



Algae Dynamics



Disclaimer

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Overview

- Uniquely positioned U.S. publicly traded company domiciled and doing business in Canada, with no exposure to U.S “Cannabis” federal regulation
- Capitalizing on under-served licensed producer marketplace in Canada
 - 50 current licensed producers countrywide vs. 624 licensed cultivators (adult use) in Colorado
- Canadian population equates to roughly the same as California
- Canadian oil extraction marketplace forecasted to grow from C\$1 million in 2015 to C\$1.7 billion in 2020, assuming full legalization in 2018
 - In terms of conversion from dried marijuana to extracts/oil, due diligence has been conducted on Colorado market, finding that 45% of dried marijuana users would eventually convert to marijuana extracts/oil
 - We expect the Canadian market to follow a similar trend as Colorado, and we assume the market would gradually reach an approximate 45% conversion rate by 2018



Overview

Continued...

- Combining university collaborations with cannabis extraction expertise to develop premium products
 - Agreement with University of Waterloo
 - Agreement with University of Western Ontario
- Memorandum of Understanding with Bonify (320,000 sq. ft. facility) for supply of Cannabis, Oil Extraction and Sales
- Having dialogue with additional Canadian applicants and Licensed Producers
- Plant layout complete and equipment specified



Strategy

Develop unique health and nutraceutical products utilizing cannabis, hemp and algae oils

- Leverage algae oil extraction expertise into cannabis oil extraction marketplace
- Research benefits of combining certain algae and cannabis oils for enhanced effects
- Leverage university collaborations – using university level research to create specific cannabis oil product lines
 - University of Waterloo – colorectum, pancreas, breast and prostate cancer
 - University of Western Ontario – depression, post-traumatic stress disorder, anxiety and schizophrenia



Algae Dynamics will retain the rights of all patents developed in collaboration with universities

- Apply to Health Canada for oil extraction and Licensed Growers license (retail sales and distribution)
- Positions the Company for medical and recreational markets (domestic & export)

Dr. Jonathan Blay, PhD, FRSB, FIBMS, Csci, CBiol

Professor of Pharmacy, University of Waterloo
Professor of Pathology, Dalhousie University

Research:

- Tumour microenvironment of solid cancers (colorectal carcinoma)
- Mechanisms of metastasis and its regulation by proteins at the cell surface
- Development of drugs (both synthetic and natural product-derived) that interfere with cancer metastasis

Dr. Blay's research group applies a range of techniques in molecular and cellular biology to understand cell behaviour and how the action of existing anticancer drugs are affected by the unique physiology of the cancer. This research involves investigations of chemokine pathways, and tumor-initiating cells; as well as the capacity of both synthetic and natural product-derived agents to interfere with the steps that favor metastasis. Researchers in the group identify novel pathways that may be the targets for future anticancer drugs, both derived from natural products and synthesized with the aid of colleagues through molecular design.

The goal is to perform fundamental cancer-related research on botanical oils and their constituents which will carry out studies relating to the cellular safety and known cancer-related potential of components within the oils.



Dr. Steven Laviolette, BSc, PhD

Addiction Research Group

Dept. of Anatomy & Cell Biology

Dept. of Psychiatry

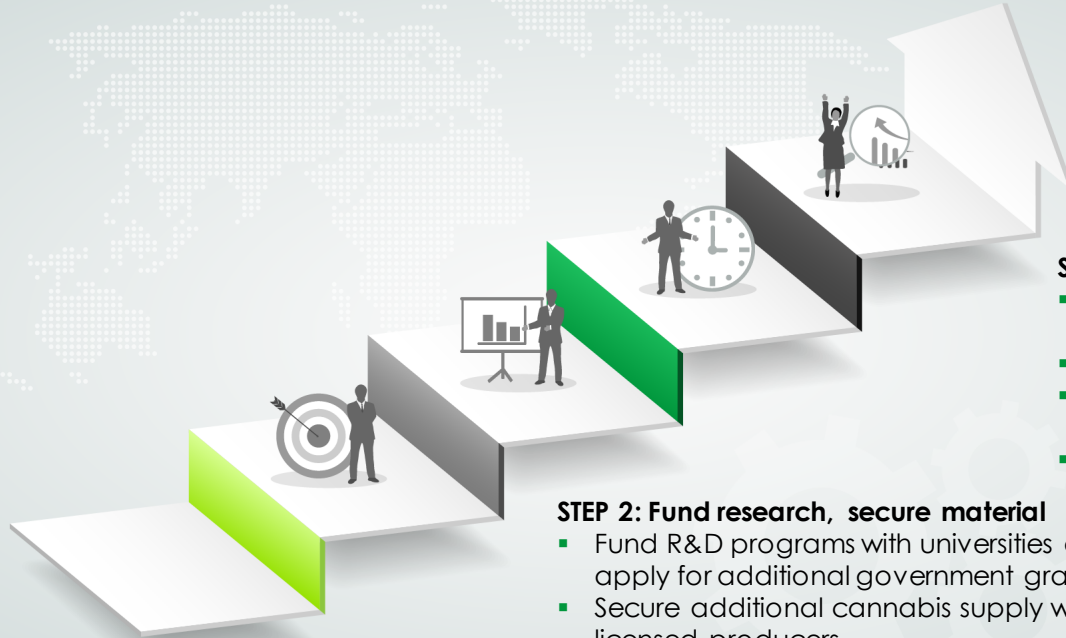
Canadian Institute for Military and Veterans Health Research

Research:

- Dr. Laviolette's research interests explore the interface between neurobiology, psychology and emotion by using an integrative combination of in vivo neuronal electrophysiology and behavioural neuropharmacology. At the general level, Dr. Laviolette is interested in exploring the neurobiological mechanisms that control how the brain processes emotionally salient information and how disturbances in these basic neural processes may lead to disorders such as addiction and schizophrenia.
- Dr. Laviolette's investigations into the neurobiology of addiction have focused on nicotine and opiates, both of which represent highly addictive substances and act on pathways in the brain that control reward, motivation and learning. Dr. Laviolette's research group has characterized and identified specific regions in the mammalian brain that control the 'switch' from the non-addicted state, to the addicted state following exposure to drugs of abuse. Their ongoing research seeks to precisely define and identify the neurobiological mechanisms that control the addiction process at the behavioural, molecular and single neuron levels of analysis. The goal is to perform fundamental translational, pre-clinical neuroscience research on how specific cannabis-derived phytochemical compounds (including but not limited to, delta-9-tetrahydrocannabinol (THC), cannabidiol (CBD) and other phytochemical and/or terpenoid compounds derived from cannabis, may serve to ameliorate symptoms and/or serve as potential pharmacotherapies for neuropsychiatric disorders, including but not limited to schizophrenia, anxiety, depression and post-traumatic stress disorder.



Development Activities



STEP 1: Engage in critical relationships

- University R&D teams assembled & research defined
- Collaboration Agreements with universities signed
- MOU Supply Agreement with Licensed Producer signed

STEP 2: Fund research, secure material

- Fund R&D programs with universities and apply for additional government grants
- Secure additional cannabis supply with licensed producers
- Directly apply for extraction license

STEP 4: Growth

- Build commercial scale Cannabis Oil Extraction facility
- Modular installation of oil extraction equipment

STEP 3: Product development, go to market

- Work with existing partners to develop specific proprietary formulations
- Develop product branding
- Develop sales channels concurrent with evolving Canadian regulations
- Begin revenue generation

Emerging Canadian Cannabis Market

Full Legalization in 2018	CY2015E Dec31/2015	CY2016E Dec31/2016	CY2017E Dec31/2017	CY2018E Dec31/2018	CY2019E Dec31/2019	CY2020E Dec31/2020
Dried marijuana (C\$, 'M)	\$48	\$93	\$185	\$431	\$784	\$1,113
Extracts/oil (C\$, 'M)	\$1	\$33	\$132	\$755	\$1,367	\$1,687
Total Market Size (C\$, 'M)	\$49	\$126	\$316	\$1,186	\$2,151	\$2,800
% Change		160%	150%	275%	81%	30%
Full Legalization in 2019	CY2015E Dec31/2015	CY2016E Dec31/2016	CY2017E Dec31/2017	CY2018E Dec31/2018	CY2019E Dec31/2019	CY2020E Dec31/2020
Dried marijuana (C\$, 'M)	\$48	\$93	\$185	\$309	\$666	\$952
Extracts/oil (C\$, 'M)	\$1	\$33	\$132	\$258	\$1,102	\$1,535
Total Market Size (C\$, 'M)	\$49	\$126	\$316	\$567	\$1,769	\$2,487
% Change		160%	150%	79%	212%	41%
Full Legalization in 2020	CY2015E Dec31/2015	CY2016E Dec31/2016	CY2017E Dec31/2017	CY2018E Dec31/2018	CY2019E Dec31/2019	CY2020E Dec31/2020
Dried marijuana (C\$, 'M)	\$48	\$93	\$185	\$309	\$499	\$842
Extracts/oil (C\$, 'M)	\$1	\$33	\$132	\$258	\$412	\$1,205
Total Market Size (C\$, 'M)	\$49	\$126	\$316	\$567	\$911	\$2,047
% Change		160%	150%	79%	60%	125%



Source: MRCC Estimates

Strong Management Team



Richard Rusiniak (Mechanical Engineer) - Co-Founder & CEO

Over 30 years of management, design and process experience. Co-founder and former President, CFO, and CTO of Cymat Corp (TSX: CYM) with a market valuation over \$150 million upon his resignation in 2002. Negotiated an Aluminum Foam Manufacturing license with Alcan International Ltd., and successfully commercialized the technology. Completed a \$10 Million technology development program with Industry Canada (TPC). Participated in the completion of over \$25 million in financings with financial institutions. From 1978 to 1988, he was project manager with Long Manufacturing, as well as The Ontario Research Foundation.

Paul Ramsay (BBA) - Co-Founder & President

Over 25 years of business development and management experience. Co-founder and former CEO and VP Business Development of Cymat Corp (TSX: CYM), which had a market valuation over \$150 million upon his resignation in 2002. Was instrumental in securing the Stabilized Aluminum Foam (SAF) license from Alcan International Ltd. Completed a \$10 Million technology development program with Industry Canada (TPC). Participated in the completion of over \$25 million in financings with public markets and financial institutions. Obtained Bachelor of Business Administration "BBA" from St. Francis Xavier University, Nova Scotia, Canada.

Ross Eastley (CA) - CFO

Over 30 years of accounting and CFO experience in both private and public sector organizations. Former CEO for the Canadian Society of Immigration Consultants (CSIC) from 2006 – 2009. Mr. Eastley reported to a nine-member Board, responsible for strategic planning, corporate communications, initial regulatory functions and management of legal processes. Former V P/Controller for Brandon University.

Board of Directors

Paul Ramsay (BBA) - Chairman

Richard Rusiniak (Mechanical Engineer)

Ross Eastley (CA) - Secretary

P. Blair Mullin (BA, MBA)

Over 25 years of varied business leadership, financial and operational experience, both domestically and internationally, in a wide range of industries as executive, consultant and banker. Mr. Mullin is currently Managing Partner of Apollo Ventures, LLC, Aldercreek Capital LLC and Apollo Marketing LLC, which provide investment capital to emerging companies. He is also President & CEO of Connectus Inc., which provides advisory services to emerging companies. Previously, Mr. Mullin served as CEO, President, CFO and a consultant to several corporations from 1997 to 2012. Mr. Mullin holds an MBA from University of Western Ontario and BA from Wilfrid Laurier University, in Canada.

Cameron McDonald (BA, BSc, MBA, Finance & Accounting, CFA)

Mr. McDonald is currently the CEO of Coldwater Fisheries Inc., a leading Canadian aquaculture company. Prior to joining Coldwater Fisheries Inc. in early 2015, Mr. McDonald was a founder and executive of Global SeaFarms Corporation. From 2004 to 2009, Mr. McDonald was an Investment Banker with Canaccord Adams (now Canaccord Genuity). Canaccord was the number one ranked technology investment banking deal team in Canada in 2006 and 2007 with financings of over \$500M on the TSX and AIM capital markets. Mr. McDonald has completed the Chartered Financial Analyst "CFA" program, and passed the Partners, Directors, and Officers Qualifying Exam in 2006.

Summary

Estimated Canadian extract market to grow from \$1mm in 2015 to \$1.5 billion in 2020 – assuming full legalization

**Source: MRCC Estimates*

Discussions with Licensed Growers for acquiring dry cannabis for oil extraction

Canadian government announced recreational legalization by July 1, 2018

Collaborations with leading Canadian Research Institutions/Universities to develop specific formulated products for the company's portfolio

Current Canadian marketplace has limited presence (50 licensed cultivators)

Attractive offering valuation relative to Canadian comparables



Addendum: Price Sensitivity Analysis

Total Marijuana Market Size (C\$, 'M)	CY2015E	CY2016E	CY2017E	CY2018E	CY2019E	CY2020E
	Dec 31/2015	Dec31/2016	Dec31/2017	Dec 31/2018	Dec31/2019	Dec31/2020
Assuming no full legalization						
Scenario 1: \$7.5/g for dried marijuana, \$2.6/ml for oil/extract	\$49	\$126	\$316	\$567	\$911	\$1,146
Scenario 2: \$6.0/g for dried marijuana, \$2.1/ml for oil/extract	\$39	\$101	\$254	\$456	\$732	\$921
Scenario 3: \$5.0/g for dried marijuana, \$1.7/ml for oil/extract	\$32	\$84	\$209	\$375	\$602	\$758
Scenario 4: \$4.0/g for dried marijuana, \$1.4/ml for oil/extract	\$26	\$68	\$169	\$304	\$488	\$614
Assuming full legalization in FY18						
Scenario 1: \$7.5/g for dried marijuana, \$2.6/ml for oil/extract	\$49	\$126	\$316	\$1,186	\$2,151	\$2,800
Scenario 2: \$6.0/g for dried marijuana, \$2.1/ml for oil/extract	\$39	\$101	\$254	\$954	\$1,731	\$2,253
Scenario 3: \$5.0/g for dried marijuana, \$1.7/ml for oil/extract	\$32	\$84	\$209	\$781	\$1,416	\$1,845
Scenario 4: \$4.0/g for dried marijuana, \$1.4/ml for oil/extract	\$26	\$68	\$169	\$636	\$1,154	\$1,502
Assuming full legalization in FY19						
Scenario 1: \$7.5/g for dried marijuana, \$2.6/ml for oil/extract	\$49	\$126	\$316	\$567	\$1,769	\$2,487
Scenario 2: \$6.0/g for dried marijuana, \$2.1/ml for oil/extract	\$39	\$101	\$254	\$456	\$1,423	\$2,001
Scenario 3: \$5.0/g for dried marijuana, \$1.7/ml for oil/extract	\$32	\$84	\$209	\$375	\$1,165	\$1,638
Scenario 4: \$4.0/g for dried marijuana, \$1.4/ml for oil/extract	\$26	\$68	\$169	\$304	\$949	\$1,334
Assuming full legalization in FY20						
Scenario 1: \$7.5/g for dried marijuana, \$2.6/ml for oil/extract	\$49	\$126	\$316	\$567	\$911	\$2,047
Scenario 2: \$6.0/g for dried marijuana, \$2.1/ml for oil/extract	\$39	\$101	\$254	\$456	\$732	\$1,647
Scenario 3: \$5.0/g for dried marijuana, \$1.7/ml for oil/extract	\$32	\$84	\$209	\$375	\$602	\$1,349
Scenario 4: \$4.0/g for dried marijuana, \$1.4/ml for oil/extract	\$26	\$68	\$169	\$304	\$488	\$1,098

Source: MRCC Estimates

Oils - Comparison



Algae Oil DHA – Health Benefits

- Supports endocannabinoid system
- Improves memory
- Lowers risk of coronary heart disease and improvement in cholesterol
- Supports results from studies in cancer treatment, depression and attention-deficit hyperactivity disorder (ADHD)



Cannabis Oil

- Need a better understanding of basic neural processes involved in the modulation of the pharmacological properties of drugs
- Need to investigate chemicals found naturally in the human body that mimic those in marijuana in controlling nausea, vomiting, learning, memory and protection against stroke and cancer
- The research cuts across the science of: Psychology, Pharmacology and Neurobiology

Intellectual Property

Patent Status:

- A US patent has been awarded for the design of the Bioreactor
- A Canadian Patent is in process for the Bioreactor design.

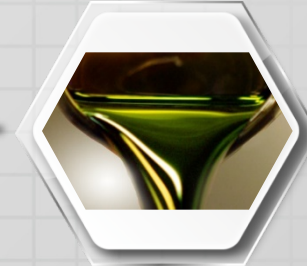


Solventless Oil Extraction for Medical Cannabis

Ice Water Extractor is designed for the removal and separation of plant trichomes from the plant exterior with no solvents; this is a 100% solvent free extraction system.



CANNABIS OIL



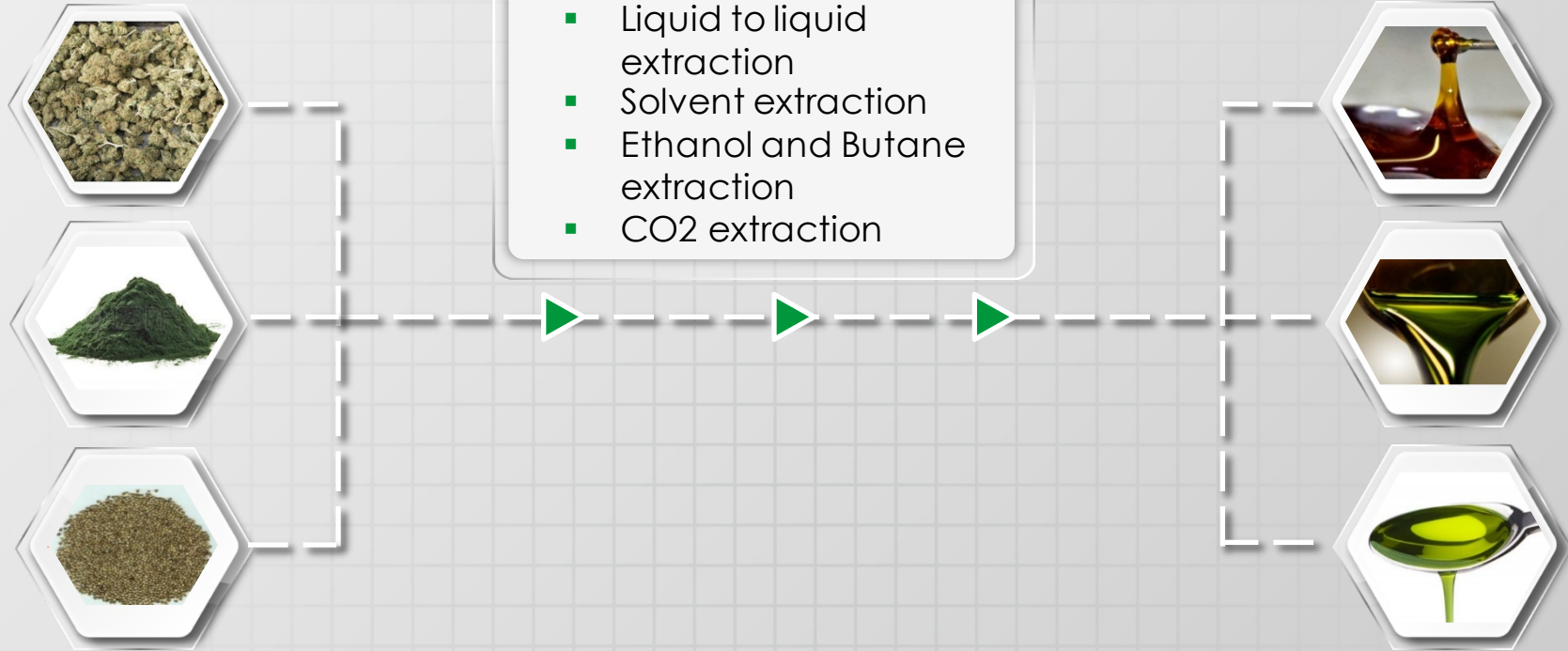
ALGAE OIL



HEMP OIL

Powders to Oil

Commercial Extraction Methods



Variables Effecting Final Results

Controlled Variables



- Growing condition
- Harvesting method
- Oil extraction method
- Compound extraction method

Independent Variables



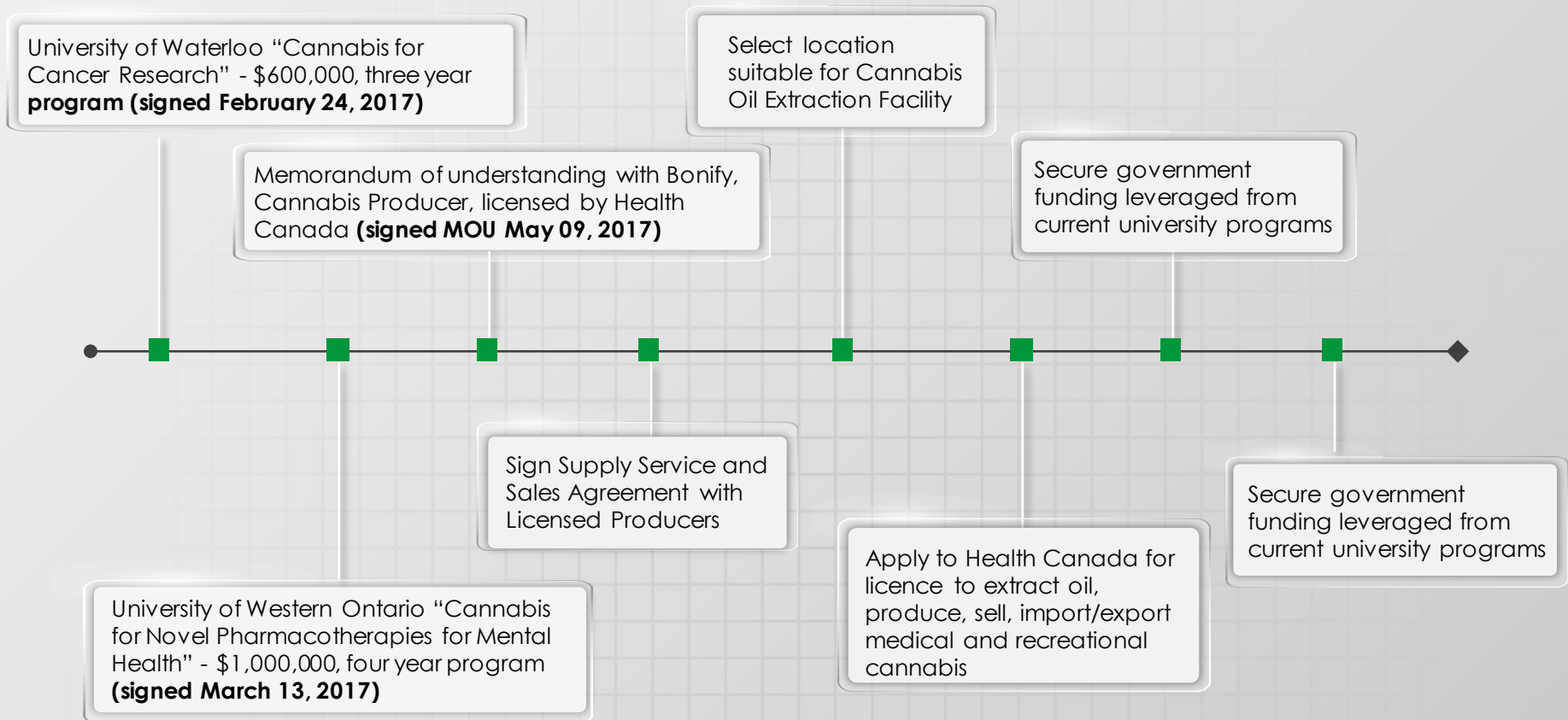
- Cultivation Supplier
- Application
- Testing methods

Dependent Variables



- Supply product consistency
 - Sample testing valuation
 - Test on delivery (compare)
 - Drug production consistency
-
- Oil extraction vs compound extraction methods
 - Lab extraction method R&D
 - Production extraction method
 - Oil dilution method
 - Oil type, process temperature

Action Plan 2017



Pharmaceutical Drugs Based on Cannabis



Drugs with chemicals taken directly from the marijuana plant

SATIVEX

Manufacturer: GW Pharmaceuticals (GWPH on NASDAQ)

Drugs with synthetic versions of chemicals naturally found in marijuana

DRONABINOL / MARINOL

Manufacturer: Unimed Pharmaceuticals, a subsidiary of Solvay Pharmaceuticals

Drugs with chemicals similar to those in marijuana but not found in the plant

NABILONE / CESAMET

Manufacturer: Valeant Pharmaceuticals International (VRX on NASDAQ)

DEXANABINOL

Manufacturer: Solvay Pharmaceuticals (acquired by Abbott Laboratories in 2010)

CT-3 (ajulemic acid)

Manufacturer: Indevus Pharmaceuticals (IDEV on NASDAQ)

CANNABINOR (formerly PRS-211,375)

Manufacturer: Pharms (PARS on NASDAQ)

HU 308

Manufacturer: Pharms (licensed from the Hebrew University of Jerusalem)

HU 331

Manufacturer: Cayman Chemical

Drugs that do not work like marijuana but use the same brain pathways

RIMONABANT / ACOMPLIA

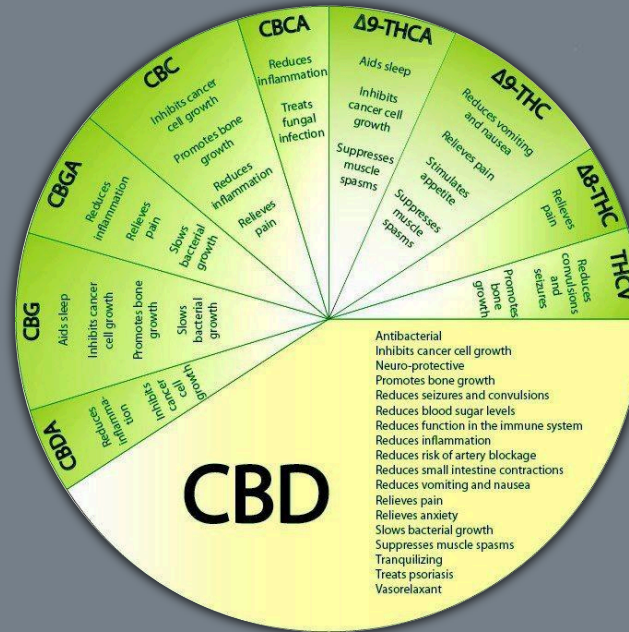
Manufacturer: Sanofi-Aventis (SNY on NASDAQ)

TARANABANT / MK-0364

Manufacturer: Merck (MRK on NASDAQ)

Cannabinoids

In their natural state, most are present in their **acidic forms**.



When cannabis is dried or heated, these acidic compounds undergo **decarboxylation**; the removal of a **carboxyl group** from the molecule.

Acidic cannabinoids have different properties than their decarboxylated counterparts, but both types possess medicinal properties.

Vast majority of the studies explore decarboxylated cannabinoids.

Trichomes – The “Miracle Molecules”



Algae Dynamics

Both cannabinoids and terpenes are manufactured in small resin glands present on the flowers and main fan leaves of late-stage cannabis plants called **trichomes**

There are actually three types of trichomes: *Bulbous*, *capitate - sessile*, and *capitate – stalked*



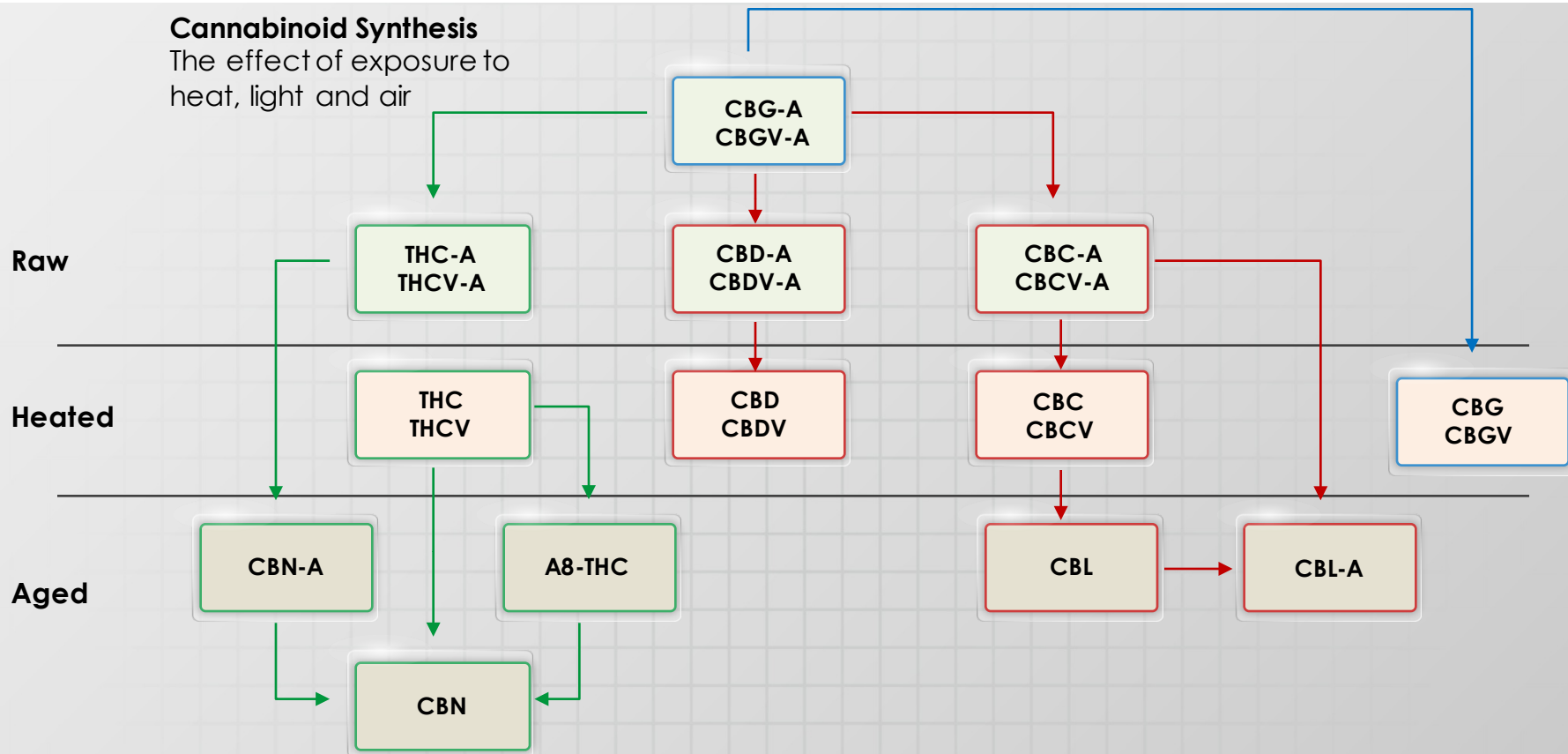
Cannabinoid Synthesis



Algae Dynamics

Cannabinoid Synthesis

The effect of exposure to heat, light and air



(EFAs) for Endocannabinoid System (ECS)

The essential fatty acids (EFAs) **is the foundation** of the endocannabinoid system (ECS)



Omega -6 and Omega-3 EFAs are required for the production of endocannabinoids and cannabinoid receptors.



It is necessary to consume EFAs because the body cannot synthesize them.

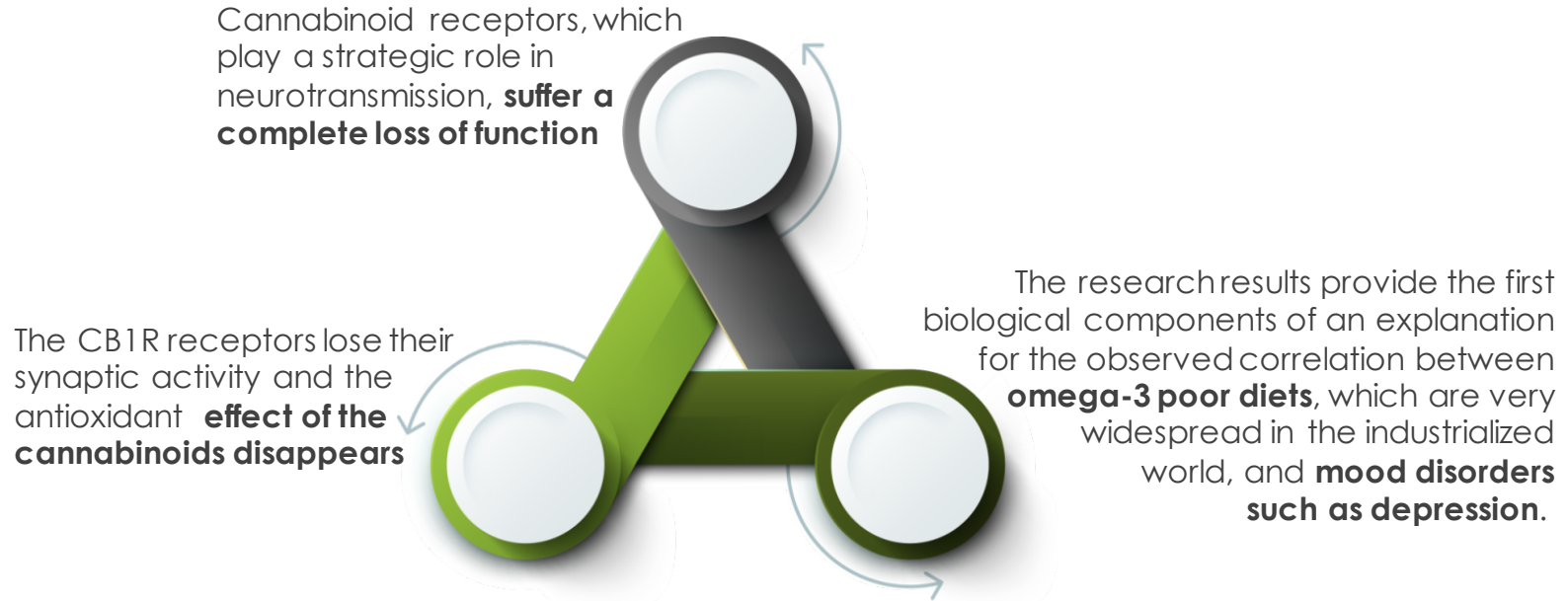


The ratio of Omega-6 to Omega-3 is alarming 10:1 instead of 1:1

Deficiency of Dietary Omega-3

result of disturbed neuronal communication

Due to Omega 3 deficiency:



Fatty Acids - Comparison

ALGAE DHA Oil (22 fatty acids) 66.3% Omega-3

C10:0 capric acid
C14:0 myristic acid
C15:0 Pentadecanic acid
C16:0 palmitic acid 22.8%
C16:1 palmitoleic acid
C17:0 margaric acid
C18:0 stearic acid
C18:1n9 Oleic acid 0.3%
C18:2n6 Linoleic acid (Omega 6)
C18:2n6t Linoleic acid
C18:3n3 alpha-Linolenic acid 0.2%
C18:3n6 gamma-Linolenic acid 0.1%
C20:0 arachidic acid
C20:2n Eicosadienoic acid
C20:3n3 Eicosatrienoic acid
C20:3n6 Eicosatrienoic acid
C20:4n6 Arachidonic acid
C20:5n3 Eicosapentaenoic acid
C22:0 behenic acid
C22:2n6 Docosadienoic acid
C22:5n3 Docosapentaenoic acid

0.8%

0.2%

0.1%

vs HEMP OIL 58.38%

C22:6n3 Docosahexaenoic acid 66.3%(OMEGA 3FA)

HEMP Oil - (5 fatty acids) 58.38% Omega-6

Palmitic acid
C16:0 palmitic acid 7.12% Saturated FA
C18:1n9 Oleic acid 12.98% Monounsaturated fatty acids
C18:2n6 Linoleic acid 58.38% Polyunsaturated -omega 6 fatty acid
C18:3n3 alpha-Linolenic acid 16.46% Polyunsaturated -omega-3 fatty acid
C18:3n6 gamma-Linolenic acid 3.05% Polyunsaturated -omega-6 fatty acid

Cannabis Oil - (up to 20 fatty acids)

- Myristic, palmitic, oleic, stearic acids to name the few
- The complete FA composition and concentrations will vary between each strain and production process



Algae Dynamics



Thank You!