Ensuring Quality Control Through Cell-Based Testing

Testing services now available through exclusive partnership with Smithers

CannaMetrix Vision

- The potency of cannabis products manifests in human biological and cannot be known from the chemical composition of products. Potency needs to be measured using human biological endpoints.

- The industry and regulatory agency reliance on chemical composition alone for product formulation, development, marketing, or use in human testing, places the industry at risk of failure due to unclear choices presented to physicians and consumers.

CannaMetrix Solution

- Commercialize a novel tool for the industry that enables rapid and affordable validation and prediction of the biological potency of natural and synthetic cannabis products based on the response of cannabis receptors to doses of cannabis products.
- Enable formulators and developers optimize their products using relevant biomarkers and to stay ahead of regulatory expectations with scientific data that validates product performance in human biology rather than inferring potency from chemical quantification alone.

CannaMetrix's Critical Consideration

The Entourage Effect is the Unique Body Response to Cannabinoids and is Determined By the Major and Minor Chemistries Acting in Concert in the Body

Facts

- **There are large number of cannabinoids and terpenes in full spectrum products**
- **The body has a large diversity of cell systems that can respond to plant chemistries and produces its own cannabinoids (endocannabinoids)**
- **The body's responses, and therefore the potency of cannabis products, are due to multiple additive, synergistic or inhibitory interactions collectively known as the Entourage Effect**

Example: CBD and THC Act Antagonistically in the Body

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The Industry's Problem of Predicting Potency

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What Determines Potency?

The industry determines the quantities of the most abundant cannabinoids and terpenes as a measure of “potency”.

Focus is on THC/CBD but labs only test ~10-15% of the 110 cannabinoids

https://www.cdxlife.com/what-can-terpenes-do-for-you/

~1/3 of the 80+ terpenes are monitored by most analytical testing labs, these may be bioactive

- **However, chemical composition is not equivalent to potency when there is more than one cannabinoid and terpene in the product.**
- **Potency manifests in biology and therefore, must be measured as such.**

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Industry Drawbacks that Limit Growth Potential

- Consumers are generally uninformed, their experiences with products are inconsistent, they have low product loyalty
- Physicians and consumers have become frustrated with package labeling that appear undifferentiated on the shelves and provide no rationale for a recommended dose
- Many customers report greater satisfaction from taking plant extracts (full spectrum or broad-spectrum products) compared to pure isolates.
- Current compliance testing only requires chemical composition which does not reveal the product's potency in the body, especially for products consisting of blends of cannabinoid/terpenes.
- The absence of affordable methods for determining the true biological potency of products has left the industry having to infer potency from anecdotal experiences or limited academic research. Formulations are being developed without determining their biopotency.
- Blood levels of cannabinoids and blood ratios of cannabinoids are uninterpretable without scientific standards that calibrate biopotency resulting from each ratio as dose-response relationships.
- Without biological potency testing, the shelf-life of products and value to consumers cannot be known.

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CannaMetrix Opportunity

- CannaMetrix is ideally positioned to capitalize on the growing demand by consumers and the industry for validation of how the composition of cannabis products affects their efficacy and value to consumers.
- Rescheduling will require preIND-level scientific understanding of how cannabis products act on cellular targets as a measure of their biopotency.
- CannaMetrix novel proprietary potency testing is based entirely on human biology and therefore, is uniquely able to address market needs by guiding product development, informing consumer choice, and predicting medical use recommendations.

A Large Number of Clients Will Seek CannaMetrix Biopotency Validation

Regulatory Labs

Testing Lab Services

Growers

Formulators

Dispensaries

Academic Research

Clinical Trials Outcome Analysis

Artificial Intelligence Platforms

Cannametrix Disruptive Technology

Based On the Human Endocannabinoid System

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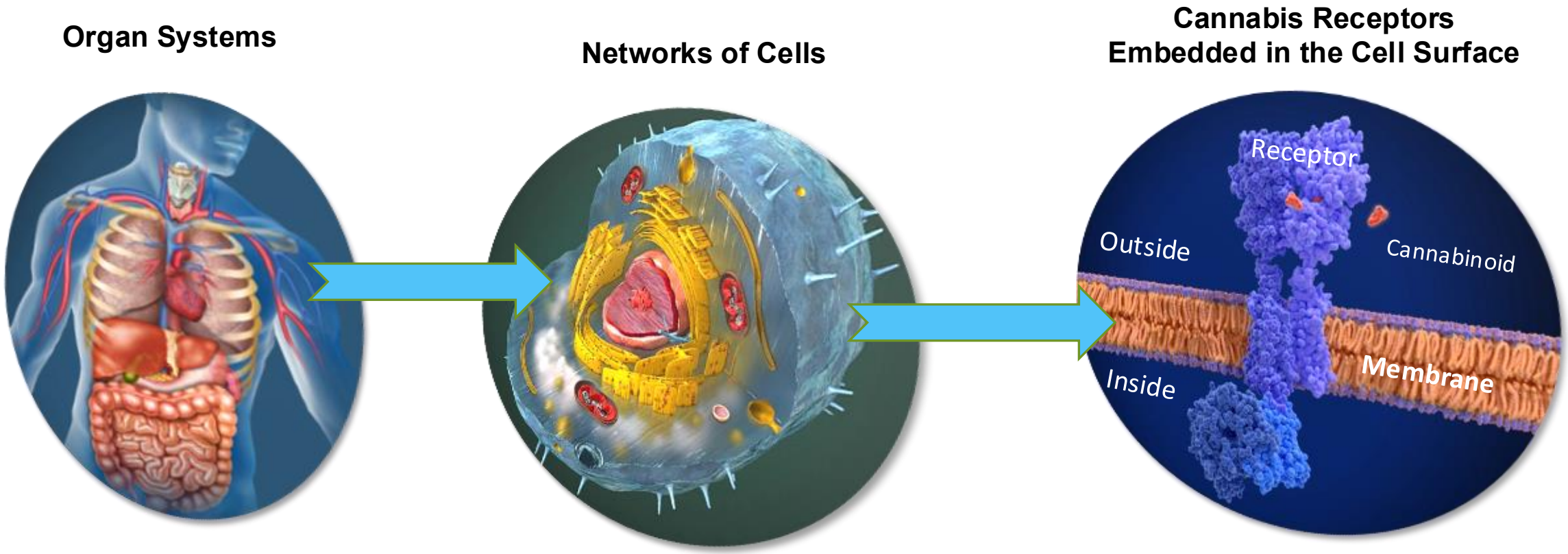
Plant Cannabinoids Communicate with Human Cells to Alter Receptor Activity



To understand the potency of cannabinoid products, it is essential to measure human cannabinoid receptor activity.

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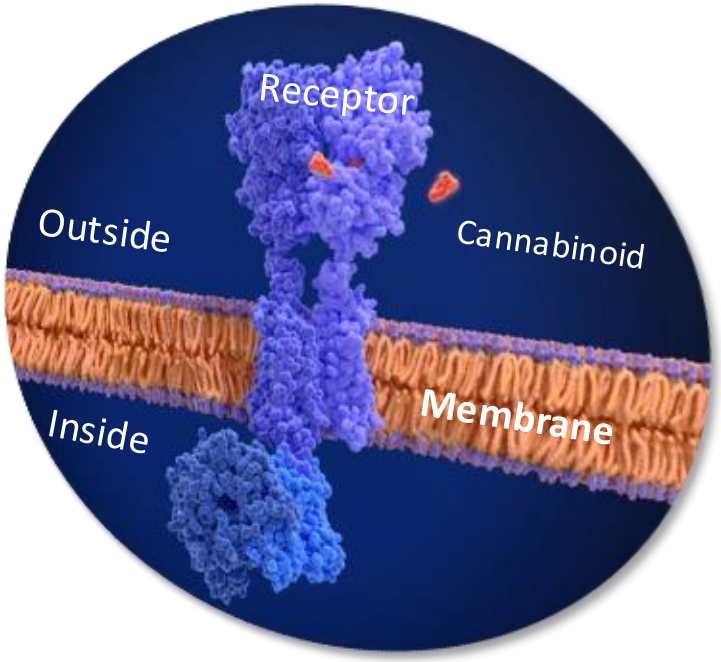
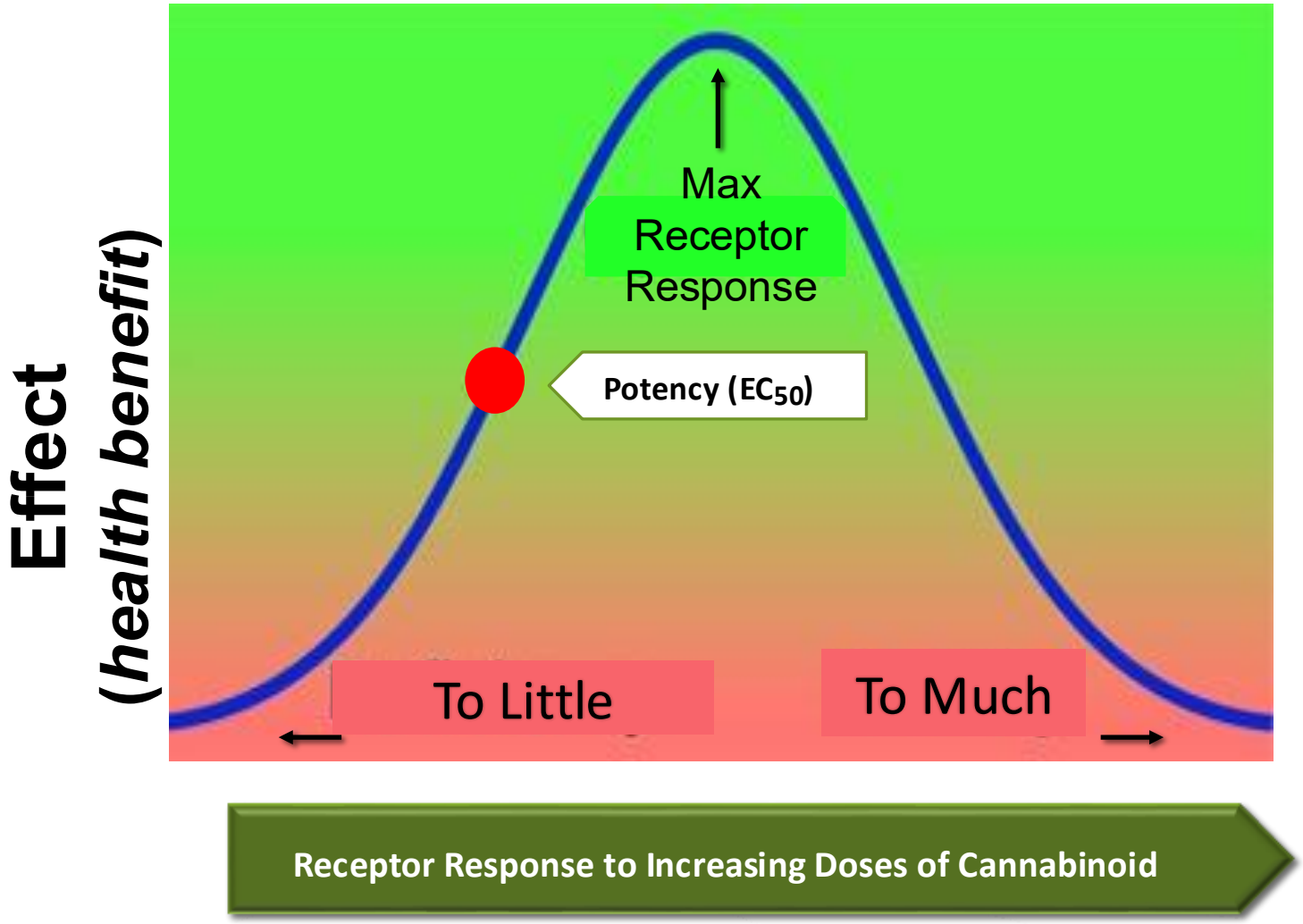
Biological Potency Guides Recommended Dosing





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CannaMetrix Technology Has No Competition

- Animal testing requires an infrastructure that is expensive, requires veterinarians and certifications and the studies take too long to be used as a routine method for quantifying cannabis product potency and batch-to-batch consistency. There is concern that the animal endocannabinoid system and cannabinoid metabolism are not comparable that in human biology.

- Human studies based on questionnaires are subjective and imprecise. Clinical studies require FDA approval, cost millions of dollars and have so far not evaluated broad or full spectrum products.

- The few cell-based assays that are commercially available or may be accessed through academic collaborations are designed for limited sample testing and are not evergreen. They are too costly for repetitive applications at industry scale. They frequently do not evaluate receptor response in a human cell endocannabinoid background.

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A Unique and Competitive Investment Opportunity

Brief Business Overview

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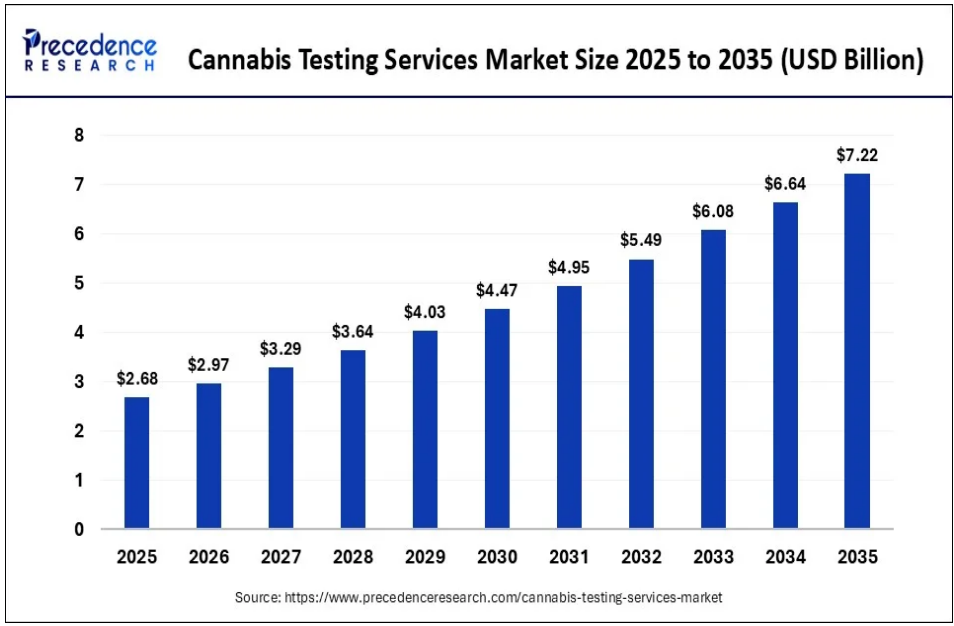
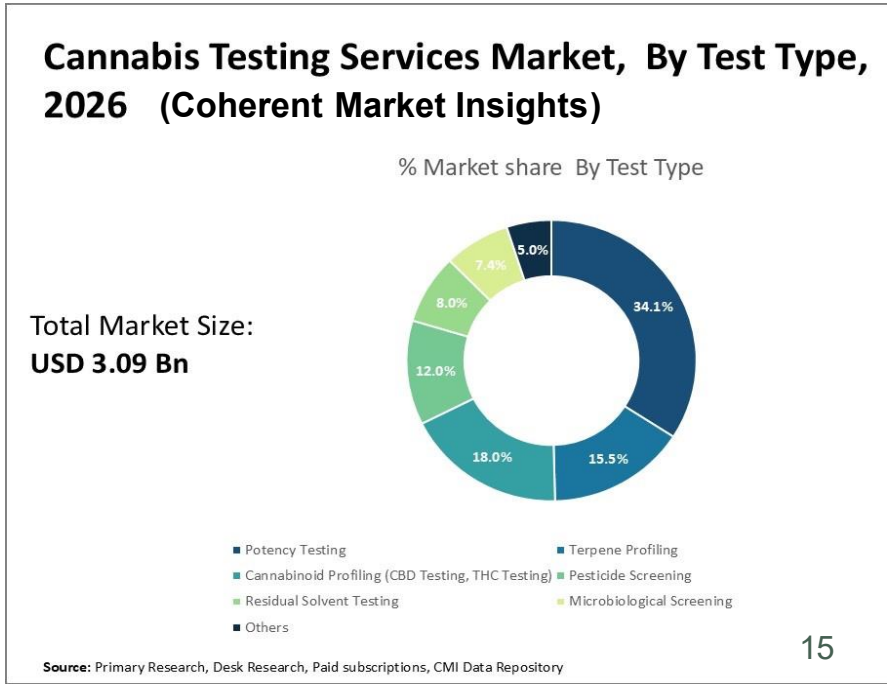
Market Trends

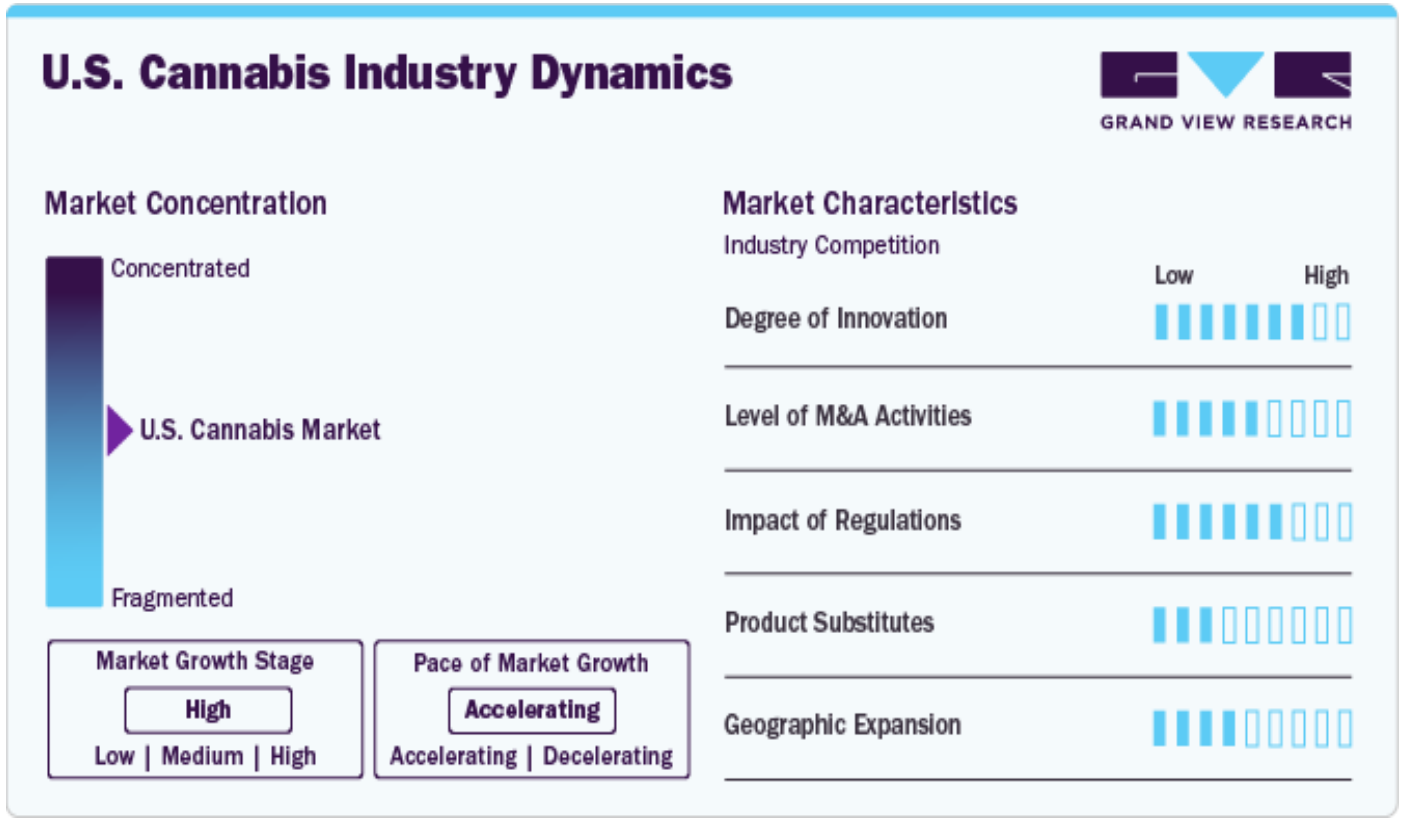
- ✓ Key Market Trends & Insights. The North America combined market for cannabis testing and supporting services market accounted for the largest global revenue share in the cannabis industry in 2025 approximating 54.1% (Grand View Research).
- ✓ The global cannabis testing services market size was estimated at USD 2.42 billion in 2025 and is projected to reach USD >7 billion by 2033, growing at a CAGR of 14.36% from 2026 to 2033 (Coherent Market Insights).
- ✓ The FDA has rescheduled cannabis and is now approving clinical trials testing individual cannabinoids. Four products containing either THC or CBD have been approved in the USA for prescription use.
- ✓ More than half of 440 clinical trials involving cannabis since 2010 were performed in the United States.





Market Dynamics

- The U.S. cannabis market is characterized by a high degree of innovation owing to the rising legalization of cannabis, rescheduling of cannabis, rising demand for cannabis-infused products (edibles) and vapes, and growing awareness among people of the need for R&D on the effects of different cannabinoids/terpenes compositions and their medicinal properties.
- The market is characterized by a medium level of mergers and acquisitions (M&A) that shape the business landscape.
- Companies are seeking strategic partnerships and acquisitions to enhance their presence and drive growth in the industry.



High Impact Innovation and Leadership

- Whether for inflammatory disease, pain relief, PTSD or recreational enjoyment, consumers want assurances of potency and product consistency.
- Cell-based disease models will identify the most effective and potent treatments for several major diseases.
- Our patented, human cell-based potency testing and product labeling will assure consumers that they are purchasing a product that will consistently deliver the results they expect. Satisfied customers will become life-long return buyers.
- Brand owners will want to have their products endorsed by CannaMetrix as having been laboratory tested in the human endocannabinoid system to have dose-dependent potency.
- CannaMetrix technology will disrupt and transform the industry with quantitative science where human cell-based methods anticipate product potency rather than inferring potency only from chemical quantification.

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Proposed Package Labeling That Guides Consumer Choice

Patent

US 2023/11,782,050 B2 published 09-05-2024: Cell-based assay for quantifying the potency and efficacy of cannabinoids and/or terpenes, and methods of use thereof.

Canadian patent pending.

Trademark

Product Labelling

The biological potency of this product at the recommended dose has been validated through laboratory cell-based testing

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Large Market Access Through CannaMetrix-Smithers Service Agreement

Established in 1925, the Smithers Group has a global outreach for specialized testing, inspection, and certification services.

Smithers has licensed cannabis testing labs in 6 states: Arizona, Illinois, Massachusetts, New Jersey, New York, and Ohio

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https://www.smithers.com/industries/cannabis-testing

Strategic Marketing Advantage Through The CannaMetrix - Smithers Service Contract

- Smithers services large multi-state operators as well as craft growers and regional players, providing CannaMetrix with access to a broad range of clients.
- Smithers is an established brand with a top-shelf reputation. Known for being science-first with expertise in supporting the full range of cannabis products from flower to complex formulations.
- Smithers provides both routine compliance testing and complex product testing and formulation support.
- Relationships with regulators and cannabis research groups provide CannaMetrix channels to lay the groundwork for the adoption and acceptance of the Cannametrix biopotency testing tools.

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Cannametrix Seeks

An Equity Investment

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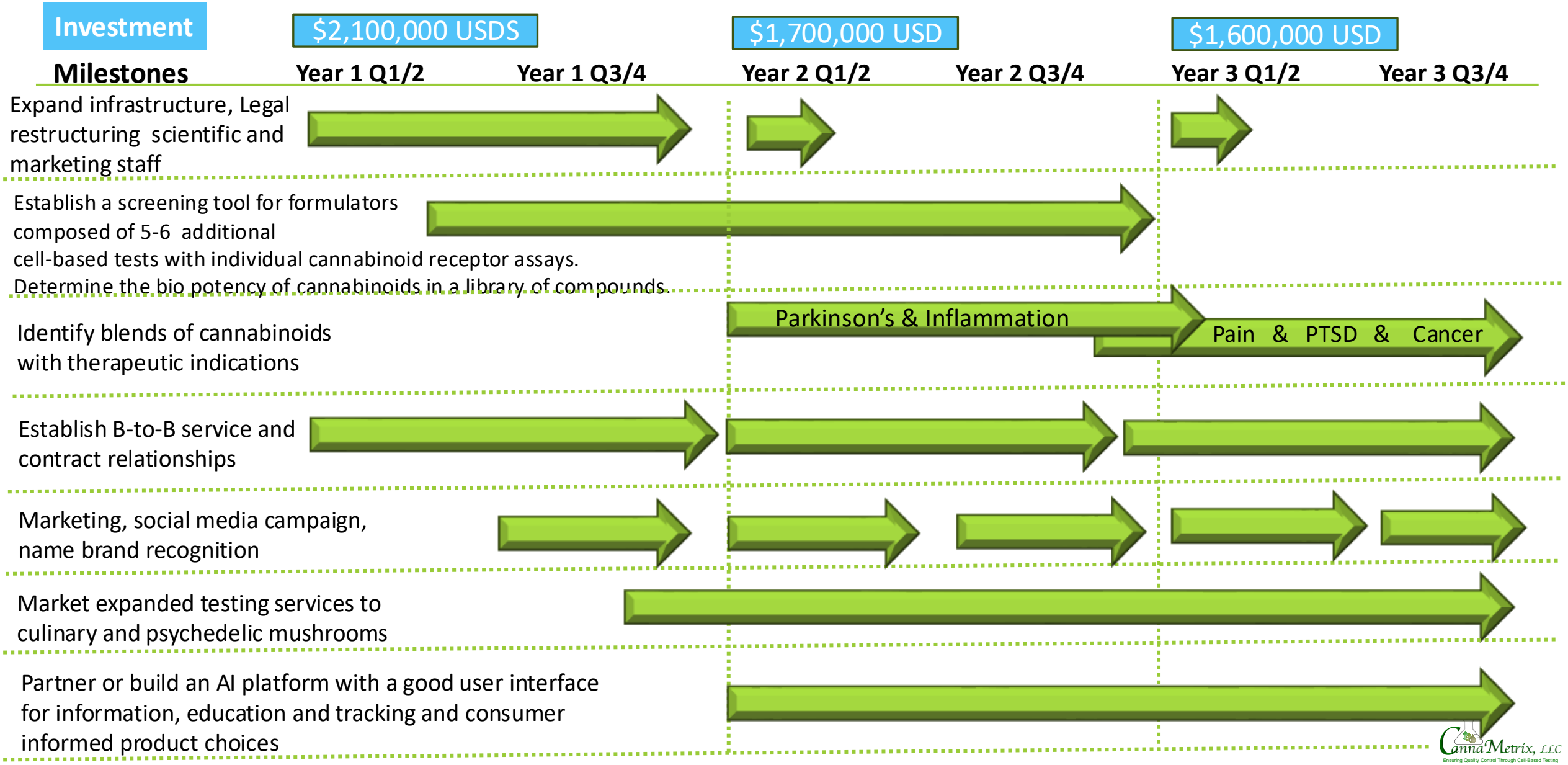
Milestone Driven Tranches for a $5.4 MM Investment



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Significant Opportunity for Return on Investment

- **Testing services have a large market share in the cannabis industry.**
  - Testing of cannabis products makes up to a significant sector in the industry
  - NY State Processors and Testing Services, Product Labelling and Trademark (current total market > $3.5B)
  - USA National Processors and Testing Services, Product labeling and Trademark (current total market > $85B)
  - Global Cannabis Potency Testing and Boutique Assay Development Services (current total market > $300B)
- **Biopotency testing will drive consumer product choice and demand by rescheduling that products meet a higher standard of validation.**
  - Biopotency testing based on human biology resonates with consumers
  - Biopotency testing makes sense as a metric for product formulation
  - Cannametrix will capitalize on the new understanding of biopotency through broad national marketing and sales
  - Unique platform of several cell-based tests will screen products for healthcare applications
  - Durable business opportunity through patent protection

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Risk Reduction for Investors

- **There is no commercial competition for CannaMetrix's biopotency testing in the cannabis industry.**
  - Patent protection in the USA and Canada on the CannaMetrix platform of human cell biopotency tests.
  - CannaMetrix's tests stand out in the industry as being highly quantitative, high throughput, every green, and affordable.
  - High bar of entry for competitors in both the technology know-how and in setting up laboratory capabilities for running and maintaining the tests.
  - New marketing and test distribution through an Exclusive Service Agreement with Smithers
- **Across the pharmaceutical and natural product industries, cell-based testing is trending over studies using animals as the method of choice for identifying and predicting the efficacy and safety products may have in humans.**
- **CannaMetrix achieved proof-of-concept of the efficacy of its biopotency assay and commercial viability.**
- **Current cannabis potency testing will guide formulation for disease treatments and attract pharma partners.**
- **Near-term expansion into other natural product biopotency testing using cell-based testing platforms and technology know-how.**

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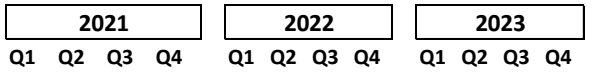
Contact Information

Harold C. Smith, Ph.D.
Founder & CEO
CannaMetrix, LLC
1200 Jefferson Rd
Rochester, NY 14623
hsmithny@gmail.com
Mobile: (585) 697-4351
Webpage: http://cannametrix.org

Appendix

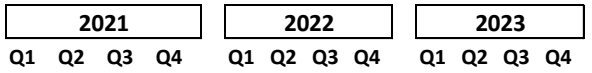
Appendix A1: Achievements from 2021 to 2023

CannaMetrix started in 2016 as a virtual company and in 2021 established a functional R&D laboratory.



Filed a provisional patent claiming the potency of molecules and human cell-based testing
Acquired 8 cannabinoid receptors in lentivirus vectors for expanded cell-based testing
Increased testing throughput with the purchase of second FlexStation III
Completed testing of plant sourced CBD from crude extract up to 99% pure product
Completed first CNR1 assay screen against pure cannabinoids
Completed second CNR1 assay screened against cannabinoid blends
Validated CNR1 assay with a library of synthetic agonists
Constructed and tested 8 novel chimeric G proteins for universal GPCR coupling
Confirmed improved dynamic range and faster testing speed
Validated assay consistency across day-to-day and prep-to-prep tests
Presented CannaMetrix technology at Rochester Cannabis Science Conference
Validated that CNR1 response is consistent with literature reported doses
Validated that CNR1 response is consistent with physiologic doses
Acquired unique cell lines for tissue-specific cell-based testing
Constructed CNR1 assay
Established requirements for long-term expression and function of assay components in evergreen cells
Raised ~2MM research contract, licensing option agreement with XXII Century
Optimized Cell-based reporter assays for cell-based systems
Established Cannametrix.org website
Raised $200K in contract research with XXII Century
Acquired high through-put robotics for receptor activity measurements
Scheduled Laboratory with Federal DEA and NYS BNE Schedule I and II research for THC
Acquired and renovated physical Laboratory in Rochester NY
Transferred $350K in Equipment and Supplies from Dr. Smith's Academic Laboratory Closeout

R&D
IP
Operations
Production
BD, Outreach



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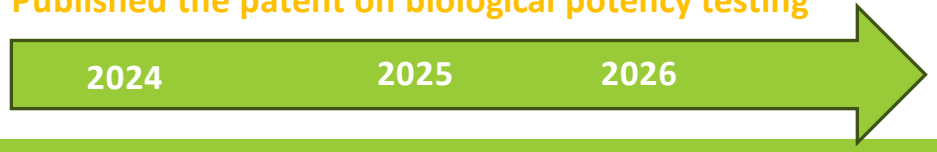
Appendix A2: Achievements from 2024 to present

CannaMetrix moved to its current laboratory location in 2024, began recruiting business partners, added substances scheduled under its DEA license, and is evaluating a variety of cannabinoids, alone and in combination, as it expands its testing platform to include multiple cell-based receptor assays and in a variety of cell types

R&D
IP
Operations
Production
BD, Outreach

National testing service through the Smithers Group
Scheduled Laboratory for DEA schedule I and II research for psilocybin
Vetted CNR1 assay against FDA cannabinoid Library
Perfecting the patent for cell-based cannabis potency testing
Hired Juan Sanchez Tamburino as COO
Began constructing cell lines for seven additional cannabinoid receptors
Launched social media promotion through SciTube
Expanded Laboratory scheduling to include schedule I psilocybin research
Established a relationship for testing with a Rochester compliancy testing lab
Presented CannaMetrix technology at Rochester Cannabis Science Conference
Completed SBIR research application submission
Launched multiple social media promotions through Research Outreach
Published Peer Reviewed article on CannaMetrix Technology
Designed and built expanded new research lab space and offices
Retained Steinbrener Law as our corporate attorney
Negotiated the termination agreement with XXII Century with complete retention of assets
Retained Foley and Lardner, LLP as our patent attorney
Published the patent on biological potency testing



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CannaMetrix Technology Will Develop Cell Lines that Modeling Different Disease States to Identify the Most Potent Combinations of Cannabinoids for Therapeutic Indications

Parkinson's Disease: cannabinoid blends that reduce tremors, pain and fatigue

Inflammation: combinations of anti-inflammatory cannabinoids may reduce swelling and pain

Cancer: inhibit tumor cell growth

Depression/PTSD: cannabinoid combinations that alleviate depression and control mood swings with minimal psychotropic effects due to THC alone

Pain management: reduce the root causes of pain without psychotropic effects due to THC alone

Fibromyalgia: identify cannabinoids that reduce cramps, pain and reduce stress

Metabolic and Eating Disorders: enhancing appetite in the elderly and chemotherapy patients to prevent wasting without psychotropic effects

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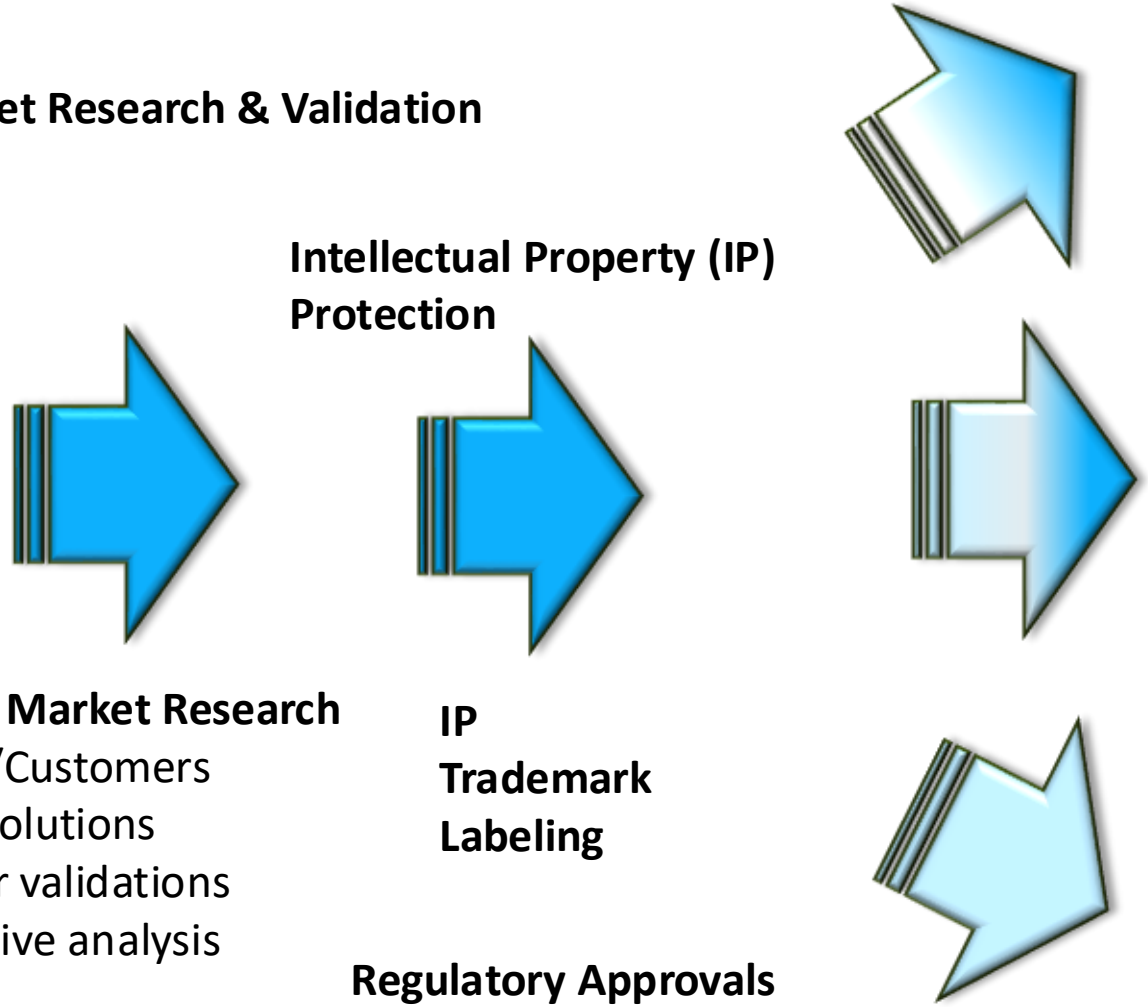
Commercialization Plan

Market Research & Validation

Intellectual Property (IP) Protection



Smithers Market Research
Demand/Customers
Current solutions
Customer validations
Competitive analysis

IP
Trademark
Labeling

Regulatory Approvals and Certifications?

Partnerships & Collaborations

ongoing

planning

Smithers testing labs
Cannabis industry leaders
Pharmaceutical companies
Plant genetic engineers
Regulatory agencies

Licensing and Strategic Alliances

Exclusive service agreement with Smithers and future licensing agreement or M&A

Consulting and contract R&D for commercial, federal and academic labs

Growth and Expansion

Equity Investors – take the company public

Pharma and Industry
Manufacturing and supply chain setup

Marketing, product labeling and sales strategies

Potency testing for mushrooms/natural products

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