7/85	Fellowship, Smythe Pain Clinic, Department of Anesthesiology University of Toronto Toronto, Ontario, Canada

**Board Certification**

1982	Diplomate, National Board of Medical Examiners
1985	American Board of Anesthesiologists
1993, 2002, 2013	Added Qualifications in Pain Medicine, American Board of Anesthesiologists
2004, 2012	Subspecialty Board Certification, Hospice and Palliative Medicine

**PROFESSIONAL**

**Professional Positions/Academic Standing**

1985-1986	Limited Term Instructor, Dept. of Anesthesiology, University of Utah
1985-present	Attending Staff, Pain Management Center, University of Utah

1986-1989 Director, Pain Clinic, VAMC, Salt Lake City, Utah  
 1986-1991 Assistant Professor, Dept. of Anesthesiology, University of Utah  
 [REDACTED]  
 1991-1998 Associate Professor, Dept. of Anesthesiology, University of Utah  
 1995-2002 Associate Medical Director, Pain Management Center, U. of Utah  
 [REDACTED]  
 1998-present Professor, Dept. of Anesthesiology, University of Utah  
 Redacted pursuant to N.Y. Public Officers Law, Art. 6

### University of Utah Service

1985-2008: ACLS Instructor, University Hospital Staff and Post Graduate Medical Staff  
 1990-2008: University of Utah Football Team Physician

### Consultancies, Advisory and Board Positions

Redacted pursuant to N.Y. Public Officers Law, Art. 6

1993-2003 Board of Directors, Cancer Pain Relief Utah, Inc.  
 Redacted pursuant to N.Y. Public Officers Law, Art. 6

1998-2002 Board of Directors, American Pain Society  
 [REDACTED]

1999-2003 Board of Directors, Partnership for Caring, Washington, D.C. and New York City,  
 NY  
 Redacted pursuant to N.Y. Public Officers Law, Art. 6

2001-2008 Board of Directors, VistaCare, Inc.  
 Redacted pursuant to N.Y. Public Officers Law, Art. 6

2002 National Institutes of Health (NINR and Office of Rare Diseases), Work Group on Palliative and End of Life Care Research

2002-2005 Chairman, Board of Directors, VistaCare Hospice Foundation, Scottsdale, AZ

2003 National Endowment for the Arts Task Force: Integrating Arts into HealthCare

2003-2004 Board of Directors, National Hospice and Palliative Care Organization

2004-2008 Board of Directors, Society for the Arts in Healthcare

2004-2006 Executive Committee (Secretary), Board of Directors, American Pain Society

2006-2013 Board of Directors, American Academy of Pain Medicine  
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Redacted pursuant to N.Y. Public Officers Law, Art. 6

2013-present Board of Directors, ISA Scientific and acting Medical Director

2014-present Board of Directors, Magellan Health

2015 Board of Directors, Anne Stirba Cancer Foundation

### **Visiting Professorships/Scholarship**

1988 University of Toronto

1990 University of California

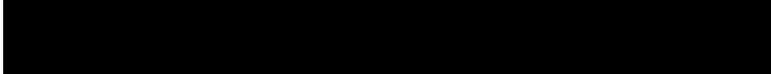
1991 Medical College of Virginia

1993 University of Arkansas

1993 University of Tennessee

1995 University of Wisconsin

1998 University of Nevada



University of Texas, San Antonio

University of Georgia

Indiana University

2000 University of North Carolina at Chapel Hill

University of Wisconsin at Madison

University of Nevada, Reno

University of Oklahoma

2001 Cook County Hospital, Chicago

University of Nevada, Reno



University of Wisconsin (LaCrosse Campus)

Medical College of Georgia

University of Wisconsin, Madison

University of Nebraska

University of Iowa

2002 Wayne State University

USC



2003

Medical College of Virginia

2004 University of Hawaii

University of California, San Diego

2005



West Virginia University, Morgantown, WV

2006 University of California, Davis

Sacramento, CA

2007 University of Alabama, Birmingham, AB

University of California, Irvine



2008 University of Regina, Regina, Saskatchewan, Canada



2009 West Virginia University, Morgantown, WV



Oregon Health Sciences University, Portland OR

2010



### **Editorial Boards and Peer Review**

1987 Hospital Formulary (reviewer)

1988-present Anesthesia and Analgesia (reviewer)

1990-present Annals of Thoracic Surgery (reviewer)

- 1991-present Journal of Musculoskeletal Pain (**editorial board**)
- 1992-2001 Journal of Pharmaceutical Care in Pain and Symptom Control (**editorial board**)
- 1992-present Cancer Practice (reviewer)
- 1993 Medical Letter (reviewer)
- 1993 Palliative Care (reviewer)
- 1994-1999 Clinical Journal of Pain (reviewer)
- 1994-present Journal of Pain and Symptom Management (**editorial board**)
- 1995 Behavioral and Brain Sciences (reviewer)
- 1997-present Journal of Clinical Oncology (reviewer)
- 1997-present Journal of the American Geriatrics Society (reviewer)
- 1997-2001 Palliative Medicine Monitor (**editor**)
- 1997-present Regional Anesthesia and Pain Medicine (reviewer)
- 1999-present PAIN (Journal of the International Association for the Study of Pain) (reviewer)
- 2000-present The Journal of Pain (Journal of the American Pain Society) (reviewer)
- 2000-present The Journal of Palliative Medicine (reviewer)
- 2001-present Obstetrics & Gynecology (reviewer)
- 2001-present Journal of Pain & Palliative Care Pharmacotherapy (**editorial board**)
- 2005-present Pain Medicine (**editorial board**)
- 2005-2012 PC-FACS (electronic publication of palliative care literature) (**editorial board**)
- 2005-present Journal of the American Medical Association (JAMA) (reviewer)
- 2006 Cochrane Collaborative Referee (Pain, Palliative and Supportive Care Group) (reviewer)
- 2007 Palliative Medicine (reviewer)
- 2007 Cancer (reviewer)
- 2010-present Pain Medicine Supplements Editor
- 2010-present Pain Medicine Senior Editor
- 2012 New England Journal of Medicine (reviewer)
- 2012 The Oncologist (reviewer)
- 2012 Grant Reviewer for US Army Medical Research and Materiel Command (USAMRMC) via The Scientific Peer Advisory and Review Services division of the American Institute of Biological Sciences (AIBS)
- 2014 Grant reviewer for Ministry of Health, The Netherlands (Rational Pharmacotherapy Program)
- 2014 Advisor, University of Wisconsin NIH-NIDA R34-Expert panel  
 “Translating clinical guidelines for opioid prescribing for use in primary care”

#### Website and E-Publication Editorial Boards

- 2005-11 [www.painknowledge.com](http://www.painknowledge.com) (editorial board)
- 2009-11 [www.painclinician.com](http://www.painclinician.com) (editorial board)
- 2010 [www.palliativecareclinician.com](http://www.palliativecareclinician.com) (editorial board)

## **SCHOLASTIC HONORS**

- 1973 Graduate Cum Laude, University of California  
 1979 Leadership Honor Society, Medical College of Virginia  
 1980 Alpha Omega Alpha (National Medical Honor Society), Med. Col. Va.  
 1980 Phi Kappa Phi (National Academic Honor Society), Med. Col. Va.

## **Awards and Community Honors/Service**

- 1988-1989 Delegate, Salt Lake County Medical Society, Utah Medical Association House of Delegates  
 1990-1998 Utah Medical Assoc. & Utah Bar Assoc. School Program for Drug Abuse Awareness  
 1991 Ethics in Medical Practice Committee, Utah Medical Association  
 1990-present Utah Youth Soccer Association Coach/Assistant Coach  
 1993 Volunteer of the Year, Community Nursing Service, SLC, UT  
 1996 Torchbearer, 100<sup>th</sup> Olympiad Olympic Torch Relay, Atlanta Summer Games  
 1996 Golden Rule Community Service Award, United Way  
 1998-2001 Team Physician, Skyline HS Womens Soccer (2001 State Champions)  
 2001 Service and Commitment Award, National Hospice and Palliative Care Organization  
 2001-2002 Medical Officer, 2002 Winter Olympics Trials and Winter Games (Ice Center)  
 2001 Professor Roger Bone, M.D. Memorial Lecturer, Rush-Presbyterian School of Medicine  
 2003 John J. Bonica 22nd Annual Memorial Lecturer, University of Washington  
 2004 American Pain Society Elizabeth Narcessian Award for Outstanding Educational Achievements in the Field of Pain  
 2006 Honoric Book Plate (In Honor of Barry Smith and Perry Fine, MD, VistaCare Hospice Foundation Founders) Memorial Book Collection on End of Life Care, Scottsdale Public Library  
 2007 American Academy of Hospice and Palliative Medicine Distinguished Hospice Physician Award  
 2007 Josefina Magno Founders Award for Leadership in Hospice and Palliative Care (presented by Capital Hospice, Washington, DC)  
 2008 American Pain Society, John and Emma Bonica Public Service Award  
 2009 Lord Kelvin Award: awarded at the 11<sup>th</sup> Annual Josefina Magno Conference on Palliative Care, Washington, DC  
 2010 American Academy of Pain Management Head Heart Award  
 2011 Marie Nyswander Award (Awarded at the Beth Israel Medical Center, New York City sponsored annual meeting on Pain and Chemical Dependency)  
 2012 Perry G. Fine, MD Endowed Fund in Pain and Palliative Medicine was created at West Virginia University  
 2012 Passion for Caring Award (Capital Caring, Washington, DC)  
 2015 American Academy of Pain Medicine Distinguished Service Award

**ADMINISTRATIVE**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Redacted pursuant to N.Y. Public Officers Law, Art. 6

### **PROFESSIONAL SOCIETIES**

American Medical Association  
 American Academy of Hospice and Palliative Medicine (founding member)  
 American Pain Society  
 American Society of Anesthesiologists  
 American Society of Regional Anesthesia  
 American Academy of Pain Medicine  
 International Myopain Research Society  
 International College of Hospice and Palliative Care (founding member)  
 International Anesthesia Research Society  
 International Association for the Study of Pain  
 National Hospice and Palliative Care Organization  
 Utah Academy of Pain Medicine  
 Utah State Society of Anesthesiologists  
 Utah Medical Association

### **TEACHING/SUPERVISION /COURSES**

1985-present Clinical Teaching of Medical Students, Residents, Fellows in the  
 Pain Management Center Didactic Lectures, Dept. of Anesthesiology, University  
 of Utah

1987-1994 Course faculty, Chief Resident as Manager, Dept. of Family  
 and Preventive Medicine, University of Utah

1992-present Course faculty, 4th Year Medical Ethics Course, School of  
 Medicine, University of Utah

1996-2003 Course Director and Annual Lecturer: Pain Management and Palliative  
 Medicine (University of Utah CME and CEU monthly seminar series)

2000	Pain Management at End of Life: Clinical and Ethical Issues (guest lecturer, Dept. of Philosophy, University of Utah)
1998	Palliative Care in the 21st Century (1st year Students, School of Medicine, University of Utah)
2000-present	Clinical Management of Pain: Sports Medicine Trainers; Dept. of Athletics
2003-2008	Social Medicine (School of Medicine, 1st and 2nd year students, University of Utah)
2006	Beyond the World Health Organization Cancer Pain Guidelines. University of Utah Hematology/Oncology Fellows lecture
2006	ACLS training, U. of Utah PA students
2007-11	Didactic lectures for pain fellows, U of U faculty and community providers
2011	Pain Pathophysiology (University of Utah Athletics Dept. Student Trainers)
2010-12	Lectures in pain management, Hospice and Palliative Care Fellowship, National Institutes of Health, Washington, DC

### **EXTRAMURAL GRANTS/AWARDS**

1. Investigator, The Impact of Advanced Illness Coordinated Care (AICC) Nurse Practitioner (AIP) on Total Charges, Intensive Care Unit Utilization and Documentation of Advance Directives  
CMS No.18-P-91853/3-01 (2003-2005)
2. Investigator, Fibromyalgia Treatment Program, Univ. of Utah Pain Research Center  
NIH 1 RO1 AR048888-01A2 (2004-2009)
3. Investigator, Utah Center for Exploring Mind-Body Interactions, U of Utah Pain Research Center  
NIH 1 R21 AT002209-01 (2004-2007)
4. Consultant, Online Pain Management for Physicians, U of Arizona and Medical Directions, Inc., Tucson, AZ  
NIH R44 NS045361 (2004-2006)
5. Advisor, Multifaceted Interventions to Ameliorate Pain and Symptoms  
NIH xxxxxxxx (2004-2006)  
Principal Investigator: Joan M. Teno, MD, Brown University, Providence, RI
6. Investigator, Cancer Pain in Elders: Improving Evidence-Based Practices in Hospices  
NIH (NCI) RO1 CA115363-01 (2005-2010)  
Principal Investigator: Keela A. Herr, PhD, Professor and Chair, Division of Gerontological Nursing, College of Nursing, University of Iowa, Iowa City, IA)
7. Consultant, Interdisciplinary Consensus Project on Assessment of Older Persons Experiencing Pain. Canadian Institutes of Health Research New Emerging Team Grant. Other support was derived from the USPHS Research Grants R01AG18299 and

R01AT000985 from the National Institutes of Health (2006)

Principal Investigator: Thomas Hadjistavropoulos, Ph.D., R.D. Psych, Professor of Psychology and Director, Centre on Aging and Health University of Regina, Regina, SK, Canada, S4S 0A2

8. Investigator, The Influence of Health Literacy on Chronic Low Back Pain (2007)  
Principal Investigator: Akiko Okifuji, PhD, University of Utah Pain Research Center
9. Consultant, Research Agenda for Opioid Therapy in Non-Cancer Chronic Pain (2007)  
Principal Investigator: C. Richard Chapman, PhD, University of Utah Pain Research Center  
Milbank Fund, New York City, NY
10. Co-Chair: Evidence-Based Guideline Committee for Chronic Opioid Therapy in Non-Cancer Pain (2006-2008)  
American Pain Society, Chicago, IL

## **BIBLIOGRAPHY**

### **Peer Review Publications**

1. **Fine PG**, Wong KC: 1984, Cranial nerve block after test dose through an epidural catheter in a pre-eclamptic parturient. *Can Anaesth Soc J* 31:565-567
2. **Fine PG**, Bubela C: 1985, Chylothorax following celiac plexus block. *Anesthesiology* 63:454-456
3. **Fine PG**: 1985, The pathways and mechanisms of pain and analgesia: a review and clinical perspective. *Hospital Formulary* 20:972-985
4. **Fine PG**, Petty WC: 1986, Myofascial trigger point pain: diagnosis and treatment. *Current Reviews in Clinical Anesthesia* 7: 34-39
5. **Fine PG**: 1986, Treating postoperative pain: epidural and spinal opioids. *WJM*;34:5-6
6. **Fine PG**: 1987, Myofascial trigger point pain in children. *J Pediatrics* 111:547-548
7. **Fine PG**, Hare BD: 1987, Cancer pain: assessment and management. *Hospital Formulary* 22: 928-945
8. **Fine PG**, Milano RA, Hare BD: 1988, The effects of myofascial trigger point injections are naloxone reversible. *Pain* 32:15-20
9. **Fine PG**, Dingman DL: 1988, Hypersensitivity dermatitis following suction assisted lipectomy: a complication of local anesthetic. *Annals of Plastic Surgery* 20:573-575

10. **Fine PG**, Hare BD, Zahnizer JC: 1988, Epidural abscess following epidural catheterization in a chronic pain patient: a diagnostic dilemma. *Anesthesiology* 69:422-424
11. **Fine PG**, Ashburn MA: 1988, Effect of stellate ganglion block with fentanyl on postherpetic neuralgia with a sympathetic component. *Anesth Analg* 67:897-899
12. **Fine PG**: 1988, Pharmacological management of sympathetic maintained pain. *Hosp Formulary* 23:796-808
13. Ashburn MA, **Fine PG**, Stanley TH: 1989, Oral transmucosal fentanyl citrate for the treatment of breakthrough cancer pain. *Anesthesiology* 71:615-617
14. Ashburn MA, **Fine PG**: 1989, Persistent pain following trauma. *Military Med* 154: 86-89
15. **Fine PG**, Ashburn MA: 1989, Spinal opioid analgesia: clinical applications reviewed. *Hosp Formulary* 24: 498-504
16. **Fine PG**, Karwande SV: 1990, Sternal wire-induced persistent chest pain: a possible hypersensitivity reaction. *Ann Thorac Surg* 49:135-36
17. Alvord LS, **Fine PG**: 1990, Real-time B-scan ultrasound in middle ear assessment. *J Ultrasound Medicine* 9:91-94
18. Ashburn MA and **Fine PG**: 1990, Evaluation and treatment of chronic pain syndromes. *Comp Ther* 16:37-42
19. **Fine PG**, Marcus M, DeBoer AJ, and Van der Oord B: 1991, An open label study of oral transmucosal fentanyl citrate (OTFC) for the treatment of breakthrough cancer pain. *Pain* 45:149-153
20. **Fine PG**: 1991, Pain and the sympathetic nervous system. *Literature Scan: Anesthesiology* 5:2-28
21. **Fine PG**, Hague BI, Stanley TH: 1992, Realizing a non-invasive drug delivery system: development of OTFC. *P & T* 17:195-200
22. **Fine PG**: 1992, Anesthesiology and the discipline of medical ethics. *Anesth Analg* 74:327-8
23. **Fine PG**, Lind G, Pace N: 1993, The influence of preoperative sympathetic block or regional anesthesia on postoperative analgesic use and pain scores after upper extremity surgery: a randomized controlled pilot study. *J Musculoskeletal Pain* 1:59-70
24. Kerrick JM, **Fine PG**, Lipman AG, Love G: 1993, Low-dose amitriptyline as an adjunct to opioids for postoperative orthopedic pain; a placebo-controlled trial. *Pain* 52:325-330
25. **Fine PG**: 1993, Barriers to cancer pain relief: the media is the message. *Journal of Pharmaceutical Care in Pain & Symptom Control* 1:65-70

26. **Fine PG**, Roberts WJ, Gillette RG, Child TR: 1994, Slowly developing placebo responses obscure results of the intravenous phentolamine test in subjects with idiopathic chronic low back pain. *Pain* 56:235-242
27. Florell SR, Velasco SE, **Fine PG**: 1994, Perioperative recognition, management, and pathological diagnosis of transfusion-related acute lung injury. *Anesthesiology* 81:508-510
28. **Fine PG**, Digre KB: 1995, A controlled trial of regional sympatholysis in the treatment of photo-oculodysplasia syndrome. *J Neuro-ophthalmology* 15:90-94
29. **Fine PG**, Jackson SH: 1995, Do not resuscitate in the operating room: more than rights and wrongs. *Amer J Anesth* 1:46-51
30. **Fine PG**: 1996, Treating myofascial pain and trigger points. *J Musculoskeletal Pain* 3:87-89.
31. **Fine PG**, Wong KC: 1996, Postdural puncture headache: an unusual case and review. *Acta Anesthesiol Sin* 34:33-35
32. Strong KS, Westenskow DR, **Fine PG**, Orr JA: 1997, A preliminary laboratory investigation of air embolus detection and grading using an artificial neural network. *International J Clin Monitoring and Computing* 14:1-5
33. **Fine PG**: 1997, Breakthrough pain in a hospice--a preliminary report. *Analgesia* 8:12-14
34. **Fine PG**: 1997, Fentanyl in the treatment of cancer pain. *Seminars in Oncology*. 24 (No. 5, Supplement 16):S16-20.
35. **Fine PG**, Busch M: 1998, Characterization of breakthrough pain by hospice patients and their caregivers. *J Pain Symptom Manage* 16:179-183.
36. **Fine PG**: 1998, A time to re-evaluate care of the dying: a call to action. *ASA Newsletter* ;60
37. **Fine PG**, Streisand J: 1998, A review of oral transmucosal fentanyl citrate: potent, rapid and noninvasive opioid analgesia. *J Palliative Medicine* 1:55-64.
38. **Fine PG**: 1998, Medical Ethics: Bringing conflicts in medical care at the end of life toward resolution. *ASA Newsletter* 62:22-23.
39. Lordon S, **Fine PG**: 1998, Myofascial pain syndrome. *Biomechanics*, September:51-58.
40. **Fine PG**: 1999, Clinical experience with Actiq. *Today's Therapeutic Trends*;17:1-11.
41. **Fine PG**: 1999, Low-dose ketamine in the management of opioid resistant terminal cancer pain. *J Pain Symptom Manage* 17:296-300.

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43. **Fine PG**: 2000, Breakthrough cancer pain: epidemiology, characteristics and management. *CNS Drugs*; 13:313-319
44. **Fine PG**: 2000, Pain—final common pathways: Pathophysiology and pragmatism. *Reg Anesth Pain Med*; 25:1-3.
45. **Fine PG**: 2000, Pain and aging: Overcoming barriers to treatment and the role of transdermal opioid therapy. *Clin Geriatrics*;8:28-36.
46. Grossberg GT, Sherman LK, **Fine PG**: 2000, Pain and behavioral disturbances in the cognitively impaired older adult. *Ann Long-Term Care*; 8: 22-24.
47. Hong G, **Fine PG**, Mendoza TR, Cleeland CS: 2001, A validation study of the Brief Hospice Inventory. *J Pain Symptom Manage*;22:637-648.
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49. **Fine PG**: 2001, Opioid analgesics in older people. *Clinics in Geriatric Medicine*;17:479-487.
50. **Fine PG**: 2001, Patient preferences in end-of-life care. *J Pharmaceutical Care in Pain & Symptom Control*; 9:85-87.
51. **Fine PG**: 2001, Opioid selection: plaudits, pitfalls and possibilities. *J Pain*; 2:195-196.
52. **Fine PG**: 2001, Palliative care: dyspnea and breakthrough pain. *J Pharmaceutical Care in Pain & Symptom Control*; 9(4):73-78.
53. **Fine PG**: 2002, The role of rofecoxib, a COX-2 specific inhibitor, for the treatment of non-cancer pain. *J Pain*; 3(4): 272-283.
54. **Fine PG**: 2002, The ethical imperative to relieve pain at life's end. *J Pain Symptom Manage*; 23 (4): 273-277.
55. **Fine PG**: 2002, Palliative radiation therapy in end-of-life care: evidence-based utilization. *Am J Hospice & Palliative Care*; 19 (3):166-170.
56. **Fine PG**, Peterson D: 2002, Caring about what dying patients care about caring. *J Pain Symptom Manage*; 23 (4): 267-268.
57. AGS Panel on Persistent Pain in Older Persons: 2002, Clinical guideline for assessment and management of persistent pain in older persons. *JAGS*; 50: S205-S224.

58. **Fine PG**, Herr K, Dahl J: 2002, Pain management of osteoarthritis. National Pain Education Council (web publication): <http://www.npecweb.com>.
59. **Fine PG**: 2002, Analgesia issues in palliative care; bone pain, controlled-release opioids, managing opioid-induced constipation and nifedipine as an analgesic. *J Pain & Palliative Care Pharmacotherapy*; 16 (1): 93-97.
60. **Fine PG**: 2002, Cancer pain. *Audio-Digest Special Topics*; 6(2).
61. **Fine PG**: 2002, Analgesic issues in palliative care: Gastroesophageal reflux pain and chronic non-cancer pain management. *J Pain & Palliative Care Pharmacotherapy*; 16 (2): 87-89.
62. **Fine PG**, Pappagallo M, Price DD: 2002, Clinical advances in pain management: Enhanced analgesia through NMDA receptor modulation. *AJPM*; 12(4) suppl.: 1S-7S.
63. **Fine PG**: 2002, Analgesia issues in palliative care: Furthering our understanding of pain, the stability and cost of opioid infusion therapy, and opioid effectiveness doses in nociceptive and neuropathic pain. *J Pain & Palliative Care Pharmacotherapy*; 16(3): 77-81.
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65. Dubois, M, **Fine PG**, Fischberg D, Ferrell B, Taylor ML, 2003: Ethics Forum: Pain management at end of life. *Pain Medicine*; 4 (1):81-84
66. Gammaitoni AR, **Fine PG**, Alvarez N, McPherson ML, Bergmark S: 2003 , Clinical application of opioid equianalgesic data. *Clin J Pain*; 19:286-297.
68. **Fine PG**: 2003, COX-2 selective NSAIDs and advancing legal issues in palliative care. *J Pain & Palliative Care Pharmacotherapy*; 17(1): 53-57.
69. Waisel D, Jackson S, **Fine PG**: 2003, Should do-not-resuscitate orders be suspended for surgical cases? *Current Opinion in Anesthesiology*; 16: 209-13.
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75. Evans RM, D'Agostino D, **Fine PG**, et al: 2003. Pain management: management of persistent nonmalignant pain. American Medical Association Press, Chicago, IL
76. Evans RM, **Fine PG**, Lippe PM, et al: 2003. Pain management: cancer pain and end of life care. American Medical Association Press, Chicago, IL
77. **Fine PG**: 2004. Difficulties and challenges in the treatment of chronic pain in the older adult. *Am J Pain Management*; 14(2 Suppl):2S-8S.
78. Gazelle G, **Fine PG**: 2004. Methadone for pain. *J Palliative Med*; 7 (2):303-304.
79. **Fine PG**: 2004. The ethics of end-of-life research. *J Pain & Palliative Care Pharmacotherapy*; 18 (1): 71-78.
80. **Fine PG**: 2004. Pharmacological management of persistent pain in older patients. *Clinical Journal of Pain*; 20(4):220-226.
81. **Fine PG**: 2004. Opioid-induced hyperalgesia and opioid rotation. *J Pain & Palliative Care Pharmacotherapy*; 18 (3): 75-79.
82. **Fine PG**: 2004. Interventional pain management: Peer viewpoint. *J Supportive Oncology*; 2(6): 11-12.
83. **Fine PG**, Miaskowski C, Paice JA: 2004. Meeting the challenges in cancer pain management. *J Support Oncol*;2(6 ) (Suppl 4):5-22.
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85. **Fine PG**: 2004: Ethics and clinical training. *J Pain Med*; 5(2):209-11
86. **Fine PG**: 2005: The evolving and important role of anesthesiology in palliative care. *Anesth Analg*; 100:183-188.
87. **Fine PG**: 2005. Severe cancer pain: Testing the limits of medicine. *J Cancer Pain*;1(2):51-53
88. **Fine PG**, Herr K, Calvani D, Kuhn S: 2005. Management of chronic pain in older persons: Focus on safety, efficacy and tolerability of drug therapy. *Clinical Courier*; 23 (27): 1-8
89. **Fine PG**, Bellamy C: 2005. Bisphosphonates for metastatic bone pain. *J Pain & Palliative Care Pharmacotherapy*; 19 (2):61-63
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91. Gordon DB, Dahl J, Phillips P, Frandsen J, Cowley C, Foster RL, **Fine PG**, Miaskowski C, Fishman S, Finley RS: 2005. Opioid analgesics in the management of acute pain. Home Health Nurse 23(6):388-396
92. **Fine PG**: 2005. Benefits of pain management in the elderly. Manag Care ;30(12 suppl):46-55.
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99. Obah C, **Fine PG**: 2006. Intranasal sphenopalatine ganglion block: minimally invasive pharmacotherapy for refractory facial and headache pain. J Pain & Palliative Care Pharmacotherapy; 20(3):57-59.
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102. Hadjistavropoulos T, Herr K, Turk D, **Fine PG**, et al: 2007. An interdisciplinary expert consensus statement on assessment of pain in older persons. Clin J Pain; 23: S1-S43.
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105. Messina J, Darwish M, **Fine PG**: 2007. Fentanyl buccal tablet. *Drugs of Today*; 43:
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108. **Fine PG**: 2008. IL10 and neuropathic pain. *J Pain & Palliative Care Pharmacotherapy*; 22(1):26-7.
109. **Fine PG**: 2008. Sedation in mechanically ventilated patients. *J Pain & Palliative Care Pharmacotherapy*; 22(3): 226-227.
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111. Chou R, Fanciullo GJ, **Fine PG**, et al: 2009 Clinical guidelines for the use of chronic opioid therapy in chronic noncancer pain. *J Pain*;10(2):113-30.
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131. **Fine PG**, Narayana A, Passik SK: 2010. Treatment of breakthrough pain with fentanyl buccal tablet in opioid-tolerant patients with chronic pain: Appropriate patient selection and management. *Pain Med*; 11(7):1024-36.
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6. Opioid Therapy in Patients With a History of Substance Use Disorders	Seddon Savage, MD	Michael Rosenthal, MD	February 2011
7. Urine Drug Testing	Michael Bottros, MD/ Paul Christo, MD	Marc Babitz, MD	February 2011
8. Appropriate Documentation of Opioid Therapy: the Emergence of the 4 A's and Trust and Verify as the Paradigm	Steven Passik, PhD	Susan Cochella, MD	March 2011
9. Opioid Rotation	Perry Fine, MD	Paul Doghramji, MD	March 2011
10. Discontinuing Opioid Therapy: Developing and Implementing an "Exit Strategy"	Charles Argoff, MD	Louis Kuritzky, MD	April 2011



63. **Fine PG**. Strategy for a bright future: President's message. Pain Med, 2011; 12 (1): 3
64. **Fine PG**. Helping Veterans Overcome the Battle Within. New York Times, Letter to the Editor, February 19, 2011
65. Quoted in Family Circle magazine article on back pain (by Sandra Gordon), April 17, 2011.
66. **Fine PG**. On the cutting edge of cancer pain. (Review of Cancer Pain: Assessment and Management, Second Edition Edited by Eduardo D. Bruera and Russell K. Portenoy Published by Cambridge University Press, New York, NY, USA). J Pain Symptom Manage, 2011; 41 (4): 808-9.
67. Quoted in Readers Digest, March 2011; "Top 10 Medical Innovations of the Decade"
68. **Fine PG**, Fishman SM. Letter to the Editor re: Reducing Opioid Abuse and Diversion. JAMA, 2011; 306(4):382.
69. Webster LR, **Fine PG**. Letter to the Editor re: Universal Precautions: It's Not about the Molecule. J Pain, 2011; 12 (6):723.
70. Clark MR, **Fine PG**. Comprehensive management of chronic pain: A clinical practice assessment CME (MedScape Anesthesiology Education; CME Released: 09/08/2011; Valid for credit through 09/08/2012; <http://www.medscape.org/viewarticle/749253>)
71. **Fine PG**, Kuritzky L, Fleming M, Shaparin N. Effective management of chronic pain: The role of opioids. RealCME (release date August 15, 2012, expires August 15, 2013; 0.75 AMA credits). Available at: <http://realcme.antidotecme.author.realcme.com/cms/1581xXgWt248811hH>
72. **Fine PG**, Vallerand A, Bruckenthal P, Cochella S. Best practices in the assessment and management of chronic pain: Supplement to Practical Pain Management. (CME release date June 2012-14. Sponsored by Albert Einstein College of Medicine at Yeshiva University, New York. 2.0 AMA credits). Available at: <http://painclinician.com/education/activity/id/125/>
73. **Fine PG**: 2013. Care at the End of Life: Once Chance to Get It Right. Op-Ed, The Salt Lake Tribune, March 15, 2013
74. **Fine PG**: 2015. Medical Marijuana Is Not Sensible Policy. Op-Ed, The Salt Lake Tribune, February 15, 2015

## **Abstracts**

1. **Fine PG**, Milano RA, Hare BD: 1984, Are The Effects of Trigger Point Injections Naloxone Reversible? *Pain*, (suppl 2): A535
2. Franz DN, Miner LC, **Fine PG**: 1988, Clonidine and Oxymetazoline Depress Ganglionic Transmission. *FASEB Journal*, 2:A502
3. **Fine PG**, Lind G, Mann R, McAllister B: 1990, A Prospective Study of Perioperative Analgesic Requirements Comparing Preoperative Sham versus Stellate Ganglion Blockade in Patients Undergoing Upper Extremity Surgery Under General Anesthesia. *Pain suppl*, 5:S425
4. Ashburn MA, Olson L, **Fine PG**, Stanley TH: 1990, The Clinical Evaluation of the Compassionate Use of Oral Transmucosal Fentanyl Citrate (OTFC) for the Treatment of Breakthrough Cancer Pain. *Pain suppl*, 5:S353
5. **Fine PG**, Orr JA, Westenskow DR, Kuck K: 1991, A Neural Network for Quantification of Air Embolism. *Anesthesiology*, 75 (suppl):A465
6. Strong KM, **Fine PG**, Orr JA, Westenskow DR: 1992, Neural Network Quantification of Air Embolism Using Doppler Ultrasound. *Anesthesiology*, 77:A516
7. **Fine PG**, Kerrick JM, Lipman AG, Love G: 1993, Low-dose Amitriptyline as an Adjunct to Opioids for Postoperative Orthopedic Pain. *Proceeding of the APS*
8. Heil J, **Fine PG**: 1993, Psychological Aspects of Sport Injury. *Proceedings of the 8th International Association of Sports Psychology World Congress*
9. **Fine PG**: 1993, Barriers to Cancer Pain Relief: The Media and the Message. *Proceedings of the National Hospice Organization*
10. **Fine PG**: 1993, A Comparative Cost Analysis of Pain Management Modalities. *Proceedings of the National Hospice Organization*
11. Kuck K, Orr JA, **Fine PG**, Westenskow DR: 1993, Neural Networks to Estimate Cardiac Output from Phonocardiograms. *Anesthesiology*, 79:A472
12. Feler CA, **Fine PG**, Cherry DA: 1993, The Patient Activated Reservoir (PAR): A Novel Way for Treating Pain in Cancer Patients. In *Abstracts of the 7th World Congress on Pain*, Gebhart GF (ed), Seattle, IASP Publications, p. 324.
13. Kuck K, **Fine PG**, Orr JA, Westenskow DR: 1994, Anesthesiologists can detect changes in cardiac output from esophageal heart sounds, *Anesthesiology*, 81:A1296
14. Ginsberg B, **Fine PG**, Gan TJ, Streisand J, Glass PSA, Gaylord B: 1995, Oral transmucosal fentanyl citrate for the treatment of acute pain following joint arthroplasty. *Anesthesiology*, 83:A867

15. **Fine PG**, Ginsberg B, Streisand JB, Gan TJ: 1995, The morphine sparing effect of oral transmucosal fentanyl citrate (OTFC) in postsurgical patients following joint arthroplasty. Proceedings of the American Pain Society
16. **Fine PG**, Ginsberg B, Streisand JB, Gan TJ: 1995, An analysis of the occurrence of subjective side effects when oral transmucosal fentanyl citrate is administered on a background of morphine sulfate. Proceedings of the American Pain Society
17. **Fine PG** et al: 1997, Managed care and pain management. Proceedings of the American Pain Society
18. Berde C, **Fine PG**, et al: 1997, Placebo and nocebo effects. Proceedings of the American Pain Society
19. **Fine PG**: 2001, Palliative radiation therapy in end-of-life care: Evidence-based utilization. J Palliat Med; 4:263
20. Cassarett DJ, Levetown M, **Fine PG**: 2001, Learning to love your Institutional Review Board: Practical suggestions for doing ethical palliative care research. J Palliat Med; 4: 280.
21. **Fine PG**: 2002, Rational selection of opioid analgesics. J Palliat Med; 5: 211
22. **Fine PG**, Rousseau P, Frederich M, Olson B: 2002, Total sedation: Ethical foundations and clinical care. J Palliat Med; 5: 217
23. McCarberg B, Herr K, **Fine PG**: 2002, Clinical strategies for management of chronic pain in older adults. J Pain
24. **Fine PG**, Glacjen M, Portenoy R: 2002, Pain management in advanced medical illness. J Pain
25. **Fine PG**, Portenoy R, Glajchen M, Herr K: 2003, Pain management issues: Substance abuse, psychosocial stress, dementia, and intractable pain. J Palliative Med; 6(1): 131
26. **Fine PG**, Messina J, Peppin JF: 2007: Management of breakthrough pain in opioid-tolerant patients with chronic low back pain or neuropathic pain: Combined analysis of two randomized, double-blind studies of fentanyl buccal tablet. J Pain; 8(4) Suppl 1:S43
27. Magar R, White R, **Fine PG**: 2007: Expected cost and cost considerations associated with opioid rotation for chronic non-cancer pain: A simulation model  
International Society for Pharmacoeconomics and Outcomes Research (ISPOR), Dublin, Ireland
28. **Fine PG**, Narayana A, Xie F: 2008, Tolerability and safety profile of fentanyl buccal tablet in opioid-tolerant patients with cancer and breakthrough pain: A pooled analysis.  
American Academy of Pain Medicine, Orlando, FL

29. **Fine PG**, Rathmell J, Messina J, Xie, F: 2008, Longterm safety profile of fentanyl buccal tablet in an open-label study of opioid tolerant patients with chronic noncancer pain and breakthrough pain.  
International Association for the Study of Pain, 12<sup>th</sup> World Congress, Glasgow, Scotland
30. **Fine PG**. Overview of palliative care: 2009. Pain Practice;9 (suppl 1):12  
Proceedings of the 5<sup>th</sup> World Congress, World Institute of Pain, New York
31. Volinn E, Fargo JD, **Fine PG**: 2009. Opioid therapy for nonspecific low back pain and the outcomes of chronic work loss and costs. J Pain;10, Suppl. 4:S46.
32. Bateman K, Cochella S, Nabann D, Dove B, Fakata K, **Fine PG**, et al: 2010. Root Cause Analysis for Unintentional Overdose Deaths Involving Opioids in Chronic Pain Patients Reveals Disproportionate Methadone Involvement. American Academy of Pain Medicine, 26<sup>th</sup> Annual Scientific Conference, San Antonio, TX.
33. **Fine P**, Herr K, Titler M, Sanders S, Swegle J, Forcucci C, Tang X, Lane K, Reyes J: 2010. The Cancer Pain Practice Index (CPPI): A Measure of Evidence-Based Practice for Cancer Pain Management in Older Adults in Hospice. American Academy of Pain Medicine, 26<sup>th</sup> Annual Scientific Conference, San Antonio, TX.
34. Herr K, Titler M, **Fine P**, Sanders S, Cavanaugh J, Swegle J, Forcucci C, Tang X: 2010. Improving Pain Management at the End of Life: Barriers and Facilitators to a Change Intervention. Gerontological Society of America 63<sup>rd</sup> Annual Scientific Meeting, New Orleans, LA
35. Kerr K, Sanders S, Fiala C, **Fine P**, Forcucci C, Tang X. Patient adherence to the pain treatment plan for older adults with cancer pain in hospice: 2012. J Pain; 12 (4) Supplement 2: 16.
36. Herr K, Titler M, Sanders S, **Fine P**, Swegle J, & Forcucci C: 2012. Translating research into practice: Description and user perceptions of a multifaceted intervention to improve cancer pain in older adults in hospices. 14th World Congress on Pain. Milan, ITALY. (Poster)
37. Couto JE, Peppin JF, **Fine PG**, Passik SD, Goldfarb NI: 2012 Developing recommendations for urine drug monitoring for patients on long-term opioid therapy. Proceedings of the American Academy of Pain Medicine, Palm Springs, CA (Poster)
38. Muir JC, Kestenbaum M, Beukema B, Hess B, Connor S, Davis M, Shah M, Scheffrey C, **Fine PG**: 2012 A Systematic, Comprehensive Approach to Improve Pain Outcomes Throughout a Hospice Population. Proceedings of the American Academy of Pain Medicine, Palm Springs, CA (Poster)
39. Muir JC, Young H, Gilson AM, Scheffey C, Davis M, **Fine PG**, Connor SR: 2012. Utilization of a state prescription monitoring program for quality and safety improvement for

pain management in an outpatient palliative care setting. Proceedings of the American Academy of Pain Medicine, Palm Springs, CA (Poster)

40. **Fine PG**: 2013. The impact of a 12-part online CME multimedia curriculum regarding chronic pain on practice patterns in primary care. Fourth International Congress on Neuropathic Pain. Toronto, Canada (Poster)

## Regional/National/International Invited Presentations and CME Accredited Programs

### KEY starting 2010

- A. Invited / Visiting Professor Presentation**
- B. Keynote/Plenary Lecture**
- C. Meeting Presentation**
- D. Peer-Reviewed Presentation**

1. Fine PG, Hare BD, Milano RA: 1984, *Trigger Point Injection Analgesia Is Naloxone Reversible*.  
International Association for the Study of Pain 4th World Congress, Seattle, WA
2. Fine PG, Russell S, Milano RA: 1986, *Training of Pain Management Specialists*  
Western USA Pain Society, Palm Springs, CA
3. Fine PG and Ashburn MA: 1988, *Opioid Mediated Stellate Ganglion Block: A Placebo Controlled Case Study*.  
Western USA Pain Society, Santa Fe, NM
4. Fine PG, Connolly M, Mann F, Pace NL: 1988, *A Prospective Study of Postoperative Analgesic Requirements and Pain Ratings Comparing General vs Regional Anesthesia for Upper Extremity Surgery*.  
Canadian and American Pain Societies, Toronto, Ontario, Canada
5. Fine PG: 1988, *Cancer Pain Management: Current Directions*  
Skyline Medical Association, Sun Valley, ID
6. Fine PG and Ashburn MA: 1989, *Transmucosal (Buccal) Fentanyl: A Novel Approach to the Treatment of Breakthrough Cancer Pain*.  
Western USA Pain Society, San Antonio, TX
7. Fine PG, Roberts W, Sternbach R: 1989, *Sympathetic Maintained Pain*  
Western USA Pain Society, San Antonio, TX
8. Fine PG, Hare BD, Hameroff S, McCain G: 1989,  
*Mechanisms Underlying Myofascial Pain*  
American Pain Society
9. Fine PG: 1990, *Oral Transmucosal Fentanyl Citrate for the Control of Breakthrough Pain in Cancer Patients*.  
International Hospice Institute-Academy of Hospice Physicians, Denver, CO
10. Fine PG, Campbell J: 1990, *Neuropathic Pain*  
Western USA Pain Society, Park City, UT

11. Fine PG:1990, *Noninvasive Drug Delivery*  
Skyline Medical Association, Sun Valley, ID
12. Fine PG, Hague B, Stanley TH: 1990, *Realization of a Noninvasive Drug Delivery System*  
American Society of Consultant Pharmacists, San Antonio, TX
13. Fine PG, Roberts WJ, Ochoa J: 1990  
*Mechanisms of Sympathetic Maintained Pain.*  
American Pain Society
14. Fine, PG: 1990, *Management Strategies for Cancer Pain*  
Utah Hospice Organization
15. Fine PG: 1990, *Cancer Pain Management with OTFC*  
International Hospice Institute
16. Fine PG: 1991, *Pain and the Sympathetic Nervous System*  
Skyline Medical Association, Sun Valley, ID
17. Fine PG: 1991, *Dealing with Death*  
AMA/MSS Presentation, U. of Utah
18. Fine PG, Nelson A, Jacobson J, Andrews L: 1991, *Medical Litigation: Probing the Depths*  
International Anesthesia Research Society
19. Fine PG: 1991, *Myofascial Pain Syndromes and Trigger Point Pain.*  
Anesthesiology Postgraduate Course, Snowbird
20. Fine PG, Young R, Murphy T, Liebeskind J: 1991, *Pain Pathways and Their Interruption*  
Western USA Pain Society
21. Fine PG, Orr J, Westenskow D, Kuck K: 1991, *A Neural Network for Quantification of Air Embolism*  
American Society of Anesthesiologists
22. Fine PG, Russel IJ, Slocumb J, Czajkowski L: 1991, *Pain and the Immune System*  
American Pain Society
23. Fine PG: 1992, *Anesthesia, Analgesia, Pain and Immunology*  
Skyline Medical Association, Sun Valley, ID
24. Fine PG, Kerrick JM, Lipman AG, Love G: 1992, *Amitriptyline as an Adjunct to Opioids in Postoperative Orthopedic Pain Management.*  
American Pain Society

25. Strong KM, Fine PG, Orr JA, Westenskow DR: 1992, *Neural Network Quantification of Air Embolism Using Doppler Ultrasound*. American Society of Anesthesiologists
26. Roberts WJ, Burchiel KJ, Gillette RG, North RB, Fine PG: 1992, *Low Back Pain: Fundamental Issues of Sensory Mechanisms*. American Pain Society
27. Fine PG: 1993, *Pre-emptive Analgesia: Basic Mechanisms and Clinical Implications*. Skyline Medical Association
28. Heil J, Fine PG: 1993, *Pain Management in Sport Injury*. International Society of Sports Psychology, Lisbon, Portugal
29. Kuck K, Orr JA, Fine PG, Westenskow DR: 1993, *Neural Networks to Estimate Cardiac Output from Phonocardiograms*. American Society of Anesthesiologist
30. Fine PG: 1993, *Barriers to Cancer Pain Relief: The Media and the Message*. National Hospice Organization
31. Fine PG: 1993, *A Comparative Cost Analysis of Pain Management Modalities*. National Hospice Organization
32. Fine PG: 1993, *Spinal Opioid Implantation Systems for the Control of Cancer Pain*. International Pain and Implants, Paris, France
33. Feler CA, Fine PG, Cherry DA: 1993, *The Patient Activated Reservoir (PAR): A Novel Way for Treating Pain in Cancer Patients*. International Association for the Study of Pain 7th World Congress, Paris, France
34. Fine PG, Kick K, Orr JA, Westenskow DR: 1994, *Neural Network Determination of Cardiac Output from Heart Tones*. Association of University Anesthesiologists, Chicago
35. Fine PG, Digre KW: 1994, *Amelioration of Symptoms with Regional Sympatholysis Suggests a Mechanism Underlying Photo-Occulodynamic Pain and Dystonia: Initial Findings from a Randomized, Double-Blind, Placeb-Controlled Study*. International Neuro-Ophthalmological Society, Freiburg, Germany
36. Fine PG, Wilkie DJ, Patchin R: 1994, *Recent Advances in Opioid Therapy*. American Pain Society, Miami
37. Fine PG, Lipman A: 1994, *Pain Management, Guidelines and Prescribing Practices*. Utah Medical Association CME Symposium
38. Fine PG: 1995, *Comprehensive Care of Dying Patients*

## Utah Medical Association Seminar Series

39. Fine PG:1995, *Pain, Pharmacology, Politics and Publicity*  
Skyline Medical Association, Sun Valley, ID
40. Fine PG: 1995, *Relieving Family Pain and Suffering*  
International Interdisciplinary Rocky Mountain Ethics Conference, Park City
41. Fine PG and Lipman A: 1996, *New Approaches to Non-invasive Drug Delivery in Symptom Management*  
Academy of Hospice Physicians, Park City
42. Fine PG: 1996,
  - a. *Clinical Trials Design: Cancer*
  - b. *Pharmacological Techniques/Routes of Administration*
  - c. *Methodological Issues in the Design of Trials of Interventional Therapy*
  - d. *Breakthrough/Incident Pain*
 " How To Assess and Treat Pain In Cancer and Aids Patients"  
Satellite Meeting of the 8th World Congress on Pain, University of Texas M.D. Anderson Cancer Center
43. Fine PG: 1996, *Photo-oculodynia Syndrome: A Newly Recognized Sympathetically Maintained Pain Syndrome*  
University of Ohio John J. Bonica Pain Conference
44. Fine PG et al: 1996,
  - a. *Ethics/Geriatrics Clinical Forum*
  - b. *Ethics Panel: Conflict of Interest*
 American Society of Anesthesiologists, New Orleans
45. Fine PG: 1996, *Use of Antiepileptic Drugs in the Treatment of Chronic Pain Syndromes*  
Parke-Davis CME Programs (San Francisco, Sacramento)
46. Fine PG: 1996, *Cancer Pain Management*  
Rocky Mountain Pain Conference, Park City
47. Fine PG: 1996, *New Developments in Opioid Analgesics for Cancer Pain*  
American Pain Society, Washington D.C
48. Fine PG et al: 1996, *Politics, Policies, Payers, and the Public's Health*  
American Pain Society, Washington, D.C
49. Fine PG: 1996, *Opioid Analgesics in the Treatment of Chronic Non-malignant Pain Syndromes*  
Medicine Grand Rounds, Washoe Medical Center, Reno, NV

50. Fine PG: 1996, *Clinical Concepts: Cancer Pain Management*  
Oncology Rounds, VAMC, Reno, NV
51. Fine PG: 1996, *Palliative Care and Pain Management for the Terminally Ill*  
Medicine Grand Rounds, UMC, Las Vegas, NV
52. Fine PG: 1996, *Advances in Non-invasive Drug Delivery Systems in Pain Management*  
Israel Pain Society, Tel Aviv
53. Fine PG: 1997, *Breakthrough Pain in Hospice Patients*  
National Hospice Organization Scientific Meeting, Miami
53. Fine PG: 1997, *Hospice and Palliative Care*  
Skyline Medical Association, Sun Valley
54. Fine PG: 1997, *Advances in Symptom Management and Terminal Care*  
AMA Student Section National Meeting
55. Fine PG: 1997, *Pharmacological Management of Acute Pain*  
American Academy of Physician Assistants, Minneapolis
56. Fine PG: 1997, *Chronic Pain Syndromes and Chronic Disease Management*  
Zeneca National Advisory Board, Washington, D.C.
57. Fine PG: 1997, *Patterns of Referred Pain*  
National Association of Athletic Trainers, Snowbird
58. Fine PG: 1997, *Breakthrough Pain: Epidemiology and Pharmacological Management*  
States Cancer Pain Initiative Annual Scientific Meeting, Minneapolis
59. Fine PG: 1997, *End of Life Issues: BioMedical Model*  
National Bishops Conference, Deer Valley
60. Fine PG, Byock I: 1997, *Care at the End of Life: Medicine and Meaning*  
Utah Medical Association Annual Meeting, Salt Lake City
61. Fine PG: 1997, *Advances in Cancer Pain Management: Breakthrough Pain*  
University of Arizona CME Course, Phoenix
62. Fine PG, et al: 1997, *Ethics Forum: Requests for Aid in Dying*  
American Society of Anesthesiologists, San Diego
63. Fine PG, 1997-1998 *Improving Care at the End of Life:*  
1) *Pain and Symptom Management*  
2) *Clinical Protocol Development*  
Institute for Healthcare Improvement Breakthrough Series, Landsdowne , VA

64. Fine PG, 1998, *Advances in Terminal Oncology Care*  
Indiana Community Cancer Care, Indianapolis
65. Fine PG, 1998, *Breakthrough Pain in Hospice Patients*  
Arizona Society of Osteopathic Physicians, Phoenix
66. Fine PG, 1998, *Contemporary Issues in Pain Management*  
Washoe Medical Center and University of Nevada, Reno
67. Fine PG, 1998, *Relief of Distressing Physical Symptoms During the Last Phase of Life*  
Rocky Mountain Ethics Conference, Law and Justice Center, Salt Lake City
68. Fine PG, 1998, *Breakthrough Pain in Home Hospice Patients  
Management of Intractable Terminal Pain*  
Texas & New Mexico Hospice Association Annual Scientific Meeting, San Padre Island
69. Fine PG, 1998, *Demographics of Chronic Disease and Healthcare Options During the  
Last Phase of Life*  
Arizona Family Practice, Soderona, AZ
70. Fine PG, 1998, *Chronic Pain Management in the Elderly: Pharmacological Therapy*  
American Geriatrics Society Annual Scientific Meeting, Seattle
71. Fine PG, 1998,  
1) *Results of a Study of Breakthrough Pain in Hospice Patients*  
2) *Low-dose Ketamine in the Management of Opioid-Resistant Pain In Far  
Advanced Cancer*  
American Academy of Hospice and Palliative Medicine, New Orleans, LA
72. Fine PG, 1998, *Conflicts in Medical Care at the End of Life*  
Nevada State Governor's Conference on Health Care Improvement, Las Vegas
73. Fine PG, 1998, *Pain and Symptom Management Management of Dyspnea*  
National Congress, Breakthrough Series on Improving Care at the End of Life, St. Louis
74. Fine PG, Herbst L, 1998, *Difficult Pain Problems: Meeting the Challenges*  
National Hospice Organization, National Council of Hospice Professionals and  
American Academy of Hospice and Palliative Medicine, Dallas
75. Fine PG, 1998, *Dying Without Physical Distress: Is It Too Much To Ask?*  
Utah Gerontological Society Conference, Ogden, UT
76. Fine PG, 1998, *Compassion: Contemporary Issues & Technology in Advanced Disease*  
University of Nevada School of Medicine and Washoe County Medical Society, Reno, NV
77. Fine PG, 1999, *Current Research into End-of-Life Care and Cancer Pain Control*  
Brigham Young University College of Nursing 24th Annual Research Conference, Provo, UT

78. Fine PG, 1999, *Pharmacotherapy in Cancer Pain Management: What's New*  
Texas and New Mexico Hospice Organization Annual Meeting, San Antonio, TX
79. Fine PG, 1999, *Pain Management for the Hospice Patient*  
Case Management Society of Texas Annual Conference, San Antonio, TX
80. Fine PG, 1999, *Pharmacologic Treatment Options: Special Considerations in Older Patients*,  
ONS 24th Annual Congress, Atlanta, GA
81. Fine PG, 1999, *Pain Management in Older Adults: A Closer Look at the AGS Guidelines*,  
American Geriatrics Society, Philadelphia, PA
82. Heil J, Fine PG, 1999, *Understanding Pain and Extraordinary Feats of Endurance*,  
Third World Congress On Mental Training, Snowbird, Utah
83. Fine PG, 1999, *End of Life Care and Nonmalignant Chronic Pain Management*  
Cancer Care in the 21st Century, Texas Medical Society, Austin, TX
84. Fine PG, 1999, *Pain Management in Older Patients*  
University of Nevada, Reno (Washoe Medical Center), Reno, NV
85. Fine PG, 1999, *A Celebration of Life at the End of Life---Means to an Ends*  
Cancer Survivors Day, Odgen, Utah
86. Fine PG, 1999, *Geriatrics and Pain Management*  
Columbia Presbyterian Medical Center, Grand Rounds, New York, NY
87. Fine PG, 1999, *Advances in Palliative Care with Opioid Therapy: Improving Quality of Life*  
American Academy of Hospice and Palliative Medicine, Snowbird, Utah
88. Fine PG, 1999, *Ethics of Pain Management*  
University of Nevada, Reno
89. Fine PG, 1999, *Palliative Care in the ICU*  
American Society of Anesthesiologists, Dallas, TX
90. Fine PG, 1999, *Conflict and Resolution in Medical Care at the End of Life*  
City of Hope National Medical Center, Los Angeles
91. Fine PG, 1999, *Cancer Pain Management*  
Oncology Fellows Educational Program, San Francisco
92. Fine PG, 1999, *When Things That Usually Work, Don't Work: Ensuring Comfort in End of Life Care*

- Advances in End of Life Care, UCLA/California Geriatric Education Center, Los Angeles
92. Fine PG, 1999, *Evaluation of Opioid Therapy in The Management of Non-Cancer Pain*  
Grand Rounds, Mount Diablo Medical Center, Concord, CA
  93. Fine PG, 2000, *Ethics and Pain Management*  
Nevada Academy of Family Practice, South Tahoe, Nevada
  94. Fine PG, 2000, *The Ethical Imperative of Comfortable Dying: A Focus on Pain Management in Older Individuals*  
National Hospice and Palliative Care Organization / American Academy of Hospice and Palliative Care, Nashville, TN
  95. Fine PG, 2000, *Comfortable Dying: Difficult Cases and New Pharmacotherapies*  
National Hospice and Palliative Care Organization / American Academy of Hospice and Palliative Care Annual Conference and Exposition, Nashville, TN
  96. Fine PG, 2000, *End of Life Care in the Emerging 21st Century*  
Grand Rounds, Depts. of Anesthesiology and Internal Medicine  
University of North Carolina at Chapel Hill
  97. Fine PG, 2000, *Medical Directorship and the Medicare Hospice Benefit*  
Role Model Conference and Palliative Medicine Education  
University of New Mexico School of Medicine, Albuquerque, NM
  98. Fine PG, 2000, *Psychosocial, Spiritual and Ethical Issues in End of Life Care*  
Role Model Conference and Palliative Medicine Education  
University of New Mexico School of Medicine, Albuquerque, NM
  99. Fine PG, 2000, *Management of Pain at End of Life*  
Pain Resource Profession Training Program  
University of Wisconsin, Madison, WI
  100. Fine PG, 2000, *Total Sedation: Ethics and Issues*  
Grand Rounds, Palliative Care Program  
University of Wisconsin, Madison, WI
  101. Fine PG, 2000, *Pain Management in the Cognitively Impaired*  
American Medical Directors Association Annual Scientific Meeting, San Francisco, CA
  100. Fine PG, 2000, *Pain and Behavioral Disturbances in the Cognitively Impaired Older Adult: Assessment and Treatment Issues*  
American Geriatrics Society Annual Scientific Meeting, Nashville, TN
  101. Fine PG, 2000, *Barriers to Adequate Pain Management*  
Joint Commission on Accreditation of Healthcare Organizations Leadership Conference,  
Chicago, IL

102. Fine PG, 2000, *Total Analgesia and Total Sedation: Ethical and Clinical Implications*  
American Academy of Hospice and Palliative Medicine Annual Scientific Meeting  
Atlanta, GA
103. Fine PG, 2000, *Ethical Imperatives of Pain Management*  
University of Texas, San Antonio, Cancer Research and Treatment Center  
San Antonio, TX
104. Fine PG, 2000, *New Developments in Pain Management*  
University of Oklahoma and Veterans Administration Medical Center  
Oklahoma City, OK
105. Fine PG, 2000, *Pain and Aging*  
Pain Research Center  
University of Utah
106. Fine PG, 2000, *Difficult Clinical Cases in Pain Management at the End of Life*  
Missouri Hospice Association Annual Clinical and Scientific Meeting  
Branson, MO
107. Fine PG, 2000, *Last Hours of Life: Care and Rituals*  
University of Nevada, Reno
108. Fine PG, 2000, *Pain Management and Geriatric Patients*  
Loyola University School of Medicine
109. Fine PG, 2000, *Update on Cancer Pain Management*  
Current Concepts in Lung and Breast Cancer Conference  
Annenberg Center for Health Sciences, Los Angeles, CA
110. Fine PG, Pasternack G, Syrjala K, 2000, *Clinical and Experimental Observations  
Providing a Rationale for Opioid Rotation in Cancer Pain*  
American Pain Society, Atlanta, GA
111. Fine PG, Battin M, Portenoy R, Coyne, P, 2000, *Ethics and Pain Management: Does  
Aggressive Treatment of Pain, Especially in Terminally Ill Patients, Require Special  
Moral Justification?*  
American Pain Society, Atlanta, GA
112. Fine PG, 2000, *A Mandate for Improved Pain Management*  
American Society of Consultant Pharmacists, 31st Annual Scientific Meeting  
Boston, MA
113. Fine PG, 2000, *End of Life Care: Communicating Bad News and Common Physical  
Symptom Management*  
Georgia Academy of Family Physicians 52nd Annual Scientific Assembly

Atlanta, GA

114. Fine PG, 2000, *End of Life Care in the Emerging 21st Century*  
VistaCare 3rd Annual National Medical Directors Meeting, Atlanta, GA
115. Fine PG, 2000, *Cancer Pain Management Review and Update*  
Northridge Medical Center Annual Pain Conference, Fort Lauderdale, FL
116. Fine PG, 2000, *American Medical Association EPEC Program: Pain Management*  
Banner Health Systems, Tempe, AZ
117. Fine PG, 2001, *Ethics and Pain Management*  
Cook County Hospital, Chicago, IL
118. Fine PG, 2001, *Caregiving*  
Partnership for Caring, Princeton, NJ
119. Fine PG, 2001, *Improving Pain Management*  
Veterans Administration/Institute for Healthcare Improvement, New Orleans, LA
120. Fine PG, 2001, *Pain Management and the Geriatric Patient*  
Physical Medicine and Rehabilitation Annual Scientific Meeting, Snowbird, UT
121. Fine PG, 2001, *Hospice Local Medical Review Policies*  
HCFA Regional Meeting, Atlanta, GA
122. Fine PG, 2001, *Update: Pain and Palliative Care*  
Baylor College of Medicine, Dallas, TX
123. Fine PG, 2001, *Ethics of Total Sedation*  
National Hospice and Palliative Care Organization, Orlando, FL
124. Fine PG, 2001, *Clinical Issues in Geriatric Pain Management*  
VA Medical Center, Prescott, AZ
125. Fine PG, 2001, *COX-2 Selective Agents in the Treatment of Chronic Pain*  
American Pain Society , Phoenix, AZ
126. Fine PG, 2001, *Developments in Opioid Analgesia for Cancer Pain Management*  
Japan Society of Anesthesiology, Kobe, Japan
127. Fine PG, 2001, *Opioid Analgesics: Past, Present and Future*  
University of Osaka, Osaka, Japan
128. Fine PG, 2001, *COX-2 Selective NSAIDs as Analgesics: What Does the Data Show?*  
Joint French and Canadian Rheumatology Societies Annual Scientific Meeting  
Montreal, Canada

129. Fine PG, 2001, *Pain Management in the Cognitively Impaired Patient*  
California Association of Longterm Care Annual Meeting, Anaheim, CA
130. Fine PG, 2001, *The Ethical Imperative of Pain Management at End of Life*  
The Roger Bone, M.D. Memorial Lecture, Dept. of Medicine Grand Rounds  
Rush-Presbyterian Medical Center, Chicago, IL
131. Fine PG, 2001, *Management of Distressing Non-Pain Symptoms at End of Life*  
American Geriatrics Society , Chicago, IL
132. Fine PG, 2001, *How to Manage the Most Challenging Symptoms in Patients with Far-Advanced Disease*  
Medical Grand Rounds, University of Nevada, Reno
133. Fine PG, 2001, *Determining Prognosis and Hospice Eligibility*  
Medicine Grand Rounds, VA Medical Center, Reno, NV
134. Fine PG, 2001, *Non-invasive Opioid Delivery Systems for the Management of Chronic Pain*  
Medical College of Georgia, Dept. of Medicine Grand Rounds, Augusta, GA
135. Fine PG, 2001, *Evolution of Opioid Analgesia and the Management of Nonmalignant Chronic Pain*  
Gundersen-Lutheran Medical Center, Medical Grand Rounds, LaCrosse, WI
136. Fine PG, 2001, *Pharmacological Management of Chronic Pain in Older Patients*  
American Geriatrics Society Clinical Guidelines Committee, Laguna Beach, CA
137. Fine PG, 2001, *Total Sedation: Ethical Issues and Clinical Management*  
National Hospice and Palliative Care, National Teleconference
138. Fine PG, 2001, *Palliative Radiotherapy*  
American Academy of Hospice and Palliative Medicine, Phoenix, AZ
139. Fine PG, 2001, *Research in End of Life Care*  
American Academy of Hospice and Palliative Medicine, Phoenix, AZ
140. Fine PG, 2001, *Pain Management in Older Patients*  
Annual Conference of Nurse Practitioners and Physician Assistants, Snowbird, UT
141. Fine PG, 2001, *-Cancer Pain Management: Comfort versus Cure  
- Opioid Analgesic Therapy*  
End of Life Summit and Management of Cancer Pain:  
Universities of Nebraska and Iowa and Dept. of Veterans Affairs, Omaha, NE
142. Fine PG, 2001, *Clinical Care of Patients with Cancer Pain*

- Medicine Grand Rounds, Veterans Administration Hospital, Salt Lake City
143. Fine PG, 2001, *Ethics of Pain Management*  
Missouri Medical Association , Springfield, MO,
  144. Fine PG, 2001, *Coxibs and Pain Management*  
Medicine Grand Rounds,  
Veterans Administration Hospital, Salt Lake City
  145. Fine PG, 2001, 1) *Historical Aspects of Opioid Analgesia*  
2) *Rational Selection of Opioids*  
3) *Clinical Cases in Cancer Pain Management*  
4) *Pharmacological Management of Noncancer Chronic Pain*  
University of Wisconsin School of Medicine (Depts. of Anesthesiology, Medicine, and  
Division of Oncology), Madison, WI
  146. Fine PG, 2001, 1) *Total Sedation: Ethical and Clinical Issues*  
2) *Ethical Imperatives of Pain Management at End of Life*  
Utah Hospice Organization: Keynote Speaker  
Park City, UT
  147. Fine PG, 2001, *Low Back Pain*  
Valley Hospital and Medical Center, Grand Rounds, Las Vegas, NV
  148. Fine PG, 2001, 1) *Rational Selection of Opioid Analgesics*  
2) *Opioids: Past, Present, Future*  
University of South Carolina School of Medicine and Veterans Administration Medical  
Center, Medicine Grand Rounds, Columbia, SC
  149. Fine PG, 2001, 1) *Chronic Pain Management: Strategies for Improving  
Outcomes of Care*  
2) *Ethical Imperatives of Pain Management*  
3) *Case Studies in Intractable Pain and Suffering*  
University of Iowa Health Sciences Center (School of Medicine, Dept. of Anesthesiology  
and College of Nursing), Iowa City, IA
  150. Fine PG, 2002, 1) *Rational Selection of Opioid Analgesics*  
2) *Total Sedation: Ethics, Management, Policies, Case Studies*  
American Academy of Hospice and Palliative Medicine, Palm Springs
  151. Fine PG, 2002, *Local Medical Review Policies*  
CMS Regional Meeting, Atlanta
  152. Fine PG, 2002, *Coxibs in Low Back Pain and Cancer Pain Management*  
American Academy of Pain Medicine, San Francisco

153. Fine PG, 2002, *Managed Care and the Imperative of Pain Management in End of Life Care*  
Hospice Foundation of America, Washington, DC
154. Fine PG, 2002,
  - 1) *Geriatrics and Pain Management*
  - 2) *Complex Pain Management Conditions: Substance Abuse, Dementia, Social Dysfunction*American Pain Society, Baltimore
155. Fine PG, 2002,
  - 1) *Comprehensive Pain and NonPain Symptom Management*
  - 2) *Palliative Radiation Therapy in Far Advanced Disease*National Hospice and Palliative Care Organization, New Orleans
156. Fine PG, 2002, *Depression, Anxiety and Agitation Assessment and Management*  
Hospice of NE Illinois
157. Fine PG, 2002, *Complex Pain Disorders: Neuropathic Pain Assessment and Management*  
Rush North Shore, Palliative Care Center of the North Shore, Evanston, IL
158. Fine PG, 2002, *Opioid Therapy in Palliative Care*  
4th Annual VistaCare National Medical Directors Conference, Scottsdale, AZ
159. Fine PG, 2002,
  - 1) *Historical Developments in Opioid Analgesia*
  - 2) *Selection of Opioid Analgesics for Chronic Pain Management*Wayne State University, School of Medicine and Dept. of Anesthesiology
160. Fine PG, 2002, *Pain Management Clinical Guidelines for Geriatric Care*  
Dept. of Geriatrics, William Beaumont Hospital, Chicago
161. Fine PG, 2002, *Mechanisms of Pain and Analgesia*  
Internal Medicine Grand Rounds, University of Southern California, Los Angeles
162. Fine PG, 2002, *Pharmacotherapy of Pain Management in Geriatric Practice*  
ElderCare Conference Series: Los Angeles, San Francisco, Dallas
163. Ferrell BA, Fine PG, Herr K, 2002, *Persistent Pain in Older Individuals: An Evidence-Based Clinical Guideline*  
American Geriatrics Society Annual Scientific Meeting, Washington, DC
164. Fine PG, 2002,
  1. *Relief of Intractable Suffering at Life's End*
  2. *Total Analgesia and Total Sedation*Rush-Presbyterian Dept. of Anesthesiology Grand Rounds and School of Medicine Lecture, Chicago, IL

165. Fine PG, 2002, *Cancer Pain and Developments in Opioid Analgesia*  
Beijing Union University, Beijing, PRC
166. Fine PG, 2002, *Ethics and Methodology in End of Life Research*  
NIH, Bethesda, MD
167. Fine PG, 2002, *Ethical Analysis and Clinical Management: Total Sedation in End of Life Care*  
Carolinas Center for Hospice and Palliative Care, Annual Meeting
168. Fine PG, 2002  
*1. Treatment of Mood Disturbance and Agitation in Terminal Illness*  
*2. Pain Management in End of Life Care*  
American Medical Association EPEC Course, Kauai, HI
169. Fine PG, 2002, *Advances in End of Life Care: Bridging State-of-the-Art Medicine and Palliative Care*  
Annual Postgraduate Course, Dept. of Anesthesiology, University of California, Davis
170. Fine PG, 2002, *Anesthesiology and Palliative Medicine*  
FAER Symposium, American Society of Anesthesiologists Annual Meeting  
Orlando, FL
171. Fine PG, Turk D, 2002, *Opioids: Maximizing Benefits, Minimizing Harms*  
National Initiative on Pain Control, Seattle, WA
172. Fine PG, 2002, *Ethical Imperatives and Pain Control at End of Life*  
Keynote Address: California Hospice Foundation, Las Vegas, NV
173. Fine PG, 2002, *Anxiety, Depression and Delirium: Etiology, Epidemiology and Treatment in Dying Patients*  
Wisconsin Palliative Medicine Annual Meeting, Wasau, WI
174. Fine PG, 2002, *Management of Intractable Symptoms at End of Life*  
Keynote Address: Ohio Hospice and Palliative Care Organization Annual Meeting,  
Columbus, OH
175. Fine PG, 2003, *Complex Pain Management at End of Life*  
Preconference Symposium: American Academy of Hospice and Palliative Medicine  
Orlando, FL
176. Fine PG, 2003, *Coxibs and Acute Pain Management*  
Scott and White Clinic, Dept. of Anesthesiology  
Temple, Texas

177. Fine PG, 2003, *Advances in Cancer Pain Management*  
American Academy of Pain Medicine Annual Meeting  
New Orleans, LA
178. Fine PG, 2003, *Ethical Issues in Palliative Care*  
NHPCO-AAPHM Joint Clinical Conference  
Denver, CO
179. Fine PG, 2003, *Neuropathic Pain: Mechanisms and Insights for Improved Management*  
Berkeley, CA
180. Fine PG, 2003, *Bridging Modern Medicine and Traditional Medical Values*  
Grand Rounds, Dept. of Medicine, Beth Israel Medical Center  
New York, NY
181. Fine PG, 2003, *Ethical Imperatives of Pain Control at End of Life*  
Plenary Address, Indiana-Illinois Hospice and Palliative Care Association  
Annual Meeting  
Indianapolis, IN
182. Fine PG, 2003, *Hospice Eligibility*  
Plenary Address, National Assisted Living Association Annual Meeting  
Phoenix, AZ
183. Fine PG, 2003, *Advances in Palliative Medicine*  
Grand Rounds, Dept. of Medicine, Medical College of Virginia  
Richmond, VA
184. Fine PG, 2003, *Advanced Pain Management*  
EPEC Course (National Hospice Medical Directors Meeting)  
Austin, TX
185. Fine, PG, 2003, *Pain and the Law*  
National Alliance of States Cancer Pain Initiatives  
Pasadena, CA
186. Fine, PG, 2003, *Update on Mechanisms of Pain and Analgesia*  
VA Medical Center Interdepartmental Conference  
Tacoma, WA
187. Fine, PG, 2003, *Developments in Opioid Analgesia*  
National Initiative on Pain Control (Audioconference Lecture)
188. Fine, PG, 2003, *Pain Management in Older Adults*  
American Academy of Pain Management  
Denver, CO

189. Fine, PG, 2003, *Completing the continuum of cancer care: Integrating life prolongation and palliation*  
Dannemiller Foundation Comprehensive Review of Pain Management  
Chicago, IL
190. Fine, PG, 2003, *Optimizing End of Life Care*  
Department of Internal Medicine Grand Rounds,  
New York City, SUNY Downstate Medical Center
191. Fine, PG, 2003, *Complex Pain Management: Intractable Cancer Pain*  
American Society of Anesthesiologists  
San Francisco, CA
192. Van Norman G, Fine, PG, Waisel D, Rothenberg D, 2003, *Clinical Forum: Ethics of Disclosure*  
American Society of Anesthesiologists  
San Francisco, CA
193. Fine, PG, 2003, *Bridging Modern Medicine, Anesthesiology, and Palliative Care*  
22nd Annual John J. Bonica Lecture, University of Washington  
Seattle, WA
194. Fine, PG, 2004, *Pharmacotherapy in Geriatric Pain Medicine*  
California Geriatrics Society  
Newport Beach, CA
195. Fine, PG, 2004, *1. Care in the last hours of life*  
*2. Pain in Geriatrics*  
California Medical Association  
Los Angeles, CA
196. Fine, PG, 2004, *Forensic palliative medicine*  
American Academy of Hospice and Palliative Medicine  
Phoenix, AZ
197. Fine, PG, 2004, *Anesthesia and palliative care*  
University of Utah Dept. of Anesthesiology Postgraduate Course  
Park City, UT
198. Fine, PG, 2004, *Nonpharmacologic and pharmacologic strategies in pain management*  
Ohio Geriatrics Society  
Toledo, OH
199. Fine, PG, 2004, *Mechanisms of pain and analgesia: an update*  
Veterans Administration Medical Center  
Spokane, WA

200. Fine, PG, 2004, *1. Intractable pain and suffering at life's end*  
*2. Refractory pain in far-advanced cancer*  
*3. Quality of life at end of life*  
American Academy of Pain Medicine  
Orlando, FL
201. Fine, PG, 2004, *Challenges of pain assessment and management in older patients*  
Rocky Mountain Geriatrics Conference  
Park City, UT
202. Fine, PG, 2004, *Opioid analgesia: rational selection in noncancer chronic pain*  
American Society of Pain Management Nurses  
Myrtle Beach, FL
203. Fine, PG, 2004, *1. Ethical and legal issues in geriatric pain management*  
*2. Management of progressive osteoarthritic pain in older patients*  
Dept. of Geriatric Medicine, University of Hawaii  
Honolulu, HI
204. Fine, PG, 2004, *Advances in neuropathic pain: mechanisms and management*  
National Initiative on Pain Control  
Phoenix, AZ
205. Fine, PG, 2004, *1. An algorithm for opioid selection: A review of the evidence*  
*2. Opioids and chemical dependency*  
Oncology Nurses Society  
Anaheim, CA
206. Fine, PG, 2004, *1. Refractory pain and suffering in terminal disease*  
*2. The ethical imperative of pain control*  
Washington State Hospice and Palliative Care Association  
Seattle, WA
207. Fine, PG, 2004, *Legal and clinical pitfalls in pain management.*  
Greater St. Louis Hospice Association  
St. Louis, MO
208. Fine, PG, 2004, *Neuropathic pain*  
National Initiative on Pain Control CME Program  
Denver, CO
209. Fine, PG, 2004, *Managing refractory pain and suffering at life's end*  
New England Pain Association  
Manchester, NH
210. Fine, PG, 2004, *Mechanisms and management of neuropathic pain*  
National Initiative on Pain Control CME Program

Portland, OR

211. Fine, PG, 2004, *Radiation therapy in end of life care*  
Carolinus Center for Hospice and End of Life Care
  
212. Fine PG, 2005, *Therapeutic Challenges in the management of patients with chronic pain*  
CME Teleconference Programs, Albert Einstein College of Medicine
  
213. Fine PG, 2005, *Translating new clinical trials data into Medicare policy*  
Centers for Medicare and Medicaid Services (CMS) Regional Meeting, Atlanta
  
214. Fine PG, 2005, 1) *Pharmacotherapeutic regimens in chronic pain*  
2) *Complex Pain Problems at the End of Life*  
American Academy of Pain Medicine, Palm Springs
  
215. Fine PG, 2005, *Mechanism-driven therapy for neuropathic pain*  
National Initiative on Pain Control, Seattle
  
216. Fine PG, 2005, *Forensic palliative medicine*  
Bucknell University, Lewisburg, PA
  
217. Fine PG, 2005, 1) *Cancer pain and palliative care*  
2) *Measuring quality of life at the end of life*  
3) *Opportunity costs and interventional analgesia in far advanced cancer*  
4) *Opioid analgesia: evidence-based review*  
5) *Pain pathways*  
American Pain Society, Boston
  
218. Fine PG, 2005, 1) *Preconference: Integrating Curative and Palliative Therapies*  
2) *Opioid therapy: complex cases*  
3) *Clinical, ethical and legal issues in pain therapy at the end of life*  
National Hospice and Palliative Care Organization Clinical Conference, Atlanta
  
219. Fine PG, 2005, 1) *Radiation therapy in palliative care*  
2) *Forensic palliative care*  
National Pain and Palliative Care Conference, San Jose, Costa Rica
  
220. Fine PG, 2005, 1) *Assessing and managing agitation in end-of-life care*  
2) *Balancing ethics and the law in end-of-life care*  
Washington State Hospice and Palliative Care Organization Medical Directors Conference, Seattle, WA
  
221. Fine PG, 2005, *Neuropathic pain*  
National Initiative on Pain Control, San Diego, CA

222. Fine PG, 2005, *Palliative radiotherapy*  
National Hospice and Palliative Care Organization  
National Audioconference
223. Fine PG, 2005, *Pharmacotherapy in Geriatric Pain Control*  
International Association for the Study of Pain World Congress (Preconference)  
Sydney, Australia
224. Fine PG, 2005, *Analgesic Update* (for the Chinese Delegation to the)  
IASP World Congress, Sydney, Australia
225. Fine PG, 2005, 1) *Introduction to End of Life Care*  
2) *Hospice and Palliative Medicine*  
3) *Palliative Care Case Studies*  
4) *Quality of Life at End of Life*  
Southern California Geriatrics Conference  
Palm Springs, CA
226. Fine PG, Harrold J, Fee P, 2005, *Physician Leadership Course*  
Preconference, National Hospice and Palliative Care Organization  
Management Conference, Hollywood, FL
227. Fine PG, 2005, *Meeting Ethical Imperatives of Pain Control*  
Keynote Address, Utah Academy of Pain Medicine  
Salt Lake City, UT
228. Fine PG, 2005, *Anesthesiology and palliative medicine*  
Grand Rounds, Department of Anesthesiology  
West Virginia University School of Medicine, Morgantown, WV
229. Fine PG, 2005, *Management of opioid-refractory pain*  
Grand Rounds, Department of Medicine (Broadcast through MD TV)  
West Virginia University School of Medicine, Morgantown, WV
230. Fine PG, 2005, *Complex pain management*  
West Virginia Hospice Council  
Morgantown, WV
231. Fine PG, 2005, *Best Practices: Pain Management*  
West Virginia Pain Summit (State Cancer Pain Initiative)  
Charleston, WV
232. Fine PG, 2005, *Cancer pain and palliative care*  
National Pain Forum  
San Diego, CA
233. Fine PG and Raskin R, 2005, *Integrating palliative and curative care*

- Disease Management Association of America  
San Diego, CA
234. Fine PG, 2005, *Update on opioid analgesia*  
National Initiative on Pain Control  
San Diego, CA
235. Fine PG, 2005, *Pain management and palliative care:  
Clinical, legal and ethical issues*  
8th International Cancer Survivor's Conference  
Denver, CO
236. Fine PG, 2005, *Practical management of chronic pain with opioid therapy*  
National Initiative on Pain Control  
Phoenix, Arizona
237. Fine PG, 2005, Keynote Address: *Integrating care in chronic progressive illness:  
Working toward a model that fits the human schema*  
  
Midwest Conference on End of Life Care  
Kansas City, MO
238. Fine PG, 2005, *Causes and management of intractable pain and suffering at the  
end of life*  
Midwest Conference on End of Life Care  
Kansas City, MO
239. Fine PG, 2006, Preconference: *Advances in pain management: Cost-benefit of  
interventional therapies*  
American Academy of Hospice and Palliative Medicine  
Nashville, TN
240. Fine PG, 2006, *Breakthrough pain: Historical perspectives*  
American Academy of Hospice and Palliative Medicine  
Nashville, TN
241. Fine PG, 2006, *Cancer pain and palliative medicine*  
American Academy of Pain Medicine  
San Diego, CA
242. Fine PG, 2006, *Opioid therapy in chronic pain management: Minimizing risk,  
maximizing benefit*  
National Initiative on Pain Control  
Houston, TX
243. Fine PG, 2006, *Ethical imperatives of pain management*  
Carolinas Center Pain Forum

- Charlotte, NC
244. Fine PG, 2006, *Opioids: Clinical, legal, ethical, regulatory issues*  
Carolinas Center Pain Forum  
Charlotte, NC
  245. Fine PG, 2006, *Advanced techniques in treating refractory pain*  
Texas Academy of Palliative Medicine  
Austin, TX
  246. Fine PG, 2006, Plenary: *National Hospice and Palliative Care Organization update: Where we are and where we are going*  
Texas Academy of Palliative Medicine  
Austin, TX
  247. Fine PG, 2006, *New concepts in breakthrough pain*  
American Conference of Pain Medicine  
New York, NY
  248. Fine PG, 2006  
Course Director: Physician Leadership Development Program  
National Hospice and Palliative Care Organization Clinical Team Conference and Scientific Symposium  
San Diego, CA
  249. Fine PG, 2006, *Integrating hospice and palliative care into disease management*  
National Hospice and Palliative Care Organization Clinical Team Conference and Scientific Symposium  
San Diego, CA
  250. Fine PG, 2006, *Neuropathic pain: mechanisms and clinical management*  
National Hospice and Palliative Care Organization Clinical Team Conference and Scientific Symposium  
San Diego, CA
  251. Fine PG, 2006, *Cancer pain and palliative care*  
American Pain Society  
San Antonio, TX
  252. Fine PG, 2006, *Opioid analgesics: from receptors to regulations*  
American Pain Society  
San Antonio, TX
  253. Fine PG, 2006, *Opioid-induced bowel dysfunction: mechanisms and preventative measures*  
American Pain Society  
San Antonio, TX

254. Fine PG, 2006, *Balancing benefits and risk in chronic opioid therapy*  
American Pain Society  
San Antonio, TX
255. Fine PG, 2006, *Opioid analgesic strategies: balancing benefit and burden.*  
National Initiative on Pain Control.  
Phoenix, AZ
256. Fine PG, 2006, *Quality of life at the end of life.*  
American Conference on Psychiatric Disorders  
New York City, NY
257. Fine PG, 2006, *Physician Leadership Development Course*  
National Hospice and Palliative Care Organization, Management Leadership  
Conference  
New York City, NY
258. Fine PG, 2006, a) *Quality of life at the end of life*  
b) *Palliative sedation*  
University of California, Davis, visiting professor conferences  
Sacramento, CA
259. Fine PG, 2006, *Clinical Leadership Program*  
(*Medicare Hospice Benefit CAP, Medical Directorship, Comprehensive End-of-Life Care  
and Documentation*)  
Hospice Alliance of Texas  
Austin, TX
260. Fine PG, 2006, *Assessment and management of neuropathic pain in a busy  
practice*  
National Initiative on Pain Control  
Phoenix, AZ
261. Fine PG, 2006, *Breakthrough pain: current and emerging perspective in patients with  
cancer-related and non-cancer chronic pain*  
Los Angeles, CA
262. Fine PG, 2006, *Pain relief through the course of an illness*  
Southwest Clinical Society 84th Annual Medical Conference  
Kansas City, KS
263. Fine PG, 2006, Plenary Speaker  
1) *Breakthrough pain*  
2) *Intractable pain and suffering in advanced illness*  
University of Hawaii / Queens Medical Center Department of Medicine Grand  
Rounds and Annual Conference on Pain and Symptom Management

Honolulu, HI

264. Fine PG, 2006, Plenary Speaker  
*Mechanisms of pain and analgesia*  
Josefina Magno Pain Conference  
Washington, DC
265. Fine PG, January 27, 2007 (Regional) Program Moderator and Speaker  
a) *Principles and practices of prescribing in chronic pain management*  
b) *Vulnerable populations*  
c) *Interventional techniques*  
Johns Hopkins School of Medicine CME Programs: New England Regional Pain Conference  
Boston, MA
266. Fine PG, February 3, 2007 (National) Plenary Speaker  
*Cancer pain and palliative care*  
North American Pain Forum  
San Jose, CA
267. Fine PG, February 10, 2007 (National) Speaker  
*Critical communication topics for patients with chronic pain*  
Symposium: Chronic Pain Management with Opioids: Strategies to Improve Communication Between Caregivers and Patients  
American Academy of Pain Medicine, 23rd Annual Scientific Conference  
New Orleans, LA
268. Fine PG, February 10, 2007 (National) Speaker  
*Intractable pain management in end-of-life care*  
American Academy of Pain Medicine, 23rd Annual Scientific Conference  
New Orleans, LA
269. Fine PG, March 15, 2007 (National) Plenary Speaker  
*Beyond morphine: Alternatives for the morphine intolerant patient*  
19th Annual Cleveland Clinic Palliative Care Conference  
Bonita Springs, FL
270. Fine PG, May 1, 2007 (National) Speaker  
*Cancer pain and palliative care*  
American Pain Society Essentials Course for Fellows  
Washington, DC
271. Fine PG, May 4, 2007 (National) Speaker  
*Palliative sedation for intractable pain and suffering in end-of-life care: clinical and ethical issues*  
American Geriatrics Society  
Seattle, WA

272. Fine PG, Davis M, Feliciano H, May 10, 2007 (National) Moderator, Speaker  
*End-stage renal disease and end-of-life care*  
National Hospice and Palliative Care Organization  
National Web-Conference
273. Fine PG, May 19, 2007 (Regional) Moderator, Speaker  
*Evaluation and treatment of breakthrough pain in chronic non-cancer pain*  
Johns Hopkins School of Medicine and the Institute for Advanced Medical Studies  
Regional Conference on Pain Management  
Dallas, TX
274. Fine PG, 2007 (Local, Regional, National) Speaker  
*Managing Pain: Improving patient outcomes and minimizing risk in opioid therapy of chronic pain*  
CME Medical Center Briefings: Grand Rounds for Anesthesiology, Pain and Palliative Medicine Departments/Divisions at:  
University of Virginia (5/23/07)  
Hershey Medical Center, SUNY Stonybrook (6/12/07)  
University of Utah (6/22/07)  
Cook County Medical Center (Chicago) (5/24/07)  
University of South Florida (Miami) (8/14/07)  
University of California at Irvine (10/4/07)
275. Fine PG, May 22, 2007 (Regional) Speaker  
*ESRD and co-morbidities: hospice and palliative care*  
Mid-Atlantic Palliative Medicine Grand Rounds,  
Washington, DC
276. Fine PG, 2007 (National) Speaker  
*The psychology of patients with chronic pain*  
American Conference on Pain Medicine  
New York City, NY
277. Fine PG, July 24, 2007 (National) Speaker  
*Access to hospice care*  
XM Satellite Radio
278. Fine PG, September 13, 2007 (Local) Speaker  
*Difficulties and challenges in the treatment of chronic pain in older adults*  
Brigham Young University, Provo, UT
279. Fine PG, Turk D, September 18, 2007 (Regional) Speaker  
*Pain and aging*  
National Initiative on Pain Control CME Series for Primary Care Physicians  
Seattle, WA

280. Fine PG, October 1-3, 2007 (National) Speaker  
Clinical Leadership Training Program  
Albany, NY
281. Fine PG, October 5, 2007 (Local) Speaker  
*Rational opioid prescribing*  
Pain Research Center CME Program  
University of Utah
282. Fine PG, October 10, 2007 (National) Speaker  
*1. Alternative approaches to symptom management at end of life*  
*2. Conversations at the end of life*  
University of California, Davis conference on Integrative Medicine in Pain Management  
Lanai'i, Hawaii
283. Fine PG, October 23-24, 2007 (National) Keynote Speaker  
*1. Pain and consciousness: Thinking "outside the box"*  
*2. Neuropathic pain*  
Josefina Magno Palliative Care Conference  
Washington, DC
284. Fine PG, October 27, 2007 (Regional) Moderator, Speaker  
*1. Challenges in opioid treatment: Management of acute and chronic peripheral side effects*  
*2. Controversies, consensus and emerging concepts in pain management*  
*3. Psychology of pain: Quality of life at the end of life*  
American Conference on Pain (West)  
Los Angeles, CA
285. Fine PG, October 31, 2007 (Local) Speaker  
*Evaluation and management of intractable pain and suffering at the end of life*  
Medicine Grand Rounds, University of Alabama School of Medicine  
Birmingham, Alabama
286. Fine PG, November 2, 2007 (International) Speaker  
*Mechanisms and management of neuropathic cancer pain.*  
10th International Conference on the Mechanisms and Treatment of Neuropathic Pain  
Snowbird Conference Center, Snowbird, Utah, USA
287. Fine PG, November 10, 2007 (National) Moderator, Speaker  
*Evidence-based guidelines for opioid therapy in chronic noncancer pain*  
Chronic Opioid Therapy: Safe and Effective Prescribing--Clinical, Regulatory, Legal and Ethical Issues  
American Academy of Pain Medicine  
Washington DC
288. Fine PG, November 15, 2007 (National) Speaker

*Neurobiology of pain*

Judicial Seminar on Emerging Issues in Neuroscience

American Association for the Advancement of Science and the National Judicial College  
Reno, NV

289. Fine PG, November 17, 2007 (Regional) Speaker  
*Rational opioid prescribing*  
Responsible Analgesic Prescribing  
Dannemiller Memorial Educational Foundation  
Salt Lake City, UT
290. Fine PG, Connor S, Ballantyne J. November 29, 2007 (National) Speaker  
*Do opioids hasten death?*  
Scientific Symposium, National Hospice and Palliative Care Organization  
New Orleans, LA
291. Fine PG, Abernethy A. November 29, 2007 (National) Speaker  
*Ten most influential developments in palliative medicine, 2007*  
Scientific Symposium, National Hospice and Palliative Care Organization  
New Orleans, LA
292. Fine PG. November 29, 2007 (National) Speaker  
*Opioid therapy: maximizing benefit, minimizing risk*  
Clinical Team Conference, National Hospice and Palliative Care Organization  
New Orleans, LA
293. Fine PG. December 1, 2007 (Regional) Speaker  
*Chronic pain concepts and comprehensive assessment*  
Persistent and Breakthrough Pain  
Johns Hopkins School of Medicine CME Program  
Atlanta, GA
294. Fine PG. December 10, 2007 (National) Speaker  
*Legal prescribing of controlled substances*  
Dannemiller Educational Foundation CME Teleconference series
295. Fine PG. December 13, 2007 (National) Speaker  
*Refractory pain control and the ethics of palliative sedation*  
Palliative Medicine Grand Rounds, Memorial Sloan Kettering Cancer Center  
New York City, New York
296. Fine PG. January 23, 2008 (International) Speaker  
*Overcoming perceived ethical barriers to pain research in older patients*  
- *Vulnerability vs. Voluntariness*  
- *Risks of hastening death with opioid analgesics for pain control*  
Consensus Meeting on Pain Management in Longterm Care  
University of Regina

Regina, Saskatchewan, Canada

297. Fine PG. January 30, 2008 (National) Moderator, Speaker  
Advanced Analgesia Preconference  
*Alternatives to opioid therapy for refractory pain conditions*  
American Academy of Hospice and Palliative Medicine  
Tampa, FL
298. Fine PG. February 1, 2008 (National) Speaker  
*Clinical guideline development: Opioid therapy in chronic noncancer pain*  
American Academy of Hospice and Palliative Medicine  
Tampa, FL
299. Fine PG. February 12, 2008 (National) Moderator, Speaker  
*Update on Tapentadol clinical trials*  
American Academy of Pain Medicine  
Orlando, FL
300. Fine PG. February 15, 2008 (National) Speaker  
*Pain in older persons*  
American Academy of Pain Medicine  
Orlando, FL
301. Fine PG. February 16, 2008 (National) Speaker  
*Role of the pain specialist in the 21<sup>st</sup> century*  
American Academy of Pain Medicine  
Orlando, FL
302. Fine PG. March 17, 2008 (National) Speaker  
*Clinical, scientific and economic mandates for research into the effectiveness of chronic opioid therapy for noncancer pain*  
Millbank Fund sponsored research consortium on chronic opioid therapy  
Salt Lake City, UT
303. Fine PG. March 31, 2008 (International) Speaker  
*Palliative medicine: understanding the newest ABA subspecialty*  
International Anesthesia Research Society  
San Francisco, CA
304. Fine PG. April 17, 2008 (Regional) Speaker  
*Chronic opioid therapy: maximizing benefit, minimizing risk.*  
National Initiative on Pain Control  
Philadelphia, PA
305. Fine PG. April 22, 2008 (Regional) Speaker  
*Chronic opioid therapy: maximizing benefit, minimizing risk.*  
National Initiative on Pain Control

Washington, DC

306. Fine PG. May 5, 2008 (National) Speaker  
Presentation to U.S. FDA Advisory Panel re: sNDA for Fentora (Indication for breakthrough pain in opioid tolerant patients with chronic noncancer pain) "*Addressing Treatment Needs of Patients With Breakthrough Pain: Optimizing Benefit and Minimizing Risk*"  
Bethesda, MD
307. Fine PG. May 7, 2008 (National) Speaker  
*Advances in pain management--emerging strategies and clinical innovations: Standard of care and barriers to therapy*  
American Pain Society  
Tampa, FL
308. Fine PG. May 7, 2008 (National) Speaker  
*Cancer pain and palliative care*  
American Pain Society  
Tampa, FL
309. Fine PG. May 9, 2008 (National) Speaker  
*Status of evidence-based pain management practices in home hospice*  
American Pain Society  
Tampa, FL
310. Fine PG. May 15, 2008 (National) Speaker  
*Tailoring the use of opioids to optimize cancer pain management*  
Oncology Nurses Society  
Philadelphia, PA
311. Fine PG. May 20, 2008 (Regional) Speaker  
*Pathophysiology of neuropathic pain*  
Regional Primary Care CME Program  
Billings, MT
312. Fine PG. 2008 (Local) Speaker  
*Pharmacology of methadone*  
Pain Research Center  
University of Utah
313. Fine PG. June 3, 2008 (Regional) Speaker  
*Diabetic painful peripheral neuropathy*  
County Medical Society CME Program  
Detroit, MI
314. Fine PG. June 10, 2008 (Regional) Speaker  
*Clinical guidelines for opioid therapy in chronic noncancer pain*

Midatlantic Palliative Care Grand Rounds  
Falls Church, VA

315. Fine PG. June 27, 2008 (Regional) Speaker  
*Quality as a business strategy*  
Hospice of Cape Cod  
Hyannis, MA
316. Fine PG. August 19, 2008 (International) Moderator/Speaker  
*International round table: Defining, assessing and treating breakthrough pain.*  
International Association for the Study of Pain 12<sup>th</sup> World Congress  
Glasgow, Scotland
317. Fine PG, August 20, 2008 (International) Speaker  
*From phenomenology to treatment best practices in the management of breakthrough pain*  
International Association for the Study of Pain 12<sup>th</sup> World Congress  
Glasgow, Scotland
318. Fine PG, Heit HA, McCarberg BH, Passik SD, Smith HS, September 6, 2008  
(National) Course Director  
*Utilizing opioid therapy for chronic pain: A case-based approach to optimize therapeutic outcomes while managing potential risks*  
PAINWEEK, 2008  
Las Vegas, Nevada
319. Fine PG, September 20, 2008. (Regional) Speaker  
*Intractable pain*  
Brainstorm 2008  
Deer Valley, UT
320. Fine PG, September 23, 2008 (National) Speaker  
*Preventing prescription opioid abuse and diversion.*  
National CME Webconference
321. Fine PG, September 27, 2008 (Regional) Speaker  
*Nonopioid pharmacotherapy in the management of chronic pain*  
Southern Pain Society  
New Orleans, LA
322. Fine PG, September 28, 2008 (Regional) Speaker  
*Cancer pain and palliative care*  
Southern Pain Society  
New Orleans, LA
323. Fine PG, October 8, 2008 (National) Speaker  
*Legal issues in opioid prescribing*

## National CME Webconference

324. Fine PG, October 16, 2008 (National) Speaker  
*Legal issues in opioid prescribing*  
National CME Webconference
325. Fine PG, October 22, 2008 (Local) Speaker  
*New therapies in opioid-induced constipation*  
Baltimore, MD
326. Fine PG, October 31, 2008 (International) Speaker  
*Treatment of pain in chemically dependent patients with advanced medical illness*  
International Conference on Pain and Chemical Dependency  
Philadelphia, PA
327. Fine PG, October 31, 2008 (International) Speaker  
*Guidelines for the safe and effective use of methadone in the management of chronic pain*  
International Conference on Pain and Chemical Dependency  
Philadelphia, PA
328. Fine PG, November 7, 2009 (Local) Speaker  
*The future of pain medicine*  
Grand Rounds, Department of Anesthesiology, NYU School of Medicine  
New York, NY
329. Fine PG, January 27, 2009 (Local) Speaker  
*1. The APS-AAPM Evidence-Based Clinical Guidelines for Chronic Opioid Therapy in Chronic Noncancer Pain*  
*2. Pain and aging*  
Kaiser Permanente Medical Staff Annual Meeting  
Honolulu, Hawaii
330. Fine PG, January 28-30, 2009 (International) Speaker, Moderator  
*1. Opioid treatment guidelines in chronic noncancer pain*  
*2. The pain continuum: acute to chronic pain prevention and management strategies*  
*3. Special considerations of pain management in older patients*  
*4. Chronic pain: From primary care physician to pain specialist*  
*5. The art of pain medicine: when drugs and needles don't work*  
American Academy of Pain Medicine, 25<sup>th</sup> Annual Scientific Meeting and 1st Pan-Pacific Conference (participant nations: Australia, China, Korea, New Zealand, USA)  
Honolulu, HI
331. Fine PG, March 14-15, 2009 (International) Speaker, Moderator  
*1. Overview of palliative care*  
*2. Update on multimodal analgesia*

- 5<sup>th</sup> World Congress of the World Institute of Pain  
New York, NY
332. Fine PG, March 19, 2009 (Regional) Speaker  
*The future of pain management*  
Caring Coalition Conference: The War on Pain  
Detroit, MI
333. Fine PG, Davis M, Reed A, April 23, 2009 (National) Speaker, Moderator  
*Live to serve another day: Sustainability of hospice care*  
Management Leadership Conference  
National Hospice and Palliative Care Organization  
Washington, DC
334. Fine PG, Ashburn M, Passik S, April 25, 2009 (National) Speaker, Moderator  
*When opioid are indicated for chronic pain: How to optimize therapeutic outcomes and minimize risk*  
American College of Physicians  
Philadelphia, PA
335. Fine PG, April 30, 2009 (Regional) Speaker  
*Safe opioid conversion*  
Western Pain Society  
Denver, CO
336. Fine PG, May 1, 2009 (National) Speaker  
*Persistent pain in older patients: The Updated AGS Guideline*  
American Geriatrics Society  
Chicago, IL
337. Fine PG, May 7-8, 2009 (Regional) Speaker  
1. *Chronic opioid therapy*  
2. *Pain management in older patients*  
3. *Update on the neurobiology of chronic pain*  
102<sup>nd</sup> Annual Sommer Memorial Lecture Series  
Portland, OR
338. Fine PG, June 1, 2009 (International) Speaker  
*Interventional cancer pain management*  
American Society of Clinical Oncology (ASCO)  
Orlando, FL
339. Fine PG, June 10 (Regional) Speaker  
*Optimizing therapy and minimizing risk in opioid therapy for chronic pain*  
National Initiative on Pain Control  
Los Angeles, CA

340. Fine PG, Kress HG, Dickenson AH, Baron R, Muller-Schwefe G,  
September 11, 2009 (International) Speaker  
*Tapentadol: A novel treatment concept in severe pain*  
European Federation of IASP Chapters  
Lisbon, Portugal
341. Fine PG, October 19, 2009 (Regional) Moderator/Speaker  
*Good practices, good outcomes*  
2<sup>nd</sup> Annual Perry G. Fine Pain and Palliative Care Lecture Series  
West Virginia School of Medicine  
Morgantown, WV
342. Fine PG, October 23, 2009 (National) Plenary Speaker  
*1. Clinical guidelines for the treatment of chronic pain with opioids*  
*2. The opioid therapy risk spectrum: From aberrant behaviors to addiction*  
20<sup>th</sup> Annual Meeting of the Alliance of State Pain Initiatives  
San Francisco, CA
343. Fine PG, November 12, 2009 (Grand Rounds) Invited Lecturer  
*1. Opioid rotation*  
*2. Integrated cancer pain care*  
Memorial Sloan Kettering Cancer Center  
Department of Medicine  
New York, NY
344. Fine PG, November 19, 2009 (Local) Grand Round Speaker  
*Risk evaluation and mitigation in pain treatment*  
Utah Valley Regional Medical Center  
Provo, UT
345. Fine PG, February 4-6, 2010 (National) Speaker/Moderator (C)  
*1. Application of multimodal therapy in acute pain*  
*2. Overview of palliative care*  
*3. Pain management in patients with advanced medical illness and chemical dependency*  
*4. Prevalence, pathophysiology and disparities in treatment of chronic pain*  
*5. Palliative sedation: ethical perspectives and clinical management*  
American Academy of Pain Medicine, 26<sup>th</sup> Annual Scientific Meeting  
San Antonio, TX
346. Fine PG. March 3-6, 2010 (National) Speaker (A)  
Medical Forum: *The future of hospice and palliative medicine*  
American Academy of Hospice and Palliative Medicine  
Boston, MA
347. Fine PG. April 1-2, 2010 (International) Speaker (A)  
*1. Chronic pain as a disease*

2. *Chronic opioid therapy*  
 3. *Management of neuropathic pain*  
 4. *Long term management of chronic pain in older patients*  
 Egyptian Society of Anesthesiology  
 Cairo, Egypt
348. Fine PG. April 18, 2010 (National) Speaker (A)  
*Guidelines for chronic opioid therapy in chronic noncancer pain*  
 American Society of Addiction Medicine  
 San Francisco, CA
349. Fine PG. April 23, 2010 (Local) Speaker (D)  
*Pain and aging*  
 Pain Research Center, Univ. of Utah, SLC, UT
350. Fine PG. May 1, 2010 (Regional) Speaker (A)  
*Effective pain management: Focus on safe use of opioids*  
 Nevada Osteopathic Association  
 Las Vegas, NV
351. Fine PG. May 6-8 (National) Speaker (C)  
 1. *Update on moderate to severe pain; Around-the-clock therapy*  
 2. *Interventions to improve evidence-based pain management in older adults*  
 3. *Methadone: safe prescribing*  
 4. *Revisiting pain management in cancer patients: Breakthrough pain*  
 American Pain Society  
 Baltimore, MD
352. Fine PG. May 13, 2010 (International) Speaker (B)  
*Keynote Address: Multimodal analgesia*  
 Canadian Pain Society  
 Calgary, Alberta, Canada
353. Fine PG. May 24-25, 2010 (Regional) Speaker (D)  
*Persistent pain in older patients*  
 National Initiative on Pain Control  
 Dallas and Houston, TX
354. Fine PG. June 10, 2010. (Regional) Speaker (A)  
 Medicine Grand Rounds: *Pharmacotherapeutic management of chronic pain*  
 University of Pittsburgh Medical Center  
 Pittsburgh, PA
355. Fine PG. June 23, 2010. (International) Moderator/Speaker (A)  
 Palliative Care Section: *Interventional pain management*  
 World Cancer Conference  
 Singapore

356. Fine PG. August 29, 2010. (International) Speaker (A)  
*Pharmacologic management of pain in older individuals*  
 Pain and Aging Special Interest Group Satellite Symposium  
 International Association for the Study of Pain  
 World Congress on Pain  
 Montreal, Quebec, Canada
357. Fine PG. September 21, 2010. (National) (A, B)  
 1. Symposium Moderator: Using Current Therapies as Part of an Overall Pain Management Program (A)  
 a. Speaker: *Introduction: Incidence and prevalence of chronic pain*  
 b. Speaker: *Setting the stage for opioid therapy as a component of chronic pain management*  
 2. Keynote Address (speaker): *Pain and consciousness* (B)  
 American Academy of Pain Management  
 Las Vegas, NV
358. Fine PG, October 3, 2010 (Regional) (A)  
 1. Speaker: *Pain and aging*  
 2. Speaker: *Palliative medicine: State of the art and science*  
 Southern Pain Society  
 New Orleans, LA
359. Fine PG, October 9, 2010 (Regional) Speaker (B)  
*Palliative medicine: It's benefit within the current healthcare environment*  
 Mary Washington Hospital (upon the occasion of the 10<sup>th</sup> anniversary of the opening of the palliative care unit)  
 Fredericksburg, VA
360. Fine PG, October 25, 2010 (Visiting Professor, Grand Rounds) Speaker (B)  
*Pain and aging*  
 West Virginia University School of Medicine "Perry G. Fine, MD Annual Pain and Palliative Medicine Lectureship"  
 Morgantown, West Virginia
361. Fine PG, October 29, 2010 (Local) Speaker (D)  
*Breakthrough pain*  
 Pain Research Center  
 University of Utah
362. Fine PG, November 2, 2010 (National) Speaker (A)  
*Dyspnea: A special type of pain*  
 Josefina Magno Palliative Care Conference  
 Washington, DC
363. Fine PG, November 6, 2010 (National) Speaker (A)

*Pathophysiology of chronic pain*  
 American Academy of Physical Medicine and Rehabilitation  
 Seattle, WA

364. Fine PG, November 10, 2010 (Visiting Professor, Grand Rounds) Speaker (A)  
*Neurobiology of chronic pain as a disease*  
 Department of Anesthesiology, Case Western Reserve Medical School  
 Cleveland, OH
365. Fine PG, March 2, 2011 (Regional) Speaker (D)  
*Risk mitigation strategies in opioid therapy for chronic pain*  
 National Initiative on Pain Control  
 Los Angeles, CA
366. Fine PG, March 17, 2011 (National) Speaker (A)  
*Breakthrough pain*  
 Cephalon International Headquarters  
 Frasier, PA
367. Fine PG, March 18, 2011 (National) Speaker (A)  
 1. *Prescription drugs with abuse potential: Perspectives from the pain medicine community*  
 2. *Abuse-deterrent opioids: Concepts and expectations*  
 Emerging Practices in Pain and Chemical Dependency  
 Beth Israel Medical Center, Albert Einstein Medical School  
 New York, NY
368. Fine PG, March 24-26, 2011 (National) Speaker/Moderator (C)  
 1. *Risk reduction in breakthrough pain treatment: Applications for pain management in cancer*  
 2. *A new perspective for moderate to severe acute pain relief*  
 3. *An interactive exploration of integrated opioid therapy in chronic pain*  
 American Academy of Pain Medicine, 27<sup>th</sup> Annual Scientific Meeting  
 Washington, DC
369. Fine PG, April 7, 2011 (National) Speaker (A)  
*Research trends in palliative care: Ethical issues for researchers and IRBs to consider*  
 Association for the Accreditation of Human Research Protection Programs  
 Washington, DC
370. Fine PG, May 4, 2011 (A)  
*Guidelines for chronic opioid therapy*  
 Hospice and Palliative Medicine Fellows  
 National Institutes of Health HPM Fellowship  
 Washington DC / Bethesda, Maryland

371. Fine PG, May 12, 2011 (National) Speaker (A)  
1. *Pain and aging*  
2. *Optimizing opioid therapy: Opioid rotation and idiosyncrasies of methadone*  
Congress of Clinical Rheumatology  
Destin, FL
372. Fine PG, May 19, 2011 (National) Moderator, Speaker (C)  
1. Symposium: Opioid Risk Evaluation and Mitigation Strategies (REMS) in Practice: Measuring Success (moderator)  
*Overview of REMS: Policy national policy update* (speaker)  
3. Symposium: Mechanisms, Models and Multimodal Management (moderator)  
a. *The multimodal imperative* (speaker)  
b. *Case studies: postoperative, neuropathic and inflammatory pain models* (speaker/panelist)  
American Pain Society  
Austin, TX
373. Fine PG, September, 2011 (National) Speaker (A)  
*Clinical aspects of pain assessment and management in older patients with progressive medical illness*  
Graham Memorial Lecture  
Longview, TX
374. Fine PG, October 3, 2011 (National) Speaker (B)  
*Ethical considerations in pain and palliative medicine research*  
4<sup>th</sup> Annual Perry G. Fine, MD Lectureship  
West Virginia University School of Medicine  
Morgantown, WV
375. Fine PG, February 23-26, 2012 (National) Speaker (A)  
a. *Palliative care 2012*  
b. *Opioid initiation, titration and opioid rotation for chronic intractable pain*  
c. *Pain medicine and litigation*  
American Academy of Pain Medicine, 28<sup>th</sup> Annual Scientific Meeting  
Palm Springs, CA
376. Fine PG, March 7, 2012 (Regional) Speaker (D)  
*Prescribing in the era of REMS*  
National Initiative on Pain Control  
Los Angeles, CA
377. Fine PG, March 23, 2012 (Local) Speaker (D)  
*U.S. FDA opioid risk evaluation and mitigation strategies*  
Pain Research Center  
University of Utah
378. Fine PG, April 3, 2012 (Local) Speaker (D)

*Pain and aging: Optimizing pharmacotherapy*

University of Utah Department of Medicine, Division of Geriatrics Grand Rounds  
 University of Utah School of Medicine, Salt Lake City, UT

379. Fine PG, April 5, 2012 (Local) Speaker (A)  
*Pain: What the public should know*  
 Salt Lake City Public Library Guest Lecture Series  
 Salt Lake City, UT
380. Fine PG, April 20, 2012 (National) Speaker (A)  
*Multimodal therapy in the management of chronic pain*  
 America College of Physicians  
 New Orleans, LA
381. Fine PG, May 9-10, 2012 (National) Speaker (A)  
*Quality as a business strategy*  
 National Hospice Work Group  
 Las Vegas, NV
382. Fine PG, May 11, 2012 (Local) Speaker (D)  
*Opioid rotation: A newest methods to emphasize safety*  
 Pain Research Center  
 University of Utah
383. Fine PG, May 14-16, 2012 (National) Speaker (C)  
*Hospice medical direction; Hospice documentation; Hospice interdisciplinary team meetings; Hospice quality assurance*  
 Clinical Leader Development Program  
 Honolulu, HI
384. Fine PG, July 28, 2012 (Local) Speaker (B)  
*Trends and developments in hospice and palliative care*  
 2<sup>nd</sup> Annual Palliative Care Conference, University of Utah  
 Salt Lake City, UT
385. Fine PG, September 13, 2012 (National) Speaker (C)  
*Pharmacotherapy for pain relief at the end of life: Optimizing benefits, minimizing harm*  
 10<sup>th</sup> Annual Rocky Mountain Geriatrics Conference  
 Snowbird, UT
386. Fine PG, October 1, 2012 (Regional) Speaker (A/D)  
*Pain as a chronic disease*  
 5<sup>th</sup> Annual Perry G. Fine, MD Pain and Palliative Care Endowed Lectureship  
 West Virginia University  
 Morgantown, WV

387. Fine PG, October 26, 2012 (Regional) Speaker (A/D)  
*The neurobiology of pain: evidence as a chronic disease*  
14<sup>th</sup> Annual Mid-Atlantic Pain and Palliative Care Conference  
Falls Church, VA
388. Fine PG. (Local) Speaker (C)  
*Pain: what everyone needs to know*  
Salt Lake City Library Evening Lectureship Series  
Salt Lake City, UT
389. Fine PG. (National) Speaker (C)  
*Improving access to hospice care*  
National Hospice Workgroup  
Las Vegas, NV
390. Fine PG. February 20-23, 2013 (National) Speaker (A/D)  
1. *Opioid induced bowel dysfunction*  
2. *Safe and effective opioid rotation*  
3. *Cancer pain: what works*  
4. *Chronic pain as a disease*  
Palliative Medicine and Supportive Oncology  
The Cleveland Clinic Palliative Medicine and Supportive Oncology Annual Meeting  
Key Largo, FL
391. Fine PG. March 7, 2013 (National) Speaker (C)  
*Medicare and Advanced Illness Economics*  
The National Hospice Work Group CFO Meeting  
Phoenix, AZ
392. Fine PG. March 13, 2013 (National) Speaker (C)  
1. *The pharmacology of methadone and oxycodone*  
2. *Opioid conversion*  
American Academy of Hospice and Palliative Medicine  
New Orleans, LA
393. Fine PG. April 13, 2013 (National) Speaker (C)  
1. *The Development of Abuse-Deterrent Opioid Formulations: Evidence to Support Their Inclusion in a Risk-Management Approach*  
American Academy of Pain Medicine  
Fort Lauderdale, FL
394. Fine PG. May, 2013 (National) Speaker (C)  
*Chronic Pain: Evidence and Mechanisms as a Disease*  
American Pain Society  
New Orleans, LA

395. Fine PG. May, 2013 (National) Speaker (B)  
*Creative Adaptation to Change*  
Mumms Software Users Group Innovations National Meeting  
New Orleans, LA
396. Fine PG. September 23, 2013 (Regional) Speaker (A)  
*Perspectives of a pain management physician*  
5<sup>th</sup> Annual Fall Death Investigation and Forensic Science Seminar  
Salt Lake City, UT
397. Fine PG. September 25, 2013 (Local) Speaker (A)  
*Medical ethics overview*  
University of Utah Introduction to Medical Professions (FPMD 5005)  
School of Medicine  
Salt Lake City, UT
398. Fine PG. October 25, 2013. (Local) Speaker (A)  
*Chronic pain as a disease*  
Chapman Lecture Series, Pain Research Center  
University of Utah  
Salt Lake City, UT
399. Fine PG. November 5, 2013 (Local) Speaker (A)  
*Cancer pain: new developments*  
Capital Caring/Washington Hospital Center Hospice and Palliative Care Fellowship  
Washington, DC
400. Fine PG, Ashburn MA. December 10, 2013 (National) Speaker (D)  
Session 1. *Interdisciplinary Pain Care: where do opioids fit in?*  
Session 2. *Risk management and documentation of care.*  
Collaboration for REMS Education ([www.core-rems.org](http://www.core-rems.org)) Pennsylvania Medical Society  
Harrisburg, PA
401. Fine PG. January 30, 2014 (National) Speaker (C)  
*Opioid prescribing: Perspectives of a pain management physician*  
28<sup>th</sup> Annual Update in PM&R  
The Canyons Resort, Park City, UT
402. Fine PG. May 9, 2014 (International) Speaker (A)  
*Cannabinoids and neuropathic pain*  
Cannabis as Medicine  
University Place, Portland, OR
403. Fine PG. May 13, 2014 (Regional) Speaker (A)  
*New developments in cancer pain management*  
Cancer Treatment Center  
Fredericksburg, VA

404. Fine PG. June 10, 2014 (International) Planner, Moderator, and Speaker (D)  
*a. Opioid rotation: Panel Moderator (Speakers: RK Portenoy, L Webster, ML McPherson)*  
*b. Medical cannabinoids*  
International Conference on Opioids  
Harvard Medical School, Boston, MA
405. Fine PG. June 13, 2014 (Local) Speaker (C)  
*Phytocannabinoids and neuropathic pain*  
U. of Utah Pain Research Center Weekly Conference  
Salt Lake City, UT
406. Fine PG. August 29, 2014 (National) Speaker (A)  
*Breakthrough pain*  
Hospice and Palliative Care Fellowship Didactic Lecture Series,  
Capital Caring/Washington Hospital Center  
Washington, DC
407. Fine PG. September 22, 2014 (National) Speaker (A)  
*Opioid rotation: New insights*  
West Virginia University  
Morgantown, WV
408. Fine PG. October 1, 2014 (Local) Speaker (C)  
*Medical ethics and end-of-life care*  
University of Utah  
Salt Lake City, UT
409. Fine PG. October 2, 2014 (Local) Speaker (D)  
*Reducing opioid abuse*  
Utah Poison Control Center 60<sup>th</sup> Anniversary Conference  
Salt Lake City, UT
410. Fine PG. October 10, 2014 (Local) Speaker (C)  
*Pain and politics*  
University of Utah Pain Research Center Weekly Conference  
Salt Lake City, UT
411. Fine PG. October 10, 2014 (Local) Speaker (C)  
*Politics and pain*  
American Society of Pain Management Nurses  
Salt Lake City, UT
412. Fine PG, Argoff C, Ashburn MA. November 4, 2014 (National) Moderator/Speaker (D)  
*Long acting and extended release opioid REMS*  
Dannemiller Foundation CME Program  
New York, NY

413. Fine PG. December 13, 2014 (National) Speaker (A)  
*Caring for the suffering: Where do we draw the line?*  
30<sup>th</sup> Annual R.W. Robertazzi Memorial Panel: Current Controversies in the Art and Science of Anesthesiology  
68<sup>th</sup> Annual PostGraduate Assembly of the New York Society of Anesthesiologists  
New York, NY
414. Fine PG. February 18, 2015 (National) Moderator (D)  
*Naloxone--the universal antidote for opioid overdose: Indications, new formulations and applications.*  
Dannemiller Memorial Education Foundation CME Program  
New York, NY
415. Fine PG. March 2, 2015 (National) Speaker (A)  
*Capital Conversations: Advanced illness coordinated care.*  
National Press Club  
Washington, DC

**Perry G. Fine, MD**

*Professor of Anesthesiology*

Pain Research Center, School of Medicine

University of Utah

Salt Lake City, Utah

Perry G. Fine, MD, completed medical school in 1981 at the Medical College of Virginia in Richmond. He served an internship in 1982 at the Community Hospital of Sonoma County in Santa Rosa, California, and completed his residency in 1984 at the University of Utah Health Sciences Center in Salt Lake City. In addition, Dr. Fine completed a fellowship in 1985 at the Smythe Pain Clinic of the University of Toronto in Ontario, Canada.

Dr. Fine is a Professor in the Department of Anesthesiology of the School of Medicine at the University of Utah, where he serves on the faculty in the Pain Research Center and is an

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He serves on the Clinical Models Committee of the Coalition to Transform Advanced Care (C-TAC). He serves on the Board of Directors of ISA Scientific, [REDACTED]

[REDACTED]. He currently holds two additional Board seats: he is on the Board of Directors of Magellan Health, a large healthcare management company focusing on behavioral health and improving health outcomes in special and vulnerable populations; he is on the Board of Directors of the Anne Stirba Cancer Foundation, whose sole focus is to raise funds to support research that will lead to the eradication of breast cancer.

Dr. Fine is widely published in the fields of pain management and end-of-life care. He serves on several scientific advisory boards and the editorial boards of several peer-reviewed medical journals, including *Pain Medicine* and the *Journal of Pain and Symptom Management*.

[REDACTED]. He is the recipient of the 2007 American Academy of Hospice and Palliative Medicine Distinguished Hospice Physician Award, and the 2008 American Pain Society John and Emma Bonica Public Service Award. He is the recipient of the American Academy of Pain Management's 2010 Head and Heart award and the 2011 Nyswander Award, presented at the annual Pain and Chemical Dependency meeting in New York City. In 2012, the Perry G. Fine, MD Endowed Fund in Pain and Palliative Medicine was created at West Virginia University by Hospice Care Inc. to honor his contributions to the fields of pain and palliative care and ensure ongoing continuing health professionals' education in these essential domains. He was honored with the 2012 "Passion for Caring" award by Capital Caring, presented at the National Building Museum in Washington, DC. Most recently, in March 2015, he received the American Academy of Pain Medicine Distinguished Service Award.



## ACADEMIC APPOINTMENTS

University of California, San Francisco      Clinical Instructor:      1996 - 1997

Pain Management Center

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## HOSPITAL APPOINTMENTS

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## AWARDS AND HONORS

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John Burton Science Award      1985

National Dean's List      1983 - 1984

Dean's List      1981 - 1984

Teaching Award:

The Golden Neuron Award for best resident teacher. Awarded by the medical students of the department of neurosciences of University of California San Diego      1995

## PROFESSIONAL SOCIETIES & BOARD MEMBERSHIPS

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American Academy of Neurology      1992 - Present

San Diego Neurologic Society      1992 - 1995

American Pain Society      1995 - Present

International Association For The Study Of Pain      1995 - Present

Long Island Headache Society      1998 - Present

American Association For The Study Of Headache      1998 - Present

International Headache Society      1997 - Present

Biomedical Research Alliance of New York (IRB)	1998 - Present
Multicultural National Advisory Board	2002 - Present
National Initiative on Pain Control	1997 - Present
Clinical Society of Queens and Long Island	2005 – Present
Member of the American Headache Society membership committee	2006 – Present
Member of the Safety Review Committee for Avigen Inc	2006 - Present
National Headache Foundation- Board of Directors	2007 – Present
Member Health Care Quality and Cost Containment Commission for the State of New York	2009 - Present
Founding member and Secretary New York State Pain Society	2011 – Present

**Advisory Boards:**

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**Speakers Bureau:**

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**PEER REVIEW:**

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### **CLINICAL RESEARCH:**

1.  **Principal Investigator-** A Multicenter Study Examining the Prevalence by Severity, Frequency & Disability of Migraine in Adult Patients in Primary Care Practice
2.  **Principal Investigator-** A Double-Blind, Placebo Controlled, Parallel Group, Dose Response Study to Evaluate the Efficacy and Safety of Topiramate versus Placebo in the Relief of Pain in Painful Diabetic Polyneuropathy
3.  **Principal Investigator-** A Multicenter, Randomized, Parallel Group, Double-Blind Study to Evaluate the Efficacy and Safety of IDDS Morphine Sulfate SR BID Compared to MS Contin Morphine Sulfate BID in Patients with Moderate Severe Pain Due to Cancer
4.  **Principal Investigator-** A Randomized, Double-Blind, Placebo Controlled Comparison of the Safety and Efficacy of ABT-594 to Placebo with Painful Diabetic
5.  **Principal Investigator-** A Sustained Efficacy Study of Pregabalin in Patients with Chronic Cervical Radiculopathy
6.  **Principal Investigator-** A Pregabalin Long-Term Open Label Extension Safety Trial in Patients with Cervical Radiculopathy
7.  **Principal Investigator-** A Randomized, Double-Blind, Placebo Controlled, Parallel Group, Dose Response Study to Evaluate the Efficacy and Safety of Topiramate in the Prophylaxis of Migraine
8.  **Principal Investigator-** A Double-Blind, Controlled Pilot Study of High Dose Capsaicin Patches in the Treatment of Pain Associated with Postherpetic Neuralgia
9.  **Principal Investigator-** A Multicenter, Double-Blind, Randomized, Placebo-Controlled Study of Eletriptan (20 and 40 mg) versus Placebo in Early Treatment of Migraine
10.  **Principal Investigator-** A Blinded, Randomized, Placebo Controlled Study of the Efficacy and Safety of two Different Doses of EpiCept-NP Topical Cream (ketamine/amitriptyline combination) Applied Two Times Daily in the Treatment of Postherpetic Neuralgia

11. **Principal Investigator-** A Multicenter, Open-Label Study of the Efficacy and Safety of EpiCept-NP Topical Cream (ketamine/amitriptyline combination) Applied Two Times Daily in the Treatment of Postherpetic Neuralgia
12. **Principal Investigator-** A Multicenter, Randomized, Placebo Controlled, Double-Blind, Parallel Group Trial to Evaluate Early Efficacy and Tolerability of Zolmitriptan (ZOMIG) Nasal Spray in the Acute Treatment of Adult Subjects with Migraine
13. **Principal Investigator-** A Comparison of the Efficacy and Safety of Topiramate versus Placebo for the Prophylaxis of Chronic Migraine
14. **Principal Investigator-** An Open-Label Study of the Safety and Efficacy of Topiramate for the Prophylaxis of Chronic Migraine: Extension Study to CAPSS 276
15. **Principal Investigator-** A Double-Blind, Randomized, Placebo Controlled Parallel Group, Multicenter Trial evaluating the Efficacy and Safety of Levetiracetam 500mg tablets in the BID Administration, in Adults Suffering from Postherpetic Neuralgia
16. **Principal Investigator-** Axert Intensity Migraine Study
17. **Principal Investigator-** A Randomized Placebo-Controlled Trial of the Efficacy and Safety of Pregabalin in the Treatment of Subjects with Neuropathic Pain Associated with Lumbosacral Radiculopathy
18. **Principal Investigator-** A Multicenter, Randomized, Double-Blind, Placebo Controlled Parallel Group Study to evaluate the Safety and Efficacy of Lamotrigine 200-400mg/Day Compared with Placebo in Subjects with Painful Diabetic Neuropathy
19. **Principal Investigator-** A Randomized, Double-Blind, multi-center, placebo-controlled, cross over study to determine the consistency of response for Treximet (Sumatriptan 85mg / naprosyn sodium 500mg) administered during the mild pain phase for the treatment of multiple migraine attacks.
20. **Principal Investigator-** A Randomized, Double-blind, placebo-controlled, group study to evaluate the efficacy and tolerability of TREXIMET (Sumatriptan succinate/naproxen sodium) for a single moderate or severe headache in adults diagnosed with probable migraine without aura ( ICHD-II 1.6.1).
21. **Principal Investigator-** A Randomized, Double- blind, Placebo-controlled, multicenter phase 3 study to evaluate the efficacy and safety of Alvimopan 0.5mg twice daily for 12 weeks for the treatment of opioid induced bowel dysfunction in adults taking opioid therapy for persistent non-cancer pain.
22. **Principal Investigator-** A Randomized, Double- blind, Placebo-controlled, multicenter phase 3 study to evaluate the long term safety of Alvimopan 0.5mg twice daily for 12 months for the treatment of opioid induced bowel dysfunction in adults taking opioid therapy for persistent non-cancer pain.
23. **Principal Investigator-** Topiramate INtervention to prevent Transformation of EPIsoDic migraine: The Topiramate study

24. **Principal Investigator-** A Randomized, double-blind, placebo-controlled, safety and efficacy of Xyrem (sodium oxybate) in subjects with fibromyalgia.
25. **Principal Investigator-** An open label 52 week study to evaluate the safety of Tegaserod (6mg b.i.d vs 12mg o.d.) given orally for the treatment of opioid-induced constipation (OIC) in patients with chronic non-cancer pain.
26. **Principal Investigator-** A Randomized, Double-blind,. Placebo controlled, Parallel-group Study of Oral Methylnaltrexone for the treatment of Opioid Induced constipation with Subjects with Chronic, Non – Malignant Pain
27. **Principal Investigator-** A Randomized-Withdrawal, Placebo-Controlled Study Evaluating the Efficacy, Safety and Tolerability of Tapentadol Extended-Release in Subjects with Chronic, Painful Diabetic Peripheral Neuropathy.
28. **Principal Investigator-** Multicenter, Primary Care- Based Open-Label Study to Assess the Success of Converting Opioid- Experienced Patients, with Chronic, Moderate to Severe Pain, to EMBEDA Using standardized Conversation guide, and to identify Behaviors Related to Prescription Opioid Abuse, Misuse, and Diversion

## LECTURES, ABSTRACTS & PUBLICATIONS

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“Neuropathic Pain Management”- Grand Rounds – Bayonne Medical Center

“Topiramate as an Effective Migraine Preventative Therapy” – Poster Presentation

“Assessing the Therapeutic Value of Using Topiramate for Migraine Prevention” – Poster Presentation

Forde, Grace MD, “Primary versus Secondary Myofacial Pain Syndrome: Can we distinguish between these entities.” *In Publication*

Beutner, H. Maibach, eds. “Cutaneous, Fungal, Bacterial and Viral Infection and Therapy.” Marcel Dekker, Inc., New York. *In Press*.

Michael C. Rowbotham, M.D., Gil Yosipovitch, M.D., Kari Connolly, M.D., Deborah Finlay, Ph.D., Grace Forde, M.D., Howard L. Fields, M.D., Ph.D., “Cutaneous Innervation Density in the Allodynic Form of Post-Herpetic Neuralgia.” *Neurobiology of Disease*.-1996

Rowbotham and Forde (book chapter). Varicella Zoster Virus Neuralgia: Diagnosis and Treatment. *Cutaneous Infection and Therapy* (editors: Aly/ Beutner/ Maibach).

Rowbotham and Forde, “Controlled trial of oral opioids for neuropathic pain of CNS and PNS origin.” Poster 16<sup>th</sup> Annual Scientific Meeting. *American Pain Society New Orleans 1998*

“Efficacy of Topiramate for the prevention of Migraines in patients who had previously used other migraine preventive medications” Poster Presentation

“Finding a fit: New strategies for chronic daily headache prophylaxis”. Johns Hopkins Advanced Studies in Medicine monograph. Volume 6 (4D) April 2006

Silberstein, S.D., Loder, E., Forde, G., et al “The impact of migraine on daily activities: effect of topiramate compared with placebo”. Current Medical Research and Opinion 2006; 22 (6): 1021-1029

Freitag, F., Forde, G., et al “Topiramate Effectively Prevents Migraine: Analyzing Pooled Data From Pivotal Controlled Trials” Neurology- July 2007

Silberstein, S., Loder E., Forde, G., et al, “ Effect of Topiramate with placebo on the impact of migraine on daily activities” Current Medical Research and Opinion- June 2006

Forde, G., “Adjuvant Analgesics for the treatment of Neuropathic Pain: Evaluating efficacy and safety profiles” Supplement to the Journal of family Practice – Pain Management Delimiters in Primary Care- February 2007

Forde, Grace; Stanos, Steven, “Practical Management Strategies for the Chronic Pain Patient” The Journal of Family Practice- August 2007

Reviewer for the CME activity titled “ Chronic Pain Management Symposium” for the American Academy of Family Practitioners Scientific Assembly. Fall 2006

Guest Editor for Pain Management Today - November 2006

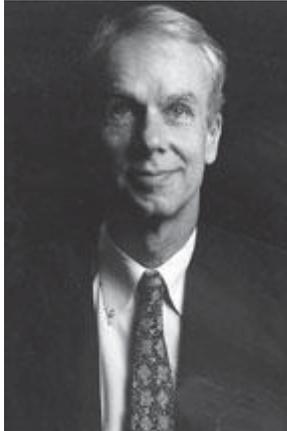
**CME Lecturer :**

Continuing Education Company Inc.,	2006 - Present
National Initiative on Pain Control through Thomson Professional Postgraduate Services	1997 - 2008
Pri – Med	2002 - 2007
National Medical Association	2000 - Present

# M. Flint Beal, MD

Neurology

- Physician
- Education
- Honors and Awards
- Research



**M. Flint Beal, MD** is an internationally recognized authority on neurodegenerative disorders.

Dr. Beal received his medical degree from the University of Virginia in 1976 and did his internship and first year residency in Medicine at New York-Cornell before completing his residency in Neurology at The Massachusetts General Hospital.

Dr. Beal's research has focused on the mechanism of neuronal degeneration in Alzheimer's Disease, Huntington's Disease, Parkinson's Disease and amyotrophic lateral sclerosis (ALS).

Dr. Beal is the author or co-author of more than 500 scientific articles and more than 125 books, book chapters and reviews.

Dr. Beal's research has focused on the mechanism of neuronal degeneration in Alzheimer's Disease, Huntington's Disease, Parkinson's Disease and amyotrophic lateral sclerosis (ALS). He has also been working on the development of novel neurochemical assays for assessing oxidative damage for use in clinical trials of new therapies for these disorders, as well as metabolomics for diagnosis.

Dr. Beal is a member of the Alpha Omega Alpha Medical Honorary Society and received the Derek Denny-Brown Neurological Scholar Award of the American Neurological Association. He has served on the Council and as Vice President of the American Neurological Association and on the Science Advisory Committees of the Hereditary Disease Foundation, Huntington's

Disease Society of America, Parkinson's Disease Study Group, Parkinson' Disease Foundation, Bachman-Strauss Foundation, The ALS Association, and the American Health Assistance Foundation. Dr. Beal is also a member of the Institute of Medicine of the National Academy of Sciences.

Selected Recent Papers (downloadable in Adobe Acrobat format\*):

[Energetics in the pathogenesis of neurodegenerative diseases](#)

[Mitochondrial DNA mutations in complex I and tRNA genes in Parkinson's disease](#)

[Neuroprotective Effects of Creatine in a Transgenic Mouse Model of Huntington's Disease](#)

Mitochondrial dysfunction and oxidative stress in neurodegenerative diseases. *Nature* 2006;443:787-795

Therapeutic effects of coenzyme Q10 and reduced COQ10 in the 1-methyl-4-phenyl-1, 2, 3, 6-tetrahydropyridine model of Parkinsonism. *J. Neurochem* 2008; 104:1613-1621

Metabolomic profiling to develop blood biomarkers for Parkinson's disease. *Brain*. 2008;131:389-96.

\*If you don't have Acrobat Reader 3.0 or higher, you can download it from Adobe's website.

Dr Michael Dor

Born: [REDACTED]

Military Service 1966 - 1969

1969 - 2006 Reserves - Major - Medical Unit

Work - Ministry of Health - Rivka 29 , Jerusalem - 025070738

Home [REDACTED]

#### Education

Tel Aviv University 1969 - 1975 Medical School

Tel Aviv University 1982 - 1984 Diploma in Community Medicine

Hebrew University 1984 - 1986 Diploma in Family Medicine

Hebrew University 1983 - 1987 Specialist Degree in Family Medicine

Beilinson Hospital 1988 - 1990 Diploma in Medical Management

Harvard University- 1991 - 1992 Masters in Public Administration

(Kennedy School of Government)

Ministry of Health 1997 - 1999 Specialist Degree in Health Management

#### Thesis

Hepatitis B Epidemiology in a mentally retarded population - 1974 - 1977

Supervisors - Prof Tiberio Shwartz; Prof Baruch Modan

#### Employment

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

1997 - 2000 Director, Department of Community Medicine - Ministry of Health

2000 - Director, General Medical Division- Ministry of Health

2002 - Deputy Director, Medical Administration - Ministry of Health

2013 - Medical Director of Medical Cannabis Unit in the Israeli Ministry of Health

#### Editorial Boards

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

Member of teaching faculty

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Ministry of Health - Management of Medical Services 2000 -

Fellowships

Middle East Institute - Harvard - 1991-1992 M\|C MPA

Jerusalem Institute - Health Plan for Area Cooperation - Presented in Stockholm 2000

Professional Society Membership

Family Physician's Association

Health Management Association - IMA (Secretary of the Association)

World Organization of Family Physicians

Harvard Alumni Association

Israeli Representative in International Forums

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Special Assignments

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Representing Israel in International forums

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# **Scientific Advisory Board**

Redacted pursuant to N.Y. Public Officers Law,  
Art. 6

**Résumé**  
Ver. 03-21-14

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**PROFESSIONAL EXPERIENCE:**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**Board of Directors**

2009-2010

**NanoDygm, Inc.**

383 Colorow Drive Salt Lake City, Utah 84108 USA

*Detecting agents of bioterror with surface-enhanced Raman spectroscopy*

**US Representative**

2007-2010

**Coordinated Research Programme on the Early and Rapid Diagnosis of Transboundary Diseases, Joint Committee of the Food and Agriculture Organization / International Atomic Energy Agency of the United Nations**

Vienna International Centre, A-1400 Vienna, Austria

*Bird Flu (H5N1 Avian Influenza) early detection*

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**Advisor -- Subcommittee on Health**

2005 – 2009

**U.S. House of Representatives**

Washington, D.C. USA

**Advisor -- China State Council on Medical Reform**

2005 – 2006

**China Ministry of Health**

1 Xizhimenwai Nanlu, Xi Cheng District, Beijing 100044, China

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

**REGULATORY EXPERIENCE**

FDA EUA, DxNA GeneSTAT 2009 A/H1N1 Swine Influenza Test, 14 December 2009

UN Food and Agriculture Organization Certification, DxNA GeneSTAT Highly-Pathogenic H5N1 Avian Influenza (Bird Flu) Test

11 Institutional Review Board Human Research Approvals, United States and United Nations World Health Organization

**GOVERNMENT TESTIMONY:**

"Phytocannabinoids in Human Medicine", Testimony to the Oklahoma, Pennsylvania and Utah State Legislatures, 2013-2014

"Women and Cancer: Where Are We in Prevention, Early Detection and Treatment of Gynecologic Cancers", Subcommittee on Criminal Justice, Drug Policy and Human Resources, U.S. House of Representatives, Washington, D.C., 7 September 2005

"U.S. Food and Drug Administration, Cervical Cancer Special Meeting", US Food and Drug Administration, Washington, D.C., 21 January 2002

**EDUCATION:**

**Ph.D.** 1991, University of Utah (Molecular Genetics)

**M.Sc.** 1983, First Class Honors, University of British Columbia (Molecular Genetics)

**B.Sc.** 1976, University of Utah (Biology)

#### **ADDITIONAL POSITIONS:**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**Scientific Consultant**, Council of Agriculture, Taiwan (H5N1 Avian Influenza), 1998-1999.

**Research Assistant Professor and Post-Doctoral Fellow**, University of Utah School of Medicine and Veterans Administration Medical Center, 1991-1993.

**Research Assistant Professor**, Department of Geography, University of Utah, (Biogeography -- using genetical, biochemical and molecular biological techniques), 1991-1993.

**Curator and Staff Biologist**, Utah Museum of Natural History, University of Utah (Ecology and Reproductive Biology), 1985-1991.

**Scientific and Technical Consultant**, U.S. Fish and Wildlife Service and Utah Division of Wildlife Resources, (Genetics of Threatened and Endangered Species), 1981-1993.

#### **PUBLICATIONS, PATENTS & SEMINAR PRESENTATIONS:**

22 published articles

Latest article: The Endocannabinoid System, Cannabinoids, and Pain. 2013. Rambam Maimonides Med J. 4(4): e0022

1 book chapter

Patents

- Four patents on phytocannabinoid extraction and purification applied for under ISA Scientific
- Issued US pharmaceutical patents: 7507731, 7521467, 7521468, 7524877, 7536363, 7541356, 7794761
- Issued US molecular biology patents: 6933123, 7267961
- Filed US pharmacology patent: 20040209877

More than 25 invited seminars across the United States and in Austria, China, Sweden, Denmark, Vietnam, Malaysia and Canada

#### **TEACHING AWARDS:**

University of Utah John R. Park Teachers' Fellowship

University of British Columbia Teaching Fellowship

KEVIN McKERNAN is the father of cannabis genome mapping, having successfully sequenced the genomes for both *Cannabis sativa* and *Cannabis indica* as announced publicly in August, 2011, [REDACTED]

[REDACTED] Mr. McKernan pioneered the genomics of cannabis and hemp to build a stronger scientific environment for the study of cannabis based therapeutics and hemp based fiber, food and fuels. Through this historical scientific breakthrough, Mr. McKernan began unlocking the mysteries of marijuana DNA. He has spoken at conferences around the world on this topic; a video of his presentation can be found at <http://tinyurl.com/SequencingCannabisGenome>.

[REDACTED] He is undisputedly one of the top cannabis genetics researchers in the world, and has successfully provided genetic profiling of children with intractable epilepsy to support clinical developments with cannabidiol (CBD). [REDACTED]

[REDACTED] . Mr. McKernan's research and genetic analysis on children with Dravet syndrome and Lennox-Gastaut syndrome, two rare and severe forms of infantile-onset, genetic, drug-resistant epilepsy syndromes, has played a part in the FDA granting orphan drug designation for one of his product candidates that contains plant-derived cannabidiol as its active ingredient.

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Mr. McKernan initiated an R&D uencing and spearheaded a process to acquire the DNA sequencing company, Ion Torrent, for \$350M. These collaborations resulted in hundreds of publications and seven journal covers from Science Translational Medicine to Nature.

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Mr. McKernan holds a B.S. in Biology from Emory University with a focus on cloning and expressing Norepinephrine Transporters.

**M. FLINT BEAL, MD** is an internationally recognized authority on neurodegenerative disorders.

Dr. Beal, an leading expert on Parkinson's and other movement disorders, whose work ranges from lab science to patient care,

Dr. Beal received his medical degree from the University of Virginia in 1976 and did his internship and first year residency in Medicine at New York-Cornell before coming to General Hospital.

Dr. Beal's research has focused on the mechanism of neuronal degeneration in Alzheimer's Disease, Huntington's Disease, Parkinson's Disease and amyotrophic lateral sclerosis (ALS).

While the laboratory is Dr. Beal's home territory, he also spends time developing clinical trials for neuroprotection in PD and other neurodegenerative diseases. He has been directly involved in the study of coenzyme Q10 (CoQ10) and creatine as promising neuroprotective therapies for Parkinson's disease. Both CoQ10 and creatine have shown initial protective effects in patients but require further study in larger multicenter trials.

As natural complements to his research, Dr. Beal lectures and writes widely on such topics as aging, energy and neurodegenerative diseases; oxidative damage and mitochondrial dysfunction; the role of CoQ10 as a treatment and other novel therapies in Parkinson's. He is the author of more than 100 books and chapters and more than 400 peer-reviewed papers. He is also the author of a forthcoming textbook, co-edited with Anthony E. Lang and Albert C. Ludolph, entitled Neurodegenerative Diseases, Neurobiology Pathogenesis and Therapeutics. He has served on the editorial boards of numerous respected journals, including Annals of Neurology.

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**Dr. Beal is a member of the Alpha Omega Alpha Medical Honorary Society and received the Derek Denny-Brown Neurological Scholar Award of the American Neurological Association. He has served on the Council and as Vice President of the American Neurological Association and on the Science Advisory Committees of the Hereditary Disease Foundation, Huntington's Disease Society of America, Parkinson's Disease Study Group, Parkinson' Disease Foundation, Bachman-Strauss Foundation, The ALS Association, and the American Health Assistance Foundation. Dr. Beal is also a member of the Institute of Medicine of the National Academy of Sciences.**

[REDACTED] to Salus Scientific Science Advisory Board

Ruth Gallily, PhD — Cannabis Pharmacology [REDACTED]

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Yahuda Baruch, M D — [REDACTED]

[REDACTED]  
Director of Mental Health, Israel Health Ministry

Lumir Hanus, DSc — [REDACTED]

[REDACTED]

# **Security Advisory Board**

**RESUME:** Darrell G. O'Connor

**Licensed Private Investigator – Commonwealth of Pennsylvania - 7/10/2011 to Present**

**Education:** B.A./Criminal Justice - John Jay College of Criminal Justice, NY, NY

**Employment:**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

**Special Agent/Criminal Investigator, Office of the Inspector General - (01/2012 to 9/2012)**

**Environmental Protection Agency, Philadelphia, Pennsylvania**

Conducted nationwide waste, fraud and abuse reviews and proactive investigations to determine compliance with EPA Superfund and State Revolving Fund programs and procedures.

**Senior Safety and Security Advisor, U. S. House of Representatives, Washington, DC - (11/07 to 01/2011)**

Held weekly meetings on budget, waste, fraud and abuse issues with the senior management of the United States Capitol Police (USCP), the House Sergeant at Arms (HSAA) and USCP Inspector General. Conduct assessments of safety, security, threats, evacuation, business continuity preparedness and disaster recovery operations for the U.S. House of Representatives, House Staff, Capitol Hill properties, District Office locations and assets.

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**Special Agent/Criminal Investigator – Transportation Security Administration, (6/02 to 6/07)**

**Office of Internal Affairs and Inspection – United States Department of Homeland Security**

Participate in impartial investigations, inspections and covert testing of TSA personnel, programs and operations to ensure the safety and security of national and local air, rail and surface transportation systems.

**Special Agent/Criminal Investigator/PIO – Bureau of Alcohol, Firearms and Explosives – (5/77 to 6/02)**

Coordinated numerous and complex criminal conspiracy investigations of violations of federal firearms, explosives and arson laws. Served as ATF PIO, National Composite Artist and National Response Team Member. Assisted in the 1996 Atlanta Olympics Centennial Park Bombing and the 9/11/2001 World Trade Center Terrorist Attack. Participated in numerous U.S. Secret Service and U.S. State Department protection details for the President of the United States, Presidential Candidates and Foreign Dignitaries. Served as an Instructor in numerous ATF training seminars for law enforcement personnel and civilian organizations.

**Special Investigator, Office of the Special Prosecutor, State of New York – (1976 to 1977)**

Participated in internal affairs and criminal investigations relating to corruption within the New York City Police Department and the NYC Criminal Justice system.

**Associations:** Member of the National Organization of Black Law Enforcement Executives (NOBLE).

WILLIAM J. DeBLOCK completed a 30 year career with the New York State Police as Deputy Superintendent - Field Commander at State Police Headquarters in Albany from 2000 – 2007. After having started as a Trooper in 1977, Mr. DeBlock rose through the ranks to retain supervision for approximately 4,500 uniform and BCI personnel statewide, gathering extensive experience in terrorism, narcotics and organized crime investigation, as well as advocating for highway safety. His career included time spent as a New Jersey State Police Trooper [REDACTED]

Mr. DeBlock's career specifically included:

- Deputy Superintendent - Field Commander, Colonel (2000-2007)
- Assistant Deputy Superintendent - Bureau of Criminal Investigation, Lieutenant Colonel (1999-2000)
- Staff Inspector Narcotics and Organized Crime (1998-1999)
- Staff Inspector in Internal Affairs Bureau (1997-1998)
- Troop F Commander - Major, Troop F Middletown (1994-1997)
- Troop NYC Commander - Major, New York City (1992-1994)
- Bureau of Criminal Investigation - Captain, Troop K Poughkeepsie (1990-1992)
- Bureau of Criminal Investigation - Captain, New York Drug Enforcement Task Force - Deputy Chief (1989-1990)
- Bureau of Criminal Investigation - Lieutenant, New York Drug Enforcement Task Force - Division Chief (1988-1989)
- Lieutenant - Special Narcotics Prosecutor, New York City (1986-1988)
- Investigator - Troop F Middletown (1981-1986)
- Trooper in Troop F Middletown and Troop T Tarrytown (1977-1981)

Mr. DeBlock recently spent time in the field of private investigation concentrating on Workers Compensation Fraud, and currently serves as Adjunct Instructor in Criminal Justice as part of the SUNY Delhi program offered at Schenectady County Community College.

Mr. DeBlock is the former Chairman of the Organized Crime Committee for the International Association of Chiefs of Police, and during his career was proudly affiliated with the New York State Association of Chiefs of Police, FBI National Academy Associates, and Henry William Associates.

DeBlock attended the FBI National Academy, Quantico, Virginia, achieved a BS in Law Enforcement Administration from Michigan State University, and graduated with an MA in Criminal Justice from the State University of New York at Albany.

Terrance W. Gainer  
CONFIDENTIAL

The Honorable Terrance W. Gainer [REDACTED]  
[REDACTED] Chief Gainer has had a distinguished 47-year career in law enforcement, security innovations, and organizational change in the United States and worldwide, most recently spearheading the security of the U.S. Capitol Building, staff, and visitors to the nation's capital. He has been instrumental in leading a number of significant security events in the National Capital Region.

The Honorable Mr. Gainer retired as the 38<sup>th</sup> United States Senate Sergeant at Arms in May 2014, a culmination of 11 years of Service on Capitol Hill as Sergeant at Arms and Chief of the United States Capitol Police. During that time, he was responsible for the screening of more than 2.2 million visitors per year, as well as 24,000 Congressional staff, in addition to the physical security of the United States Capitol, its grounds, and the Senate and House office buildings – nearly 8 million square feet of space and 275 acres of land.

Those responsibilities included the design and installation of security systems such as intrusion detection, perimeter security, vehicle barriers, closed-circuit television, and security screening measures. Additionally, the work encompassed assessment of technology advancements to ensure innovative technologies were utilized to meet mission needs, as well as providing technical solutions to operational challenges on many sensitive or classified technologies; coordination of construction security activities; and review of systems and operations that could create security vulnerabilities.

Chief Gainer began his law enforcement career as a police officer in the Chicago Police Department and rose through the ranks, including many years as an experienced homicide detective. An accomplished attorney, Mr. Gainer served as chief legal officer of that department before he entered the Illinois State Government as Deputy Inspector General and Deputy Director of the Illinois State Police. He served at the U.S. Department of Transportation as Special Assistant to the Secretary before being appointed as Director of the Illinois State Police in 1991.

In 1998, Chief Gainer moved to Washington, D.C., where he served as Executive Assistant Chief of Police for the Metropolitan Police Department and four years later was selected to be the Chief of the U.S. Capitol Police. [REDACTED]

[REDACTED] The following year, the U.S. Senate appointed Mr. Gainer as the Senate Sergeant at Arms.

While Sergeant at Arms, the Honorable Mr. Gainer faced severe government cutbacks and sequestration, and guided the first major right-sizing of the organization in decades. Through a

combination of operational efficiencies and reorganization, Mr. Gainer managed to cut the SAA's total budget by more than 12 percent over four years and reduce staffing. At the same time, service outputs increased, and customer and employee satisfaction remained extremely high.

While serving as Sergeant at Arms, the Honorable Mr. Gainer was appointed a Commissioner on the Independent Commission on the Security Forces of Iraq, charged with conducting an independent assessment of the Iraqi Security Forces and reporting the findings to Congress. He also served with the Special Envoy for Middle East Regional Security, which was created to advance the resolution of the Israeli-Palestinian dispute by assisting in strengthening security institutions.

██████████ Mr. Gainer is a decorated veteran who served in Viet Nam and retired as a Captain in the United States Navy Reserve. His degrees include a Bachelor's degree in Sociology, a Master of Science in Management, a Juris Doctor degree, and an Honorary Doctorate of Humane Letters. ██████████

# Cultivation

## CURRICULUM VITAE

**Daniel Kenneth Harder**

### Personal



### Education

Gustavus Adolphus College, St. Peter, Minnesota. Fall 1978 and Spring 1979.

University of Wisconsin, Madison, Wisconsin. Bachelor of Science degree in Botany, Spring 1982.

University of California, Berkeley, California. Doctor of Philosophy degree in Botany, May 1990. Dissertation title: Developmental Physiology of the Cultivated Winged Bean, *Psophocarpus tetragonolobus*, L. (DC).

### Primary Professional Roles

Redacted pursuant to N.Y. Public Officers Law, Art. 6

### Past Professional Roles



Wo/Men's Alliance for Medical Marijuana, Vice-President, Board of Directors, January 2010-2013.

Executive Director, Arboretum at the University of California, Santa Cruz Oct. 2001 - Oct. 2009

Adjunct Professor, Department of Ecology and Evolutionary Biology, University of California, Santa Cruz Oct. 2001

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Odell Wilson Research Fellow, University of California, Berkeley. Fall 1986, spring and summer 1988.

Graduate Student, Department of Botany, University of California, Berkeley 1984-1990.

Doctorate of Philosophy degree conferred Fall 1990. Dissertation: Harder, D. K. 1990.

Developmental Physiology of the Cultivated Winged Bean, *Psophocarpus tetragonolobus* (L.) DC.: Growth Attributes and Mineral Contents. University of California, Berkeley.

**Professional Experience**

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

Panel Expert for legislative hearings regarding the Light Brown Apple Moth in California.

California State Senator Joe Simitian, Environmental Quality Committee, May 13, 2008.

US Congresswoman Jackie Speier, Roundtable; Anatomy of a Decision, September 30, 2008.

California State Senator Dean Florez, Senate Committee on Food and Agriculture, Evaluating CDFA's LBAM EIR; Is It Supported by the Facts? August 25, 2009.

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

Lecturer in Botany, University of Missouri, St. Louis. 1992 – 2001.

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

Scientific Expert and Chief Botanical Consultant for U.S. Food and Drug Administration, Division of Drug Testing and Analytical Analysis, tobacco litigation and pharmacopeia quality standards. St. Louis, Missouri. 1997 – 1999.

**Redacted pursuant to N.Y. Public Officers Law, Art. 6**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Visiting Scientist to St Louis Public Schools, lectures, workshops, and implementing a hands-on science education program 1992 – 1999

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Field research for the Ph.D. Thesis on the cultivated winged bean, *Psophocarpus tetragonolobus* (L.) DC. at National Tropical Botanical Garden at Lawai, Kauai, Hawaii and Universities of California, Berkeley and Davis. 1986, 1987, 1988.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Teaching Assistant in the Botany Department at the University of California, Berkeley in Basic Biology, Plants and Civilization, Plant Physiology, Flora of California, and Evolutionary Morphology.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

#### **Professional Societies**

American Horticultural Society  
American Public Garden Association  
American Institute of Biological Sciences  
Association Pour l'Etude Taxonomique de la Flore d'Afrique Tropicale (AETFAT)  
Botanical Society of America  
California Association of Museums  
California Native Plant Society, local and state chapters  
Northern California Botanists  
Society for Economic Botany  
Society of Ethnobotany

#### **Languages**

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## Awards, Grants and Fellowships

- The David and Lucile Packard Foundation, Organizational Effectiveness, Oct. 2013-Oct. 2014.
- The David and Lucile Packard Foundation, Local Grantmaking, Nov. 2013-Oct. 2015.
- San Lorenzo Valley Water District Classic Watershed Education Grant 2013. Oct. 2013-Oct 2014.
- Heritage Preservation, 2012 Conservation Assessment Program, Jan. 2012-Dec. 2013.
- San Francisco Bay Guardian, Best of the Bay, Local Heroes, 07/05/2008, with James Carey and Jeff Rosendale. Recognition of bringing opposing scientific data and perspective into the eradication attempt of the Light Brown Apple Moth.
- Elvenia J. Slosson Endowment, *Central Coast Native Plant Horticulture*. July 1, 2009 – June 30, 2010.
- The David and Lucile Packard Foundation, *Collection Stewardship* grant. Local Grantmaking in Conservation Science. January through December 2009.
- California Department of Parks and Recreation Contracts: 1) Growing for the *Laguna Lagoons Uplands Coastal Scrub Restoration Project at Coast Dairies Property on the North Coast of Santa Cruz County* (a seed collection and growing contract for 120,000 native plants), May 14 2007 – December 31, 2008, 2) Planting for the *Laguna Lagoons Uplands coastal Scrub Restoration Project at Coast Dairies Property on the North Coast of Santa Cruz County*, November 14, 2008 – April 1, 2009, and 3) Growing for two sites within the *Santa Cruz District of California State Parks within the Henry Cowell Sandhills Restoration and Laguna Lagoons Uplands Coastal Scrub Restoration Project at Coast Dairies Property on the North Coast of Santa Cruz County*, from April 2009 until March 15<sup>th</sup>, 2011.
- Saratoga Horticultural Research Endowment, *Collection Security for Rare Cultivars and Succulent Plant Introductions*. January – December 2009.
- Institute for Museums and Library Services, Museums for America Collections Stewardship Award. *Enhanced Stewardship: Collections Data, Seed Storage, and Herbarium*. Beginning October 1, 2008.
- The Christensen Fund. *Culture in the Collections*. 18 month project, Awarded 2007.
- The David and Lucile Packard Foundation, Organizational Effectiveness grant. Awarded 2005.
- Elvenia J. Slosson Endowment, The Creation of an Australian Rock Garden. One-year project. Awarded February 2006.
- Elvenia J. Slosson Endowment, The Cultivation of Species Growing in Natural Rock Gardens. One-year project. Awarded February 2005.
- Stanley Smith Horticultural Trust. Interpretation Along the Taxonomy Trail. Awarded 2005.
- Institute for Museums and Library Services, Office of Museum Services. Conservation Project Support and Educational Component. Awarded July 2005, completed July 2007.
- US Fish and Wildlife Service/National Park Service, *Dudleya* Conservation. One year project, awarded Oct. 2004.
- The David and Lucile Packard Foundation, Plant Conservation Program of the Arboretum at the University of California, Santa Cruz. Three-year, awarded October 2001.
- The Henry Luce Foundation, Inc., Natural Resources Management, An Integrated Botanical Training and Conservation Program in Viet Nam. Four-year program, awarded, January 2001.
- National Geographic Society – Grant No. 6733-00 – “Botanical Inventory of Unexplored Areas in Viet Nam : The North” Two Year Project beginning spring 2000.
- National Science Foundation, Directorate for Biological Sciences, Division of Environmental Sciences, Biotic Surveys and Inventories, "A Multi-taxa Inventory of Threatened Conservation Areas in Viet Nam. Three year project beginning Fall, 1998.
- Anonymous support for building reference collections in association with the Missouri Botanical Garden’s Viet Nam Botanical Conservation Program. Spring, 2000.

Global Environmental Facility (GEF), United Nations Environment Program (UNEP), United Nations Development Programme (UNDP), and World Bank, Congo, Brazzaville. Four year project beginning Spring 1996.

Dana Brown Charitable Trust, "An Integrated Program for Zambia: Botanical Diversity, Professional Training and Conservation." Three-year project beginning Spring 1996.

United States Agency for International Development (USAID), Program in Science and Technology Cooperation (PSTC), Project 11.077; The Plant Genetic Resources of the Zambebian Domain of Zambia within Remote Sensing for Natural Resources Analysis. A three-year project beginning fall 1993.

National Geographic Society - Grant No. 4666-91. "Ethnobotanical Survey of the Zambebian Woodland of Northern Zambia." Four-month project beginning spring 1994.

National Geographic Society - Grant No. 4145-92. "Southern Migration Route" Three-month project in Western Tanzania, beginning Fall 1992.

Odell Wilson Fellowship for Outstanding Academic Achievement from the University of California, Berkeley. Granted for the Fall of 1989 and Spring of 1990.

Outstanding Graduate Student Instructor. Granted from the University of California, Berkeley, for Fall 1987 (Plants and Civilization with Herbert Baker) and Fall 1988 (Plant Physiology with Lewis Feldman).

International Board for Plant Genetic Resources Contract Grant to collect the wild species in the genus *Psophocarpus* from Zaire (Democratic Republic of Congo) and Kenya. Six months, Spring and Summer 1987.

Sigma Xi, Grant-in-Aid of Research, 1987, 1988, 1989.

## Publications

- Harder, D. K. 1987. Report on the collection of *Psophocarpus* species in Zaire (reference No. 86/74). International Board for Plant Genetic Resources. Rome, Italy.
- Harder, D. K., P. M. L. Onyembe & T. Musasa. 1990. The uses, nutritional composition and ecogeography of four species of *Psophocarpus* (*Leguminosae*, *Phaseoleae*) in Zaire. *Economic Botany* 44: 391-409.
- Harder, D. K. 1991. Indigenous uses of *Psophocarpus* (*Leguminosae*, *Phaseoleae*) in Zaire. Proceedings of the XIII A.E.T.F.A.T. Congress held in Zomba, Malawi, 2-11 April.
- Harder, D. K. & J. Smartt. 1992. Further evidence on the origin of the cultivated winged bean: chromosome numbers and the presence of a fungal disease. *Economic Botany* 46(2): 187-191.
- Harder, D. K. 1992. Temporal mineral allocation in tubers of the cultivated winged bean, *Psophocarpus tetragonolobus* (L.) DC.: implication to selective breeding. First International Symposium on Tuber Legumes, Guadeloupe, F.W.I., 1-24 April.
- Harder, D. K. 1992. Chromosome counts in *Psophocarpus* (*Fabaceae*) June 1992. *Kew Bull.* 47(2): 529-534.
- Harder, D. K. 1994. Aluminum content of the edible portions of the winged bean: field study and caveat. *Plant Foods for Human Nutrition* 45: 127-137.
- Harder, D. K. & J. Smartt. 1995. Winged bean, *Psophocarpus tetragonolobus*, (*Fabaceae*, *Phaseoleae*). In: N. W. Simmonds & J. Smartt (eds.), *Evolution of Crop Plants*. 2nd Edition.
- Harder, D. K. 1996. Evolution and speciation within *Psophocarpus* and the origin of the cultivated winged bean (*Psophocarpus tetragonolobus* (L.) DC.). *Evolution of the Leguminosae. Advances in Legume in Legume Systematics; part 8, Legumes of Economic Importance*. B. Pickersgill & M. Locke (eds.), Proceedings of the Third International Legume Conference, Royal Botanic Gardens, Kew, U.K.
- Harder, D. K. *Mucuna* (*Fabaceae*). In: W. D. Stevens (ed.), *Flora de Nicaragua*. Monogr. Syst. Bot. Missouri Bot. Gard. (accepted).
- Harder, D. K. *Stizolobium* (*Fabaceae*). In: W. D. Stevens (ed.), *Flora de Nicaragua*. Monogr. Syst. Bot. Missouri Bot. Gard. (accepted).

- Miller, J. S. and D. K. Harder. 1994. Models for Ethical Collaboration in Biodiversity Prospecting. In: R. P. Adams, J. S. Miller, E. M. Golenberg and J. E. Adams, Conservation of Plant Genes II: Utilization of Ancient and Modern DNA. Monogr. Syst. Bot. Missouri Bot. Gard. 48:238-243.
- Miller, J. S. and D. K. Harder (eds.), Round Table Discussion of Intellectual Property Rights. Proceedings of XIV A.E.T.F.A.T. Congress Held in Wageningen, The Netherlands. 22-27 Aug. 1994.
- Thin, N. N. and D. K. Harder 1996. Diversity of Flora of Fansipan-The Highest Mountain in Vietnam. Ann. Missouri Bot. Gard. 83: 404 - 408.
- Harder, D. K. 1995. Ethnobotany, botanical inventory and conservation: an integrated approach in Zambia. Abstracts of the 46th Annual Meeting of the American Institute of Biological Sciences, August.
- Harder, D. K. 1997. Forest Threats Initiative; Protected Area Status. Report to USAID/Zambia.
- Harder, D. K. 1999. Abstract for the Botanical Society of America, Economic Botany Section. International Botanical Congress.
- Harder, D.K. 1999. Botanical Diversity, Professional Training and Conservation: An Integrated Approach in Zambia. In: Timberlake, J. & Kativu, S. African Plant Diversity, Taxonomy and Uses, pp. 283-287. Royal Botanic Gardens, Kew.
- Harder, D.K. Abreae. In: G.V. Pope (ed.), *Flora Zambesiaca*. Royal Botanic Gardens, Kew. (accepted).
- Harder, D.K. 2000. Typification and New Combinations in *Abrus* Adans. (Fabaceae, Faboideae, Abreae). Novon 10(2).
- Nguyen Khanh Van, T.H. Nguyen, K.L. Phan, T.H. Nguyen. 2000. Cac Bieu Do Sinh Khi Hau, Viet Nam (Bioclimatic Diagrams of Viet Nam) (English version of manuscript by DKH). Nha Xuat Ban Dai Hoc Quoc Gia Ha Noi (Viet Nam National University Publishing House, Hanoi), 126 pp.
- Harder, D.K. 2001. Director's Note. Bulletin of the UCSC Arboretum Associates 25(4):3,5.
- Phan Ke Loc, D.K. Harder, Tran Dinh Dai, Duong Thi Hoan, Nguyen Tien Hiep 2001. Tinh da dang cua he thuc vat Viet Nam 8. *Koelreuteria bipinnata* Franch. Tam phong go kep long chim hai lan (Ho Bo Hon Sapindaceae) Loai moi cho he thuc vat Viet Nam. Di Truyen hoc & ung dung (Genetics and Applications) 4:27-31.
- Hiep, Nguyen Tien, D.K. Harder, L.V. Averyanov, A. Farjon, K.D. Hill, D.D. Soejarto, Phan Ke Loc. 2001. Highlights on results of collaborative research on selected plant taxa and of the flora of Cuc Phuong national park, Viet Nam, 1991-2000. Proceedings of International Symposium on Plant Biodiversity and Development of Bioactive Natural Products, National Museum of Natural Science, Taichung. November 18-20. pp. 67-74.
- Farjon, A., Nguyen Tien Hiep, D.K. Harder, Phan Ke Loc, L. Averyanov. 2002. A new genus and species in Cupressaceae (Coniferales) from northern Vietnam, *Xanthocyparis vietnamensis*. Novon 12(2):179-189.
- Harder, D.K. 2002. The Golden Vietnamese Cypress. Bulletin of the UCSC Arboretum Associates 26(1):1,7.
- Harder, D.K. 2002. The Golden Vietnamese Cypress, *Xanthocyparis vietnamensis*; a new genus and species for science. American Conifer Society Bulletin 19(2):54-57.
- Averyanov, L., Nguyen Tien Hiep, Phan Ke Loc, D.K. Harder 2002. The history of discovery and natural habitats of *Xanthocyparis vietnamensis* (Cupressaceae). Turczaninowia 5(4):31-39.
- Averyanov, L., Nguyen, T.N., Phan, K.L. and Harder, D.K. Natural habitat and associated species of *Xanthocyparis vietnamensis* A. Farjon, Nguyen Tien Hiep (Cupressaceae) in the limestone mountains of Ha Giang Province of northern Vietnam. (Submitted)
- Averyanov, L., Phan Ke Loc, Nguyen Tien Hiep, D.K. Harder 2003. Phytogeographic Review of Viet Nam and Adjacent Areas of Eastern Indochina. Komarovia 3:1-83.
- Regalado Jr., J., D.K. Harder, Nguyen Tien Hiep, Nguyen T. Thanh Hu'ong, L. Averyanov, Phan Ke Loc 2003. Cac Taxon Thuc Vat Bac Cao Co Mach Moi Cho Khoa Hoc Va/Hoac Bo Sung Cho He Thuc Vat Viet Nam (1993-2002) (New Discoveries for the Flora of Viet Nam, 1993-2003). Nhung Van De Nghien Cuu Co Ban Trong Khoa Hoc Su Song (Problems of Basic Research in

- Life Sciences, Proceedings of the Second National Conference in Life Sciences, Hue, July 25-26, 2003). Pp. 145-149.
- Harder, D.K. editor, *The Bulletin, A quarterly publication of the Arboretum Associates* published quarterly since 2003.
- Regalado Jr., J., Nguyen Tien Hiep, Phan Ke Loc, L. Averyanov, D.K. Harder 2005. New Insights into the Diversity of the Flora of Viet Nam. *Biol. Skr.* **55**: 189-197.
- Harder, D.K. and Jeff Rosendale 2008. Integrated Pest Management Practices for the Light Brown Apple Moth in New Zealand: Implications for California. Submitted on March 6, 2008 through Representative J. Laird's website
- Harder, D.K., K. Kimes, J. Rosendale 2008. Light Brown Apple Moth: Implications for California Agriculture. Released through Representative J. Laird's website on March 25, 2008.
- Harder, D.K., K. Kimes, R. Upton, and L. Casper 2008. Light Brown Apple Moth (LBAM) Eradication Program: Formal Petition to Reclassify LBAM as a Non-Actionable Pest. Submitted September 12, 2008 to the California Department of Food and Agriculture and the United States Department of Agriculture.
- Harder, D.K. (contributing editor) 2011. American Herbal Pharmacopoeia: Botanical Pharmacognosy – Microscopic Characterization of Botanical Medicines. Edited by Roy Upton. CRC Press, Boca Raton, FL.
- Harder, D.K. 2013 Botanical Identification, In: *Cannabis Monograph and Therapeutic Compendium; Cannabis sativa L., C. indica Lam.; Standards of Analysis, Quality Control, and Therapeutics*. Roy Upton, Aviva Romm, and Lyle Craker (eds.). American Herbal Pharmacopoeia. Scotts Valley, CA
- Harder, D.K. 2013 Macroscopic Identification, In: *Cannabis Monograph and Therapeutic Compendium; Cannabis sativa L., C. indica Lam.; Standards of Analysis, Quality Control, and Therapeutics*. Roy Upton, Aviva Romm, and Lyle Craker (eds.). American Herbal Pharmacopoeia. Scotts Valley, CA.
- Harder, D.K. 2013 Commercial Sources and Handling, In: *Cannabis Monograph and Therapeutic Compendium; Cannabis sativa L., C. indica Lam.; Standards of Analysis, Quality Control, and Therapeutics*. Roy Upton, Aviva Romm, and Lyle Craker (eds.). American Herbal Pharmacopoeia. Scotts Valley, CA.
- Harder, D. K. et al. The description of two new species of *Arisaema* and one new species of Zingiberaceae from Northern Viet Nam. (In preparation).
- Harder, D. K. et al. The description and taxonomic clarification of new taxa of *Viola* from the Santa Cruz Mountains. (In preparation).

## Reviews

Redacted pursuant to N.Y. Public Officers Law, Art. 6

## Interests / Hobbies

Redacted pursuant to N.Y. Public Officers Law, Art. 6

# Production

## CURRICULUM VITAE

David W. Pate PhD, MSc

### Education and Training:

- 1999 Doctor of Philosophy degree in Pharmaceutical Chemistry, University of Kuopio, Finland. Nominated by the Faculty of Pharmacy as author of the "Best Dissertation on Campus" for 1999. Dissertation defense opposition provided by Raphael Mechoulam.
- 1981-83 Participated in Pharmacognosy (Natural Products Chemistry) Program, University of Mississippi, University, MS. Awarded a University Non-Service Fellowship (1981-82) and a Teaching Assistantship (1982-83).
- 1979-81 Assisted curation of the H.H. Rusby collection of economic plants and completed courses under Richard Evans Schultes at the Harvard Botanical Museum, Cambridge, MA.
- 1979 Master of Science degree in Biology, University of Missouri-St. Louis, St. Louis, MO. Awarded a Teaching Assistantship (1976-78).
- 1974 Bachelor of Arts degree in Science, Biology major/Chemistry minor, Webster College, St. Louis, MO.
- 1972-73 Attended Harris-Stowe State College, St. Louis, MO.
- 1972 Associate of Arts degree in Liberal Arts, St. Louis Community College-Forest Park, St. Louis, MO.

**Professional Appointments:**

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1986-92 Staff Research Associate II, University of California-San Francisco

1985-86 Research Associate, University of Missouri-St. Louis  
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**Research Grants:** US NIH grant co-author, 1985 (\$207,000)

**Memberships in Scientific Societies, Past and Present:**

Canadian Consortium for the Investigation of Cannabinoids

International Association for Cannabis as Medicine

International Cannabinoid Research Society

International Hemp Association

**Research Interests:**

Pharmaceutical Chemistry

- Ophthalmic endocannabinoids
- Glaucoma pathophysiology
- Cyclodextrin technology
- Prodrug strategies

Biological Sciences

- Nutritional value of hemp seed
- Medicinal use of marijuana
- Chemical ecology of *Cannabis*

**Other Academic and Professional Activities, Past and Present:**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Author of US FDA Drug Master File (IND 43,542) for medical *Cannabis*

Principal author of first license application granted by the Dutch government for commercial development of medical *Cannabis*

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Invited speaker, and provided adjunct scientific counsel, to the US Institute of Medicine/National Academy of Sciences medical marijuana study - Marijuana and Medicine: Assessing the Science Base, J.E. Joy, S.J. Watson Jr. and J.A. Bensen Jr., Eds., National Academy Press, Washington D.C., 1999

Coined the term “phytocannabinoid” now used commonly in scientific parlance.  
J.M. McPartland, G. Guy. The evolution of *Cannabis* and coevolution with the cannabinoid receptor – a hypothesis. *In: The Medicinal Use of Cannabis*, G. Guy, R. Robson, K. Strong, B. Whittle, Eds. pp. 71-102. Royal Society of Pharmacists, London, 2004.

Member of international scientific committee submitting a report to Alan Rock, Canadian Federal Minister of Health, in support of his decision to legalize hemp foods, 2001 (“THC in Hemp Foods and Cosmetics: The Appropriate Risk Assessment”) [http://www.hempreport.com/response/response\\_january\\_2001.doc](http://www.hempreport.com/response/response_january_2001.doc)

Contributor to Medical Botany, 2<sup>nd</sup> Edition, W.H. Lewis and M.P.F. Elvin-Lewis, Wiley-Interscience, New York, 2003

Co-editor of policy discussion paper by the Health Officers Council of British Columbia, 2005 (“A Public Health Approach to Drug Control in Canada”) <http://www.cfdp.ca/bchoc.pdf>

# **Quality Assurance/Quality Control**

# Blake Ebersole

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CV



“Humans have used natural products as medicine for at least 10,000 years. Today, a new wave of interest in natural products is here, representing an enormous opportunity to improve people’s lives.

On this foundation, my life’s goal is to apply the highest level of scientific rigor, transparency and care to fulfill the true potential of natural products.

To this aim, I have committed to a life of learning and expertise in research, development, manufacturing, regulation, quality assurance and marketing of natural products.”

## Professional Experience:

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# Blake Ebersole

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CV

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## Leadership

- Planned and implemented numerous corporate-level strategic and tactical plans, processes and policies which improved performance in research, quality, supply chain, sales/marketing, finance and legal departments
- Managed projects and budgets for research, marketing, legal and quality departments
- Department supervisor with 5+ direct reports, experienced in HR practices and requirements
- Led training sessions for corporate, sales/marketing and quality departments
- Serve as principal liaison to trade associations and standards-setting agencies such as USP
- Computer-savvy (PC, Mac, MS Office/Excel, Adobe, CRM, ERP)

## Diplomas:

2010 Masters, Business Administration

*Butler University*  
Indianapolis, IN, USA

2000 Bachelor of Science, Forensic Chemistry (ACS)

*West Chester University*  
West Chester, PA, USA

## Positions held:

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2014-present

*NIH/NCCAM Grant Advisor, "Botanicals and Drug Interactions", University of Rhode Island*  
Redacted pursuant to N.Y. Public Officers Law, Art. 6

# Blake Ebersole

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CV

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2001-2002

*Chemistry Teacher*, Honolulu School District, Honolulu, HI, USA

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## Training, Honors and Awards:

- **Best Presentation**, Purdue Research Park, Butler University, 2010
- **Adhering to Good Manufacturing Practices**, American Herbal Products Association, 2010
- **Gateway Competition Prize**, Butler University, 2008
- **Dietary Supplement Health Claim Substantiation under DSHEA**, American Herbal Products Association, 2006
- **Outstanding Chemistry Seminar**, West Chester University, 2000:  
*Pharmacology and binding of ligands at the serotonin receptor*
- **Honors Merit Scholarship**, West Chester University, 1996-1997

## Professional Organizations and Contributions:

- **American Herbal Products Association**, Committee Member: Labs, Methods and Standards Committee, International Committee, Ayurveda Committee
- **American Botanical Council**, Member
- **American Botanical Council/American Herbal Pharmacopoeia/National Center for Natural Products Research**, Peer reviewer, Lab Guidance on Black Cohosh, Lab Guidance on Skullcap
- **Association of Official Analytical Chemists (AOAC)**, Member and Peer Reviewer for *Journal of AOAC*
- **Journal of Medicinal Food**, Peer-reviewer
- **American Chemical Society**, Member (Agricultural and Food Chemistry Division)
- **U.S. Pharmacopoeia (USP)**, Monograph development liaison
- **NIH**, Research liaison
- **USDA**, Research liaison
- **National Center for Natural Products Research (NCNPR), University of Mississippi**, Research liaison

## Scientific Publications (Author/Advisor):

1. Lymphatic transport and human pharmacokinetics of a solid-lipid curcumin particle product, Eidenberger T, **Ebersole B**. Manuscript
2. Curcumin ameliorates neuroinflammation, tau hyperphosphorylation, amyloid accumulation and memory deficits in p25 transgenic mice. Sundaram JR, Poore CP, Sulaimi NH, Pareek T, Pant HC, **Ebersole B**, Frautschy SA, Low CM Kesavapany S. *Current Alzheimer's Research*, Submitted.

3. Investigation of the effects of solid lipid curcumin on cognition and mood in a healthy older population. Cox KH, Pipingas A, Scholey AB. *Journal of Psychopharmacology*. 2014 Oct 2 pii:0269881114552744
4. Anti-inflammatory effects of novel standardized solid lipid curcumin formulations. Nahar PP, Slit AL, Seeram NP. *Journal of Medicinal Food*. Accepted for publication, 2014 DOI:10.1089/jmf.2014.0053
5. Pomegranate phenolics inhibit formation of advanced glycation endproducts by scavenging reactive carbonyl species. Liu W1, Ma H, Frost L, Yuan T, Dain JA, Seeram NP. *Food and Function*. 2014 Oct 22;5(11):2996-3004.
6. Indazole-Type Alkaloids from *Nigella sativa* Seeds Exhibit Antihyperglycemic Effects via AMPK Activation in Vitro. Yuan T, Nahar P, Sharma M, Liu K, Slitt A, Aisa HA, Seeram NP. *Journal of Natural Products*. 2014 Oct 24;77(10):2316-20.
7. Skullcap (*Scutellaria baicalensis*) Laboratory Guidance. ABC-AHP-NCNPR Botanical Adulterants Program. Manuscript in publication, 2014.
8. Pomegranate Extract Modulates Processing of Amyloid- $\beta$  Precursor Protein in an Aged Alzheimer's Disease Animal Model. Ahmed AA, Subaiea MG, Eid A, Li L, Seeram PN1, Zawia HN. *Current Alzheimer's Research*. 2014 Oct 1.
9. Retinal amyloid fluorescence imaging predicts cerebral amyloid burden and Alzheimer's disease. Frost S, Kanagasingam Y, Macaulay L, Koronyo-Hamaoui M, Koronyo Y, Biggs D, Verdooner S, Black KL, et al. *Alzheimer's and Dementia* 2014; 10(4) S234-235
10. Pomegranate extracts impact the androgen biosynthesis pathways in prostate cancer models in vitro and in vivo . Ming DS, Pham S, Deb S, Chin MY, Kharmate G, Adomat H, Beheshti EH, Locke J, Guns ET. *Journal of Steroid Biochemistry and Molecular Biology*. 2014 Sep;143:19-28.
11. Bitter melon extract attenuating hepatic steatosis may be mediated by FGF21 and AMPK/Sirt1 signaling in mice. Yu Y, Zhang XH, **Ebersole B**, Ribnicky D, Wang ZQ. *Scientific Reports (Nature)*. 2013 Nov 5;3:3142. doi: 10.1038/srep03142.
12. Inhibitory effect of a standardized pomegranate fruit extract on Wnt signalling in 1, 2-dimethylhydrazine induced rat colon carcinogenesis. Sadik NA, Shaker OG. *Digestive Diseases and Sciences*. 2013 Sep;58(9):2507-17.
13. Curcumin suppresses soluble tau dimers and corrects molecular chaperone, synaptic, and behavioral deficits in aged human tau transgenic mice. Ma QL, Zuo X, Yang F, Ubeda OJ, et al. *Journal of Biological Chemistry*. 2013 Feb 8;288(6):4056-65.
14. Optimization of an analytical method for the determination of punicalagins in pomegranate extracts by HPLC. Brown PN, **Ebersole B**, Seeram NP 2013. Manuscript.
15. Curcumin and Yoga Therapy for Those at Risk for Alzheimer's Disease. Frautschy S. et al. Ongoing, clinicaltrials.gov # NCT01811381
16. Effects of *Withania somnifera* in patients of schizophrenia: A randomized, double blind, placebo controlled pilot trial study. Agnihotri AP, Sontakke SD, Thawani VR, Saoji A, and Goswami VS. *Indian Journal of Pharmacology*. 2013 Jul-Aug; 45(4): 417–418.
17. *Withania somnifera* root extract inhibits mammary cancer metastasis and epithelial to mesenchymal transition. Yang Z1, Garcia A, Xu S, Powell DR, Vertino PM, Singh S, Marcus AI. *PLoS One*. 2013 Sep 12;8(9) doi: 10.1371/journal.pone.0075069
18. New phenolics from the flowers of *Punica granatum* and their in vitro  $\alpha$ -glucosidase inhibitory activities. Yuan T, Wan C, Ma H, Seeram NP. *Planta Medica*. 2013 Nov;79(17):1674-9.
19. Optimization and validation of ursolic acid by HPLC in *Ocimum sanctum*. Shah J, Patel S, **Ebersole B**, Hingorani L. *Planta Medica* 2012 DOI: 10.1055/s-0032-1321177
20. Acute human pharmacokinetics of a lipid-dissolved turmeric extract, Shah J, Patel S, **Ebersole B**, Hingorani L. *Planta Medica* 2012 DOI: 10.1055/s-0032-1320664
21. Sustained cognitive effects and safety of HPLC-standardized *Bacopa monnieri* extract: A randomized, placebo controlled clinical trial. Hingorani, Patel 1, Ebersole B. *Planta Medica* 2012; DOI: 10.1055/s-0032-1320681

22. Safety assessment of a solid lipid curcumin particle preparation (LONGVIDA®): acute and subchronic toxicity studies. Dadhaniya P, Patel C, Muchhara V, Bhadja N, Mathuria N, Vachhani K, Soni MG. *Food and Chemical Toxicology*. 2011 Aug;49(8):1834-42.
23. Safety and pharmacokinetics of a solid lipid curcumin particle formulation (LONGVIDA®) in osteosarcoma patients and healthy volunteers. Gota VS, Maru GB, Soni TG, Gandhi TR, Kochar N, Agarwal MG. *Journal of Agricultural and Food Chemistry*. 2010 Feb 24;58(4):2095-9
24. Effects of fruit ellagitannin extracts, ellagic acid, and their colonic metabolite, urolithin A, on Wnt signaling. Sharma M, Li L, Celver J, Killian C, Kovoov A, Seeram NP. *Journal of Agricultural and Food Chemistry*. 2010 Apr 14;58(7):3965-9
25. *Eugenia jambolana* Lam. berry extract inhibits growth and induces apoptosis of human breast cancer but not non-tumorigenic breast cells. Li L, Adams LS, Chen S, Killian C, Ahmed A, Seeram NP. *Journal of Agricultural and Food Chemistry*. 2009 Feb 11;57(3):826-31
26. Pomegranate extract mouth rinsing effects on saliva measures relevant to gingivitis risk. DiSilvestro RA, DiSilvestro DJ, DiSilvestro DJ. *Phytotherapy Research*. 2009 Aug;23(8):1123-7
27. Protective effects of standardized pomegranate (*Punica granatum* L.) polyphenolic extract in ultraviolet-irradiated human skin fibroblasts. Pacheco-Palencia LA, Noratto G, Hingorani L, Talcott ST, Mertens-Talcott SU. *Journal of Agricultural and Food Chemistry*. 2008 Sep 24;56(18):8434-41.
28. Safety assessment of pomegranate fruit extract: acute and subchronic toxicity studies. Patel C, Dadhaniya P, Hingorani L, Soni MG. *Food and Chemical Toxicology*. 2008 Aug;46(8):2728-35.
29. Curcumin structure-function, bioavailability, and efficacy in models of neuroinflammation and Alzheimer's disease. Begum A et al . *Journal of Pharmacology and Experimental Therapeutics*. 2008 Jul;326(1):196-208.
30. In vitro determination of absorption of pomegranate extract into CACO-2 cells. Mertens-Talcott SU, **Ebersole B**. Unpublished.
31. Absorption, metabolism, and antioxidant effects of pomegranate (*Punica granatum* L.) polyphenols after ingestion of a standardized extract in healthy human volunteers. Mertens-Talcott SU, Jilma-Stohlawetz P, Rios J, Hingorani L, Derendorf H. *Journal of Agricultural and Food Chemistry*. 2006 Nov 15;54(23):8956-61

### **Inventorship, Licensing and Execution of Patent Applications:**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Redacted pursuant to N.Y. Public Officers Law, Art. 6

## Scientific Conference Presentations (Author/Advisor):

1. Acute human pharmacokinetics of a lipid-dissolved turmeric extract. Shah J, Patel S, **Ebersole B**, Hingorani L. *2012 International Congress on Natural Products Research*, New York, NY. July 31, 2012. *Planta Med* 2012; 78 - PH5 DOI: 10.1055/s-0032-1320664
2. High-throughput screening program for commercial single-herb extracts. Hingorani L, Seeram NP, **Ebersole B**. *2012 International Congress on Natural Products Research*, New York, NY. July 31, 2012. *Planta Med* 2012; 78 - PF85 DOI: 10.1055/s-0032-1320632
3. Optimization and validation of ursolic acid by HPLC in *Ocimum sanctum*. Hingorani L, **Ebersole B**, Patel S. *2012 International Congress on Natural Products Research*, New York, NY. July 31, 2012.
4. Orthogonal validation of analytical and quality systems for botanical products. Hingorani L, Patel S, Darji B, **Ebersole B**. *2012 International Congress on Natural Products Research*, New York, NY. July 31, 2012. *Planta Med* 2012; 78 - PJ156 DOI: 10.1055/s-0032-1321316
5. Sustained cognitive effects and safety of HPLC-standardized *Bacopa monnieri* extract: a randomized, placebo-controlled trial. Hingorani L, Patel S, **Ebersole B**. *2012 International Congress on Natural Products Research*, New York, NY. July 31, 2012.
6. Anti-inflammatory effects of a standardized SLCP preparation (Longvida®) against generic curcumin extract in LPS-stimulated RAW 264.7 macrophages. *244<sup>th</sup> ACS National Meeting and Exposition*, Philadelphia, PA, August 2012
7. Bitter melon extract enhances insulin sensitivity by modulating FGF21 signaling in high-fat diet fed mice. Wang ZQ, Yu Y, Zhang XH, Li H, Qin J, **Ebersole B**, Cefalu WT. *7<sup>th</sup> International Conference for Functional Foods in the Prevention and Management of Metabolic Syndrome*, Southern Methodist University, Dallas, TX, USA, December 3-4, 2010.
8. Optimization of an analytical method for the determination of punicalagins in pomegranate extracts by HPLC. Zhu J, Chan M, Brown PN, Guns ET. *Annual Natural Health Products Research Conference*, Vancouver, Canada, 2009
9. Efficacy of curcumin formulations in relation to systemic availability in the brain and different blood compartments in neuroinflammatory and AD models. Frautschy SA et al, *39th Annual Meeting of the Society of Neuroscience*, Chicago, October 2009.
10. Can daily pomegranate extract impact the growth of prostate cancer in a cohort of men awaiting radical prostatectomy? A randomized placebo-controlled clinical trial underway. Guns ET, Brown PN, Balneaves L, Van Patten C, Goldenberg L, So A. *Annual Natural Health Products Research Conference*, Vancouver, Canada, 2009
11. Improving bioavailability of curcumin by solid lipid particle for treatment of Alzheimer's (AD). Frautschy, SF. *38th Annual Meeting of the Society of Neuroscience*, Washington DC, November 15, 2008.
12. Evaluation of pomegranate fruit extracts in prostate cancer cell lines and with specific cytochrome P450 enzymes. Brown PN, Guns E, Wood CA, Chan M, Lo A, Garg P, Khelifi D. *Annual Natural Health Products Research Conference*, Saskatoon, Canada, 2007.
13. Pharmacology of *Bacopa monnieri* at 5HT1a receptors, Hall B, Burnett A, Halley C, Christians A, Parker LA, Medora R, and Parker KK. *Annual Meeting of the American Society of Pharmacognosy*, Corvallis, OR, 2005.

## Invited Presentations (Speaker):

1. "Natural Products Research for Neurodegenerative Diseases", NIH/NINDS, Bethesda, MD, March 3, 2015
2. "Optimized Curcumin and the Aging Brain", Amway/Nutriline Lunch & Learn, October 29, 2014
3. "Curcumin Advancements: The Aging Brain with Longvida® Curcumin", Douglas Labs, April 23, 2014. Source: <https://www.youtube.com/watch?v=UdpU9BSi2Zc>
4. "Longvida: The Brain Curcumin". *Vitafoods International Conference*, Geneva, Switzerland, May 24, 2012
5. "100% Ingredient Identity". *SupplySide Marketplace Good Manufacturing Practices Workshop*, NY, NY, May 8, 2012
6. "Nutraceuticals: An Overview". Department of Nutrition and Food Science, Texas A&M University, April 6, 2012.
7. "Fortification of Polyphenols into Functional Foods". *Prepared Foods R&D Applications Seminar*, Chicago, IL, USA, August 3, 2011.
8. "Science-based Curcumin", 16<sup>th</sup> *International Food Ingredients and Additives (IFIA) Conference*, Tokyo Japan, May 19, 2011
9. "Bioavailability of Botanical Supplements: Challenges and Opportunities". Department of Nutrition and Food Science, Texas A&M University, March 31, 2011.
10. "Foods Designed for Health, Functional Foods, and Nutraceuticals". Department of Nutrition and Food Science, Texas A&M University, March 20, 2008.
11. "Overview of Research-Validated Pomegranate: Focus on Prostate Health". *US Too Prostate Cancer Group Patient Education Symposium*, Chicago, IL, USA, November 2, 2007.
12. "Science-based Nutrition: Finding the Right Pomegranate". *US Too Prostate Cancer Group Regional Meeting*, Chicago, IL, USA, July 24, 2007.

## Published Articles and Quotes in Non-Academic Press:

1. Article, "[Extracts: More than a Cup of Tea](#)", *Natural Products Insider*, February 2015
2. Article, "[Certifications are Fine, But...](#)", *Natural Products Insider*, January 2015
3. Article, "[Supplement Trends of 2014 and the Future](#)", *Natural Products Insider*, December 2014
4. Article, "[Traceability: What's the Point?](#)" *Natural Products Insider*, November 2014
5. Article, "[R&D: The Key Disciplines](#)", *Supplement Perspectives*, November 2014
6. Article, "[Dose Delivery: Oil into Water](#)", *Natural Products Insider*, August 2014
7. Article, "[Advances in Brain Health Research](#)", *Natural Products Insider*, July 2014
8. Article, "[Next-Gen Blood Sugar Management](#)", *Natural Products Insider*, June 2014
9. Article, "[Emerging Carotenoid Research](#)", *Natural Products Insider*, April 2014
10. Special Issue, "[Beyond Lutein](#)", *Natural Products Insider*, April 2014
11. Article, "[Sci-Fi, QC and Botanicals](#)", *Natural Products Insider*, March 2014
12. Article, "[Dose Delivery, Old & New](#)", *Natural Products Insider*, March 2014
13. Article, "[Beyond the Test Tube: Superfruit Science](#)", *Natural Products Insider*, Feb 2014
14. Article, "[Joint Health: Alternative Now Mainstream](#)", *Natural Products Insider*, Feb 2014
15. Article, "[Advancement Depends on Going Back to Basics](#)", *Natural Products Insider*, Dec 2013
16. Article, "[Consume Your Political News Frequently--and Calmly](#)", *Natural Products Insider*, November 2013
17. Article, "[The Eyes Are the Window to Our Health](#)", *Natural Products Insider*, October 2013
18. Article, "[Weighting to Lose](#)", *SupplySide Community*, October 2012,
19. Article, "[Eyes Wide Open: Eye Health Supplements](#)", *Natural Products Insider*, August 2013
20. Article, "[The Gut-Brain Axis](#)", *Natural Products Insider*, August 2013
21. Article, "[Five Great Apps for Supplement Science](#)", *Natural Products Insider*, July 2013
22. Article, "[Scientific Validity Keys for Supplement GMPs](#)", *Natural Products Insider*, June 2013
23. Article, "[Sports Supplements: OK for Kids?](#)", *Natural Products Insider*, May 2013
24. Article, "[Your Trade Show Physical and Mental Health Checklist](#)", *Natural Products Insider*, April 2013
25. Article, "[Tips for Hiring the Right Contract Ingredient Manufacturer](#)", *Natural Products Insider*, March 2013

26. Article, "[Politics, Religion and Organic Farming](#)", *Natural Products Insider*, February 2013
27. Article, "[The Eyes Are the Window to.. Our Health](#)", *Natural Products Insider*, January 2013
28. Article, "[Silver Linings in Omega-3 Research](#)", *Natural Products Insider*, December 2012
29. Article, "[Why Antioxidants Are Useful](#)", *Natural Products Insider*, November 2012
30. Article, "[Weighting to Lose](#)", *Natural Products Insider*, October 2012
31. Article, "[The Bugs Are Taking Over](#)", *SupplySide Community*, September 2012,
32. Quoted in "Encouraging Natural Bone Health", *Natural Practitioner*, July/August 2012.
33. Quoted in "Boosting the Brain", *Nutrition Industry Executive*, July/August 2012
34. Article, "[The Research Says It All: Omegas Do a Body Good](#)", *SupplySide Community*, August 2012,
35. Article, "[Ensuring Purity for Prenatal Supplements](#)," *SupplySide Community*, July 2012,
36. Article, "[Are You in the 59 Percent?](#)", *SupplySide Community*, May 2012,
37. Article, "[The Omnivore's Inflammatory Dilemma](#)", *SupplySide Community*, April 2012,
38. Article, "[New Frontiers in Digestive Health](#)", *SupplySide Community*, March 2012,
39. Article, "[Ch-ch changes in Senior Supplements](#)", *SupplySide Community*, February 2012,
40. Quoted in "[Help for Healthy Joints](#)", *Nutrition Industry Executive*, October 2011.
41. Interviewed for three nutrition trade media articles in Tokyo, Japan, May 2011
42. Quoted in "[Superior or Superfluous](#)", *Natural Products Insider Magazine*, March 2011.
43. Quoted in "[Dietary Supplements and Bioavailability: Suppliers Improve Ingredient Bioavailability](#)", *Nutritional Outlook Magazine*, January 27, 2011
44. Quoted in "[The Promise of Pomegranate](#)", *Indianapolis Business Journal*, April 12, 2010
45. Quoted in "[Bioavailability of \*Boswellia serrata\*](#)", *Natural Products Insider*, June 2009
46. Quoted in "[Supplier claims pomegranate functional fortification breakthrough](#)", *Nutraingredients-USA.com*, May 6, 2009.
47. Quoted in "[Verdure Sciences Introduces Pomella® FG for functional foods](#)", *NPI Center*, April 27, 2009.
48. Quoted in "[New findings on bioavailability of 11-keto-B-boswellic acid from \*Boswellia serrata\*](#)," *NPI Center*, March 9, 2009.
49. Quoted in "[Clinical trial shows Pomella® pomegranate extract may benefit oral health](#)", *NPI Center*, February 5, 2009.
50. Quoted in "Striking a balance with immune health ingredients," *Nutrition Industry Executive Magazine*, December 2008.
51. Quoted in "[Verdure launches organic botanical extracts](#)", *Nutraingredients-USA.com*, December 4, 2008.
52. Quoted in "[Verdure Sciences expands sustainability program with certified organic offerings](#)," *NPI Center*, December 2, 2008.
53. Quoted in "[Safety of pomegranate revealed](#)", *NPI Center*, September 17, 2008.
54. Quoted in "[University study finds POMELLA® pomegranate extract may reverse skin aging](#)", *NPI Center*, September 9, 2008
55. Quoted in "[Verdure Sciences enhances serotonin profile of Bacognize®](#)", *Nutraingredients-USA.com*, October 19, 2007
56. Quoted in "[Clinically researched \*Bacopa\* extract redefined; Bacognize® now HPLC-standardized to serotonin-active compounds](#)," *NPI Center*, October 17, 2007.
57. Interviewed for Health Notes Radio Show, "Pomegranate Q+A", British Columbia, Canada, September 24, 2007.
58. Quoted in "[Pomella® extract gains Australian TGA approval](#)," *NPI Center*, August 13, 2007.
59. Quoted in "[Cosmeceuticals: At the Intersection of Nutrition and Beauty](#)", *Inside Cosmeceuticals Magazine*, June 4, 2007.
60. Quoted in "[Pomegranate juice a victim of its own success](#)", *Functional Ingredients Magazine*, May 1, 2007.
61. Quoted in "[Geni shifts strategy with Stauber](#)", *Nutraingredients-USA.com*, September 13, 2006.
62. Quoted in "[The Gold Standard: Superfruits](#)", *Functional Ingredients Magazine*, June 1, 2006.
63. Quoted in "[Geni Herbs takes Pomella into beverages](#)", *Nutraingredients-USA.com*, November 22, 2005.
64. Quoted in "Pomegranate: Red-Hot Fruit", *Natural Products Insider Magazine*, August 2005.
65. Quoted in "Fruits from the Tree of Life", *Prepared Foods Magazine*, August 2005.

## Christopher Stubbs

Chris double majored in Biology and Chemistry at the University of Colorado at Colorado Springs, focusing on molecular biology and analytical chemistry.

### About Christopher

Chris was immediately interested in the laboratory and performed four years of undergraduate research with the CU Biology Department and the CU Institute of Bioenergetics, studying the endocannabinoid signaling system in human and animal models of drug-sensitive and drug-resistant cancers, their metabolic differences, and the effects of cannabinoid treatment on various parameters, including programmed cell death, or apoptosis. After graduating, Chris took a position with the CU Health Sciences Center in Aurora, CO in the Department of Cells, Stem Cells & Development studying developmental cell signaling pathways. At the time this position ended, the cannabis industry was just starting to grow in Colorado.

### Redacted pursuant to N.Y. Public Officers Law, Art. 6

Chris took a scientific approach to modifying cannabis production practices from cultivation through to product development, allowing for increased production efficiencies and reproducibility—a problem that still plagues the industry.

Chris played an integral role in the rulemaking process that now regulates the Cannabis industry in Colorado, and [REDACTED] is well versed when it comes to sharing his knowledge with regulators, lawmakers, the public, and scientists alike.

### Redacted pursuant to N.Y. Public Officers Law, Art. 6

Chris has worked with countless patients and parents of pediatric patients to help them achieve the level of access and understanding they desire.

Currently, Chris is working in the U.S. and other jurisdictions to elucidate the current science behind the endocannabinoid system and the many phytocannabinoid based therapies the cannabis plant offers, as well as apply current analytical techniques and instrumentation to properly test and label cannabis products in the marketplace, thus contributing to and spreading the fact that cannabis and its formulations are valid, efficacious, and safe therapies for a number of human diseases.

# **Dispensary and Retail Operator**

**James Logan Rice III:** Jim has an extensive business and entrepreneurial background with over 18 years of experience;

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Jim earned a Bachelor of Arts degree with honors in finance from Michigan State University and a Master of Business Administration from the University of Michigan.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

# Bradley Alan Francis

CO  
NFI

· CONFIDENTIAL

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*A hard charging business and operations management professional with experience in the medical cannabis field working to establish industry best practices in the United States and throughout the World. Successfully launched a multi-location medical marijuana start-up, has written winning medical marijuana applications, and currently leading commercial industrial hemp production in Colorado.*

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## **PROFESSIONAL EXPERIENCE:**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

### **United States Army**

*Field Artillery Officer*

2001 – 2014

*Kabul, Afghanistan (2009-2010)*

- Officer in charge of an Embedded Training Team: provided operational oversight for two Afghan National Army (ANA) Infantry Battalions (50% of Army forces in Kabul) with a combined strength of 1,252 personnel
- Responsible for operational, strategic and tactical issues pertaining to the safety and security of Kabul Province
- Developed/implemented security plans for several national events including: **2010 Parliamentary Elections, 2010 National Peace Jirga, 2010 Kabul Conference and Afghan Independence Day**
- Coordinated Humanitarian Assistance Operations which provided food, tents, stoves, clothing and sundry items to more than 2,000 families that were affected by severe flooding along the Pakistan border
- Established a \$10M, 5-year construction contract for site development to meet training demands and future growth

# Bradley Alan Francis

CO  
NEI



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## ***EDUCATION:***

UNIVERSITY OF MASSACHUSETTS-LOWELL (Lowell, MA)  
**Bachelor's of Science in Corporate Finance. (2008)**

WORCESTER POLYTECHNIC INSTITUTE (Worcester, MA)  
**Reserve Officers Training Corps. (2008)**

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## ***PROFESSIONAL ASSOCIATIONS:***

- *Turnaround Management Association – New England Chapter*
- *United States Field Artillery Association*

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## ***COMPUTER SKILLS:***

- MS Office – Word, Excel, Powerpoint, Access, Visio
  - Microsoft Dynamics - Great Plains
  - QuickBooks
  - Vicinity Mfg. V.4
  - Counterpoint SQL
- 
-

# **Community Services**

## Hugh Hempel Narrative

### Business Experience

Hugh Hempel, a [REDACTED], is a former [REDACTED] technology industry veteran turned healthcare entrepreneur. During his 30-year career in high technology, Mr. Hempel has held numerous senior management positions in many innovative and pioneering technology companies [REDACTED]

Mr. Hempel currently runs a biotechnology startup and is working with the FDA to develop a new drug for [REDACTED]

[REDACTED] Mr. Hempel [REDACTED] discovered through their own medical research that a simple sugar compound called cyclodextrin could save [REDACTED] lives.

The Hempels' journey to develop cyclodextrin into a new pharmaceutical drug made international headlines and was featured on the front page of *The Wall Street Journal* in a 10-chapter online story entitled, "A Desperate Fight to Save Kids and Change Science," as well as in a documentary called "Here. Us. Now." As [REDACTED] "citizen scientists," the Hempels successfully filed drug applications with the U.S. Food and Drug Administration (FDA) and received unprecedented approval from the FDA to start cyclodextrin treatment [REDACTED]

As a result of developing this novel drug [REDACTED] Niemann Pick Type C patients worldwide, Mr. Hempel [REDACTED] have become nationally recognized healthcare advocates who are frequent speakers on a variety of topics including small clinical trial design, new drug discovery, and patient reported outcome systems.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

### Community and Non-Profit Involvement

Mr. Hempel is involved in numerous community and non-profit healthcare organizations. [REDACTED]

[REDACTED] Mr. Hempel sits on Board of Directors for The Global Genes Project, a leading rare and genetic disease non-profit advocacy organization based in [REDACTED]

### **Working with Government Agencies**

Mr. Hempel has extensive experience working with our nation's leading federal health agencies, making him uniquely qualified to operate a statewide medical marijuana business. He has spent six years working closely with the Food and Drug Administration (FDA), a U.S. Department of Health and Human Services (HHS) agency. Specifically, he works with FDA's Center for Drug Evaluation and Research (CDER), the largest of FDA's five centers, to ensure that the drug he developed is safe and effective to provide [REDACTED] NPC patients worldwide. He has worked extensively with CDER physicians, chemists, pharmacologists, and other scientists, and understands the strict regulations involved in manufacturing pharmaceutical-grade medications under carefully monitored conditions to create the best dose and route of delivery for patients with debilitating medical conditions.

He has also worked with the National Institutes of Health (NIH), the primary agency of the United States government responsible for investing nearly \$30 billion annually in biomedical and health-related research. His experience in working with leading federal health agencies and conducting clinical trials is a major asset to The Clinic Nevada.

### **Medical Marijuana Knowledge**

Mr. Hempel is a licensed and registered medical marijuana caregiver in Nevada (#C140400756).

[REDACTED]  
[REDACTED]. As a licensed caregiver, Mr. Hempel is extremely knowledgeable about the benefits of medical marijuana and has been researching the endocannabinoid receptors system since 2009.

Mr. Hempel decided to create a Nevada-based "cannabusiness" focused on legally developing and distributing pharmaceutical-grade cannabis products (high-quality flowers, extracts and concentrates) at competitive prices for Nevada patients. Mr. Hempel aims to create a statewide cannabis research program in Nevada to better elucidate the potential benefits of the cannabis plant. The creation of a pharmaceutical-quality cannabis supply network is the first step towards this larger goal of building knowledge about using cannabis to improve health.

# Equity Holders

MICHAEL P. FALCONE is [REDACTED]

[REDACTED] In addition, he has overseen all non-real estate investments made on behalf of [REDACTED] and by the company. He is now the primary contact for sourcing equity and joint venture partners and oversees all aspects of design for the firm.

[REDACTED], Falcone has seen first-hand the decline in economy and has made it a personal mission to revitalize the area. He looks at Salus Scientific as a vital cog in creating a center for cannabis and hemp research that will not only benefit New York, making it the epicenter for growth and research, but the rest of the country as well.

Currently he is an Executive Committee member of the Syracuse University School of Architecture Advisory Board, a member of the Advisory Board of Syracuse University School of Visual and Performing Arts and a member of the Board of the Everson Museum of Art in Syracuse, NY. [REDACTED], a

[REDACTED] guest lecturer at [REDACTED], speaking to real estate development and the importance of good design in private enterprise.

Mr. Falcone holds a BA degree in English with a minor in Sociology from Georgetown University.

NICOLE RUVO FALCONE, [REDACTED]

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Ms. Ruvo avidly works to bring cutting-edge health solutions to [REDACTED] New Yorker's, and continually interfaces with top scientists and doctors from around the world to further not only the [REDACTED], but to promote and fund leading research into degenerative brain diseases that impact millions of people worldwide.

Ms. Ruvo has been [REDACTED]

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Ms. Ruvo has been named to multiple boards and has co-chaired a variety of New York-based charity events, including the Breast Cancer Research Foundation's famed Hampton's "Paddle for Pink" event, NYC Meals on Wheels, Free Arts NYC and the New York City chapter of the Police Athletic League. Ms. Ruvo is currently a co-chair to New York's Art Production Fund, a non-profit organization dedicated to commissioning and producing ambitious public art projects, reaching new audiences and expanding awareness through contemporary art.

Ms. Ruvo graduated from the University of San Diego, receiving a Bachelor's Degree in Marketing and Communications.

# ISA Deck



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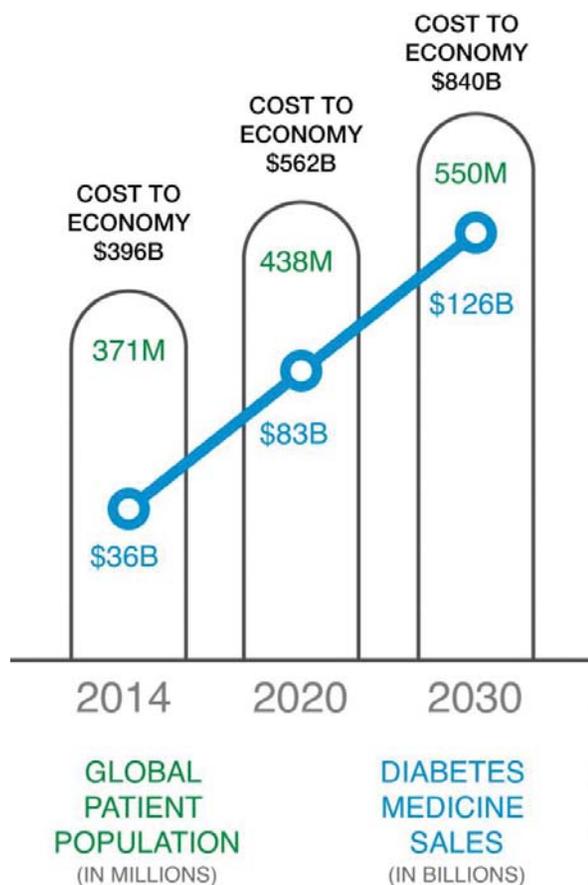
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ISA Scientific, Inc.™

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# Reverse, Cure or Even Prevent Diabetes?



- A global epidemic, rapidly getting worse
- Chief cause of coronary artery disease, heart attack, stroke, blindness and kidney failure
- 5.1 million deaths from high blood sugar alone in 2013
- Huge medical costs – \$612 billion globally in 2014, \$250 billion in the United States
- **Current medicines deficient, better ones needed (American Diabetes Association)**
- **Huge unmet need for effective therapies**

## ISA Scientific Mission Statement

Improve health and the quality of life with oral, non-psychoactive products based on cannabis plant chemistry.

**349**  
MILLION

The number of people globally who suffer from chronic pain.

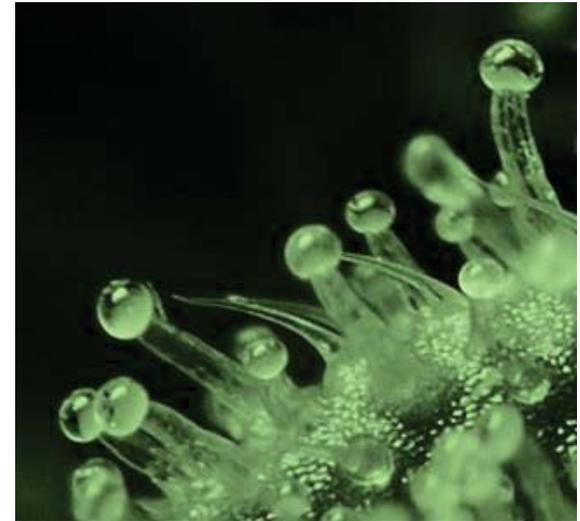
**371**  
MILLION

The number of people globally who suffer from diabetes.



# Cannnabidiol (CBD): The Essential Cannabinoid

- **Profound Medicinal Potential**
  - Suppresses inflammation and oxidative damage, major reasons for hazardous health conditions
  - Important therapy for intractable, chronic and even life-threatening diseases
- **Non-Psychoactive**
- **Safe**
  - Chronic use and higher doses well tolerated
- **Abundant in Hemp**
  - Grown for its fiber, nutritious seeds and edible oil



## Science supports the premise that cannabinoids, especially CBD, are beneficial to human health.

There is a growing consensus among scientific and medical professionals that CBD and other cannabinoids can be effective for promoting health and treating certain chronic, intractable and life-threatening conditions. Peer-reviewed research exists in such regard, and new studies continue to accrue.

Cannabinoids are found only in cannabis plants like hemp, grown for food and fiber around the world. Hemp is particularly rich in CBD.

10,000 peer-reviewed technical articles have been published on cannabinoid-related topics including how these work in the body.

Cannabinoids interact with the endocannabinoid receptor system, which controls many important bodily functions.

Cannabinoids impact additional pathways in the human body that control pain and support the immune system, heart function, cell growth and sugar metabolism.

# First Markets Targeted by ISA Scientific



- **Reverse, Cure or Even Prevent Diabetes, Types 1 and 2**
  - Existing medicines fueling huge economic and societal burdens
  - Need for new treatment paradigms (American Diabetes Association)
- **Relieve Chronic Pain without Addiction or Hazardous Side Effects**
  - Prescription opioids, inadequate relief
  - 36 million people addicted globally
  - 2.4 million in the US, 36,000 deaths yearly
  - Reduce or eliminate opioid use voluntarily

# Making CBD Real Human Medicine



- **Key Unmet Need – Efficient Oral Administration**
- **Securing a Reliable, Abundant CBD Supply**

## **Key Unmet Need**

Little CBD Gets into the Body When Taken by Mouth  
**Efficient Oral Dosing**



**Uniquely Resolved by ISA Scientific**  
**For the First Time – Anywhere**

# Efficient Oral Dosing Achieved



- **Little CBD Enters the Body When Taken by Mouth**

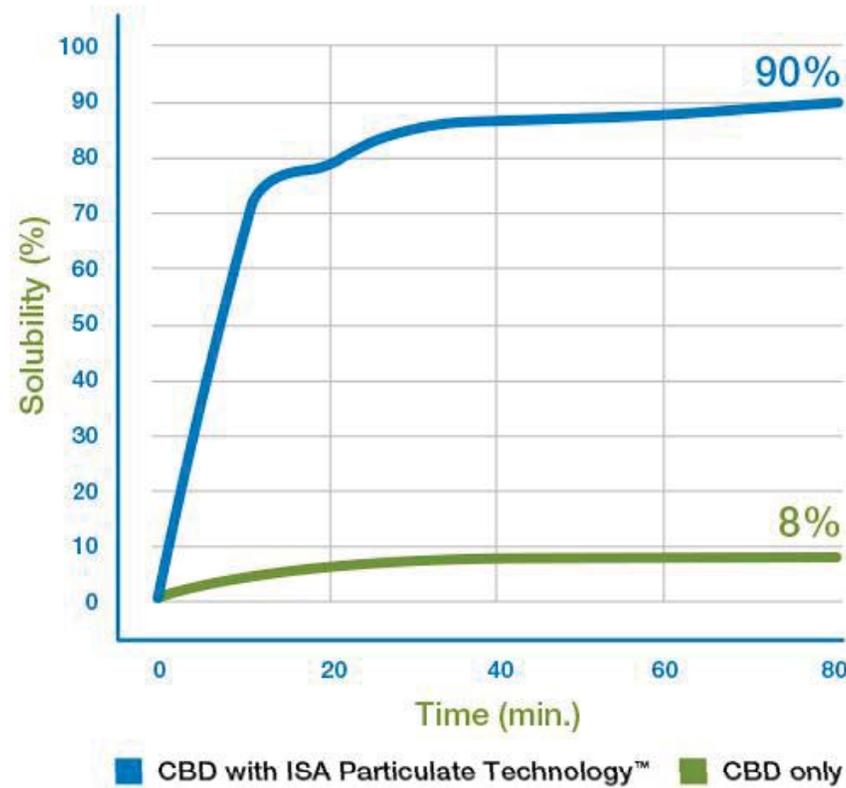
- Inefficient, unable to reliably and economically dose
- Unpredictable therapeutic results



- **Resolved by ISA Scientific**

- CBD's entry enhanced with innovative, patented nanotechnology exclusive to ISA Scientific (ISA Particulate Technology™)
- Made with GRAS ingredients, safe to use
- **Consistent, cost-efficient dosing and predictable treatment outcomes**

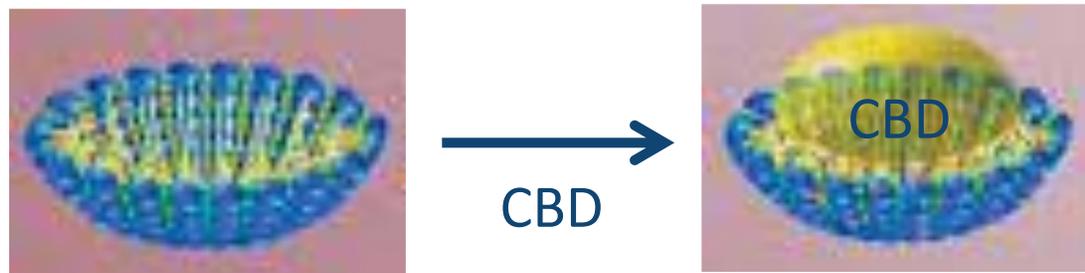
# High CBD Bioavailability Achieved



**For the First Time**

Our unique, patented ISA Particulate Technology™ reliably and significantly enhances CBD's entry into the body — thus superior, economical efficiency and predictable outcomes from use.

# Breakthrough Innovation ISA Particulate Technology™ High Bioavailability



# Clinical Trials Uniquely Underway



Sourasky Medical Center  
Tel Aviv, Israel

- Professionally-Refereed Studies Essential
  - Acceptance by healthcare professionals
  - Regulatory approval

# CBD in Abundance – For the First Time



- **Current CBD Supply Poor and Costly**
  - Mostly dilute, impure preparations
  - Substandard quality (toxins, pesticides)
  - But sizeable and rapidly growing global demand
- **Cost-Effectively Resolved by ISA Scientific**
  - Large-scale growing in China, Israel & USA
  - Patent-protected time- and money-saving ways to manufacture
  - Extracts and concentrates from ISA Scientific
  - Reagent- and clinical-grade CBD in Israel, soon in USA



# Making CBD – International Perspective



China



United States



Israel

ISA Scientific is setting up its large-scale commercial CBD production via its joint venture in China. It has progressed in developing proprietary methods to greatly reduce CBD production time and costs. Standardization will be a distinctive hallmark of ISA Scientific's CBD products, to not only ensure product quality but also distinguish the Company from its competitors.



# CBD – A Product in Its Own Right

- Reagent and Pharmaceutical Grade Natural CBD
- Standardized Natural CBD-Rich Extracts and Concentrates

**Substantial  
Purchase Orders  
Already in Place**

**Significant Revenues Imminent**



# Unrivaled Intellectual Property Estate

**Patented**

**Patent  
Pending**

- **Use Patents for Conditions of Huge Public Health Importance**
  - Diabetes, cardiovascular disorders (heart attack), inflammatory diseases (atherosclerosis, arthritis, ulcerative colitis, Crohn's disease)
  - Immense Markets
- **Nanotechnologies to Enhance Bioavailability**
- **Cost-Effective Ways to More Efficiently Extract and Purify**
- **Patent Thicket**
  - Inhibit competitors and licensing opportunities

# World-Class Collaborations



# Huge Public Health Significance Immense Commercial CBD Markets



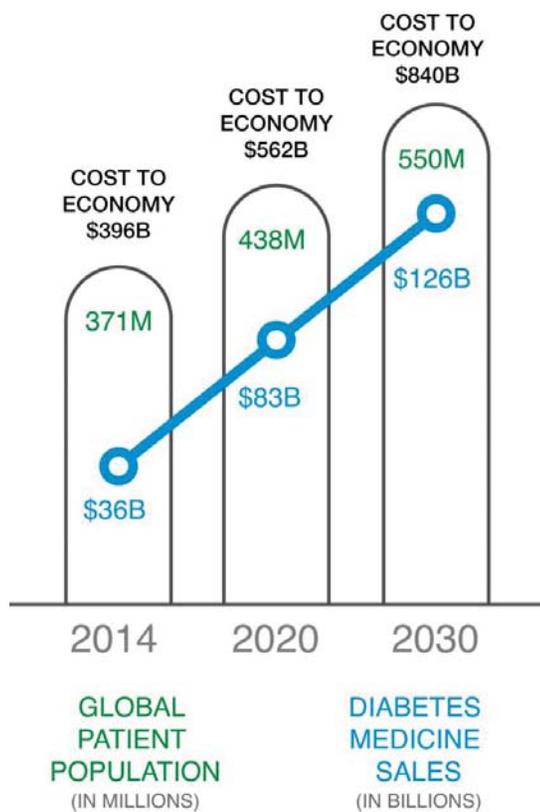
## First Markets for ISA Scientific



- Reverse, Cure or Even Prevent Diabetes, Types 1 and 2
  - Need for better treatments (American Diabetes Association)
- Relieve Chronic Pain without Addiction or Hazardous Side Effects
  - Prescription opioids, inadequate relief
  - Reduce or eliminate opioid use voluntarily
  - 36 million people addicted globally
  - 2.4 million in the US, 36,000 deaths yearly

# Diabetes Worldwide

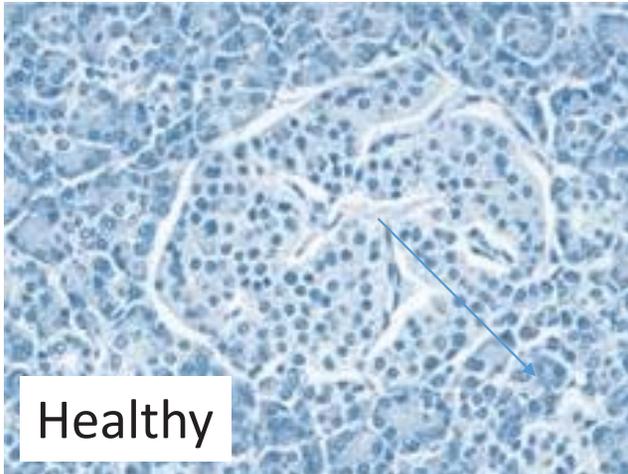
## PROFIT – Millions of US Dollars per Year



MARKET (%)	CHINA	USA	EUROPE	INDIA
100.0	6241.50	1423.50	3159.08	3339.75
10.0	624.15	142.35	315.91	339.98
5.0	312.08	71.18	157.95	166.99
1.0	62.42	14.24	31.59	33.40
0.5	31.21	7.18	15.80	16.70

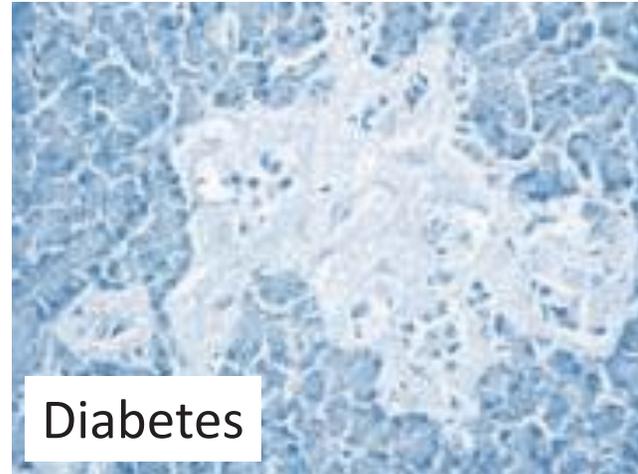
Assumes \$0.15/patient/day profit for a CBD dose of 25 milligrams

# Diabetes



Healthy

Cells in the Pancreas that  
Make Insulin



Diabetes

Insulin-Making Cells in the  
Pancreas Few or Gone

# Chronic Pain Worldwide

## PROFIT – Millions of US Dollars per Year

**400 MILLION PEOPLE**  
Suffer From Chronic  
Muscle and Joint Pain



MARKET (%)	CHINA	USA	EUROPE	INDIA
100.0	5475.00	6351.00	3011.25	5665.75
10.0	547.50	635.10	301.12	566.58
5.0	273.75	317.55	150.56	283.29
1.0	54.75	63.51	30.11	56.66
0.5	27.38	31.76	15.06	28.33

Assumes \$0.15/patient/day profit for a CBD dose of 25 milligrams

# Human Clinical Trials: CBD & ISA Particulate Technology™

- Phase 1 Clinical Studies Underway
- First Targets of ISA Scientific's CBD Therapies—Pain and Diabetes



Israel



China



# Kentucky – First of Its Kind in the USA



- First US Production of Reagent- and Clinical-Grade CBD
- Human Clinical Trials at the University of Kentucky
  - Principal Investigator in Place

# Superior Ability to Execute

ISA Scientific has accomplished,  
professional know-how and  
experience.



# Key Personnel

- **Mark J. Rosenfeld, M.S., Ph.D. – Chief Executive Officer, Science**
  - Founder & Chief Science Officer, Seroctin Research & Technology
  - Founder & Chief Science Officer, Impact Diagnostics
  - Chief Science Officer, DxNA
  - Advisor, China Health Ministry
  - US Delegate, Joint United Nations FAO/IAEA Committee on Transboundary Diseases
  - Visiting Scholar, Peking University
  - 1 IPO & 1 acquisition
- **Perry G. Fine, M.D. – Medical Director**
  - Board Certified: Anesthesiology, Pain Medicine, Hospice and Palliative Medicine
  - President Emeritus, American Academy of Pain Medicine
  - Professor of Anesthesiology, University of Utah
  - Member, FDA Advisory Board – Opioids
  - 2 companies through IPO
- **Giora Meyuhas, M.B.A. – Chairman of the Board**
  - Israel Economic Minister to North America
  - President & CEO, Gadot Petrochemicals Industries
  - Director, Baran Group Ltd.
  - Director, First International Bank Israel Ltd
  - Multiple companies through IPO, acquisition & merger

# Key Personnel

- **Ruth Gallily, Ph.D. – *Cannabis* Pharmacology**
  - Principal Investigator, ISA Scientific Cannabidiol & Diabetes Studies
  - Professor, Hebrew University - Lautenberg Center of General and Tumor Immunology
  - Pioneer in therapeutic CBD use
- **Susan Alpert, M.D., Ph.D. – Regulatory Affairs, Clinical**
  - Director, USFDA Office of Device Evaluation
  - Senior Vice President – Global Regulatory Affairs, Medtronic
  - Vice President – Regulatory Sciences, C.R. Baird, Inc.
  - Executive Committee, Clinical Trials Transformation Initiative
  - Past Chair & Fellow, Regulatory Affairs Professional Society
  - Board of Advisors, Medical Technology Leadership Forum
- **Kyle Yang, M.B.A. – China Director**
  - North American Representative, China Continuing Medical Education
  - General Director, Beijing Transpacific IP Technology Development
  - Among the first students from People's Republic of China to attend Harvard University

# Key Personnel

- **Julius Ben-Ari, Ph.D. – Phytocannabinoid Detection, Extraction and Purification**
  - Director, Mass Spectrometry & Chromatography, Teabag, Institute of Plant Sciences and Genetics in Agriculture, The Robert H. Smith Faculty of Agriculture, Food and Environment, Hebrew University of Jerusalem, Israel
  - Faculty, Israel Institute for Biological Research, Israel
- **Anthony R. Torres, M.D. – Phytocannabinoid Extraction and Purification**
  - Director, Biomedical Laboratory, Center for Persons with Disabilities, Utah State University
  - Research Associate, National Cancer Institute, National Institute of Health
  - Assistant Professor, Yale University
- **Lee Hollaar, Ph.D. – Intellectual Property Strategy**
  - Visiting Scholar, US Court of Appeals for the Federal Circuit
  - Multiple amicus (friend of the court) briefs, US Supreme Court
  - Fellow, Intellectual Property Unit, Judiciary Committee, US Senate
  - Registered Patent Agent

# Key Personnel

- **John Abu-Ulba – General Manager**
  - Founder & CEO, Miracle Source Food Group Ltd. (one of the larger wholesale hemp food suppliers in North America)
  - Co-Founder & Producer, Size Industry Films Inc.
  - Director & Consultant, Stadium Sleeve Enterprises Ltd.
  - Member, Canadian Hemp Trade Alliance



ISA Scientific, Inc.™

Thank You

תודה

谢谢

[www.isascientific.com](http://www.isascientific.com)

**Reuters**

<http://www.reuters.com/article/2015/03/23/yissum-research-idUSnBw235444a+100+BSW20150323>

**CNBC**

<http://www.cnn.com/id/102526541>

**BusinessWire**

<http://www.businesswire.com/news/home/20150323005444/en/ISA-Scientific-Yissum-Hadasit-Kennedy-Trust-Rheumatology#.VS8a6cJFCW8>

**Yahoo! Finance**

<http://finance.yahoo.com/news/isa-scientific-yissum-hadasit-kennedy-120000936.html>

**Toronto Dominion (TD) Waterhouse**

<http://research.tdwaterhouse.ca/research/public/Markets/NewsArticle/100-082b6907-1>

**World News**

[http://article.wn.com/view/2015/03/23/ISA\\_Scientific\\_Yissum\\_Hadasit\\_and\\_the\\_Kennedy\\_Trust\\_for\\_Rheu\\_0/](http://article.wn.com/view/2015/03/23/ISA_Scientific_Yissum_Hadasit_and_the_Kennedy_Trust_for_Rheu_0/)

**TechnologyNetworks**

<http://www.technologynetworks.com/MedChem/>

**DOCTORS DIR.com**

<http://www.doctorsdir.com/Rheumatology.php>



## ISA Scientific, Yissum, Hadasit and the Kennedy Trust for Rheumatology Research to Collaborate on Treating Diabetes and Other Serious Health Conditions with Cannabidiol

Mon Mar 23, 2015 8:00am EDT

Yissum Research Development Company Ltd. (Yissum), the technology transfer company of the Hebrew University of Jerusalem, Hadasit Ltd. (Hadasit), the technology transfer company of the Hadassah Medical Organization in Jerusalem, and the Kennedy Trust for Rheumatology Research (KIR) in the United Kingdom announced today that they have signed an exclusive worldwide licensing and collaboration agreement with ISA Scientific, Inc., a biopharmaceutical company focused on the development and commercialization of cannabinoids as human medicine, for using the non-psychoactive cannabinoid, cannabidiol (CBD), to treat serious medical conditions, including diabetes, inflammatory diseases (like arthritis, atherosclerosis and ulcerative colitis) and cardiovascular disorders.

The licensed intellectual property is the result of many years of research and collaboration between renowned cannabinoid scientists, Raphael Mechoulam, Professor of medicinal chemistry, and Ruth Gallily, Professor of immunology, both from the Hebrew University; the distinguished immunologist, Professor Sir Marc Feldman, Director of the Kennedy Institute of Rheumatology; and prominent physicians and scientists at Hadassah Professors Chaim Lotan and Ronen Durst, and Dr. Lola Weiss.

Yaacov Michlin, Chief Executive Officer of Yissum, stated: “We are very pleased with this business collaboration, which is a result of many years of multi-disciplinary cooperation between distinguished scientists in the field of CBD chemistry and biology, together with leading clinicians and researchers in the area of diabetes, cardiovascular disorders and inflammation diseases. We are confident that ISA Scientific is the right partner to translate these academic accomplishments into CBD treatments that will benefit patients worldwide.”

“ISA Scientific is pleased to be collaborating with Yissum, Hadasit and KIR in making the human therapeutic use of CBD a reality,” said Mark J. Rosenfeld, M.S., Ph.D., Chief Executive Officer of ISA Scientific. “The licensing agreement is very well timed because our Phase 1 clinical trials on dosing and safety are now underway in Israel, and arrangements for Phase 2 trials on treating diabetes and neuropathic pain are in process. It is important to recognize that very little CBD usually gets into the bloodstream when it is taken by mouth, and this inefficiency is a major obstacle to making oral CBD medicines with consistent dosing and reliable therapeutic outcomes. ISA Scientific has uniquely resolved this key problem with proprietary drug delivery technology now being integrated into our clinical trials. Besides maximizing the therapeutic utility of ISA Scientific’s CBD formulations, this technology also helps reduce production costs and thus the price of medicine to patients.”

“The licensed technology encompasses diabetes and other disorders of immense public health relevance, and these are impacting hundreds of millions of people around the world. That there is tremendous demand for alternatives to more successfully treat these diseases is an understatement. What ISA Scientific is doing to make efficient and affordable CBD medicine will prove eminently valuable in that regard.”

### **About Yissum**

Yissum Research Development Company of the Hebrew University of Jerusalem was founded in 1964 to protect and commercialize the Hebrew University’s intellectual property. Products based on Hebrew University technologies that have been commercialized by Yissum currently generate \$2 Billion in annual sales. Ranked among the top technology transfer companies in the world, Yissum has registered over 8,500 patents covering 2,400 inventions; has licensed out 750 technologies and has spun out 90 companies. Yissum’s business partners span the globe and include companies such as Syngenta, Monsanto, Roche, Novartis, Microsoft, Johnson & Johnson, Merck, Intel, Teva and many more. For further information please visit [www.yissum.co.il](http://www.yissum.co.il).

### **About Hadasit**

Hadasit, the Technology Transfer Company of Hadassah Medical Organization (HMO) in Jerusalem, promotes and commercializes HMO's continuously generated intellectual property

and Research & Development capabilities. IP generated by HMO has already gained global recognition due to Hadasit's successful enterprising of Hadassah's biomedical technology, including novel therapeutics, diagnostics and medical devices. Hadasit's portfolio includes more than 200 active patent families tied to medical and commercial breakthroughs, including the cancer treatment liposomal-doxorubicin, developed with Hebrew University. For further information, please visit [www.hadasit.co.il](http://www.hadasit.co.il).

### **About KIR**

The Kennedy Trust for Rheumatology Research is an independent charity based in the United Kingdom which focuses on supporting research into rheumatic and related musculoskeletal diseases. The KIR website is located at [www.kennedytrust.org](http://www.kennedytrust.org).

### **About ISA Scientific**

ISA Scientific is a closely-held American corporation whose activities are centered on making non-psychoactive, safe and effective therapeutic products based on cannabis plant chemistry, for the improved treatment of debilitating and even life-threatening health conditions impacting millions of people worldwide as well as to help better health in general. The Company is distinctively proceeding down a commercial product development pathway that includes refereed human clinical trials, which it considers regrettably lacking for cannabis chemistry but essential to achieving regulatory approval and widespread acceptance by healthcare professionals. The Company is also positioned to become a major supplier of cannabis-plant chemistry, especially CBD. ISA Scientific has situated its research, development and production where most advantageous. The Company's R&D occurs largely in Israel, the global center for cannabis-related research. Certain scientific and medical activities along with other matters of importance are strategically situated in the US and Canada. ISA Scientific is also distinctively located in China, where the therapeutic alternatives offered by cannabis chemistry could go far in helping to resolve conditions responsible for a huge public health crisis there. Refer to ISA Scientific's website for more information: [www.isascientific.com](http://www.isascientific.com).

Yissum Ltd.

Tsipi Haitovsky, Media Liaison

Tel: +972-52-598-9892

E-mail: [tsipih@yissum.co.il](mailto:tsipih@yissum.co.il)

**Attachment K: Proof from Local Internet Service Provider that all of Applicant's Manufacturing and Dispensing Facilities are in an Area with Internet Connectivity**

Time Warner Cable has provided screenshots to confirm internet connectivity and availability of Business Class services at Salus Scientific facilities. Serviceability status compliant with NYS Medical Marijuana Program regulations is indicated by a result of "ON-NET" within the Building Details of each screenshot captured below. Verification of internet connectivity and associated screenshots have been provided by:

Dean Deihl-Manges

Business Account Manager

Time Warner Cable Business Class

Phone: 866-398-1326

Fax: 866-582-7614

Email: dean.deihl-manges@twc-b2b.com

Internet connectivity has been confirmed at the following locations, demonstrated by screenshots included on the following pages:

1. The manufacturing facility located at 100 Oakdale Road, Johnson City, New York 13790.  
(See Internet Connectivity Screenshot A.)
2. The dispensing facility located at 6801 Kinne Street, East Syracuse, New York 13057.  
(See Internet Connectivity Screenshot B.)
3. The dispensing facility located at 56-15 58<sup>th</sup> Street Maspeth (Queens), New York 11378.  
(See Internet Connectivity Screenshot C.)
4. The dispensing facility located at 4700 Vestal Parkway East Vestal, New York 13850.  
(See Internet Connectivity Screenshot D.)
5. The dispensing facility located at 26183 US Route 11, Evans Mills, New York 13637.  
(See Internet Connectivity Screenshot E.)

Starting Point 6.0 - sales! x | Zimbra Compose x | 13850 - Google Search x

https://c.na2.visual.force.com/apex/StartingPoint6?sfmc.tabName=01r40000000AA5c

salesforce 15

Search... Search

Hope Jackson | Help & Training | BC Sales UI

Home | Files | Leads | Accounts | Opportunities | Forecasts | Site Surveys | **Starting Point 6** | Related Opportunities

Mon, June 01, 2015

## Starting Point 6.0

**Search Address**

Street : 100 OAKDALE RD

City : JOHNSON CITY

State : NY

**Search Contact/Lead**

Name :

E-mail :

Phone# :

WebForm Confirmation# :

**Search Business**

Name :

Account# :

[Multi-Address Check](#) | [Search](#) | [Clear all fields](#) | [USPS Lookup](#) | [Google Maps](#)

### BUILDING DETAILS

**100 OAKDALE RD**  
JOHNSON CITY, NY 13790

Type: Commercial location  
Division: Central New York  
Largest Tenant: Akel Wholesale Grocery Inc  
TWC Customers (Res/Com): 0  
Tenants: 5  
Total Employees in Building: 60  
Dominant Industry Vertical: Wholesale Trade  
Total Telecom Spend (\$/mo.) (D&B):  
Max Data Services Class (D&B):  
MIDAS Building Key: 1166128  
Building Name: Akel Wholesale Grocery Inc  
Franchise Area:

**Serviceability ON-NET**

Estimated Fiber Service Delivery  
Estimated Coax Service Delivery  
Serviceability Code Description  
Serviceability Code Per Billing: N  
Distance to Closest Fiber Serviceable Location  
Distance to Closest Coax Serviceable Location: 0  
Closest Node: PLD75  
Node Description  
Distance to Node: 0 ft  
DSL Distance: 7756 ft  
Wire Center: JHCYNYJC  
Rate Center  
Rate Center Abbr  
Related Project  
Up to 300M Internet Available?

[BUILDING DETAILS](#)

[MAP Section:](#) [View Small Map](#) | [View Large Map](#) | [View SF Building Record](#) | [Get House File](#) | [Sales Guidelines](#)

### SEARCH RESULTS

[Create Order](#)

3:19 PM 6/1/2015

Internet Connectivity Screenshot A.

Starting Point 6.0 ~ salesfi x Zimbra: Inbox

https://c.na2.visual.force.com/apex/StartingPoint6?fdc.tabName=01r4000000AA5c

Street : 6801 KINNE ST.  
 City : EAST SYRACUSE  
 State : NY

Name :  
 E-mail :  
 Phone# :  
 WebForm Confirmation# :

Multi-Address Check Search Clear all fields USPS LookUp Google Maps

**BUILDING DETAILS**

**6801 KINNE ST  
 EAST SYRACUSE, NY 13057**

Type Commercial location  
 Division Central New York  
 Largest Tenant MCSHANES RESTAURANT  
 TWC Customers (Res/Com) 0  
 Tenants 4  
 Total Employees In Building 8  
 Dominant Industry Vertical Eat and Drink  
 Total Telcom Spend (\$/mo.) (D&B)  
 Max Data Services Class (D&B)  
 MIDAS Building Key 1240808  
 Building Name 6801 KINNE ST  
 Franchise Area

Serviceability **ON-NET**  
 Estimated Fiber Service Delivery  
 Estimated Coax Service Delivery  
 Serviceability Code Description  
 Serviceability Code Per Billing N  
 Distance to Closest Fiber Serviceable Location  
 Distance to Closest Coax Serviceable Location  
 Closest Node BK126  
 Node Description BK126 - Platinum Node  
 Distance to Node 0 ft  
 DSL Distance 16881 ft  
 Wire Center SYRCNYJS  
 Rate Center  
 Rate Center Abbr  
 Related Project [BK126 - Platinum Node](#)  
 Up to 300M Internet Available?

MAP Section: View Small Map View Large Map View SF Building Record Get House File Sales Guidelines

**SEARCH RESULTS**

Create Order

Service Locations(3) Billing Accounts(3) Contacts(3) Leads(0) Site Surveys(1) Right of Entries(1) Construction Jobs(1)

Action	Type	Record Name	Billing Account	Location(Building)	Comments	Open Opportunities	Create Order	Owner	AE Acct Keep List	Industry	NAICS	Employees	Owner Sales Position	Days Since Last M2W
<input type="checkbox"/>		MC SHANE'S RESTAURANT	MC SHANE'S RESTAURANT -	6801 Kinne St, East Syracuse, NY, 13057	<a href="#">View</a>	<a href="#">Open</a>	<a href="#">Create</a>	Cory Sullivan	<input type="checkbox"/>	Retail	722110, Full-Service Restaurants	8	Account Executive II	
<input type="checkbox"/>		MCSHANES RES	MCSHANES RES -413551601	6801 KINNE ST, EAST SYRACUSE, NY, 13057	<a href="#">View</a>	<a href="#">Open</a>	<a href="#">Create</a>	NE Unassigned Accounts	<input type="checkbox"/>	72211019	722511, Full-Service Restaurants	8	Account Consultant II	1631

9:19 AM 6/2/2015

Internet Connectivity Screenshot B.

Starting Point 6.0 - sales: x | Zimbra: Inbox x

https://c.na2.visual.force.com/apex/StartingPoint6?sfdc.tabName=01r40000000AA5c

salesforce 15

Search... Search

Hope Jackson | Help & Training | BC Sales UI

Home | Files | Leads | Accounts | Opportunities | Forecasts | Site Surveys | **Starting Point 6** | Related Opportunities

Tue, June 02, 2015

### Starting Point 6.0

**Search Address**

Street :

City :

State :

**Search Contact/Lead**

Name :

E-mail :

Phone# :

WebForm Confirmation# :

**Search Business**

Name :

Account# :

[Multi-Address Check](#) | [Search](#) | [Clear all fields](#) | [USPS LookUp](#) | [Google Maps](#)

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**BUILDING DETAILS**

**5615 58TH ST**  
**MASPETH, NY 11378**

<p>Type: Business; residential/commercial undetermined</p> <p>Division: New York City</p> <p>Largest Tenant: LION PAVILION LIMITED</p> <p>TWC Customers (Res/Com): 0</p> <p>Tenants: 1</p> <p>Total Employees in Building: 10</p> <p>Dominant Industry Vertical: Wholesale Trade</p> <p>Total Telcom Spend (\$/mo.) (D&amp;B):</p> <p>Max Data Services Class (D&amp;B):</p> <p>MIDAS Building Key: 106130253</p> <p>Building Name: LION PAVILION LIMITED</p> <p>Franchise Area:</p>	<p>Serviceability: <b>ON-NET</b></p> <p>Estimated Fiber Service Delivery:</p> <p>Estimated Coax Service Delivery:</p> <p>Serviceability Code Description:</p> <p>Serviceability Code Per Billing: SY</p> <p>Distance to Closest Fiber Serviceable Location:</p> <p>Distance to Closest Coax Serviceable Location:</p> <p>Closest Node: MB05</p> <p>Node Description: MB05 - Platinum Node</p> <p>Distance to Node: 0 ft</p> <p>DSL Distance: 8854 ft</p> <p>Wire Center: NYCKNYFA</p> <p>Rate Center:</p> <p>Rate Center Abbr:</p> <p>Related Project: <a href="#">MB05 - Platinum Node</a></p> <p>Up to 300M Internet Available? Yes</p>
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[MAP Section](#) | [View Small Map](#) | [View Large Map](#) | [View SF Building Record](#) | [Get House File](#) | [Sales Guidelines](#)

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**SEARCH RESULTS**

[Create Order](#)

Internet Connectivity Screenshot C.

Starting Point 6.0 ~ salesf x Zimbra: Inbox x

https://c.na2.visual.force.com/apex/StartingPoint6?sfdc.tabName=01r4000000AA5c

Search... Search

Michael Broucker Help & Training Salesforce Chatter

Chatter Profile Opportunities People Groups Files **Starting Point 6** Site Surveys Related Opportunities

Wed, June 03, 2015

## Starting Point 6.0

**Search Address**

Street :

City :

State :

**Search Contact/Lead**

Name :

E-mail :

Phone# :

WebForm Confirmation# :

[Multi-Address Check](#) [Search](#) [Clear all fields](#) [USPS Lookup](#) [Google Maps](#)

### ADDRESS DETAILS

**4700 VESTAL PKWY E  
VESTAL, NY 13850**

<p>Type Public, Government, or Local School (i.e., not Col)</p> <p>Division Central New York</p> <p>Largest Tenant NATIONWIDE CREDIT INCORPORATED</p> <p>TWC Customers (Res/Com) 11</p> <p>Tenants 76</p> <p>Total Employees In Building 1110</p> <p>Dominant Industry Vertical Call Centers</p> <p>Telcom Spend (\$/mo.) (D&amp;B)</p> <p>Max Data Services Class (D&amp;B)</p> <p>MIDAS Building Key 100080930</p> <p>Building Name VESTAL PLZ</p> <p>Franchise Area</p>	<p>Serviceability <b>ON-NET</b></p> <p>Estimated Fiber Service Delivery</p> <p>Estimated Coax Service Delivery</p> <p>Serviceability Code Description</p> <p>Serviceability Code Per Billing N</p> <p>Distance to Closest Fiber Serviceable Location</p> <p>Distance to Closest Coax Serviceable Location 0</p> <p>Closest Node PL177</p> <p>Node Description PL177 - Platinum Node</p> <p>Distance to Node 0 ft</p> <p>DSL Distance 8541 ft</p> <p>Wire Center JHCYNYJC</p> <p>Rate Center</p> <p>Rate Center Abbr</p> <p>Related Project <a href="#">PL177 - Platinum Node</a></p> <p>Up to 300M Internet Available?</p>
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**MAP Section:** [View Small Map](#) [View Large Map](#) [View SF Building Record](#) [Get House File](#) [Sales Guidelines](#)

### SEARCH RESULTS

Order

Internet Connectivity Screenshot D. Please note that "4700 Vestal Parkway, East Vestal, NY" returns the same service address as "4700 Vestal Parkway East, Vestal, NY."

Starting Point 6.0 ~ salesf | Zimbra: Inbox | <https://c.na2.visual.force.com/apex/StartingPoint6?sfdc.tabName=01r4000000AA5c>

salesforce 15 | Search... | Michael Broucker | Help & Training | Salesforce Chatter

Home Chatter Profile Opportunities People Groups Files **Starting Point 6** Site Surveys Related Opportunities

Wed, June 03, 2015

## Starting Point 6.0

**Search Address**

Street :

City :

State :

**Search Contact/Lead**

Name :

E-mail :

Phone# :

WebForm Confirmation# :

**Search Business**

Name :

Account# :

[Multi-Address Check](#) [Search](#) [Clear all fields](#) [USPS LookUp](#) [Google Maps](#)

### BUILDING DETAILS

**26183 US ROUTE 11**  
**EVANS MILLS, NY 13637**

<p>Type Undetermined due to insufficient data</p> <p>Division Central New York</p> <p>Largest Tenant BOBBY BIG APPLE PLAZA</p> <p>TWC Customers (Res/Com) 1</p> <p>Tenants 4</p> <p>Total Employees In Building 1</p> <p>Dominant Industry Vertical Other</p> <p>Total Telcom Spend (\$/mo.) (D&amp;B)</p> <p>Max Data Services Class (D&amp;B)</p> <p>MIDAS Building Key 110086024</p> <p>Building Name BOBBY BIG APPLE PLAZA</p> <p>Franchise Area</p>	<p>Serviceability <b>ON-NET</b></p> <p>Estimated Fiber Service Delivery</p> <p>Estimated Coax Service Delivery 30 Calendar Days</p> <p>Serviceability Code Description Coax Drop - 30 Day Activation</p> <p>Serviceability Code Per Billing C7</p> <p>Distance to Closest Fiber Serviceable Location</p> <p>Distance to Closest Coax Serviceable Location 0</p> <p>Closest Node WT100</p> <p>Node Description</p> <p>Distance to Node 0 ft</p> <p>DSL Distance 23013 ft</p> <p>Wire Center EVMLNVEI</p> <p>Rate Center</p> <p>Rate Center Abbr</p> <p>Related Project</p> <p>Up to 300M Internet Available?</p>
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[MAP Section: View Small Map View Large Map](#)
[View SF Building Record](#)
[Get House File](#)
[Sales Guidelines](#)

### SEARCH RESULTS

[Create Order](#)

Internet Connectivity Screenshot E.

## **Attachment L: Timeline of Estimated Timeframe from Growing Marijuana to Production of Final Approved Product**

### **Accelerated Cultivation Timeline for Initial Operations**

In compliance with 10 NYCRR §1004.9, Salus Scientific will surrender its registration to the department if it fails to begin operations to the satisfaction of the department within six months of the issuance of a registration. Upon receiving its registration from the Department of Health and a Certificate of Occupancy from the local building department, Salus Scientific will have finished, approved medical marijuana ready for registered patients in under 4 months.

To accelerate operations, Salus Scientific will secure a Certificate of Occupancy as quickly as possible for a single room, which will then be adapted and equipped to house the first batch of marijuana from rooting to flowering. During the 8 weeks it takes for the first batch to complete its growth cycle, Salus Scientific will obtain Certificates of Occupancy for additional rooms in the manufacturing facility, beginning with the processing rooms and Extraction Lab.

Salus Scientific will adhere to the following timeline to ensure that approved medical marijuana products will be available to registered patient cardholders in their final form by January of 2016:

Total time from Certificate of Occupancy to finished product: approximately 14 weeks (97 days)

1. Days 1 -30: Construction of Vegetative room: 4 weeks
2. Days 31 – 45: Roots established for first batch of marijuana: 2 weeks
3. Days 46 – 87: First batch flowered: 6 weeks  
- Additional 1000 clones taken to begin next batch –
4. Days 88 - 94: Drying/Curing: 1 week
5. Days 95 – 97: Processing/packaging/labeling: 2 days

**REQUEST FOR EXEMPTION FROM FOIL  
Trade Secret (POL § 87(2)(d))  
NOT FOR DISTRIBUTION**

**Attachment M: Compliance Statement**

**ATTACHMENT "M"**

Nicole Ruvo declares as follows:

1. I am the Chief Executive Officer of Salus Scientific, LLC ("Salus"), duly authorized as such by the Board of Salus.
2. This declaration is made pursuant to 10 NYCRR § 1004.5(b)(8) in support of Salus' application to the New York State Department of Health for registration as a registered organization to manufacture and dispense approved medical marijuana products in New York State in accordance with Title V-A of Article 33 of the New York Public Health Law and 10 NYCRR Part 1004.
3. Salus is able to, and will, comply with all applicable state and local laws and regulations, including but not limited to Title V-A of Article 33 of the New York Public Health Law and 10 NYCRR Part 1004, relating to the activities in which Salus intends to engage under its registration as a registered organization.

Dated: June 2, 2015



\_\_\_\_\_  
Nicole Ruvo (Signature)



Appendix A: Affidavit for Board Members, Officers, Managers, Owners, Partners, Principal Stakeholders, Directors, and Members

Appendix A must be completed for all board members, officers, managers, owners, partners, principal stakeholders, directors, and members. For board members, officers, managers, owners, partners, directors, and members of the applicant that are not natural persons, Appendix A must be completed by each board member, officer, manager, owner, partner, director and member of that entity, going back to the level of ownership by a natural person. An Organizational Chart documenting your organizational structure must be included with this application.

Form with 6 numbered sections: 1. Business Name: Salus Scientific, LLC; 2. Name: Nicole Ruvo; 3. Title: Chief Executive Officer; 4. Briefly describe the role of this person or entity in the proposed registered organization; 5. Will this person or entity come into contact with medical marijuana or medical marijuana products?; 6. Has this person or entity held any position of management or ownership during the preceding ten years of a 10% or greater interest in any other business which manufactured or distributed drugs?



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

7. Has this person or entity been convicted of a felony or had any type of registration or license suspended or revoked in any administrative or judicial proceeding?

Yes No

If the answer to either of these questions is "Yes," a statement explaining the circumstances of the felony, suspension or revocation must be provided below.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Table with 6 columns: Institution, Address, From, To, Degree Received, Date Received. Row 1: University of San Diego, San Diego, CA, 1996, 2000, Bachelor, May 2000.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Table with 6 columns: Institution, Address, From, To, Degree Received, Date Received. Row 1: University of San Diego, San Diego, CA, 1996, 2000, Bachelor, May 2000.



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

Table with 5 columns: Type of Professional License, License Number, Institution Granting License (Mailing Address, Phone, Email), Effective Date, Expiration Date. Row 1: 16. Licenses Held: List any and all licenses issued by a governmental or other regulatory entity.

17. Employment History for the Past 10 Years: Start with MOST RECENT employment and include employment during the last 10 years. Attach additional copies of page 3, if necessary.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Name of Employer:
Type of Business:



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

Form with multiple sections for personal and professional information, including fields for Street Address, City, State, Zip Code, Starting Date of Employment, Ending Date of Employment, Name of Supervisor for Reference, Supervisor Phone Number, Position/Responsibilities, Reason For Departure, Name of Employer, and Type of Business.



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

Form with multiple sections for business information, including fields for Type of Business, Street Address, City, State, Zip Code, Starting/Ending Date of Employment, Name of Supervisor for Reference, Supervisor Phone Number, Position/Responsibilities, Reason For Departure, Name of Employer, and a section for 18. Offices Held or Ownership Interest in Other Businesses.



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

Form with three identical sections for business information. Each section includes fields for 'From:', 'To:', 'Business Type:', 'Name and Address of Business:', 'Office Held/Nature of Interest:', and 'Name, Address and Phone Number of Licensing/Regulatory Agency, if applicable:'. The 'Office Held/Nature of Interest:' field includes checkboxes for 'open', 'closed', and 'proposed'.



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

19. Affirmative Statement of Qualifications

For individuals who have not previously served as a director/officer nor have had managerial experience, please include a statement below explaining how you are qualified to operate the proposed facility. This statement should include, but not be limited to, any relevant community/volunteer background and experience.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

20. The undersigned certifies, under penalty of perjury, that the information contained herein or attached hereto is accurate, true, and complete in all material respects.

Signature: Nicole Rung Date: June 3, 2015
Notary Name: Maurice Hallivis Notary Registration Number: No. 01HA6007604
Notary (Notary Must Affix Stamp or Seal) Date: May 26, 2018
MAURICE HALLIVIS
Notary Public, State of New York
No. 01HA6007604
Qualified in New York County
Commission Expires May 26, 2018

Nicole Ruvo  
Schedule of Partnerships

ENTITY	ADDRESS	TYPE	YEARS	OFFICE OR INTEREST	OPEN/CLOSED/ PROPOSED	NAME/ADDRESS OF LICENSING OR REGULATORY AGENCY
	Redacted pursuant to N.Y. Public Officers Law, Art. 6					

**REQUEST FOR EXEMPTION FROM FOIL**  
**Employment History POL § 89(2)(b)(i)**  
**Economic/Personal Hardship POL § 89(2)(b)(iv)**  
**NOT FOR DISTRIBUTION**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

SALUS SCIENTIFIC, LLC

333 West Washington St,  
Suite 600, Syracuse, NY

13202

Medical Marijuana 2015

██████ interest

OPEN

Redacted pursuant to N.Y. Public Officers Law, Art. 6



Appendix A:

Affidavit for Board Members, Officers, Managers, Owners, Partners, Principal Stakeholders, Directors, and Members

Appendix A must be completed for all board members, officers, managers, owners, partners, principal stakeholders, directors, and members. For board members, officers, managers, owners, partners, directors, and members of the applicant that are not natural persons, Appendix A must be completed by each board member, officer, manager, owner, partner, director and member of that entity, going back to the level of ownership by a natural person. An Organizational Chart documenting your organizational structure must be included with this application.

1. Business Name: Salus Scientific, LLC
This is the name that was entered in Section A of the Application for Registration as a Registered Organization.
2. Name: Michael P Falcone 3. Title: Chairman
4. Briefly describe the role of this person or entity in the proposed registered organization:
The Board Chair shall act as a partner to the CEO and others with respect to mission, strategy and best practices by providing strong leadership and business acumen as Salus grows and prospers into a nationally recognized medical marijuana provider. It will be my job to act as a sounding board and provide good governance, trusted advice, relationship management with the various stakeholders and maintain an overall vision for the enterprise. In addition it will be the COB role to keep the CEO accountable, on task and review their performance along with the that of Salus as an ongoing viable business.
5. Will this person or entity come into contact with medical marijuana or medical marijuana products?
[checked] Yes [ ] No
Any managers who may come in contact with or handle medical marijuana, including medical marijuana products, shall be subject to a fingerprinting process as part of a criminal history background check in compliance with the procedures established by Division of Criminal Justice Services and submission of the applicable fee. Criminal history background checks must be done through Identogo at http://www.identogo.com/FP/NewYork.aspx using the ORI number NY0412500 and the Fingerprint Reason "Control Substance License."
6. Has this person or entity held any position of management or ownership during the preceding ten years of a 10% or greater interest in any other business which manufactured or distributed drugs? [ ] Yes [checked] No
If the answer to this question is yes, provide the name of the business, a statement defining the position of management or ownership held in such business, and any finding of violations of law or regulation by a governmental agency against the business or person or entity.



Appendix A: Affidavit for Board Members, Officers, Managers, Owners, Partners, Principal Stakeholders, Directors, and Members

7. Has this person or entity been convicted of a felony or had any type of registration or license suspended or revoked in any administrative or judicial proceeding?

Yes No

If the answer to either of these questions is "Yes," a statement explaining the circumstances of the felony, suspension or revocation must be provided below.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Table with 6 columns: Institution, Address, Dates Attended (From, To), Degree (Degree Received, Date Received). Row 1: Georgetown University, 3700 O Street, NW Washington, DC 20057, 08/1981-12/1985, B.A. English focus on 20th century American Literature, 12/1985.

Employment History POL § 89(2)[b](i)
Economic/Personal Hardship POL § 89(2)[b](iv)
NOT FOR DISTRIBUTION



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

16. Licenses Held: List any and all licenses issued by a governmental or other regulatory entity.

Table with 5 columns: Type of Professional License, License Number, Institution Granting License (Mailing Address, Phone, Email), Effective Date, Expiration Date. The table contains 6 empty rows.

17. Employment History for the Past 10 Years: Start with MOST RECENT employment and include employment during the last 10 years. Attach additional copies of page 3, if necessary.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Reason For Departure:

Name of Employer:

Type of Business:

Employment History POL § 89(2)(b)(i)
Economic/Personal Hardship POL § 89(2)(b)(iv)
NOT FOR DISTRIBUTION



Appendix A:

Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

Form with multiple sections for employment history, including fields for Street Address, City, State, Zip Code, Starting Date of Employment, Ending Date of Employment, Name of Supervisor for Reference, Supervisor Phone Number, Position/Responsibilities, Reason For Departure, Name of Employer, and Type of Business.

Employment History POL § 89(2)(b)(i)
Economic/Personal Hardship POL § 89(2)(b)(iv)
NOT FOR DISTRIBUTION



**Appendix A:  
Affidavit for Board Members, Officers, Managers, Owners, Partners,  
Principal Stakeholders, Directors, and Members**

Type of Business:		
Street Address:		
City:	State:	Zip Code:
Starting Date of Employment:		Ending Date of Employment:
Name of Supervisor for Reference:		Supervisor Phone Number:
Position/Responsibilities:		
Reason For Departure:		
Name of Employer:		Type of Business:
Street Address:		
City:	State:	Zip Code:
Starting Date of Employment:		Ending Date of Employment:
Name of Supervisor for Reference:		Supervisor Phone Number:
Position/Responsibilities:		
Reason For Departure:		
<b>18. Offices Held or Ownership Interest in Other Businesses</b> List any affiliations you have been associated with in the past 10 years. Affiliation, for the purpose of this section, includes serving as either a board member, officer, manager, owner, partner, principal stakeholder, director or member of the organization. Organizations outside of New York State must also be disclosed.		
Have you owned or operated a business or had any affiliations with the operations of a business in New York, in the USA, or in other countries? <input checked="" type="checkbox"/> <b>Yes</b> <input type="checkbox"/> <b>No</b>		
From: see attached exhibit	Name and Address of Business:	
To:		
Business Type:	Office Held/Nature of Interest:	<input type="checkbox"/> open <input type="checkbox"/> closed <input type="checkbox"/> proposed
Name, Address and Phone Number of Licensing/Regulatory Agency, if applicable:		

**Employment History POL § 89(2)(b)(i)  
Economic/Personal Hardship POL § 89(2)(b)(iv)  
NOT FOR DISTRIBUTION**



Appendix A: Affidavit for Board Members, Officers, Managers, Owners, Partners, Principal Stakeholders, Directors, and Members

Form with three identical sections for business information. Each section includes fields for 'From:', 'To:', 'Business Type:', 'Name and Address of Business:', 'Office Held/Nature of Interest:', and 'Name, Address and Phone Number of Licensing/Regulatory Agency, if applicable:'. Checkboxes for 'open', 'closed', and 'proposed' are provided for the Office Held/Nature of Interest field.



Appendix A: Affidavit for Board Members, Officers, Managers, Owners, Partners, Principal Stakeholders, Directors, and Members

19. Affirmative Statement of Qualifications

For individuals who have not previously served as a director/officer nor have had managerial experience, please include a statement below explaining how you are qualified to operate the proposed facility. This statement should include, but not be limited to, any relevant community/volunteer background and experience.

20. The undersigned certifies, under penalty of perjury, that the information contained herein or attached hereto is accurate, true, and complete in all material respects.

Signature: [Handwritten Signature] Date: 6/2/15
Notary Name: Jody Hess-Franey Notary Registration Number: 01HE5043000
Notary (Notary Must Affix Stamp or Seal) Date: 6/2/15
JODY HESS-FRANEY
Notary Public, State of New York
Qualified in Onon. Co. No. 01HE5043000
Commission Expires May 1, 2019
[Handwritten Signature]

ENTITY	ADDRESS	TYPE	YEARS	INTEREST - MAJORITY	OFFICE HELD	OPEN/CLOSED/PROPOSED	NAME/ADDRE SS OF LICENSING OR REGULATORY AGENCY _____
		Redacted pursuant to N.Y. Public Officers Law, Art. 6					

**Employment History POL § 89(2)(b)(i)  
Economic/Personal Hardship POL § 89(2)(b)(iv)  
NOT FOR DISTRIBUTION**

Michael P Falcone  
Schedule of Partnerships

ENTITY	ADDRESS	TYPE	YEARS	INTEREST - MAJORITY	OFFICE HELD	OPEN/CLOSED/PROPOSED	NAME/ADDRESS OF LICENSING OR REGULATORY AGENCY
		Redacted pursuant to N.Y. Public Officers Law, Art. 6					

**Employment History POL § 89(2)(b)(i)  
Economic/Personal Hardship POL § 89(2)(b)(iv)  
NOT FOR DISTRIBUTION**

ENTITY	ADDRESS	TYPE	YEARS	INTEREST - MAJORITY	OFFICE HELD	OPEN/CLOSED/PROPOSED	NAME/ADDRESS OF LICENSING OR REGULATORY AGENCY
		Redacted pursuant to N.Y. Public Officers Law, Art. 6					

ENTITY	ADDRESS	TYPE	YEARS	INTEREST - MAJORITY	OFFICE HELD	OPEN/CLOSED/PROPOSED	NAME/ADDRE SS OF LICENSING OR REGULATORY AGENCY
		Redacted pursuant to N.Y. Public Officers Law, Art. 6					

Redacted pursuant to N.Y. Public Officers Law, Art. 6

SALUS SCIENTIFIC, LLC

333 west wasnington st,  
Suite 600, Syracuse, NY  
13202

Medical Marijuana

2015

██████ interest

██████████ OPEN

N/A

**Employment History POL § 89(2)(b)(i)  
Economic/Personal Hardship POL § 89(2)(b)(iv)  
NOT FOR DISTRIBUTION**

Michael P Falcone  
 Schedule of Partnerships

ENTITY	ADDRESS	TYPE	YEARS	INTEREST - MAJORITY	OFFICE HELD	OPEN/CLOSED/PROPOSED	NAME/ADDRESS OF LICENSING OR REGULATORY AGENCY
Redacted pursuant to N.Y. Public Officers Law, Art. 6							
EAGLEBROOK SCHOOL	271 Pine Nook Rd, Deerfield, MA 01342	School	1996 - Present	N/A	Board Member	OPEN	N/A
EVERSON MUSEUM OF ART	401 Harrison St., Syracuse, NY 13202	Museum	April 2015 - Present	N/A	Board Member	OPEN	N/A
SYRACUSE STAGE	820 E. Genesee St., Syracuse, NY 13210	Performing Arts	Appx. 2008 - 2012	N/A	Board Member	OPEN	N/A

TMP = TAX MATTERS PARTNER



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

Appendix A must be completed for all board members, officers, managers, owners, partners, principal stakeholders, directors, and members. For board members, officers, managers, owners, partners, directors, and members of the applicant that are not natural persons, Appendix A must be completed by each board member, officer, manager, owner, partner, director and member of that entity, going back to the level of ownership by a natural person. An Organizational Chart documenting your organizational structure must be included with this application.

1. Business Name: Salus Scientific, LLC
This is the name that was entered in Section A of the Application for Registration as a Registered Organization.
2. Name: Darren P Moore 3. Title: COO/CFO
4. Briefly describe the role of this person or entity in the proposed registered organization:
The Chief Operations Officer/Chief Financial Officer will focus efforts on operational and regulatory compliance, financial integrity and governance. My job will be to work with board members, employees of the enterprise, and government departments in conjunction with our executive team to provide financial guidance and responsible deployment of company assets. In addition, I will be working closely with our legal counsel to suggest and implement financial and operational best practices for our company within the Medical Marijuana sector.
5. Will this person or entity come into contact with medical marijuana or medical marijuana products?
[checked] Yes [ ] No
Any managers who may come in contact with or handle medical marijuana, including medical marijuana products, shall be subject to a fingerprinting process as part of a criminal history background check in compliance with the procedures established by Division of Criminal Justice Services and submission of the applicable fee. Criminal history background checks must be done through Identogo at http://www.identogo.com/FP/NewYork.aspx using the ORI number NY0412500 and the Fingerprint Reason "Control Substance License."
6. Has this person or entity held any position of management or ownership during the preceding ten years of a 10% or greater interest in any other business which manufactured or distributed drugs? [ ] Yes [checked] No
If the answer to this question is yes, provide the name of the business, a statement defining the position of management or ownership held in such business, and any finding of violations of law or regulation by a governmental agency against the business or person or entity.

REQUEST FOR EXEMPTION FROM FOIL
Employment History POL § 89(2)(b)(i)
Economic/Personal Hardship POL § 89(2)(b)(iv)
NOT FOR DISTRIBUTION



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

7. Has this person or entity been convicted of a felony or had any type of registration or license suspended or revoked in any administrative or judicial proceeding?
Yes No

If the answer to either of these questions is "Yes," a statement explaining the circumstances of the felony, suspension or revocation must be provided below.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Table with 6 columns: Institution, Address, Dates Attended (From, To), Degree Received, Date Received. Rows include University of San Diego and Cal Poly San Luis Obispo.

REQUEST FOR EXEMPTION FROM FOIL
Employment History POL § 89(2)(b)(i)
Economic/Personal Hardship POL § 89(2)(b)(iv)
NOT FOR DISTRIBUTION



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

Table with 5 columns: Type of Professional License, License Number, Institution Granting License (Mailing Address, Phone, Email), Effective Date, Expiration Date. Rows include Securities Exchange Commission licenses and California Department of Real Estate license.

17. Employment History for the Past 10 Years: Start with MOST RECENT employment and include employment during the last 10 years. Attach additional copies of page 3, if necessary.

Redacted pursuant to N.Y. Public Officers Law, Art. 6

Name of Employer: N/A

Type of Business: N/A

REQUEST FOR EXEMPTION FROM FOIL
Employment History POL § 89(2)(b)(i)
Economic/Personal Hardship POL § 89(2)(b)(iv)
NOT FOR DISTRIBUTION



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

Form with multiple sections for personal and professional information, including fields for Street Address, City, State, Zip Code, Starting Date of Employment, Ending Date of Employment, Name of Supervisor for Reference, Supervisor Phone Number, Position/Responsibilities, Reason For Departure, Name of Employer, and Type of Business.

REQUEST FOR EXEMPTION FROM FOIL
Employment History POL § 89(2)(b)(i)
Economic/Personal Hardship POL § 89(2)(b)(iv)
NOT FOR DISTRIBUTION



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

Form with multiple sections for business information, including fields for Type of Business, Street Address, City, State, Zip Code, Starting/Ending Date of Employment, Name of Supervisor, and Position/Responsibilities.

Redacted pursuant to N.Y. Public Officers Law, Art. 6



**Appendix A:**

**Affidavit for Board Members, Officers, Managers, Owners, Partners,  
Principal Stakeholders, Directors, and Members**  
Redacted pursuant to N.Y. Public Officers Law, Art. 6

**REQUEST FOR EXEMPTION FROM FOIL**  
**Employment History POL § 89(2)(b)(i)**  
**Economic/Personal Hardship POL § 89(2)(b)(iv)**  
**NOT FOR DISTRIBUTION**



Appendix A:
Affidavit for Board Members, Officers, Managers, Owners, Partners,
Principal Stakeholders, Directors, and Members

19. Affirmative Statement of Qualifications

For individuals who have not previously served as a director/officer nor have had managerial experience, please include a statement below explaining how you are qualified to operate the proposed facility. This statement should include, but not be limited to, any relevant community/volunteer background and experience.

20. The undersigned certifies, under penalty of perjury, that the information contained herein or attached hereto is accurate, true, and complete in all material respects.

Signature: [Handwritten Signature]

Date: 6/4/15

Notary Name: [Handwritten Signature]

Notary Registration Number: 13-203

Notary (Notary Must Affix Stamp or Seal)
MELANIE Y. SHIN
NOTARY PUBLIC
13-203
STATE OF HAWAII
My commission expires June 02, 2017

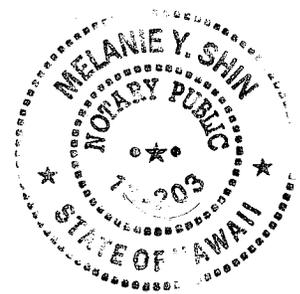
Date: JUN 04 2015

**NOTARY PUBLIC CERTIFICATION**  
Melanie Y. Shin First Judicial Circuit

Doc. Description: Appendix A:  
Affidavit for Board  
Members

No. of Pages: 8 Date of Doc. 6/04/15

Melanie Y. Shin JUN 04 2015  
Notary Signature Date



**REQUEST FOR EXEMPTION FROM FOIL**  
Employment History POL § 89(2)(b)(i)  
Economic/Personal Hardship POL § 89(2)(b)(iv)  
**NOT FOR DISTRIBUTION**

Redacted pursuant to N.Y. Public Officers Law, Art. 6

{01073178}

**REQUEST FOR EXEMPTION FROM FOIL**  
**Employment History POL § 89(2)(b)(i)**  
**Economic/Personal Hardship POL § 89(2)(b)(iv)**  
**NOT FOR DISTRIBUTION**

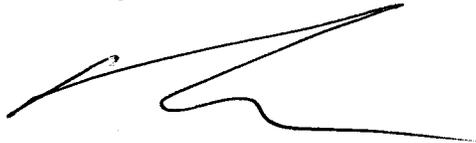
June 4, 2015

New York State Department of Health  
Bureau of Narcotic Enforcement  
Medical Marijuana Program  
150 Broadway  
Albany, NY 12204

To Whom It May Concern:

Please find enclosed my Appendix A affidavit for inclusion with Salus Scientific, LLC's application for registration as a registered organization to manufacture and dispense approved medical marijuana products in New York State.

Sincerely,

A handwritten signature in black ink, appearing to read 'Darren Moore', with a long horizontal stroke extending to the right.

Darren Moore

Shipment Receipt: Page #1 of 1

THIS IS NOT A SHIPPING LABEL. PLEASE SAVE FOR YOUR RECORDS.

SHIP DATE:  
Thur, Jun 4, 2015  
  
EXPECTED DELIVERY DATE:  
MON, JUN 8, 2015 10:30 AM

SHIPMENT INFORMATION:  
UPS 2nd Day Air AM  
0.10 lbs actual wt  
LTR Billed Weight  
Carrier Letter

SHIP FROM:  
DARREN MOORE

SHIP TO:  
NEW YORK STATE DEPT. OF HEALTH  
BUREAU OF NARCOTIC ENFORCEMENT  
150 BROADWAY  
MEDICAL MARIJUANA PROGRAM  
ALBANY NY 12204-2719  
Business

DESCRIPTION OF GOODS:  
DOCUMENTS

SHIPPED THROUGH:

SHIPMENT CHARGES:  
2nd Day Air AM \$24.75  
Service Options \$0.00  
Fuel Surcharge \$1.11  
CMS Processing Fee \$0.20

Total \$26.06

COMPLETE ONLINE TRACKING: Enter this address in your web browser to track:  
<http://theupsstore.com> (select Tracking, enter Shipment ID #) SHIPMENT  
QUESTIONS? Contact SHIPPED THROUGH above.

CUSTOMER ACKNOWLEDGEMENT: I acknowledge and accept Terms & Conditions in force  
for tendering shipments through this location and certify that address, content  
and values provided for this shipment are accurate in all respects.

Signature:

ShipmentID: MMJF8C8DHRGA4



Powered by iShip(r)  
06/04/2015 04:10 PM Pacific Time N

The UPS Store



SEE NOTICE ON REVERSE regarding UPS Terms, and notice of limitation of liability. Where allowed by law, shipper authorizes UPS to act as forwarding agent for export control and  
customs purposes. If exported from the US, shipper certifies that the commodity, technology or software were exported from the US in accordance with the Export Administration  
Regulations. Diversion contrary to law is prohibited. 500 R 0215

REQUEST FOR EXEMPTION FROM FOIL  
Employment History POL § 89(2)(b)(i)  
Economic/Personal Hardship POL § 89(2)(b)(iv)  
NOT FOR DISTRIBUTION

**Ngwgt u'qhUwr r qt v**

# Office of the Broome County Executive

*"The People's Office"*

Debra A. Preston, County Executive

June 3, 2015

New York State Department of Health  
Bureau of Narcotic Enforcement  
Medical Marijuana Program  
150 Broadway  
Albany, New York 12204

To whom it may concern:

I offer this letter of support for Salus Scientific's application for a medical marijuana license.

Salus Scientific's mission is to grow, manufacture and provide medical marijuana in a safe, secure and effective manner to patients with qualifying medical conditions and in need of the most compassionate care. Salus Scientific's team of unparalleled medical, pharmaceutical and business professionals are committed to its mission as well as to providing its services in a manner that protects the public's health, safety and welfare.

I also understand Salus Scientific seeks to locate a medical marijuana cultivation facility as well as a dispensing facility in Broome County. Without hesitation, I support this proposal and, as stated earlier, endorse the company's application for a medical marijuana license.

Sincerely,



Debra A. Preston  
County Executive  
Broome County Government



# Town of DeWitt

(315)446-3910 ext. 5

Edward M. Michalenko, Ph. D, Supervisor

FAX (315)449-0620

Town Board:  
Kerry Mannion  
Jack Dooling  
Joseph Chiarenza Jr.  
Jamie Frank  
Kerin Rigney  
Karen Docter

5400 Butternut Drive  
East Syracuse, NY  
13057

Town Manager:  
Michael Moracco

June 3, 2015

New York State Department of Health  
Bureau of Narcotic Enforcement  
Medical Marijuana Program  
150 Broadway  
Albany, New York 12204

To whom it may concern:

I offer this letter of support for Salus Scientific's application for a medical marijuana license.

Salus Scientific's mission is to grow, manufacture and provide medical marijuana in a safe, secure and effective manner to patients with qualifying medical conditions and in need of the most compassionate care. Salus Scientific's team of unparalleled medical, pharmaceutical and business professionals are committed to its mission as well as to providing its services in a manner that protects the public's health, safety and welfare.

I also understand Salus Scientific seeks to locate a medical marijuana dispensing facility in the Town of DeWitt. Without hesitation, I support this proposal and, as stated earlier, endorse the company's application for a medical marijuana license.

Sincerely,

Edward M. Michalenko, Ph.D.  
Supervisor



County of Onondaga  
**Office of the County Executive**

John H. Mulroy Civic Center, 14th Floor  
421 Montgomery Street, Syracuse, New York 13202

Phone: 315.435.3516 Fax: 315.435.8582

[www.ongov.net](http://www.ongov.net)

**Joanne M. Mahoney**  
*County Executive*

**Ann Rooney**  
*Deputy County Executive, Human Services*

**William P. Fisher**  
*Deputy County Executive*

**Mary Beth Primo**  
*Deputy County Executive, Physical Services*

June 4, 2015

New York State Department of Health  
Bureau of Narcotic Enforcement  
Medical Marijuana Program  
150 Broadway  
Albany, New York 12204

To whom it may concern:

I offer this letter of support for Salus Scientific's application for a medical marijuana license.

Salus Scientific's mission is to grow, manufacture and provide medical marijuana in a safe, secure and effective manner to patients with qualifying medical conditions and in need of the most compassionate care. Salus Scientific's team of unparalleled medical, pharmaceutical and business professionals are committed to its mission as well as to providing its services in a manner that protects the public's health, safety and welfare.

I also understand Salus Scientific seeks to locate a medical marijuana dispensing facility in Onondaga County. Without hesitation, I support this proposal and, as stated earlier, endorse the company's application for a medical marijuana license.

Sincerely,

A handwritten signature in black ink that reads "Joanne M. Mahoney".

Joanne M. Mahoney  
Onondaga County Executive



**TOWN OF  
LERAY**

EST. 1806

**TOWN OF LERAY  
MUNICIPAL OFFICES**

8650 LeRay St  
Evans Mills, NY 13637-3191  
(315) 629-4052 Fax (315) 629-4393  
www.townofleray.org

**Supervisor**

Ronald C. Taylor  
(315) 629-5532

June 4, 2015

**Town Clerk**

Mary C. Smith  
(315) 629-4052

New York State Department of Health  
Bureau of Narcotic Enforcement  
Medical Marijuana Program  
150 Broadway  
Albany, New York 12204

**Highway**

**Superintendent**  
Bruce Shawcross  
(315) 629-4401

To whom it may concern:

**Zoning Enforcement  
Officer**

David Lachienauer  
(315) 629-4052

I offer this letter of support for Salus Scientific's application for a medical marijuana license.

**Planning Board  
Chairman**

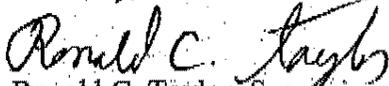
Deborah Biondolillo  
(315) 629-4283

Salus Scientific's mission is to grow, manufacture and provide medical marijuana in a safe, secure and effective manner to patients with qualifying medical conditions and in need of the most compassionate care. Salus Scientific's team of unparalleled medical, pharmaceutical and business professionals are committed to its mission as well as to providing its services in a manner that protects the public's health, safety and welfare.

**Town Assessor**  
William Vargulick  
(315) 629-3420

I also understand Salus Scientific seeks to locate a medical marijuana dispensing facility in the Town of LeRay. Without hesitation, I support this proposal and, as stated earlier, endorse the company's application for a medical marijuana license.

Sincerely,

  
Ronald C. Taylor, Supervisor  
Town of LeRay



THE ASSEMBLY  
STATE OF NEW YORK  
ALBANY

CHAIR  
Task Force on Food, Farm and  
Nutrition Policy  
CHAIR  
Subcommittee on Women Veterans  
COMMITTEES  
Agriculture  
Corporations, Authorities and Commissions  
Economic Development, Job Creation,  
Commerce and Industry  
Energy  
Local Governments  
Veterans' Affairs  
Legislative Women's Caucus

ADDIE J. RUSSELL  
Assemblywoman for 116<sup>th</sup> "River" District

June 4, 2015

New York State Department of Health  
Bureau of Narcotic Enforcement  
Medical Marijuana Program  
150 Broadway  
Albany, New York 12204

To Whom It May Concern:

I offer this letter of support for Salus Scientific's application for a medical marijuana license.

Salus Scientific's mission is to grow, manufacture and provide medical marijuana in a safe, secure and effective manner to patients with qualifying medical conditions and in need of the most compassionate care. Salus Scientific's team of unparalleled medical, pharmaceutical and business professionals are committed to its mission as well as to providing its services in a manner that protects the public's health, safety and welfare.

I also understand Salus Scientific seeks to locate a medical marijuana dispensing facility in the Village of Evans Mills. Without hesitation, I support this proposal and, as stated earlier, endorse the company's application for a medical marijuana license.

Please feel free to contact me if I can be of any further assistance. I can be reached at my Watertown District Office at (315) 786-0284.

Sincerely,

Addie J. Russell  
Member of Assembly  
116<sup>th</sup> "River" District



**TOWN OF VESTAL**  
**OFFICE OF THE SUPERVISOR**  
605 Vestal Parkway West  
Vestal • New York • 13850-1486  
Telephone (607) 748-1514 / Fax (607) 786-3631

**Town Council**

Patty Fitzgerald  
Francis Majewski  
Suzanne Messina  
Shoba Agneshwar

**Supervisor**  
John Schaffer

---

June 3, 2015

New York State Department of Health  
Bureau of Narcotic Enforcement  
Medical Marijuana Program  
150 Broadway  
Albany, New York 12204

RE: Marijuana Businesses

To Whom It May Concern:

We offer this letter of support for a lawfully licensed marijuana business to be located in the Town of Vestal.

Without hesitation, we support the location of a medical marijuana cultivation facility as well as a dispensing facility in Broome County, and endorse company's applications for a medical marijuana license.

Sincerely,

John Schaffer  
Town of Vestal Supervisor

WJS/tlp

New York State Department of Health  
Bureau of Narcotic Enforcement  
Medical Marijuana Program  
150 Broadway  
Albany, NY 12204

June 5, 2015

To Whom It May Concern:

As community leaders in Broome County, we are writing as a group to express our complete support for the Salus Scientific medical marijuana license application.

The Salus Scientific team brings together a world class research, clinical, and management team with the unprecedented applied technical experience to produce, manufacture, and dispense pharmaceutical grade medical marijuana on a large scale. Their collective history as safe and secure operators in other states gives us the confidence that they will be a responsible corporate citizen in our region, as does their association with respected national and international research partners.

After reviewing their plans, we are convinced that through the establishment of their cultivation and manufacturing facility in the Southern Tier, Salus Scientific will help drive a new global paradigm in cannabis from the heart of the Greater Binghamton Region. They are committed to using local business and labor in their operations and will seek to use locally grown product. They also plan to minimize their environmental footprint through the use of the most modern agricultural practices, green building principles and clean transportation alternatives. With these approaches, they have committed to revitalizing an area that has long struggled to rebuild its economy. Their decision to locate in our community was also very much driven by proximity to the planned Binghamton University School of Pharmacy. This developing partnership shows their intention to undertake further research into medical marijuana dispensation and delivery with a highly recognized academic partner like BU. Cutting-edge health care will remain at the very core of their work.

Salus Scientific exemplifies, in every facet of their application, the best of what we in the Southern Tier consider a model program in the newly developing field of medical marijuana cultivation and distribution business. Their unmatched, research-driven approach brings together some of the most recognizable names in the study of cannabis

and in related fields, which will allow them to help transform health care in this state and ensure that New York continues to be a model for the rest of the country

We urge your support of the Salus Scientific application and look forward to your decision.

Sincerely,

Donna A. Lupardo; New York State Assembly, 123<sup>rd</sup> District

Clifford W. Crouch; New York State Assembly, 122<sup>nd</sup> District

Debra A. Preston; Broome County Executive

Jason T. Garnar; Minority Leader, Broome County Legislature

Gregory Deemie; Johnson City Mayor

Dr. Gloria E. Meredith; Founding Dean, Binghamton University School of  
Pharmaceutical Sciences

Jeff Davis; Hospital Consultant



**Appendix B: Architectural Program**

**A SEPARATE “APPENDIX B” SHALL BE COMPLETED FOR EACH SEPARATE BUILDING AND/OR FACILITY INCLUDED IN THE ORGANIZATION’S BUSINESS PLAN**

<b>COMPANY INFORMATION</b>	
Business Name:	
Facility Type:	<input type="checkbox"/> Manufacturing Facility <input type="checkbox"/> Dispensing Facility
Use and Occupancy Classification:	
Building Construction Type and Classification:	
Facility Address:	
Primary Contact Telephone number:	
Primary Contact Fax number:	
<b>PART I – ARCHITECTURAL PROGRAM &amp; CONSTRUCTION TIMELINE:</b>	
Applicant shall identify planning requirements, including but not limited to:	
<input type="checkbox"/>	TOWN BOARD APPROVAL
<input type="checkbox"/>	PLANNING BOARD APPROVAL
<input type="checkbox"/>	ZONING BOARD OF APPEALS APPROVAL
<input type="checkbox"/>	PREPARATION OF CONSTRUCTION DOCUMENTS
<input type="checkbox"/>	BUILDING PERMIT
<input type="checkbox"/>	BIDDING PHASE
<input type="checkbox"/>	CONTRACT AWARD PHASE PER EACH APPLICABLE CONTRACTOR (Identify all that apply)
<input type="checkbox"/>	COMMENCEMENT OF CONSTRUCTION
<input type="checkbox"/>	COMPLETION OF CONSTRUCTION



**Appendix B – Architectural Program**

**PART II – SITE PLAN(S)**

Applicant shall provide the appropriate details for each of the following by identifying the location and dimension on the Site Plan attached to the application for each building location.

- |  |   |
|--|---|
| <input type="checkbox"/> Entrance and Exits        | <input type="checkbox"/> Fire Lane and/or Fire Apparatus Road |
| <input type="checkbox"/> Public Parking Spaces     | <input type="checkbox"/> Percentage of Green Space            |
| <input type="checkbox"/> Staff Parking Spaces      | <input type="checkbox"/> Location of Emergency Power Systems  |
| <input type="checkbox"/> Accessible Parking Spaces | <input type="checkbox"/> Loading & Unloading                  |
| <input type="checkbox"/> Accessible Route(s)       | <input type="checkbox"/> Security Gates & Fences              |

**PART III – ENERGY SOURCES & ENGINEERING SYSTEMS:**

Applicant shall provide the following minimum information to outline the specifications relating to the energy sources and engineering systems of each building included in the application.

- Energy Source:
- |                                      |                                      |                                   |
|--------------------------------------|--------------------------------------|-----------------------------------|
| <input type="checkbox"/> Natural Gas | <input type="checkbox"/> Oil         | <input type="checkbox"/> Electric |
| <input type="checkbox"/> Solar       | <input type="checkbox"/> Other _____ |                                   |
- Engineering Systems:
- Heating System: Type \_\_\_\_\_, Size \_\_\_\_\_ Efficiency \_\_\_\_\_,  
Ventilation Requirements \_\_\_\_\_
- Cooling System: Type \_\_\_\_\_, Size \_\_\_\_\_ Efficiency \_\_\_\_\_,  
Ventilation Requirements \_\_\_\_\_
- Ventilation & Humidification Systems:  
Type \_\_\_\_\_, Size \_\_\_\_\_, Efficiency \_\_\_\_\_,  
Ventilation Requirements \_\_\_\_\_
- Electrical Distribution Available \_\_\_\_\_
- Water Supply: Municipal Water Service \_\_\_\_\_ or Private Well Water \_\_\_\_\_
- Sewage: Municipal Sewer System \_\_\_\_\_ or Private Septic System \_\_\_\_\_
- Emergency Power System:  
Type \_\_\_\_\_, Size \_\_\_\_\_ Efficiency \_\_\_\_\_,



Appendix B – Architectural Program

Table with 2 columns: checkbox and code description. Includes codes like 2010 BUILDING CODE OF NYS, 2010 FIRE CODE OF NYS, etc.



**Appendix B – Architectural Program**

<p><b>Select Project Type:</b> Check all that apply. Refer to the Existing Building Code for definitions.</p>	<input type="checkbox"/> New Building <input type="checkbox"/> Repair <input type="checkbox"/> Alteration Level 1 <input type="checkbox"/> Alteration Level 2	<input type="checkbox"/> Alteration Level 3 <input type="checkbox"/> Change of Occupancy <input type="checkbox"/> Addition <input type="checkbox"/> Historic Building	<input type="checkbox"/> Demolition <input type="checkbox"/> Chapter 3. Prescriptive Compliance Method <input type="checkbox"/> Chapter 13. Performance Compliance Method
<p><b>Select Work Involved:</b> Check all that apply.</p>	<input type="checkbox"/> General Construction <input type="checkbox"/> Roofing <input type="checkbox"/> Asbestos Abatement/Environmental <input type="checkbox"/> Fire Alarm	<input type="checkbox"/> Structural <input type="checkbox"/> Mechanical <input type="checkbox"/> Plumbing <input type="checkbox"/> Electrical	<input type="checkbox"/> Site Work <input type="checkbox"/> Sprinkler <input type="checkbox"/> Elevators <input type="checkbox"/> Other: _____

<b>CODE COMPLIANCE REVIEW</b>						
<p>Applicant shall provide all applicable information in regards to the code topic and section listed below.</p> <p>1. Code Compliance Review is based on the 2010 NY State Building Code for New Construction. If any other building code applies to the location or type of construction, provide applicable code and sections that most closely relates and references the code topic and information in the code sections listed below. Provide appropriate abbreviations for other applicable codes, such as: <b>FC: Fire Code, PC: Plumbing Code, MC: Mechanical Code, FGC: Fuel Gas Code, ECC: Energy Conservation Code.</b></p> <p>2. Provide the Required standard for each applicable code section. (i.e.: area, quantity, classification type, materials, hourly separation, etc.). If section does not apply, indicate one of the following with explanation: <b>NA: Not Applicable, NR: Not Required, NP: Not Permitted</b></p> <p>3. Provide your facilities "Actual" value for each required standard as per applicable code section.</p>						
No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
1	Use & Occupancy Classification	302.1 - 312		Use & occupancy of this facility. Identify all applicable materials, class and quantities regarding Table 307.1.		



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
2	Combustible Storage	413		All combustible storage areas and rooms, as per applicable Building and Fire Codes. Identify all combustible stored materials, area and room dimensions, all required fire separations, and exit requirements.		
3	Hazardous Materials	414		All hazardous materials stored or used as per applicable Building and Fire Codes. Identify all combustible stored materials, area and room dimensions, all required fire separations, and exit requirements.		
4	Hazardous Materials Control Areas	414.2		Provide additional information indicating number, size, materials stored, and quantity of each material.		
5	Building Area & Height	501-507		Provide the building area & height Provide all calculations and cite applicable code sections for increased Building Area & Heights allowed per building code(s).		
6	Incidental Use Areas	508.2		Identify all Incidental Use Areas and required fire separation of occupancies on Building Plans.		



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
7	Mixed Occupancies	508.3		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).		
8	Nonseparated Uses	508.3.2		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).		
9	Separated Uses (Ratio < 1)	508.3.3		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).		
10	Construction Classification	602		Provide Construction Classification per each building included in Application.		
11	Fire Resistance Rating Req'm't for Building Elements	Table 601		Provide Fire Resistance Rating per each building element as per Table 601. Identify rating & elements on Building Plans.		



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
12	Exterior Wall Fire-Resistance Rating	Table 602		Identify required fire resistance rating of exterior walls on Building Plan(s).		
13	Exterior Fire Separation Distance	Table 602		Identify required fire separation distance of exterior walls between Buildings on Plan.		
14	Fire Walls	705		Provide code information and identify all applicable required Fire Wall(s) and fire resistance requirement on Building Plans.		
15	Fire Barriers	706		Provide code information and identify all applicable required Fire Barrier(s) and fire resistance requirement on Building Plans.		
16	Shaft Enclosures	707		Provide code information and identify all applicable required Shaft Wall(s) and fire resistance requirement on Building Plans.		
17	Fire Partitions	708		Provide code information and identify all applicable required Fire Partition(s) and fire resistance requirement on Building Plans.		



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
18	Horizontal Assemblies	711		Provide code information and identify all applicable required Horizontal Assemblies and fire resistance requirement on Building Plans.		
19	Fire Protection: Sprinkler System	903		Indicate Type of Sprinkler System: <input type="checkbox"/> NFPA 13 <input type="checkbox"/> NFPA 13 R <input type="checkbox"/> NFPA 13D Provide code information of all applicable requirements for Automatic Sprinkler Systems with code section cited.		
20	Alt. Fire Extinguishing System	904		Provide code information of all applicable requirements for Alternative Automatic Fire-Extinguishing Systems with code section(s) cited.		
21	Standpipe System	905		Provide code information of all applicable requirements for Standpipe Systems with code section(s) cited.		
22	Fire Alarm & Detection Systems	907		Provide code information of all applicable requirements for Fire Alarm System(s) with code section cited. Indicate Type of Fire Alarm System <input type="checkbox"/> Addressable <input type="checkbox"/> Hardwired (zoned)		



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
23	Emergency Alarm System	908		Provide code information of all applicable requirements for Emergency Alarm Systems with code section cited.		
24	Fire Department Connections	912		Identify Fire Department connections in accordance with NFPA applicable standard.		
25	Exits	1001.1 & 2		Identify on the Building Plans and documents, per each door, the following information: door width, door height, direction of swing, type of construction, hourly rating, and door closures.		
26	Occupant Load	1004 & Table 1004.1.1		Identify the use/name of each room, dimensions of each room, and Occupant Loads per each room on the Building Plans.		
27	Egress Width	1005		Provide egress widths & cite applicable code section(s) and requirement(s) on the Building Plans		
28	Accessible Means of Egress	1007.1		Provide accessible means of egress as per Section 1007 & cite applicable code section(s) and requirement(s) on the Building Plans.		



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
29	Doors, Gates, and Turnstiles	1008		Means of egress doors shall meet the requirements of this section.		
30	Interior Stairs	1009		Identify the following information for each stairway on the Building Plan(s): the width of stairways; the height, width, depth and number of risers and treads; dimensions of landings; stairway construction type; and handrail height.		
31	Ramps	1010.1		Identify the following information of each ramp, on the Building Plan(s): width; total vertical rise; length of ramp; and handrail height.		
32	Common Path of Travel	1014.3		Identify on the Building Plan(s): the length of the "Common Path of Travel" per each room as per applicable building code requirements.		
33	Exit Doorway Arrangement	1015		Identify on the Building Plan(s): applicable building code requirements for all Exits and Exit Access Doorways per each room and required exits in all buildings.		
34	Corridor Fire Rating	1017.1		Identify, on the Building Plan(s): all corridors with required fire resistance and the applicable fire rating.		



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
35	Corridor Width	1017.2		Identify on the Building Plan(s): the width of all corridors. Provide applicable code section(s) and requirement(s).		
36	Dead End Corridor	1017.3		Corridors shall not exceed the maximum dead end corridor length as per applicable code.		
37	Number of Exits and Continuity	1019		Identify on the Building Plan(s): required number of exits, continuity and arrangement as per the applicable code requirements.		
38	Vertical Exit Enclosures	1020		Identify on the Building Plan(s): all applicable code requirements for each Vertical Exit Enclosure.		
39	Exit Passageways	1021		Identify on the Building Plan(s): all applicable code requirements for each Exit Passageway.		
40	Horizontal Exits	1022		Identify on the Building Plan(s): all applicable code requirements for each Horizontal Exit.		



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
41	Exterior Exit Ramps & Stairways	1023		Identify on the Building Plan(s): all applicable code requirements for each exterior exit ramps and stairways.		
42	Exit Discharge	1024		Identify on the Building Plan(s): all applicable code requirements for each Exit Discharge.		
43	Accessibility	1101.1 - 1110 & ICC/A117.1(03)		Identify on the Building Plan(s): all applicable code requirements such that the design and construction of each building/facility provides accessibility to physically disabled persons.		
44	Energy Conservation	2010 NYS ECCC & IECC 2012		Identify the R-Value and U-Value of each construction component and assembly of the building envelope as required in the applicable energy and building code(s).		
45	Emergency & Standby Power	2702.1		Identify emergency & Standby Power locations and specifications of the system to be provided.		
46	Smoke Control Systems	2702.2.2		Identify the Standby power for smoke control systems in accordance with Section 909.11 of NYS Building Code.		



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
47	Plumbing Fixture Count	2902.1		Identify on the Building Plan(s): the minimum plumbing facilities as per applicable plumbing code(s).		
48	Available Street Water Pressure			Provide the available street or well water pressure.		
49	Fire Apparatus Access Road	FC503.1		Identify on the Site Plan: Fire Apparatus Road, Fire Lane and other Fire Service requirements per applicable Building and Fire Codes.		



**Part I-Architectural Program & Construction Timeline:**

The Village of Johnson City's as administered by the Town of Union, New York requirement for the site a 100 Oakdale Road is a Site Plan Review. There is no other Land Use approval required See letter from the Town of Union.

The following Anticipated timeline for the design/approvals and construction of the Manufacturing Facility:

AHJ Approval:	60 Days
Preparation of Construction Documents Concurrent with Land Use Approvals	120 Days
Bidding	30 Days
Construction	270 Days

# town of union

## Code Enforcement / Permits Department

3111 E. Main Street - Endwell, NY 13760-5990  
Phone (Voice/TTY) (607) 786-2920  
Fax (607) 786-2320



Daria Golazeski  
DCPW Codes & Ordinances

May 28, 2015

Michael P. Falcone  
Chairman & CEO  
The Pioneer Companies  
333 W. Washington Street  
Syracuse, NY 13202

RE: 100 Oakdale Road  
Village of Johnson City

Dear Mr. Falcone,

This letter is to confirm that 100 Oakdale Road in the Village of Johnson City is located in an Industrial Zoning District in the Village. The proposed use of the property for a medical marijuana growth, processing, manufacturing and distribution facility is considered a Manufacturing Use pursuant to the Village of Johnson City Zoning Code ("Zoning Code"). Under the Zoning Code a Manufacturing Use is a Permitted Use in an Industrial Zoning district.

Since the building has been vacant for several years, site plan review and approval is required for the proposed use in accordance with Article 63 of the Zoning Code.

Please contact me if you have any questions regarding this matter.

Sincerely,

  
Daria M. Golazeski  
DCPW Codes & Ordinances

Listed below please find the classification of all chemicals/materials that are classified as hazardous for this location. The amounts of corrosive materials that are proposed will not exceed those amounts that are permitted within an outside control area.

Each of the materials that are being stored on site, and which are considered as hazardous per the International Fire Code are listed below.

We have also indicated the hazard classification and the maximum quantity allowed on site:

- **GH Micro - Class I oxidizer** - Per the 2012 edition of the International Fire Code Table 5003.1.1(3) the amount of Class I oxidizers is **unlimited** when stored outside.
- **Botanicare CalMag - Corrosive** - Per the 2012 edition of the International Fire Code Table 5003.1.1(4) the amount of corrosives permitted per outside control area is **2,000 gallons**.
- **AM Hydro Dark Energy - Class 3 Combustible Liquid** - Per the 2012 edition of the International Fire Code Table 5704.4.2 the amount of Class 3 Combustible Liquids allowed in a single outdoor control area is **22,000 gallons**. Storage piles must be located a minimum of 10'-0" from property lines and 5'-0" from public ways.
- **GH Rapid Rooter - Class 3 Combustible Liquid** - Per the 2012 edition of the International Fire Code Table 5704.4.2 the amount of Class 3 Combustible liquids allowed in a single outdoor control area is **22,000 gallons**. Storage piles must be located a minimum of 10'-0" from property lines and 5'-0" from public ways.
- **Botanicare Liquid Karma - Corrosive** - Per the 2012 edition of the International Fire Code Table 5003.1.1(4) the amount of corrosives permitted per outside control area is **2,000 gallons**.
- **Botanicare Hydroplex - Corrosive** - Per the 2012 edition of the International Fire Code Table 5003.1.1(4) the amount of corrosives permitted per outside control area is **2,000 gallons**.
- **Rock RSN8 - Corrosive** - Per the 2012 edition of the International Fire Code Table 5003.1.1(4) the amount of corrosives permitted per outside control area is **2,000 gallons**.
- **Advanced Nutrients PH Down - Toxic/Corrosive** - Toxic Materials are limited to **100 gallons** per outside control area. See 2012 IFC Table 5003.1.1(4).
- **Dip N'Grow - Class IB Flammable Liquid** - Class IB Flammable Liquids are limited to **2,200 gallons** per outside control area. See 2012 IFC Table 5704.4.2.

Further, if stored on site piles must be located a minimum of 50'-0" from property lines and 10'-0" from any public way.

- **GH Azamax - Class 3 Combustible Liquid** - Per the 2012 edition of the International Fire Code Table 5704.4.2 the amount of Class 3 Combustible liquids allowed in a single outdoor control area is **22,000 gallons**. Storage piles must be located a minimum of 10'-0" from property lines and 5'-0" from public ways.

Total quantities (by hazard classification) proposed are as follows:

- **Corrosives - Maximum per outside control area is 2,200 gallons.**
- **Oxidizers (Class I) - Maximum per outside control area is unlimited.**
- **Class 3 Combustible Liquids - Maximum per outside control area is 22,000 gallons.**

The 2012 International Fire Code allows more than one control area on a single property, as follows:

- Where a property exceeds 10,000 square feet a group of two outdoor control areas is allowed when approved and when each control area is separated by a minimum distance of 50 feet.
- Or, where a property exceeds 35,000 square feet, additional groups of outdoor control areas are allowed when approved and when each group is separated by a minimum distance of 300 feet.
- An offsite warehouse could also be used to store these materials, or a separate on site warehouse building could be erected to store corrosive materials if the situation can not otherwise be addressed.

REQUEST FOR EXEMPTION FROM FOIL  
Trade Secret (POL § 87(2)(d))  
NOT FOR DISTRIBUTION























Appendix B: Architectural Program

A SEPARATE "APPENDIX B" SHALL BE COMPLETED FOR EACH SEPARATE BUILDING AND/OR FACILITY INCLUDED IN THE ORGANIZATION'S BUSINESS PLAN

COMPANY INFORMATION
Business Name: Salus Scientific, LLC
Facility Type: Manufacturing Facility [ ] Dispensing Facility [ ]
Use and Occupancy Classification: M-Mercantile
Building Construction Type and Classification: VB
Facility Address: 4700 Vestal Parkway, East Vestal, New York 13850
Primary Contact Telephone number: 315-552-1344
Primary Contact Fax number: 315-471-1154
PART I - ARCHITECTURAL PROGRAM & CONSTRUCTION TIMELINE:
Applicant shall identify planning requirements, including but not limited to:
[ ] TOWN BOARD APPROVAL
[ ] PLANNING BOARD APPROVAL
[ ] ZONING BOARD OF APPEALS APPROVAL
[ ] PREPARATION OF CONSTRUCTION DOCUMENTS
[ ] BUILDING PERMIT
[ ] BIDDING PHASE
[ ] CONTRACT AWARD PHASE PER EACH APPLICABLE CONTRACTOR (Identify all that apply)
[ ] COMMENCEMENT OF CONSTRUCTION
[ ] COMPLETION OF CONSTRUCTION



Appendix B – Architectural Program

PART II – SITE PLAN(S)

Applicant shall provide the appropriate details for each of the following by identifying the location and dimension on the Site Plan attached to the application for each building location.

- Entrance and Exits
Public Parking Spaces
Staff Parking Spaces
Accessible Parking Spaces
Accessible Route(s)
Fire Lane and/or Fire Apparatus Road
Percentage of Green Space
Location of Emergency Power Systems
Loading & Unloading
Security Gates & Fences

PART III – ENERGY SOURCES & ENGINEERING SYSTEMS:

Applicant shall provide the following minimum information to outline the specifications relating to the energy sources and engineering systems of each building included in the application.

- Energy Source:
Natural Gas, Solar, Oil, Other, Electric
Engineering Systems:
Heating System: Type RTU, Size (2) 3 ton, Efficiency 13 Seer
Cooling System: Type RTU, Size (2) 3 Ton, Efficiency 13 Seer, Ventilation Requirements Mechanical
Ventilation & Humidification Systems:
Type N/A, Size N/A, Efficiency N/A
Electrical Distribution Available Existing
Water Supply: Municipal Water Service yes or Private Well Water
Sewage: Municipal Sewer System yes or Private Septic System
Emergency Power System:
Type N/A, Size N/A, Efficiency N/A



Appendix B – Architectural Program

Table with 2 columns: Checkmark and Code Description. Includes codes like 2010 BUILDING CODE OF NYS, 2010 FIRE CODE OF NYS, etc.



**Appendix B – Architectural Program**

<b>Select Project Type:</b> Check all that apply. Refer to the Existing Building Code for definitions.	<input type="checkbox"/> New Building <input type="checkbox"/> Repair <input type="checkbox"/> Alteration Level 1 <input checked="" type="checkbox"/> Alteration Level 2	<input type="checkbox"/> Alteration Level 3 <input type="checkbox"/> Change of Occupancy <input type="checkbox"/> Addition <input type="checkbox"/> Historic Building	<input checked="" type="checkbox"/> Demolition <input checked="" type="checkbox"/> Chapter 3. Prescriptive Compliance Method <input type="checkbox"/> Chapter 13. Performance Compliance Method
	<b>Select Work Involved:</b> Check all that apply.	<input checked="" type="checkbox"/> General Construction <input type="checkbox"/> Roofing <input type="checkbox"/> Asbestos Abatement/Environmental <input checked="" type="checkbox"/> Fire Alarm	<input type="checkbox"/> Structural <input checked="" type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Plumbing <input checked="" type="checkbox"/> Electrical

<b>CODE COMPLIANCE REVIEW</b>						
Applicant shall provide all applicable information in regards to the code topic and section listed below.						
1. Code Compliance Review is based on the 2010 NY State Building Code for New Construction. If any other building code applies to the location or type of construction, provide applicable code and sections that most closely relates and references the code topic and information in the code sections listed below. Provide appropriate abbreviations for other applicable codes, such as: <b>FC: Fire Code, PC: Plumbing Code, MC: Mechanical Code, FGC: Fuel Gas Code, ECCC: Energy Conservation Code.</b>						
2. Provide the Required standard for each applicable code section. (i.e.: area, quantity, classification type, materials, hourly separation, etc.). If section does not apply, indicate one of the following with explanation: <b>NA: Not Applicable, NR: Not Required, NP: Not Permitted</b>						
3. Provide your facilities "Actual" value for each required standard as per applicable code section.						
No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
1	Use & Occupancy Classification	302.1 - 312		Use & occupancy of this facility. Identify all applicable materials, class and quantities regarding Table 307.1.	M-Mercantile	M-Mercantile



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
2	Combustible Storage	413		All combustible storage areas and rooms, as per applicable Building and Fire Codes. Identify all combustible stored materials, area and room dimensions, all required fire separations, and exit requirements.	Not Applicable -No high piled storage	Not Applicable-No high piled storage
3	Hazardous Materials	414		All hazardous materials stored or used as per applicable Building and Fire Codes. Identify all combustible stored materials, area and room dimensions, all required fire separations, and exit requirements.	Not Applicable-no material will be stored on site identified in table 414.2.5 (1)	Not Applicable-no material will be stored on site identified in table 414.2.5 (1)
4	Hazardous Materials Control Areas	414.2		Provide additional information indicating number, size, materials stored, and quantity of each material.	No material identified in table 414.2.5 (1) stored on site	No material identified in table 414.2.5 (1) stored on site
5	Building Area & Height	501-507		Provide the building area & height Provide all calculations and cite applicable code sections for increased Building Area & Heights allowed per building code(s).	VB- Group B Table 503 2/9000 fully Sprinklered with eq 5-1 and 5-2=42750	Dispensary actual=2980 Building actual=24000 See Exhibit 1-code sheet
6	Incidental Use Areas	508.2		Identify all Incidental Use Areas and required fire separation of occupancies on Building Plans.	None Required	None Required



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
7	Mixed Occupancies	508.3		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).	N/A	N/A
8	Nonseparated Uses	508.3.2		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).	N/A	N/A
9	Separated Uses (Ratio < 1)	508.3.3		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).	N/A	N/A
10	Construction Classification	602		Provide Construction Classification per each building included in Application.	VB	VB
11	Fire Resistance Rating Req'm't for Building Elements	Table 601		Provide Fire Resistance Rating per each building element as per Table 601. Identify rating & elements on Building Plans.	VB-Non-Rated all elements	VB-Non-Rated all elements



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
12	Exterior Wall Fire-Resistance Rating	Table 602		Identify required fire resistance rating of exterior walls on Building Plan(s).	VB-Non rated exterior assemblies	VB-Non rated exterior assemblies
13	Exterior Fire Separation Distance	Table 602		Identify required fire separation distance of exterior walls between Buildings on Plan.	X>30'	33'
14	Fire Walls	705		Provide code information and identify all applicable required Fire Wall(s) and fire resistance requirement on Building Plans.	Table 705.4 Group B -3 hour	Not Applicable - adjacent businesses are B occupancy and are on the same parcel
15	Fire Barriers	706		Provide code information and identify all applicable required Fire Barrier(s) and fire resistance requirement on Building Plans.	Table 706.3.9 Group B-2 hour	Not Applicable - Entire 24000 Retail building is a single fire area 
16	Shaft Enclosures	707		Provide code information and identify all applicable required Shaft Wall(s) and fire resistance requirement on Building Plans.	N/A	N/A
17	Fire Partitions	708		Provide code information and identify all applicable required Fire Partition(s) and fire resistance requirement on Building Plans.	See exhibit 1	Existing



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
18	Horizontal Assemblies	711		Provide code information and identify all applicable required Horizontal Assemblies and fire resistance requirement on Building Plans.	N/A	N/A-Single Story
19	Fire Protection: Sprinkler System	903		Indicate Type of Sprinkler System: <input checked="" type="checkbox"/> NFPA 13 <input type="checkbox"/> NFPA 13 R <input type="checkbox"/> NFPA 13D Provide code information of all applicable requirements for Automatic Sprinkler Systems with code section cited.	9.3.2.6 Group M- Automatic Fire sprinkler system required in fire areas exceeding 12000 SF	Existing fully sprinklered building
20	Alt. Fire Extinguishing System	904		Provide code information of all applicable requirements for Alternative Automatic Fire-Extinguishing Systems with code section(s) cited.	N/A	Existing fully sprinklered building
21	Standpipe System	905		Provide code information of all applicable requirements for Standpipe Systems with code section(s) cited.	Not required 905.3	N/A
22	Fire Alarm & Detection Systems	907		Provide code information of all applicable requirements for Fire Alarm System(s) with code section cited. Indicate Type of Fire Alarm System <input type="checkbox"/> Addressable <input type="checkbox"/> Hardwired (zoned)	907.2.2 Group B- Fire Alarm Not required 907.2.2.1 Group B-Fire Detection-Not Required	Fire Alarm- Not required Fire Detection-Not Required



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
23	Emergency Alarm System	908		Provide code information of all applicable requirements for Emergency Alarm Systems with code section cited.	N/A	N/A
24	Fire Department Connections	912		Identify Fire Department connections in accordance with NFPA applicable standard.	912.2.1 Visible Location	See Exhibit 2- Site plan for location
25	Exits	1001.1 & 2		Identify on the Building Plans and documents, per each door, the following information: door width, door height, direction of swing, type of construction, hourly rating, and door closures.	See exhibit 1- Code Sheet 49 occupants-single exit	See exhibit 1- Code Sheet single fire/emergency exit +1 exit
26	Occupant Load	1004 & Table 1004.1.1		Identify the use/name of each room, dimensions of each room, and Occupant Loads per each room on the Building Plans.	See exhibit 1- Code Sheet 1 occupant per 100 Sf	See exhibit 1- Code Sheet 1 occupant per 100 Sf
27	Egress Width	1005		Provide egress widths & cite applicable code section(s) and requirement(s) on the Building Plans	Table 1005.1 .15" per occupant	See exhibit 1-49 occupants at .15" per=7.35" /36" <span style="border: 1px solid black; padding: 0 2px;">+</span>
28	Accessible Means of Egress	1007.1		Provide accessible means of egress as per Section 1007 & cite applicable code section(s) and requirement(s) on the Building Plans.	1007.1 one accessible means of egress	See exhibit 1- one provided



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
29	Doors, Gates, and Turnstiles	1008		Means of egress doors shall meet the requirements of this section.	1008.1.1-32" min required	36" provided
30	Interior Stairs	1009		Identify the following information for each stairway on the Building Plan(s): the width of stairways; the height, width, depth and number of risers and treads; dimensions of landings; stairway construction type; and handrail height.	N/A	N/A
31	Ramps	1010.1		Identify the following information of each ramp, on the Building Plan(s): width; total vertical rise; length of ramp; and handrail height.	N/A	Single story building-Not applicable
32	Common Path of Travel	1014.3		Identify on the Building Plan(s): the length of the "Common Path of Travel" per each room as per applicable building code requirements.	1014.3 common path shall not exceed 75'	See exhibit 1
33	Exit Doorway Arrangement	1015		Identify on the Building Plan(s): applicable building code requirements for all Exits and Exit Access Doorways per each room and required exits in all buildings.	Table 1015.1 One means of egress B occupancy/49 occupants	2890 Sf at 60=49 total occupants
34	Corridor Fire Rating	1017.1		Identify, on the Building Plan(s): all corridors with required fire resistance and the applicable fire rating.	Exhibit 1	Exhibit 1



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
35	Corridor Width	1017.2		Identify on the Building Plan(s): the width of all corridors. Provide applicable code section(s) and requirement(s).	1017.2 exception 2. 36" min	60"
36	Dead End Corridor	1017.3		Corridors shall not exceed the maximum dead end corridor length as per applicable code.	1017.3 Exception 2 b Occupancy 50' with Fire sprinkler svstem	Fully Sprinklered No dead-end corridors-see exhibit 1
37	Number of Exits and Continuity	1019		Identify on the Building Plan(s): required number of exits, continuity and arrangement as per the applicable code requirements.	table 1019.2 -B occupancy 49 Exception d-100'	See exhibit 1
38	Vertical Exit Enclosures	1020		Identify on the Building Plan(s): all applicable code requirements for each Vertical Exit Enclosure.	N/A	N/A
39	Exit Passageways	1021		Identify on the Building Plan(s): all applicable code requirements for each Exit Passageway.	N/A	N/A
40	Horizontal Exits	1022		Identify on the Building Plan(s): all applicable code requirements for each Horizontal Exit.	N/A	N/A



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
41	Exterior Exit Ramps & Stairways	1023		Identify on the Building Plan(s): all applicable code requirements for each exterior exit ramps and stairways.	N/A	N/A
42	Exit Discharge	1024		Identify on the Building Plan(s): all applicable code requirements for each Exit Discharge.	Not required	Not required
43	Accessibility	1101.1 - 1110 & ICC/A117.1(03)		Identify on the Building Plan(s): all applicable code requirements such that the design and construction of each building/facility provides accessibility to physically disabled persons.	One accessible route from public ROW and through facility	see exhibits 1 and 2 Complies
44	Energy Conservation	2010 NYS ECCC & IECC 2012		Identify the R-Value and U-Value of each construction component and assembly of the building envelope as required in the applicable energy and building code(s).		See exhibit 1
45	Emergency & Standby Power	2702.1		Identify emergency & Standby Power locations and specifications of the system to be provided.	1006.3-not required 1011.5.3-not required	See exhibit 1
46	Smoke Control Systems	2702.2.2		Identify the Standby power for smoke control systems in accordance with Section 909.11 of NYS Building Code.	Not required	Not required



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
47	Plumbing Fixture Count	2902.1		Identify on the Building Plan(s): the minimum plumbing facilities as per applicable plumbing code(s).	2901.1-1/25 M 1/25 Women 2902.2-Exception 3-separate	See exhibit 1
48	Available Street Water Pressure			Provide the available street or well water pressure.	Access to within 150 of portions of the building	80 psi
49	Fire Apparatus Access Road	FC503.1		Identify on the Site Plan: Fire Apparatus Road, Fire Lane and other Fire Service requirements per applicable Building and Fire Codes.	Access to within 150 of portions of the building	See exhibit 2



**Part I-Architectural Program & Construction Timeline:**

The town of Vestal requires Zoning Board of Appeals Approval.

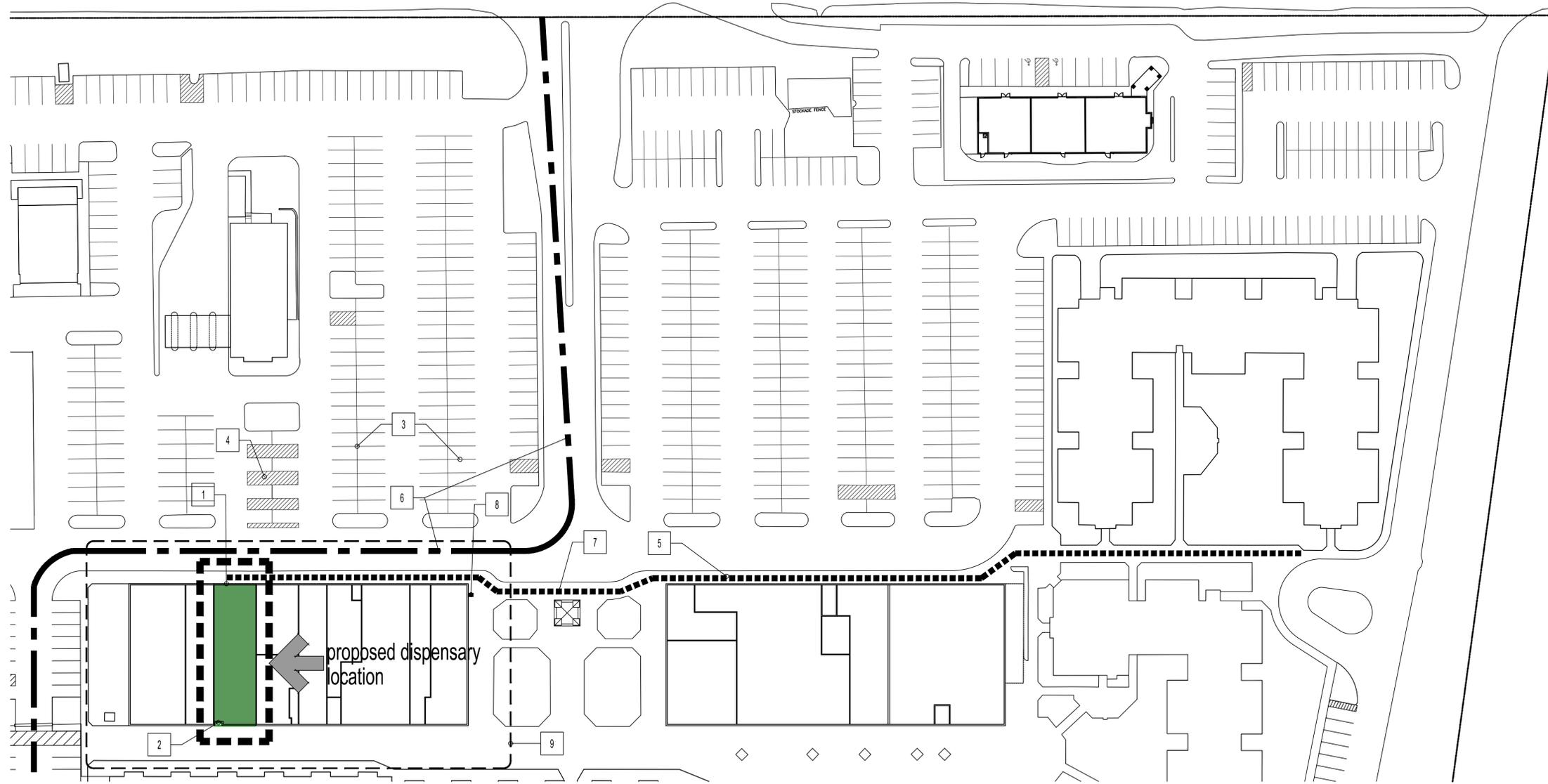
The following Anticipated timeline for the design/approvals and construction of the Manufacturing Facility:

AHJ Approval:	90 Days
Preparation of Construction Documents Concurrent with Land Use Approvals	30 Days
Bidding	14 Days
Construction	45 Days





NYS ROUTE 434 VESTAL PARKWAY



site data:

- Entrance and exits:  
existing accessible entrance and rear emergency exit to remain
- Public parking spaces:  
Shared parking with entire existing mixed use development  
Previous Mercantile occupancy 1/250=12 required spaces provided
- Staff parking spaces:  
Shared parking with entire existing mixed use development  
Previous Mercantile occupancy 1/250=12 required spaces provided
- Accessible parking spaces:  
existing accessible parking spaces to remain-shared with development
- Accessible route:  
existing accessible route to remain
- Fire Lane:  
existing accessible entrance and rear emergency exit to remain
- Green Space:  
Shared parking with entire existing mixed use development  
Previous Mercantile occupancy 1/250=12 required spaces provided
- Emergency Power System:  
none required at this location  
nysbc-1011.5.3-exit signs internally to provide 90 mins of illumination  
nysbc-1006.3 single exit spaces do not require illumination emergency power
- Loading and Unloading:  
existing development loading zone to remain
- Security Gates and Fences:  
Not Applicable to this site

code compliance notes :

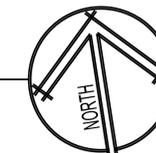
All architectural and site design are based on 2010 NY State Building code.  
All accessibility design are based on 2010 NY State Building code and ICC/ANSI A117.1-03.

site key notes legend:

- |   |                                    |   |                |
|---|------------------------------------|---|----------------|
| 1 | Dispensary Entrance                | 9 | 30' Open space |
| 2 | Emergency Exit only                |   |                |
| 3 | Public/Staff Shared Parking Spaces |   |                |
| 4 | Accessible Parking Spaces          |   |                |
| 5 | Accessible Route to public ROW     |   |                |
| 6 | Fire Lane/ access                  |   |                |
| 7 | Accessible loading/unloading       |   |                |
| 8 | Fire department connection         |   |                |

SITE PLAN

SCALE: 1/64" = 1'-0"



REQUEST FOR EXEMPTION FROM FOIL  
Critical infrastructure (POL § 86(5))  
NOT FOR DISTRIBUTION





**Appendix B: Architectural Program**

**A SEPARATE "APPENDIX B" SHALL BE COMPLETED FOR EACH SEPARATE BUILDING AND/OR FACILITY INCLUDED IN THE ORGANIZATION'S BUSINESS PLAN**

<b>COMPANY INFORMATION</b>	
Business Name:	Salus Scientific, LLC
Facility Type:	Manufacturing Facility <input type="checkbox"/> Dispensing Facility <input type="checkbox"/>
Use and Occupancy Classification:	M-Mercantile
Building Construction Type and Classification:	VB
Facility Address:	26183 US Route 11, LeRay, New York 13637
Primary Contact Telephone number:	315-552-1344
Primary Contact Fax number:	315-471-1154
<b>PART I – ARCHITECTURAL PROGRAM &amp; CONSTRUCTION TIMELINE:</b>	
Applicant shall identify planning requirements, including but not limited to:	
<input type="checkbox"/>	TOWN BOARD APPROVAL
<input type="checkbox"/>	PLANNING BOARD APPROVAL
<input type="checkbox"/>	ZONING BOARD OF APPEALS APPROVAL
<input checked="" type="checkbox"/>	PREPARATION OF CONSTRUCTION DOCUMENTS
<input checked="" type="checkbox"/>	BUILDING PERMIT
<input checked="" type="checkbox"/>	BIDDING PHASE
<input checked="" type="checkbox"/>	CONTRACT AWARD PHASE PER EACH APPLICABLE CONTRACTOR (Identify all that apply)
<input checked="" type="checkbox"/>	COMMENCEMENT OF CONSTRUCTION
<input checked="" type="checkbox"/>	COMPLETION OF CONSTRUCTION



**Appendix B – Architectural Program**

**PART II – SITE PLAN(S)**

Applicant shall provide the appropriate details for each of the following by identifying the location and dimension on the Site Plan attached to the application for each building location.

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> Entrance and Exits        | <input checked="" type="checkbox"/> Fire Lane and/or Fire Apparatus Road |
| <input checked="" type="checkbox"/> Public Parking Spaces     | <input checked="" type="checkbox"/> Percentage of Green Space            |
| <input checked="" type="checkbox"/> Staff Parking Spaces      | <input checked="" type="checkbox"/> Location of Emergency Power Systems  |
| <input checked="" type="checkbox"/> Accessible Parking Spaces | <input checked="" type="checkbox"/> Loading & Unloading                  |
| <input checked="" type="checkbox"/> Accessible Route(s)       | <input checked="" type="checkbox"/> Security Gates & Fences              |

**PART III – ENERGY SOURCES & ENGINEERING SYSTEMS:**

Applicant shall provide the following minimum information to outline the specifications relating to the energy sources and engineering systems of each building included in the application.

- Energy Source:
- |   |                                      |  |
|---|--------------------------------------|--|
| <input checked="" type="checkbox"/> Natural Gas | <input type="checkbox"/> Oil         | <input checked="" type="checkbox"/> Electric |
| <input type="checkbox"/> Solar                  | <input type="checkbox"/> Other _____ |  |
- Engineering Systems:
- Heating System: Type RTU, Size ((2) 3 Ton Efficiency 13 SEER,  
Ventilation Requirements \_\_\_\_\_
- Cooling System: Type RTU, Size (2) 3 Ton Efficiency 13 SEER,  
Ventilation Requirements \_\_\_\_\_
- Ventilation & Humidification Systems:  
Type N/A, Size N/A, Efficiency N/A,  
Ventilation Requirements \_\_\_\_\_
- Electrical Distribution Available Existing
- Water Supply: Municipal Water Service Yes or Private Well Water \_\_\_\_\_
- Sewage: Municipal Sewer System Yes or Private Septic System \_\_\_\_\_
- Emergency Power System:  
Type N/A, Size N/A Efficiency N/A



Appendix B – Architectural Program

Table with 2 columns: Checkmark and Code Description. Includes codes like 2010 BUILDING CODE OF NYS, 2010 FIRE CODE OF NYS, etc.



**Appendix B – Architectural Program**

<b>Select Project Type:</b> Check all that apply. Refer to the Existing Building Code for definitions.	<input type="checkbox"/> New Building <input type="checkbox"/> Repair <input type="checkbox"/> Alteration Level 1 <input checked="" type="checkbox"/> Alteration Level 2	<input type="checkbox"/> Alteration Level 3 <input type="checkbox"/> Change of Occupancy <input type="checkbox"/> Addition <input type="checkbox"/> Historic Building	<input checked="" type="checkbox"/> Demolition <input checked="" type="checkbox"/> Chapter 3. Prescriptive Compliance Method <input type="checkbox"/> Chapter 13. Performance Compliance Method
	<b>Select Work Involved:</b> Check all that apply.	<input checked="" type="checkbox"/> General Construction <input type="checkbox"/> Roofing <input type="checkbox"/> Asbestos Abatement/Environmental <input checked="" type="checkbox"/> Fire Alarm	<input type="checkbox"/> Structural <input checked="" type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Plumbing <input checked="" type="checkbox"/> Electrical

**CODE COMPLIANCE REVIEW**

Applicant shall provide all applicable information in regards to the code topic and section listed below.

- Code Compliance Review is based on the 2010 NY State Building Code for New Construction. If any other building code applies to the location or type of construction, provide applicable code and sections that most closely relates and references the code topic and information in the code sections listed below. Provide appropriate abbreviations for other applicable codes, such as: **FC: Fire Code, PC: Plumbing Code, MC: Mechanical Code, FGC: Fuel Gas Code, ECCC: Energy Conservation Code.**
- Provide the Required standard for each applicable code section. (i.e.: area, quantity, classification type, materials, hourly separation, etc.). If section does not apply, indicate one of the following with explanation: **NA: Not Applicable, NR: Not Required, NP: Not Permitted**
- Provide your facilities "Actual" value for each required standards as per applicable code section.

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
1	Use & Occupancy Classification	302.1 - 312		Use & occupancy of this facility. Identify all applicable materials, class and quantities regarding Table 307.1.	M-Mercantile	M-Mercantile



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
2	Combustible Storage	413		All combustible storage areas and rooms, as per applicable Building and Fire Codes. Identify all combustible stored materials, area and room dimensions, all required fire separations, and exit requirements.	Not Applicable -No high piled storage	Not Applicable-No high piled storage
3	Hazardous Materials	414		All hazardous materials stored or used as per applicable Building and Fire Codes. Identify all combustible stored materials, area and room dimensions, all required fire separations, and exit requirements.	Not Applicable-no material will be stored on site identified in table 414.2.5 (1)	Not Applicable-no material will be stored on site identified in table 414.2.5 (1)
4	Hazardous Materials Control Areas	414.2		Provide additional information indicating number, size, materials stored, and quantity of each material.	no material identified in table 414.2.5 (1) stored on site <input checked="" type="checkbox"/>	no material identified in table 414.2.5 (1) stored on site <input checked="" type="checkbox"/>
5	Building Area & Height	501-507		Provide the building area & height Provide all calculations and cite applicable code sections for increased Building Area & Heights allowed per building code(s).	VB- Group M Table 503 2/9000 SF allowable	Dispensary actual=2,100 Building actual=10,776 See Exhibit 1-Code Sheet
6	Incidental Use Areas	508.2		Identify all Incidental Use Areas and required fire separation of occupancies on Building Plans.	None Required	None Required



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
7	Mixed Occupancies	508.3		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).	Separation between B OCC & proposed M OCC. / 2 Hour per Table 508.3.3	2 Hour separation provided, see Exhibit 2 - Site Plan
8	Nonseparated Uses	508.3.2		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).	Separation between B OCC & proposed M OCC. / 2 Hour per Table 508.3.3	Separation between B OCC & proposed M OCC. / 2 Hour per Table 508.3.3
9	Separated Uses (Ratio < 1)	508.3.3		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).	Separation between B OCC & proposed M OCC. / 2 Hour per Table 508.3.3	Separation between B OCC & proposed M OCC. / 2 Hour per Table 508.3.3
10	Construction Classification	602		Provide Construction Classification per each building included in Application.	VB	VB
11	Fire Resistance Rating Req'm't for Building Elements	Table 601		Provide Fire Resistance Rating per each building element as per Table 601. Identify rating & elements on Building Plans.	VB-Non-Rated all elements	VB-Non-Rated all elements



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
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13	Exterior Fire Separation Distance	Table 602		Identify required fire separation distance of exterior walls between Buildings on Plan.	X>30'	60' to nearest adjacent building
14	Fire Walls	705		Provide code information and identify all applicable required Fire Wall(s) and fire resistance requirement on Building Plans.	Table 705.4 Group M -3 hour	Not Applicable - no adjacent businesses on property
15	Fire Barriers	706		Provide code information and identify all applicable required Fire Barrier(s) and fire resistance requirement on Building Plans.	Table 706.3.9 Group M-2 hour	Not Applicable - Entire 2,100 building is a single fire area.
16	Shaft Enclosures	707		Provide code information and identify all applicable required Shaft Wall(s) and fire resistance requirement on Building Plans.	N/A	N/A
17	Fire Partitions	708		Provide code information and identify all applicable required Fire Partition(s) and fire resistance requirement on Building Plans.	Two Hour Fire Partition Between tenant Spaces	Two our demising walls- See Exhibit 2- Site Plan



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
18	Horizontal Assemblies	711		Provide code information and identify all applicable required Horizontal Assemblies and fire resistance requirement on Building Plans.	N/A	N/A-Single Story
19	Fire Protection: Sprinkler System	903		Indicate Type of Sprinkler System: <input checked="" type="checkbox"/> NFPA 13 <input type="checkbox"/> NFPA 13 R <input type="checkbox"/> NFPA 13D Provide code information of all applicable requirements for Automatic Sprinkler Systems with code section cited.	9.3.2.6 Group M- Automatic Fire sprinkler system required in fire areas exceeding 12000 SF	Fully sprinklered building
20	Alt. Fire Extinguishing System	904		Provide code information of all applicable requirements for Alternative Automatic Fire-Extinguishing Systems with code section(s) cited.	N/A	Fully sprinklered building
21	Standpipe System	905		Provide code information of all applicable requirements for Standpipe Systems with code section(s) cited.	Not required 905.3	N/A
22	Fire Alarm & Detection Systems	907		Provide code information of all applicable requirements for Fire Alarm System(s) with code section cited. Indicate Type of Fire Alarm System <input type="checkbox"/> Addressable <input type="checkbox"/> Hardwired (zoned)	907.2.7 Group M- Fire Alarm Not required 907.2.7.2 Group M-Fire Detection-Not Required	Fire Alarm- Not required <500 OCC. Fire Detection-Not Required <100 OCC.



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
23	Emergency Alarm System	908		Provide code information of all applicable requirements for Emergency Alarm Systems with code section cited.	N/A	N/A
24	Fire Department Connections	912		Identify Fire Department connections in accordance with NFPA applicable standard.	N/A	N/A
25	Exits	1001.1 &2		Identify on the Building Plans and documents, per each door, the following information: door width, door height, direction of swing, type of construction, hourly rating, and door closures.	See Exhibit 1- Code Sheet 35 occupants-single exit	See exhibit 1- Code Sheet single fire/emergency exit +1 exit
26	Occupant Load	1004 & Table 1004.1.1		Identify the use/name of each room, dimensions of each room, and Occupant Loads per each room on the Building Plans.	See exhibit 1- Code Sheet 1 occupant per 60 SF Gross	See exhibit 1- Code Sheet 1 occupant per 60 SF Gross - 35 Total 
27	Egress Width	1005		Provide egress widths & cite applicable code section(s) and requirement(s) on the Building Plans	Table 1005.1 .15" per occupant	See exhibit 1-35 occupants at .15" per=5.25" /36" 
28	Accessible Means of Egress	1007.1		Provide accessible means of egress as per Section 1007 & cite applicable code section(s) and requirement(s) on the Building Plans.	1007.1 one accessible means of egress	see exhibit 1- one provided - Main Entrance



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code' (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value' /Allowed Code Value	Facility's Actual Value'
29	Doors, Gates, and Turnstiles	1008		Means of egress doors shall meet the requirements of this section.	1008.1.1-32" min required	36" provided
30	Interior Stairs	1009		Identify the following information for each stairway on the Building Plan(s): the width of stairways; the height, width, depth and number of risers and treads; dimensions of landings; stairway construction type; and handrail height.	N/A	N/A
31	Ramps	1010.1		Identify the following information of each ramp, on the Building Plan(s): width; total vertical rise; length of ramp; and handrail height.	N/A	Single story building-Not applicable
32	Common Path of Travel	1014.3		Identify on the Building Plan(s): the length of the "Common Path of Travel" per each room as per applicable building code requirements.	1014.3 common path shall not exceed 75'	See Exhibit 1 - less than 75'
33	Exit Doorway Arrangement	1015		Identify on the Building Plan(s): applicable building code requirements for all Exits and Exit Access Doorways per each room and required exits in all buildings.	Table 1015.1 One means of egress M occupancy/33 occupants	2,100 SF/60 gross=35 total occupants
34	Corridor Fire Rating	1017.1		Identify, on the Building Plan(s): all corridors with required fire resistance and the applicable fire rating.	Table 1017.1-M Occupancy greater than 30 occupants 1	Corridor rated 1 hour - see Exhibit 1 Code Review Exit



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
35	Corridor Width	1017.2		Identify on the Building Plan(s): the width of all corridors. Provide applicable code section(s) and requirement(s).	1017.2 exception 2. 36" min	60"
36	Dead End Corridor	1017.3		Corridors shall not exceed the maximum dead end corridor length as per applicable code.	1017.3 Exception 2, M Occupancy 20' with Fire sprinkler svstem	Not Sprinklered, No dead-end corridors-see Exhibit 1
37	Number of Exits and Continuity	1019		Identify on the Building Plan(s): required number of exits, continuity and arrangement as per the applicable code requirements.	Table 1019.2, M Occupancy <49 OCC.	See Exhibit 1, 35 OCC., less than 75 FT. Travel
38	Vertical Exit Enclosures	1020		Identify on the Building Plan(s): all applicable code requirements for each Vertical Exit Enclosure.	N/A	N/A
39	Exit Passageways	1021		Identify on the Building Plan(s): all applicable code requirements for each Exit Passageway.	N/A	N/A
40	Horizontal Exits	1022		Identify on the Building Plan(s): all applicable code requirements for each Horizontal Exit.	N/A	N/A



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
41	Exterior Exit Ramps & Stairways	1023		Identify on the Building Plan(s): all applicable code requirements for each exterior exit ramps and stairways.	N/A	N/A
42	Exit Discharge	1024		Identify on the Building Plan(s): all applicable code requirements for each Exit Discharge.	not required	not required
43	Accessibility	1101.1 - 1110 & ICC/A117.1(03)		Identify on the Building Plan(s): all applicable code requirements such that the design and construction of each building/facility provides accessibility to physically disabled persons.	one accessible route from public ROW and through facility	see exhibits 1 and 2 Complies
44	Energy Conservation	2010 NYS ECCC & IECC 2012		Identify the R-Value and U-Value of each construction component and assembly of the building envelope as required in the applicable energy and building code(s).		
45	Emergency & Standby Power	2702.1		Identify emergency & Standby Power locations and specifications of the system to be provided.	1006.3-not required 1011.5.3-not required	see exhibit 1
46	Smoke Control Systems	2702.2.2		Identify the Standby power for smoke control systems in accordance with Section 909.11 of NYS Building Code.	not required	not required



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
47	Plumbing Fixture Count	2902.1		Identify on the Building Plan(s): the minimum plumbing facilities as per applicable plumbing code(s).	2901.1-1/25 M 1/25 Women 2902.2-Exception 3-separate	See exhibit 1
48	Available Street Water Pressure			Provide the available street or well water pressure.	Access to within 150 of portions of the building	80 psi
49	Fire Apparatus Access Road	FC503.1		Identify on the Site Plan: Fire Apparatus Road, Fire Lane and other Fire Service requirements per applicable Building and Fire Codes.	Access to within 150 of portions of the building	See exhibit 2



**Part I – Architectural Program & Construction Timeline:**

The Town of LeRay, New York requirement for the Dispensary Site at 26183 US Route 11, LeRay, New York is a standard Site Plan Review. There is no other Land Use approval(s) required for approval of this site.

The following is the anticipated timeline for the design/approvals and construction of this Dispensary Facility:

AHJ Approval:	60 Days
Preparation of Construction Documents:	120 Days
Bidding:	30 Days
Construction:	270 Days

Town of LeRay, New York  
Jefferson County











**Appendix B: Architectural Program**

**A SEPARATE "APPENDIX B" SHALL BE COMPLETED FOR EACH SEPARATE BUILDING AND/OR FACILITY INCLUDED IN THE ORGANIZATION'S BUSINESS PLAN**

<b>COMPANY INFORMATION</b>	
Business Name:	Salus Scientific, LLC
Facility Type:	Manufacturing Facility <input type="checkbox"/> Dispensing Facility <input type="checkbox"/>
Use and Occupancy Classification:	M-Mercantile
Building Construction Type and Classification:	VB
Facility Address:	56-17 58th Street Manhasset, New York 11378
Primary Contact Telephone number:	315-552-1344
Primary Contact Fax number:	315-471-1154
<b>PART I – ARCHITECTURAL PROGRAM &amp; CONSTRUCTION TIMELINE:</b>	
Applicant shall identify planning requirements, including but not limited to:	
<input type="checkbox"/>	TOWN BOARD APPROVAL
<input type="checkbox"/>	PLANNING BOARD APPROVAL
<input type="checkbox"/>	ZONING BOARD OF APPEALS APPROVAL
<input checked="" type="checkbox"/>	PREPARATION OF CONSTRUCTION DOCUMENTS
<input checked="" type="checkbox"/>	BUILDING PERMIT
<input checked="" type="checkbox"/>	BIDDING PHASE
<input checked="" type="checkbox"/>	CONTRACT AWARD PHASE PER EACH APPLICABLE CONTRACTOR (Identify all that apply)
<input checked="" type="checkbox"/>	COMMENCEMENT OF CONSTRUCTION
<input checked="" type="checkbox"/>	COMPLETION OF CONSTRUCTION



Appendix B – Architectural Program

PART II – SITE PLAN(S)

Applicant shall provide the appropriate details for each of the following by identifying the location and dimension on the Site Plan attached to the application for each building location.

- Entrance and Exits
Public Parking Spaces
Staff Parking Spaces
Accessible Parking Spaces
Accessible Route(s)
Fire Lane and/or Fire Apparatus Road
Percentage of Green Space
Location of Emergency Power Systems
Loading & Unloading
Security Gates & Fences

PART III – ENERGY SOURCES & ENGINEERING SYSTEMS:

Applicant shall provide the following minimum information to outline the specifications relating to the energy sources and engineering systems of each building included in the application.

- Energy Source:
Natural Gas, Oil, Electric, Solar, Other
Engineering Systems:
Heating System: Type RTU, Size ((2) 3 Ton, Efficiency 13 SEER, Ventilation Requirements
Cooling System: Type RTU, Size (2) 3 Ton, Efficiency 13 SEER, Ventilation Requirements
Ventilation & Humidification Systems: Type N/A, Size N/A, Efficiency N/A, Ventilation Requirements
Electrical Distribution Available Existing
Water Supply: Municipal Water Service Yes or Private Well Water
Sewage: Municipal Sewer System Yes or Private Septic System
Emergency Power System: Type N/A, Size N/A, Efficiency N/A



Appendix B – Architectural Program

Table with 2 columns: Checkmark and Code Description. Includes codes like 2010 BUILDING CODE OF NYS, 2010 FIRE CODE OF NYS, etc.



**Appendix B – Architectural Program**

<b>Select Project Type:</b> Check all that apply. Refer to the Existing Building Code for definitions.	<input type="checkbox"/> New Building <input type="checkbox"/> Repair <input type="checkbox"/> Alteration Level 1 <input checked="" type="checkbox"/> Alteration Level 2	<input type="checkbox"/> Alteration Level 3 <input type="checkbox"/> Change of Occupancy <input type="checkbox"/> Addition <input type="checkbox"/> Historic Building	<input checked="" type="checkbox"/> Demolition <input checked="" type="checkbox"/> Chapter 3. Prescriptive Compliance Method <input type="checkbox"/> Chapter 13. Performance Compliance Method
	<b>Select Work Involved:</b> Check all that apply.	<input checked="" type="checkbox"/> General Construction <input type="checkbox"/> Roofing <input type="checkbox"/> Asbestos Abatement/Environmental <input checked="" type="checkbox"/> Fire Alarm	<input type="checkbox"/> Structural <input checked="" type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Plumbing <input checked="" type="checkbox"/> Electrical

**CODE COMPLIANCE REVIEW**

Applicant shall provide all applicable information in regards to the code topic and section listed below.

- Code Compliance Review is based on the 2010 NY State Building Code for New Construction. If any other building code applies to the location or type of construction, provide applicable code and sections that most closely relates and references the code topic and information in the code sections listed below. Provide appropriate abbreviations for other applicable codes, such as: **FC: Fire Code, PC: Plumbing Code, MC: Mechanical Code, FGC: Fuel Gas Code, ECCC: Energy Conservation Code.**
- Provide the Required standard for each applicable code section. (i.e.: area, quantity, classification type, materials, hourly separation, etc.). If section does not apply, indicate one of the following with explanation: **NA: Not Applicable, NR: Not Required, NP: Not Permitted**
- Provide your facilities "Actual" value for each required standard as per applicable code section.

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
1	Use & Occupancy Classification	302.1 - 312		Use & occupancy of this facility. Identify all applicable materials, class and quantities regarding Table 307.1.	M-Mercantile	M-Mercantile



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
2	Combustible Storage	413		All combustible storage areas and rooms, as per applicable Building and Fire Codes. Identify all combustible stored materials, area and room dimensions, all required fire separations, and exit requirements.	Not Applicable -No high piled storage	Not Applicable-No high piled storage
3	Hazardous Materials	414		All hazardous materials stored or used as per applicable Building and Fire Codes. Identify all combustible stored materials, area and room dimensions, all required fire separations, and exit requirements.	Not Applicable-no material will be stored on site identified in table 414.2.5 (1)	Not Applicable-no material will be stored on site identified in table 414.2.5 (1)
4	Hazardous Materials Control Areas	414.2		Provide additional information indicating number, size, materials stored, and quantity of each material.	no material identified in table 414.2.5 (1) stored on site	no material identified in table 414.2.5 (1) stored on site
5	Building Area & Height	501-507		Provide the building area & height Provide all calculations and cite applicable code sections for increased Building Area & Heights allowed per building code(s).	VB- Group M Table 503 2/9000 SF allowable	Dispensary actual=2,750 Building actual=2,750 See Exhibit 1-Code Sheet
6	Incidental Use Areas	508.2		Identify all Incidental Use Areas and required fire separation of occupancies on Building Plans.	None Required	None Required



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
7	Mixed Occupancies	508.3		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).	N/A	N/A
8	Nonseparated Uses	508.3.2		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).	N/A	N/A
9	Separated Uses (Ratio < 1)	508.3.3		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).	N/A	N/A
10	Construction Classification	602		Provide Construction Classification per each building included in Application.	VB	VB
11	Fire Resistance Rating Req'm't for Building Elements	Table 601		Provide Fire Resistance Rating per each building element as per Table 601. Identify rating & elements on Building Plans.	VB-Non-Rated all elements	VB-Non-Rated all elements



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
12	Exterior Wall Fire-Resistance Rating	Table 602		Identify required fire resistance rating of exterior walls on Building Plan(s).	VB-Non rated exterior assemblies	VB-Non rated exterior assemblies
13	Exterior Fire Separation Distance	Table 602		Identify required fire separation distance of exterior walls between Buildings on Plan.	X<30'/adjoining buildings	3 hour masonry wall existing
14	Fire Walls	705		Provide code information and identify all applicable required Fire Wall(s) and fire resistance requirement on Building Plans.	Table 705.4 Group M -3 hour	3 hour masonry wall existing
15	Fire Barriers	706		Provide code information and identify all applicable required Fire Barrier(s) and fire resistance requirement on Building Plans.	Table 706.3.9 Group M-2 hour	Not Applicable - Entire 2,750 building is a single fire area.
16	Shaft Enclosures	707		Provide code information and identify all applicable required Shaft Wall(s) and fire resistance requirement on Building Plans.	N/A	N/A
17	Fire Partitions	708		Provide code information and identify all applicable required Fire Partition(s) and fire resistance requirement on Building Plans.	N/A	N/A



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
18	Horizontal Assemblies	711		Provide code information and identify all applicable required Horizontal Assemblies and fire resistance requirement on Building Plans.	N/A	N/A
19	Fire Protection: Sprinkler System	903		Indicate Type of Sprinkler System: <input checked="" type="checkbox"/> NFPA 13 <input type="checkbox"/> NFPA 13 R <input type="checkbox"/> NFPA 13D Provide code information of all applicable requirements for Automatic Sprinkler Systems with code section cited.	9.3.2.6 Group M- Automatic Fire sprinkler system required in fire areas exceeding 12000 SF	Fully sprinklered building
20	Alt. Fire Extinguishing System	904		Provide code information of all applicable requirements for Alternative Automatic Fire-Extinguishing Systems with code section(s) cited.	N/A	Fully sprinklered building
21	Standpipe System	905		Provide code information of all applicable requirements for Standpipe Systems with code section(s) cited.	Not required 905.3	N/A
22	Fire Alarm & Detection Systems	907		Provide code information of all applicable requirements for Fire Alarm System(s) with code section cited. Indicate Type of Fire Alarm System <input type="checkbox"/> Addressable <input type="checkbox"/> Hardwired (zoned)	907.2.7 Group M- Fire Alarm Not required 907.2.7.2 Group M-Fire Detection-Not Required	Fire Alarm- Not required <500 OCC. Fire Detection-Not Required <100 OCC.



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
23	Emergency Alarm System	908		Provide code information of all applicable requirements for Emergency Alarm Systems with code section cited.	N/A	N/A
24	Fire Department Connections	912		Identify Fire Department connections in accordance with NFPA applicable standard.	N/A	N/A
25	Exits	1001.1 & 2		Identify on the Building Plans and documents, per each door, the following information: door width, door height, direction of swing, type of construction, hourly rating, and door closures.	See Exhibit 1- Code Sheet 46 occupants-single exit	See exhibit 1- Code Sheet single fire/emergency exit +1 exit
26	Occupant Load	1004 & Table 1004.1.1		Identify the use/name of each room, dimensions of each room, and Occupant Loads per each room on the Building Plans.	See exhibit 1- Code Sheet 1 occupant per 60 SF Gross	See exhibit 1- Code Sheet 1 occupant per 60 SF Gross - 46 Total
27	Egress Width	1005		Provide egress widths & cite applicable code section(s) and requirement(s) on the Building Plans	Table 1005.1 .15" per occupant	See exhibit 1-46 occupants at .15" per=6.9" /36" provided
28	Accessible Means of Egress	1007.1		Provide accessible means of egress as per Section 1007 & cite applicable code section(s) and requirement(s) on the Building Plans.	1007.1 one accessible means of egress	see exhibit 1- one provided - Main Entrance



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
29	Doors, Gates, and Turnstiles	1008		Means of egress doors shall meet the requirements of this section.	1008.1.1-32" min required	36" provided
30	Interior Stairs	1009		Identify the following information for each stairway on the Building Plan(s): the width of stairways; the height, width, depth and number of risers and treads; dimensions of landings; stairway construction type; and handrail height.	N/A	N/A
31	Ramps	1010.1		Identify the following information of each ramp, on the Building Plan(s): width; total vertical rise; length of ramp; and handrail height.	N/A / Elevator provided	Elevator Provided
32	Common Path of Travel	1014.3		Identify on the Building Plan(s): the length of the "Common Path of Travel" per each room as per applicable building code requirements.	1014.3 common path shall not exceed 75'	See Exhibit 1 - less than 75'
33	Exit Doorway Arrangement	1015		Identify on the Building Plan(s): applicable building code requirements for all Exits and Exit Access Doorways per each room and required exits in all buildings.	Table 1015.1 Two means of egress M occupancy/46 occupants	2,750100 SF/60 gross=46 total occupants
34	Corridor Fire Rating	1017.1		Identify, on the Building Plan(s): all corridors with required fire resistance and the applicable fire rating.	Table 1017.1-M Occupancy greater than 30 occupants 1	N/A - no corridors



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
35	Corridor Width	1017.2		Identify on the Building Plan(s): the width of all corridors. Provide applicable code section(s) and requirement(s).	1017.2 exception 2. 36" min	60"
36	Dead End Corridor	1017.3		Corridors shall not exceed the maximum dead end corridor length as per applicable code.	1017.3 Exception 2, M Occupancy 20' with Fire sprinkler svstem	No dead-end corridors-see Exhibit 1
37	Number of Exits and Continuity	1019		Identify on the Building Plan(s): required number of exits, continuity and arrangement as per the applicable code requirements.	Table 1019.2, M Occupancy <46 OCC.	See Exhibit 1, 35 OCC., less than 75 FT. Travel
38	Vertical Exit Enclosures	1020		Identify on the Building Plan(s): all applicable code requirements for each Vertical Exit Enclosure.	N/A	N/A
39	Exit Passageways	1021		Identify on the Building Plan(s): all applicable code requirements for each Exit Passageway.	N/A	N/A
40	Horizontal Exits	1022		Identify on the Building Plan(s): all applicable code requirements for each Horizontal Exit.	N/A	N/A



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
41	Exterior Exit Ramps & Stairways	1023		Identify on the Building Plan(s): all applicable code requirements for each exterior exit ramps and stairways.	N/A	N/A
42	Exit Discharge	1024		Identify on the Building Plan(s): all applicable code requirements for each Exit Discharge.	not required	not required
43	Accessibility	1101.1 - 1110 & ICC/A117.1(03)		Identify on the Building Plan(s): all applicable code requirements such that the design and construction of each building/facility provides accessibility to physically disabled persons.	one accessible route from public ROW and through facility	see Exhibits 1 and 2 Complies
44	Energy Conservation	2010 NYS ECCC & IECC 2012		Identify the R-Value and U-Value of each construction component and assembly of the building envelope as required in the applicable energy and building code(s).		
45	Emergency & Standby Power	2702.1		Identify emergency & Standby Power locations and specifications of the system to be provided.	1006.3-not required 1011.5.3-not required	see Exhibit 1
46	Smoke Control Systems	2702.2.2		Identify the Standby power for smoke control systems in accordance with Section 909.11 of NYS Building Code.	not required	not required



**Appendix B – Architectural Program**

No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
47	Plumbing Fixture Count	2902.1		Identify on the Building Plan(s): the minimum plumbing facilities as per applicable plumbing code(s).	2901.1-1/25 M 1/25 Women 2902.2-Exception 3-separate	See exhibit 1
48	Available Street Water Pressure			Provide the available street or well water pressure.	Access to within 150 of portions of the building	80 psi
49	Fire Apparatus Access Road	FC503.1		Identify on the Site Plan: Fire Apparatus Road, Fire Lane and other Fire Service requirements per applicable Building and Fire Codes.	Access to within 150 of portions of the building	See Exhibit 2



**Part I – Architectural Program & Construction Timeline:**

The Town of Dewitt, New York requirement for the Dispensary Site at 6801 Kinne Street, East Syracuse, New York is a standard Site Plan Review. There is no other Land Use approval(s) required for approval of this site.

The following is the anticipated timeline for the design/approvals and construction of this Dispensary Facility:

AHJ Approval:	60 Days
Preparation of Construction Documents:	120 Days
Bidding:	30 Days
Construction:	270 Days

Town of Dewitt, New York  
Onondaga County











Appendix B: Architectural Program

A SEPARATE "APPENDIX B" SHALL BE COMPLETED FOR EACH SEPARATE BUILDING AND/OR FACILITY INCLUDED IN THE ORGANIZATION'S BUSINESS PLAN

COMPANY INFORMATION
Business Name: Salus Scientific, LLC
Facility Type: Manufacturing Facility [ ] Dispensing Facility [ ]
Use and Occupancy Classification: M-Mercantile
Building Construction Type and Classification: VB
Facility Address: 6801 Kinne Street, East Syracuse, New York 13057
Primary Contact Telephone number: 315-552-1344
Primary Contact Fax number: 315-471-1154
PART I - ARCHITECTURAL PROGRAM & CONSTRUCTION TIMELINE:
Applicant shall identify planning requirements, including but not limited to:
[ ] TOWN BOARD APPROVAL
[ ] PLANNING BOARD APPROVAL
[ ] ZONING BOARD OF APPEALS APPROVAL
[ ] PREPARATION OF CONSTRUCTION DOCUMENTS
[ ] BUILDING PERMIT
[ ] BIDDING PHASE
[ ] CONTRACT AWARD PHASE PER EACH APPLICABLE CONTRACTOR (Identify all that apply)
[ ] COMMENCEMENT OF CONSTRUCTION
[ ] COMPLETION OF CONSTRUCTION



Appendix B – Architectural Program

PART II – SITE PLAN(S)

Applicant shall provide the appropriate details for each of the following by identifying the location and dimension on the Site Plan attached to the application for each building location.

- Entrance and Exits
Public Parking Spaces
Staff Parking Spaces
Accessible Parking Spaces
Accessible Route(s)
Fire Lane and/or Fire Apparatus Road
Percentage of Green Space
Location of Emergency Power Systems
Loading & Unloading
Security Gates & Fences

PART III – ENERGY SOURCES & ENGINEERING SYSTEMS:

Applicant shall provide the following minimum information to outline the specifications relating to the energy sources and engineering systems of each building included in the application.

- Energy Source: Natural Gas, Solar, Oil, Other, Electric
Engineering Systems: Heating System, Cooling System, Ventilation & Humidification Systems, Electrical Distribution Available, Water Supply, Sewage, Emergency Power System



Appendix B – Architectural Program

PART IV – BUILDING CODE COMPLIANCE: (pages 3-13)

CHECK ALL APPLICABLE CODES FOR THE FACILITY

Table with 2 columns: Compliance checkbox and Code description. Includes codes such as 2010 BUILDING CODE OF NYS, 2010 FIRE CODE OF NYS, 2010 PLUMBING CODE OF NYS, 2010 MECHANICAL CODE OF NYS, 2010 FUEL GAS CODE OF NYS, 2010 PROPERTY MAINTENANCE CODE OF NYS, 2010 ENERGY CONSERVATION CONSTRUCTION CODE OF NYS, 2012 IECC COMMERCIAL PROVISIONS, 2010 EXISTING BUILDING CODE OF NYS, NEC NATIONAL ELECTRIC CODE, (Specify Applicable Version), 2014 NY CITY CONSTRUCTION CODE, 2008 NY CITY CONSTRUCTION CODE, 1968 NY CITY CONSTRUCTION CODE, NFPA 101-06 LIFE SAFETY CODE, ICC/ANSI A117.1-03 ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES, and OTHER.



**Appendix B – Architectural Program**

<b>Select Project Type:</b> Check all that apply. Refer to the Existing Building Code for definitions.	<input type="checkbox"/> New Building <input type="checkbox"/> Repair <input type="checkbox"/> Alteration Level 1 <input checked="" type="checkbox"/> Alteration Level 2	<input type="checkbox"/> Alteration Level 3 <input type="checkbox"/> Change of Occupancy <input type="checkbox"/> Addition <input type="checkbox"/> Historic Building	<input checked="" type="checkbox"/> Demolition <input checked="" type="checkbox"/> Chapter 3. Prescriptive Compliance Method <input type="checkbox"/> Chapter 13. Performance Compliance Method
	<b>Select Work Involved:</b> Check all that apply.	<input checked="" type="checkbox"/> General Construction <input type="checkbox"/> Roofing <input type="checkbox"/> Asbestos Abatement/Environmental <input checked="" type="checkbox"/> Fire Alarm	<input type="checkbox"/> Structural <input checked="" type="checkbox"/> Mechanical <input checked="" type="checkbox"/> Plumbing <input checked="" type="checkbox"/> Electrical

<b>CODE COMPLIANCE REVIEW</b>						
Applicant shall provide all applicable information in regards to the code topic and section listed below.						
1. Code Compliance Review is based on the 2010 NY State Building Code for New Construction. If any other building code applies to the location or type of construction, provide applicable code and sections that most closely relates and references the code topic and information in the code sections listed below. Provide appropriate abbreviations for other applicable codes, such as: <b>FC: Fire Code, PC: Plumbing Code, MC: Mechanical Code, FGC: Fuel Gas Code, ECCC: Energy Conservation Code.</b>						
2. Provide the Required standard for each applicable code section. (i.e.: area, quantity, classification type, materials, hourly separation, etc.). If section does not apply, indicate one of the following with explanation: <b>NA: Not Applicable, NR: Not Required, NP: Not Permitted</b>						
3. Provide your facilities "Actual" value for each required standard as per applicable code section.						
No.	Topic	NYS Building Code Section	Other Code <sup>1</sup> (as Stated Above) & Section	Minimum Information Required to be Identified for this building/facility on the Building or Site Plan(s)	Required Code Value <sup>2</sup> /Allowed Code Value	Facility's Actual Value <sup>3</sup>
1	Use & Occupancy Classification	302.1 - 312		Use & occupancy of this facility. Identify all applicable materials, class and quantities regarding Table 307.1.	M-Mercantile	M-Mercantile



**Appendix B – Architectural Program**

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2	Combustible Storage	413		All combustible storage areas and rooms, as per applicable Building and Fire Codes. Identify all combustible stored materials, area and room dimensions, all required fire separations, and exit requirements.	Not Applicable -No high piled storage	Not Applicable-No high piled storage
3	Hazardous Materials	414		All hazardous materials stored or used as per applicable Building and Fire Codes. Identify all combustible stored materials, area and room dimensions, all required fire separations, and exit requirements.	Not Applicable-no material will be stored on site identified in table 414.2.5 (1)	Not Applicable-no material will be stored on site identified in table 414.2.5 (1)
4	Hazardous Materials Control Areas	414.2		Provide additional information indicating number, size, materials stored, and quantity of each material.	no material identified in table 414.2.5 (1) stored on site	no material identified in table 414.2.5 (1) stored on site
5	Building Area & Height	501-507		Provide the building area & height Provide all calculations and cite applicable code sections for increased Building Area & Heights allowed per building code(s).	VB- Group M Table 503 2/9000 SF allowable	Dispensary actual=2,000 Building actual=2,000 See Exhibit 1-Code Sheet
6	Incidental Use Areas	508.2		Identify all Incidental Use Areas and required fire separation of occupancies on Building Plans.	None Required	None Required



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7	Mixed Occupancies	508.3		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).	N/A	N/A
8	Nonseparated Uses	508.3.2		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).	N/A	N/A
9	Separated Uses (Ratio < 1)	508.3.3		Provide analysis with code cited, and required fire separation of occupancies. Identify required fire separation of occupancies on Building Plan(s).	N/A	N/A
10	Construction Classification	602		Provide Construction Classification per each building included in Application.	VB	VB
11	Fire Resistance Rating Req'm't for Building Elements	Table 601		Provide Fire Resistance Rating per each building element as per Table 601. Identify rating & elements on Building Plans.	VB-Non-Rated all elements	VB-Non-Rated all elements



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12	Exterior Wall Fire-Resistance Rating	Table 602		Identify required fire resistance rating of exterior walls on Building Plan(s).	VB-Non rated exterior assemblies	VB-Non rated exterior assemblies
13	Exterior Fire Separation Distance	Table 602		Identify required fire separation distance of exterior walls between Buildings on Plan.	X>30'	70' to nearest adjacent building
14	Fire Walls	705		Provide code information and identify all applicable required Fire Wall(s) and fire resistance requirement on Building Plans.	Table 705.4 Group M -3 hour	Not Applicable - no adjacent businesses on property
15	Fire Barriers	706		Provide code information and identify all applicable required Fire Barrier(s) and fire resistance requirement on Building Plans.	Table 706.3.9 Group M-2 hour	Not Applicable - Entire 2,000 building is a single fire area.
16	Shaft Enclosures	707		Provide code information and identify all applicable required Shaft Wall(s) and fire resistance requirement on Building Plans.	N/A	N/A
17	Fire Partitions	708		Provide code information and identify all applicable required Fire Partition(s) and fire resistance requirement on Building Plans.	N/A	N/A



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18	Horizontal Assemblies	711		Provide code information and identify all applicable required Horizontal Assemblies and fire resistance requirement on Building Plans.	N/A	N/A-Single Story
19	Fire Protection: Sprinkler System	903		Indicate Type of Sprinkler System: <input checked="" type="checkbox"/> NFPA 13 <input type="checkbox"/> NFPA 13 R <input type="checkbox"/> NFPA 13D Provide code information of all applicable requirements for Automatic Sprinkler Systems with code section cited.	9.3.2.6 Group M- Automatic Fire sprinkler system required in fire areas exceeding 12000 SF	Fully sprinklered building
20	Alt. Fire Extinguishing System	904		Provide code information of all applicable requirements for Alternative Automatic Fire-Extinguishing Systems with code section(s) cited.	N/A	Fully sprinklered building
21	Standpipe System	905		Provide code information of all applicable requirements for Standpipe Systems with code section(s) cited.	Not required 905.3	N/A
22	Fire Alarm & Detection Systems	907		Provide code information of all applicable requirements for Fire Alarm System(s) with code section cited. Indicate Type of Fire Alarm System <input type="checkbox"/> Addressable <input type="checkbox"/> Hardwired (zoned)	907.2.7 Group M- Fire Alarm Not required 907.2.7.2 Group M-Fire Detection-Not Required	Fire Alarm- Not required <500 OCC. Fire Detection-Not Required <100 OCC.



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23	Emergency Alarm System	908		Provide code information of all applicable requirements for Emergency Alarm Systems with code section cited.	N/A	N/A
24	Fire Department Connections	912		Identify Fire Department connections in accordance with NFPA applicable standard.	N/A	N/A
25	Exits	1001.1 & 2		Identify on the Building Plans and documents, per each door, the following information: door width, door height, direction of swing, type of construction, hourly rating, and door closures.	See Exhibit 1- Code Sheet 33 occupants-single exit	See exhibit 1- Code Sheet single fire/emergency exit +1 exit
26	Occupant Load	1004 & Table 1004.1.1		Identify the use/name of each room, dimensions of each room, and Occupant Loads per each room on the Building Plans.	See exhibit 1- Code Sheet 1 occupant per 60 SF Gross	See exhibit 1- Code Sheet 1 occupant per 60 SF Gross - 33 Total
27	Egress Width	1005		Provide egress widths & cite applicable code section(s) and requirement(s) on the Building Plans	Table 1005.1 .15" per occupant	See exhibit 1-33 occupants at .15" per=4.95" /36"
28	Accessible Means of Egress	1007.1		Provide accessible means of egress as per Section 1007 & cite applicable code section(s) and requirement(s) on the Building Plans.	1007.1 one accessible means of egress	see exhibit 1- one provided - Main Entrance



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29	Doors, Gates, and Turnstiles	1008		Means of egress doors shall meet the requirements of this section.	1008.1.1-32" min required	36" provided
30	Interior Stairs	1009		Identify the following information for each stairway on the Building Plan(s): the width of stairways; the height, width, depth and number of risers and treads; dimensions of landings; stairway construction type; and handrail height.	N/A	N/A
31	Ramps	1010.1		Identify the following information of each ramp, on the Building Plan(s): width; total vertical rise; length of ramp; and handrail height.	N/A	Single story building-Not applicable
32	Common Path of Travel	1014.3		Identify on the Building Plan(s): the length of the "Common Path of Travel" per each room as per applicable building code requirements.	1014.3 common path shall not exceed 75'	See Exhibit 1 - less than 75'
33	Exit Doorway Arrangement	1015		Identify on the Building Plan(s): applicable building code requirements for all Exits and Exit Access Doorways per each room and required exits in all buildings.	Table 1015.1 One means of egress M occupancy/33 occupants	2,000 SF/60 gross=33 total occupants
34	Corridor Fire Rating	1017.1		Identify, on the Building Plan(s): all corridors with required fire resistance and the applicable fire rating.	Table 1017.1-M Occupancy greater than 30 occupants 1 <sub>+</sub>	N/A no corridors in building



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35	Corridor Width	1017.2		Identify on the Building Plan(s): the width of all corridors. Provide applicable code section(s) and requirement(s).	1017.2 exception 2. 36" min	60"
36	Dead End Corridor	1017.3		Corridors shall not exceed the maximum dead end corridor length as per applicable code.	1017.3 Exception 2, M Occupancy 20' with Fire sprinkler svstem	Not Sprinklered, No dead-end corridors-see Exhibit 1
37	Number of Exits and Continuity	1019		Identify on the Building Plan(s): required number of exits, continuity and arrangement as per the applicable code requirements.	Table 1019.2, M Occupancy <49 OCC.	See Exhibit 1, 33 OCC., less than 75 FT. Travel
38	Vertical Exit Enclosures	1020		Identify on the Building Plan(s): all applicable code requirements for each Vertical Exit Enclosure.	N/A	N/A
39	Exit Passageways	1021		Identify on the Building Plan(s): all applicable code requirements for each Exit Passageway.	N/A	N/A
40	Horizontal Exits	1022		Identify on the Building Plan(s): all applicable code requirements for each Horizontal Exit.	N/A	N/A



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41	Exterior Exit Ramps & Stairways	1023		Identify on the Building Plan(s): all applicable code requirements for each exterior exit ramps and stairways.	N/A	N/A
42	Exit Discharge	1024		Identify on the Building Plan(s): all applicable code requirements for each Exit Discharge.	not required	not required
43	Accessibility	1101.1 - 1110 & ICC/A117.1(03)		Identify on the Building Plan(s): all applicable code requirements such that the design and construction of each building/facility provides accessibility to physically disabled persons.	one accessible route from public ROW and through facility	see exhibits 1 and 2 Complies
44	Energy Conservation	2010 NYS ECCC & IECC 2012		Identify the R-Value and U-Value of each construction component and assembly of the building envelope as required in the applicable energy and building code(s).		
45	Emergency & Standby Power	2702.1		Identify emergency & Standby Power locations and specifications of the system to be provided.	1006.3-not required 1011.5.3-not required	see exhibit 1
46	Smoke Control Systems	2702.2.2		Identify the Standby power for smoke control systems in accordance with Section 909.11 of NYS Building Code.	not required	not required



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47	Plumbing Fixture Count	2902.1		Identify on the Building Plan(s): the minimum plumbing facilities as per applicable plumbing code(s).	2901.1-1/25 M 1/25 Women 2902.2-Exception 3-separat <sup>4</sup>	See exhibit 1
48	Available Street Water Pressure			Provide the available street or well water pressure.	Access to within 150 of portions of the building	80 psi
49	Fire Apparatus Access Road	FC503.1		Identify on the Site Plan: Fire Apparatus Road, Fire Lane and other Fire Service requirements per applicable Building and Fire Codes.	Access to within 150 of portions of the building	See exhibit 2



**Part I – Architectural Program & Construction Timeline:**

The New York City Department of Planning requirement for the Dispensary Site at 56-17 58<sup>th</sup> Street, Maspeth, New York is a standard Site Plan Review. There is no other Land Use approval(s) required for approval of this site.

The following is the anticipated timeline for the design/approvals and construction of this Dispensary Facility:

AHJ Approval:	60 Days
Preparation of Construction Documents:	120 Days
Bidding:	30 Days
Construction:	270 Days

New York City Department of Planning  
Maspeth County  
Located in Queens Borough of New York City







58TH STREET

SIDEWALK

SHOULDER

EXISTING STAIR BULKHEAD

EXISTING ROOFTOP EGRESS

PROPOSED DISPENSARY LOCATION

PARKING

DRIVEWAY

DRIVEWAY



**SITE PLAN**

1" = 10'-0"

REQUEST FOR EXEMPTION FROM FOIL  
Critical Infrastructure (POL § 86[5])  
NOT FOR DISTRIBUTION