CannaMetrix, LLC
Ensuring Quality Control Through Cell-Based Testing

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Executive Summary

The Opportunity: Medicinal use of marijuana or hemp in plant form or synthetic compounds is rapidly gaining acceptance as a treatment to alleviate symptoms associated with chronic diseases with aspirations to be considered as primary treatment for specific medical conditions. The industry seeks to develop products composed of blends of purified cannabinoids or full spectrum products from new cannabis chemotypes in hopes of improving the potency relative to a variety of medicinal applications. Other than cannabinoid and terpene chemical compositional analysis and inferences of potency therefrom, there has been little to no effort in the industry to validate products for their actual biological potency using biomarkers within the endocannabinoid system. The need for biological potency determinations in addition to chemical composition analysis may have been overlooked because of federal standards that were largely aimed at restricting products with THC content greater than 0.3%. Although the psychotropic potency of THC is currently inferred based on percent composition, its actual potency in patients may be overestimated in combination products or full spectrum products due to mitigating effects of cannabinoid antagonists at the THC cell receptor (CB1). For the non-psychotropic cannabinoids and terpenes, percent composition cannot predict how the human endocannabinoid system will respond to individual purified cannabinoids and certainly cannot predict how multiple agonist and antagonist compounds within broad or full spectrum products might affect patients.

Medically relevant, biological endpoints have not yet been adopted as metrics for validating the quality and potency of cannabis products and ensuring batch-to-batch consistency.

The industry needs to adopt standards for bringing drugs to market comparable to how drug potency is measured and expressed throughout the pharmaceutical industry, namely, units of activity per drug concentration (i.e., biological potency) as well as chemical composition. Determining biological potency of cannabis products will differentiate them by informing physicians and consumers in making product choices and in assessing appropriate drug doses. Physicians expect this level of validation for drugs that they recommend to their patients. CannaMetrix addresses this unmet need through proprietary human cell-based potency testing that will establish a new high bar for the industry in cannabis product development and product validation.

Our Significant Competitive Position: CannaMetrix addresses an unmet need for biologically relevant and predictive commercial cannabis potency testing. CannaMetrix's proprietary cell-based cannabis potency testing, the 'EC50 Array', is the only commercial assay that quantifies and predicts biological potency of cannabinoids in products based on their dose-dependent activity through the naturally expressed human cell endocannabinoid biomarkers. The EC50 Array uniquely reveals the appropriate blends of purified cannabinoids that will have the highest potency for modulating the endocannabinoid system. Our assay can more reliably predict the medicinal potency of full spectrum products resulting from genetic engineering and selection of cannabis chemotypes. A unique advantage in cell-based potency testing is the ability to predict dose-dependent off-target or toxic effects that might be observed in patients, thereby guiding product composition and suggested dosing for purified cannabinoids alone or in combination and full spectrum products. In development CannaMetrix will achieve personalized cannabis potency testing, affording patients with informed choice as to which products ideally promote their endocannabinoid system. Our competitive edge is that brand differentiation through CannaMetrix human cell-based potency testing is grounded in the science of the endocannabinoid system. Industry-wide uptake is inevitable because our approach enables informed consumer choice.

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CannaMetrix's proprietary assay for testing cannabis products enables growers and developers of cultivars of cannabis to differentiate their products in the marketplace by establishing that their products have consistent EC50 potencies along medicinally relevant defined endocannabinoid receptors pathways as determined in human cells *in vitro*.

Business Objectives: While we see revenue generation potential from testing and EC50 Array licensing agreements nationally and internationally within the next 16 months, we project that a large revenue potential will be in the exclusive licensing or acquisition of the technology as major players enter the cannabis space who will value proprietary biological validation for developing unique medicinal cannabis cultivars and products targeting defined medicinal applications. Data obtained from testing cannabis products with our assay is essential to physician acceptance of cannabis as a treatment for their patients, will drive regulatory approval and is key to competitive placement of products in the market.

Management: Dr. Harold C. Smith, Ph.D. founder and CEO has a long, distinguished career with the University of Rochester School of Medicine and Dentistry including over 30 years of funded research producing 145 peer-reviewed publications on cellular and molecular biochemistry, physiological regulatory pathways, and drug development experience. Dr. Smith is also founder and CEO of OyaGen, Inc an infectious disease drug discovery company with licensed small molecule leads for treating COVID-19 and a first-in-class therapeutic for HIV/AIDS in development. He is joined by Drs. Charles Smith, Ph.D., CSO and Drs. Ryan Bennett, Ph.D. and David Yule, Ph.D. as technical consultants who add their extensive experience in biochemistry, G protein-coupled receptor biology, molecular genetics, receptor biology and drug discovery to CannaMetrix. For more information, please contact:

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