June 28, 2021

Free Your Mind – Psychedelic Therapeutics Aim to Change the Mental Health Landscape...Is it Worth the Trip?

Summary

***"To use your head, you have to go out of your mind."* — Timothy Leary, Ph.D., Harvard Professor**

Was Timothy Leary correct? If you do not know who Dr. Leary is, perhaps now you should take the time to get acquainted with and understand how psychedelic research in the mid-20th century paved the way for today's burgeoning movement in psychedelic medicine for treating mental health and CNS disorders; psilocybin, ibogaine, LSD (lysergic acid diethylamide), DMT (N,N-dimethyltryptamine), ayahuasca, and MDMA (3,4-methylenedioxymethamphetamine). Multiple data readouts are expected in 2021/22 and the first approvals could come as soon as in 2023. There is much to discuss, a trip to take if you will, down the path of how psychedelic medicines are not emerging, but rather re-emerging, and now being supported at the R&D, regulatory, investment community, and physician/therapist levels. In this industry report, we break down the space from multiple angles — including a historical perspective, drug classes and MOAs, IP and go-forward considerations, the key players, and who the emerging players may be. In conjunction with this report, we are initiating coverage of 10 biotechnology companies in the psychedelic medicine space and presenting profiles on 16 additional companies and non-profit research organizations advancing psychedelic-focused programs.

Details

Maxim Group is initiating coverage with Buy ratings on the following companies:

COMPASS Pathways plc (CMPS).....**LINK**
Cybin Inc. (CLXPF).....**LINK**
Enveric Biosciences Inc. (ENVB).....**LINK**
Field Trip Health Ltd. (FTRPF).....**LINK**
Mind Cure Health (MCURF).....**LINK**
Mind Medicine (MindMed) Inc. (MNMD).....**LINK**
Mindset Pharma Inc. (MSSTF).....**LINK**
Mydecine Innovations Group (MYCOF).....**LINK**
PharmaTher Holdings Ltd. (PHRRF).....**LINK**
PsyBio Therapeutics Corp. (PSYBF).....**LINK**

Jason McCarthy, Ph.D. (212) 895-3556 jmccarthy@maximgrp.com
Michael Okunewitch (212) 895-3579 mokunewitch@maximgrp.com

Table of Contents

PART III: COMPANY PROFILES 184

"Psychedelics, used responsibly and with proper caution, would be for psychiatry what the microscope is for biology and medicine or the telescope is for astronomy."

- Dr. Stanislav Grof,
Psychiatrist and pioneering psychedelic researcher

PART I: THE PSYCHEDELIC MEDICINE SPACE

"It gave me an inner joy, an open mindedness, a gratefulness, open eyes and an internal sensitivity for the miracles of creation... I think that in human evolution it has never been as necessary to have this substance LSD. It is just a tool to turn us into what we are supposed to be."

- Dr. Albert Hofmann,
Chemist and discoverer of LSD

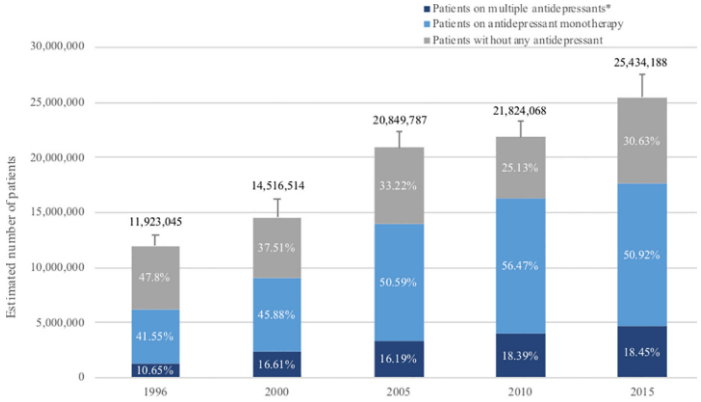
Psychedelics: The Evolving Space

A renaissance in psychiatric medicine: The emergence of psychedelic-based medicine is rapidly evolving in the healthcare space and it marks the next iteration in a burgeoning therapeutics landscape in mental health. However, before we take a trip into the history of this class of therapeutics, applications for use, drug classes and mechanisms of action, clinical trial approaches, examination of key players in the space and how these medicines are being applied today, let us first take a brief look at how the mental health space has evolved to this point.

The unmet need in mental health-related indications is substantial to say the least, including areas such as depression, anxiety, PTSD and substance abuse to name a few, and then also in areas of CNS-related disease with neurodegeneration like Alzheimer's disease, Parkinson's disease, multiple sclerosis, even migraine/cluster headache. Let us look at purely mental health to start, in particular depression as the example, merely because of the sheer size of the indication. Depression impacts an estimated 300M people globally and ~20M in the US. Treatment options in the pharmacological sense include the SSRIs, SNRIs, MAOIs and atypical antipsychotics, though still about a third of patients do not get better with treatment. Drugs are often prescribed at the physician level, meaning mainly the general practitioner, who then uses a trial-and-error process with available meds to see if something can help their patient. This process to determine efficacy can take 8-12 weeks and there are unwanted side effects associated with these meds.

To put the scale and scope of this process into focus, think about this question. How many diagnoses are made for any disease or condition and there are over 20+ medications approved by FDA? Well, that's depression and anxiety, and yet the unmet need could still not be greater. This has been further exacerbated by the COVID-19 pandemic, and not just for depression/anxiety, but PTSD, social anxiety and substance abuse. In fact, scripts for anxiety-related meds like benzodiazepines were up 34% in 2020 due to COVID and an estimated 12-14% of Americans already take antidepressants[1]. Think about that. We are a country of 330M+ people. Not bad from a pharmaceutical marketing perspective though. The global anxiety/depression pharmaceuticals market generated ~$14.5B in 2020 and this is factoring in that a lot of drugs are available as lower priced generics.

Exhibit 1. Antidepressant treatment for patients with major depression, 1996-2015. Shown below from a 2020 review from Luo et al show antidepressant us in the US for major depression. Note, in the category of "multiple antidepressants" this refers to patients who were prescribed one or more antidepressant during that year. This can include combination therapy and/or switching monotherapies.



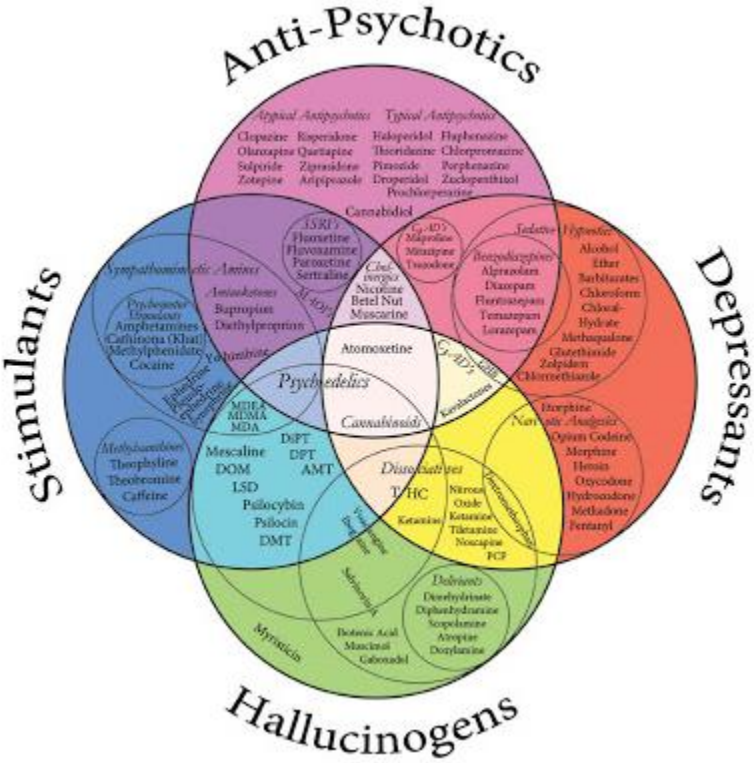
Source. Luo et al 2020[2]

[1] American Psychological Association. https://www.apa.org/monitor/2017/11/numbers

[2] Luo et al. 'National Prescription Patterns of Antidepressants in the Treatment of Adults with Major Depression in the US Between 1996 and 2015: a Population Representative Survey Based Analysis.' Frontiers in Psychiatry. February 2020. 11(35)

The use of these classes (SSRIs, SNRIs, MAOIs, atypical antipsychotics) of antidepressant went on for decades without a major depression-drug breakthrough, that is until Ketamine came into the mainstream with the 2019 approval of J&J's Spravato. This also ushered in development of therapeutics targeting the N-methyl-D-aspartate (NMDA) receptor. Ketamine and its use in treatment-resistant depression was one of the most unexpected discoveries in psychiatry in the 21st century, demonstrating improved mood and reduced suicidal ideation in severely depressed patients. These events were described by researchers at Yale as the biggest breakthrough in depression research in half a century.[3] This drug, which is an anesthetic agent, is often lumped into "psychedelic drugs", more so from its recreational use than anything else, though it's important to note that Ketamine is not a true psychedelic, it's a dissociative. That said, we are not here to debate to which class of drug ketamine belongs. What is important though to consider is how the breakthroughs in depression with ketamine have brought with it not the emergence of psychedelic-based therapeutics (Ibogaine, LSD, psilocybin, DMT, MDMA), but rather their reemergence in the mainstream of psychiatric therapeutics development.

Exhibit 2. Classes of drugs in mental health; stimulants, depressants, anti-psychotics and psychedelics.



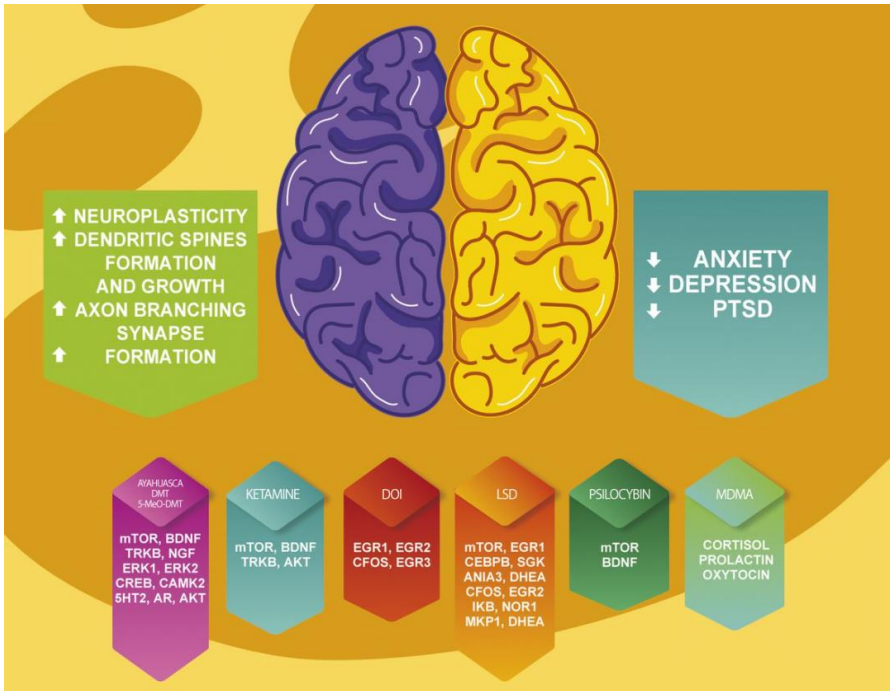
Source: Neurocritic[4]

The word "psychedelic" finds its roots in two Greek words; "psyche" and "delein", which mean "the soul, mind" and "to make visible, reveal."[5] Essentially these are compounds, whether they are naturally occurring in plants/fungi and extracted (i.e. psilocybin, ayahuasca, ibogaine), or synthetic (i.e. LSD, MDMA), that are inducing mind-altering experiences in people that use them, or in the context of this paper, being treated with them. Note that natural compounds are also being developed synthetically by some groups in the space.

[3] Murrough et al. 'Ketamine for Rapid Reduction of Suicide Ideation: A randomized controlled trial.' Psychological Medicine. 2015. Vol 45.pp.3571-3580.
[4] The Neurocritic, venn diagram of psychoactive drugs. https://neurocritic.blogspot.com/2010/08/ketamine-for-depression-yay-or-neigh.html
[5] Online Etymology Dictionary. https://www.etymonline.com/word/psychedelic

This, and classes of psychedelics, their mechanisms of action (neuroplasticity, signaling pathways), molecular pathways and applications are discussed below.

Exhibit 3. Effects of psychedelic compounds on the brain. From a therapeutics perspective, psychedelic compounds impact a wide range of signaling pathways that in-part permit induction of neuroplastic alterations that when combined with psychotherapy in a well-controlled setting has been shown to alleviate anxiety, depression, PTSD and other mental health conditions like addiction. More details on specific mechanisms of action (MOAs) are show in another section below. This is a generalized view of MOAs for several psychedelic compounds.



Source: Inserra et al 2021[6]

Nonetheless, mention psychedelics to most people and they immediately think of something like Pink Floyd, The Grateful Dead, or perhaps the classic story of Alice in Wonderland and a drug trip disguised as a children's story. This thought process is also then associated with counterculture movement of the late 1960's and early 1970's. We are not trying to be facetious, but the mainstream stigma attached to these types of compounds is impossible to ignore, though this dogma over the past decade and particularly in the past few years, is shifting.

Psychedelics, in our view, should be viewed much the same as any other class of drug, whether that is in oncology, neurology or infectious disease for example. Meaning these are chemicals/molecules that interact with receptors and other molecular machinery in cells that result in some changes to the cells, signaling and overall physiology that supports better outcomes of a disease/condition. Like any substance that is put in the body, it is only merely changing the existing chemistry that is already in place, nothing more. From our perspective, when considering how a certain compound could be used medicinally, taking this view is critical. Same could be said of the cannabinoids, including both THC and CBD (there are many others), which are targeting the endogenous endocannabinoid signaling system in our cells to drive some physiological change(s) to treat disease. Cannabinoids and those developing them from a therapeutics perspective, experienced challenges in terms of separation from the stigma associated with marijuana recreational use, legalization issues

[6] Inserra et al. 'Psychedelics in Psychiatry: Neuroplastic, Immunomodulatory and Neurotransmitter Mechanisms.' Pharmacological Reviews. January 2021. 73(1). Pp 202-277

and media hype. However, like J&J broke the barrier with nasal-delivered Ketamine, GW Pharmaceuticals (acquired by Jazz Pharmaceuticals [JAZZ – NR] on 5/5/21 for $7.6B in total consideration) broke the barrier with cannabinoids and many others are following. Who could break the barrier in psychedelics? We'll see. Psychedelics, as noted above, also have their own stigma that needs to be shaken as there is a clear separation of those pursuing these compounds as therapeutics and those advancing recreational use. The latter, like cannabis, is the subject of a shifting legal environment and States debating and some now permitting, legal (or decriminalized) use of psychedelics. Bottom line, this paper is focused on therapeutics only, though legal issues, social stigma, and other factors and how they change will be something to pay attention too going forward as this space continues to evolve.

The use of psychedelic compounds that were naturally occurring goes back thousands of years but made its way to "scientific discovery" in 1898 when Arthur Heffter isolated mescaline from the peyote cactus. This was the first isolation of a naturally occurring psychedelic and Heffter conducted experiments with patients, as well as on himself, with the compound.[7] Not long after that, in 1912 MDMA (3,4-Methylenedioxymethamphetamine) was synthesized by Merck, albeit as a chemical backbone for creating other chemical compounds and then it was shelved. MDMA was not used as a psychedelic for experiments or other applications really until the late 1950's.[8] MDMA is also considered a "non-classic" psychedelic.

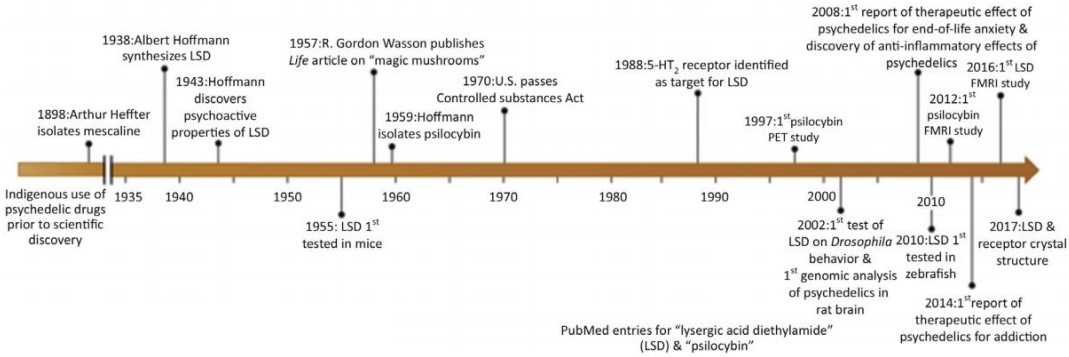
The movement towards more widespread use of psychedelic compounds by scientific/medical research really came to be in the late 1930's and early 1940's when Albert Hoffman synthesized lysergic acid diethylamide (LSD) and discovered its psychoactive properties while at the Sandoz Pharmaceutical Company (Novartis, NVS - NR) in Bazel, Switzerland. LSD was actually produced commercially in the 1940's for use in psychological therapy. Over the course of the 1950's and 1960's some 40,000 subjects (including psychiatric patients) were administered psychedelics (LSD, MDMA, DMT, others) resulting in the publication of over 1,000 research articles. Much was learned about the therapeutic potential of psychedelics during this time in areas such as depression, anxiety, and addiction. For example, meta-analyses of studies during this time that conducted experiments with LSD in subjects with unipolar depression showed 80% improvement of symptoms. Likewise in alcohol addiction studies with LSD that were randomized demonstrated that 40-45% of patients did not experience relapse after a year.[9] These are just a few examples. However, much of the data during this initial flurry of studies with psychedelic-based therapeutics was compelling but much was based on experimental standards that would likely not meet current criteria around reporting, control groups and reproducible data. That said, the signals of efficacy were there and the space was rapidly evolving during this period of ~20 years. However, the next logical question is what happened to the progress being made and further development of psychedelics for clinical use?

Exhibit 4. History of psychedelic research. Shown below is a timeline of psychedelic research from the isolation of mescaline by Arthur Heffter in 1898 through key events into 2017. These are several examples, though with 1000+ publications on psychedelics, there are many more.

[7] Heffter Research Institute, https://www.heffter.org/about-dr-heffter/

[8] Bernschneider-Reif and Freudenmann 'The Origin of MDMA ("Ecstasy")- Separating the facts from the myth.' Pharmazie. November 2006. 61(11). pp 966-972.

[9] Mangini M. 'Treatment of Alcoholism Using Psychedelic Drugs: A review of the program of research.' Journal of Psychoactive Drugs. October-December 1998. 30(4). Pp 381-418.



Source: Kyzar et al 2017 [10]

The cultural revolution of the 1960's, psychedelic research gets stymied. During this period LSD became available for recreational use as a means to have a "spiritual experience" and came at a time when there was shifting mainstream thinking towards more radical views and questioning of government and social norms; the "counterculture revolution". LSD, while one of several psychedelic-based compounds that demonstrated compelling data towards treating mental health-related diseases, became synonymous with hippies and the counterculture movement, which of course then earned it a stigma with the rest of the country. Of notoriety with the association of LSD and counterculture was Timothy Leary, a Harvard professor who encouraged LSD use and famously touted its use as a way to "tune in, turn on, and drop out". The writings and communications of Timothy Leary were collected and published in the book "The Timothy Leary Project: Inside the Great Counterculture Experiment." Further exacerbating the general view of LSD was use by the CIA as a means of interrogation and torture. This was all further compounded by the vilification of psychedelics during this time by the media. Combined, this ultimately led to psychedelic compounds being categorized as schedule 1 substances, meaning of no medical use and high potential for abuse, and clinical research essentially ground to a halt in the 70's, though some of it went underground. Note, these compounds actually have a low propensity, if any for abuse/addiction.[11]

The use of psychedelic compounds for clinical research reemerged in the 90's, having lost several decades of time over which period only one could imagine how much knowledge and therapeutic benefit for patients/subjects could have been gained. While this "dark" period for psychedelics stemmed from socio-political driven changes to the regulatory environment around these compounds, the idea of what we describe as "time lost" is not unique to psychedelics. One example we could point to is the AIDS epidemic in the early 80's that led to the discovery of T cell involvement in that disease and its more in-depth role in immunity in general, leaving the B cells and antibodies in a similar void. Likewise, the discovery of antibiotics in the late 1920's and mass use/commercialization during WWII left behind the sulfonamides, plasma and other anti-infective approaches that were efficacious. There are other examples too, like gene therapy for which safety issues in the 1990's left progression in this space at a slowdown/standstill for 10-20 years. Clearly not the same between these examples from the view of how it happened, but it happened…time lost, though we would say not forgotten and each had reemerged…now it is happening for psychedelic-based therapeutics.

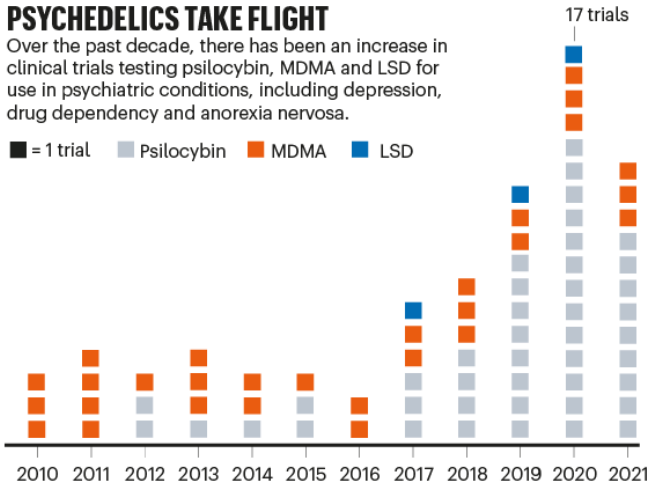
Psychedelics reemerging. In the early 1990's, Rick Strassman led a group of researchers at the University of New Mexico via Federal funding to evaluate the psychological and physiological effects of DMT (N,N-dimethyltryptamine) in healthy volunteers. Over the course of 1990-1995, 60 subjects were involved and ~400 doses administered. This was a tremendous step forward for psychedelics-based research and opened the door to the

[10] Kyzar et al. 'Psychedelic Drugs in Biomedicine.' Trends in Pharmacological Sciences. November 2017. 38(11). Pp 992-1005
[11] Johnson et al. 'The Abuse Potential of Medical Psilocybin According to the 8 Factors of the Controlled Substances Ave.' Neuropharmacology. November 2018

reemergence of the entire space. Dr. Strassman's work, in addition to peer-reviewed publications, can be found in his book "DMT: The Spirit Molecule. A Doctor's Revolutionary Research into the Biology of Near-Death and Mystical Experiences." Recall that DMT was also classified as a schedule 1 drug thus this really opened the door to what was possible going forward. Next came work by others with MDMA and Ibogaine, both considered "non-classic" psychedelics, were evaluated as part of phase 1 clinical programs at Harbor-UCLA Medical Center and the University of Miami, respectively. Outside the US during this period there was also the first psychiatric/biomedical studies using ayahuasca. MAPS, the Multidisciplinary Association for Psychedelic Studies, was founded in 1986 as a non-profit research and educational center for the development, evaluation and progression of psychedelics and marijuana. MAPS actually has one of the most advanced programs today with an MDMA P3 and three MDMA phase 2s (MAPS research programs can be found here; LINK).

The activity in psychedelic-based research in the 1990's continued to gain traction and in the 2000's psilocybin reemerged into more mainstream focus, as did LSD and other compounds, and not just in the US and Canada, but around the World. Leading academic centers including Johns Hopkins University, Imperial College London, New York University, Oxford University, Yale, and Harvard, among others, are running psychedelic-based research programs. From an investment perspective, in addition to funding by large institutions like the National Institutes of Health, the private sector is investing quite significantly into both private and public companies.

Exhibit 5. Increasing clinical trials with psychedelics since 2010.



Source: Tullis et al 2021[12]

Compass Pathways (CMPS) was a first mover in terms of listing on a national exchange in the US and currently has a market capitalization of ~$1.3B, followed by MindMed (MNMD), atai (ATAI - NR), GH Research (GHRS - NR), as well as Enveric (ENVB), who moved into psychedelics through an acquisition. There are multiple other names, many of which are listed on Canadian exchanges, some of whom also have OTC listings in the US, or are only OTC listed in the US; a few examples include Cybin (NEO: CYBN, OTC: CLXPF), Field Trip Health (TSX: FTRP, OTC: FTRPF), MINDCURE (CSE: MCUR, OTC: MCURF), Mindset Pharma (CSE: MSET, OTC: MSSTF), Mydecine (NEO: MYCO, OTC: MYCOF) PsyBio Therapeutics (TSXV: PSYB, OTC: PSYBF), PharmaTher Holdings (CSE: PHRM, OTC: PHRRF), to name some, there are others, many of which are profiled in this paper below.

[12] Tullis et al. 'How Ecstasy and Psilocybin are Shaking up Psychiatry.' Nature. January 2021

All said, a combination of the past and present support from a research and drug development perspective, unmet needs in multiple therapeutic areas like mental health and addiction (as well as others), advancing molecular and genetic knowhow to better understand these medicines and the substantial investments to support these efforts has created a building tidal wave of innovation and opportunity that is heading towards the large US national exchanges, in our view. This is not like the cannabis wave and it's not recreational use of these compounds, it's a medicinal paradigm shift. We have seen it in monoclonal antibodies that gave rise to the checkpoints, gene therapy, CAR-T, RNA-based therapeutics, anti-infectives, NMDA-targeting bringing mental health back to the forefront (exacerbated by COVID too), Alzheimer's disease drug development has reemerged…and now we think we are going to see it with psychedelic-based medicines in multiple mental health indications as well as in other therapeutics areas.

What comes next for psychedelic-based medicines? The path forward towards bringing psychedelic-based medicines through clinical development to approval and commercialization, like any drug category, will come with its own sets of challenges that will need to be addressed as preclinical/clinical programs continue to advance, more assets are acquired or discovered and enter the R&D race, and biotech/pharma companies both large and small opt to throw their hats in the ring with a psychedelic-based asset. This will also include, in-part, shifting public perception and the stigma away from the past and towards a new beginning for what could emerge as a powerful set of therapeutic tools to treat mental health and other areas of unmet medical need. One area of particular interest in terms of shifting central dogma, is likely to be related to the psychopharmacological treatment paradigm that is the backbone of mental health treatments. Meaning, patients with mental health-related conditions like depression and anxiety are typically treated with daily oral-delivered drugs for weeks, months or sometimes years to try and get symptom relief. This is the current standard of care, albeit leaving still a tremendous unmet need. One of the challenges with these types of drugs (i.e. SSRI, SNRI, MAOI, atypicals) is that it's a one-side approach, trying to target the physiological aspects of mental health in the brain.

These therapies do not consider patient feelings, emotions, experiences, attitude, or insight. Psychedelic-based therapeutics address some of these aspects of mental health, with the goal of altering a patient's defenses, insights and perceptions in a carefully controlled setting that positions them to potentially have success in treating their underlying condition with concomitant psychotherapy as part of the treatment. Psychedelics can potentially unlock the subconscious and unconscious, bring it to the surface and build awareness for the patients (an inward experience), which then presents opportunity for intervention and support to address the underlying issues driving mental health-related conditions. This brings up the concept of "set and setting" for the effects of psychedelic drugs. This is dependent first on the "set", which is the personality, preparation, expectation and intention of the person having the experience, then the "setting", which is the physical, social and cultural environment in which the experience takes place.[13]

A key factor to consider for expanding mental health towards the use of psychedelics is the need for changes to clinical trial parameters. SOC antidepressants for example often require large, placebo-controlled trials and oral pills. Without minimizing how challenging this can be, layer on psychedelics and it becomes even more complex. These compounds must be administered in carefully controlled environments and possibly have more than one administration spread out over weeks. This is very different than daily administration of SOC therapies. Psychedelic therapies often require psychotherapy to work with the patients to leverage the inward experiences they have had and induce a change in the patient's condition, the "integration."[14] These types of therapeutics and their administration also require medical and research personnel to be trained. Lastly, trial designs, interactions and input from regulatory bodies in the US and globally, intellectual property, manufacturing, dosing and delivery, and above all else, safety, must be considered. Despite popular belief psychedelics have remarkably positive safety profiles, particularly in the clinical setting.

[13] Hartogsohn I. 'Constructing Drug Effects: A History of Set and Setting.' Drug Science, Policy and Law. January 2017. Vol 3.
[14] Sessa and Winkelman. 'Advances in Psychedelic Medicine: State-of-the-Art Therapeutic Applications. 2019

The reemergence of psychedelic-based therapeutics is ongoing and is likely to continue to build traction in the mainstream as new perspectives and development initiatives evolve. This is likely to be significantly impacted by the emergence of a number of private and public therapeutics companies moving towards national exchanges in the US. Recall that there are over 1000 publications on clinical and preclinical work with psychedelics stemming from the 1950's thru the early 1970's that have paved the way to the next chapter in this therapeutics category. The clinical development of psychedelics that initiated again in the early 1990's has paved the way to where the space is in 2021 and the number of clinical trials continues to increase. In the remainder of this paper, we profile classes of psychedelic medicines, indications, market opportunities, regulatory/legal/IP matters and key players in the space on both the public and private side, as well as initiate coverage of several. With that, let us get to it and see what's happening around the psychedelics space.

Classes of Psychedelic Compounds

As mentioned, following a pause of nearly 40 years, recent studies revealing the therapeutic potential of psychedelic compounds have led to a 'renaissance' in psychedelic research. Clinical studies are being conducted by a number of private and public healthcare companies to evaluate the psychopharmacology of psychedelics. The results could provide insight into their therapeutic value in various psychiatric and central nervous system (CNS) disorders. Psychedelics are known to produce alterations in mood, cognition, and sensory perception. Although these substances have been used for centuries, the mechanisms by which they induce their neuropsychological effects have not been elucidated till more recently. It is now well known that the majority of psychedelic compounds interact primarily with serotonin (5-hydroxytryptamine, 5-HT) receptor, in particular, the 5-HT_{2A} receptor, to mediate their effects. Before we dive deeper into the different mechanism of action (MOA) involved, however, let's discuss the major classes of psychedelics, which are broadly classified as either classical psychedelics or atypical/non-classical psychedelics. Classical psychedelics, also known as serotonergic psychedelics, act as full or partial agonists of the 5-HT_{2A} receptor, and examples include LSD, N,N-Dimethyltryptamine (DMT), and psilocybin. Meanwhile, non-classical psychedelics can be further divided into dissociative (e.g., ketamine) and entactogens (MDMA or 'ecstasy), which rely on different mechanisms and signaling pathways, although they may still affect the 5-HT_{2A} receptor to some degree.

Exhibit 6. Primary MOA and effects of psychedelic classes. There are three distinct classes of psychedelics: classical hallucinogens (like LSD, DMT, psilocybin), entactogens (like MDMA), and dissociatives (like ketamine). Though the different classes vary in mechanism of action and perceptive effects, there are also many similarities across effects and therapeutic potential.

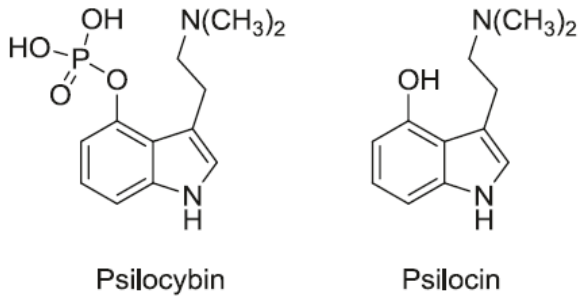
Class and Compound	Primary Mechanism of Action	Effects					
		Cognition	Perception	Negative Emotions	Positive Emotions	Social Relatedness	Other Compounds
Classic psychedelics							
LSD, psilocybin, and ayahuasca (DMT)	Serotonin 5-HT_{2A} and 5-HT_{2C} receptor agonist	Increased cognitive flexibility (53), creative thinking (51), and insightfulness (52); distractibility and disorganized behavior (49, 51, 53, 62)	Changes in visual perception (51, 53); mystical experiences (6, 12, 34, 52); paranoia (53); hallucinations, depersonalization, derealization (51, 62, 69)	Anxiety (29, 51, 69); labile mood with anxiety (34)	Increase in well-being and life satisfaction (70); positive mood (60, 71) or blissful state (52, 53, 69)	Enhanced empathy (50); prosocial attitudes and behaviors (34); openness and trust (69)	Mescaline
Entactogens							
MDMA	Serotonin 5-HT_{2A} agonist; mixed serotonin, norepinephrine, and dopamine reuptake inhibition and release	Deficits in spatial memory (111); mild impairment on psychomotor tasks (92)	Changes in body perception, slight visual and auditory alterations, no hallucinations (92)	Distrust and hostility (103); anxiety (93, 101, 103, 105)	Increased trust and sense of a greater meaning in life (100); euphoria (92, 103) and well-being (92)	Increased connectedness toward others (91, 99, 102); increased empathy (96, 100, 103)	MDA, MDEA
Dissociative anesthetics							
Ketamine	NMDA antagonist	Deficits in vigilance, verbal fluency, delayed recall, and tests of frontal lobe function (121)	Derealization, depersonalization (8, 120, 121, 124); illusions in all sensory domains and perceptual alterations (121)	Amotivation, emotional dulling, hostility (121); anxiety (121, 123)	Improved mood (7, 8, 120, 123)	Emotional withdrawal (121)	Dextrome-thorphan, phen-cyclidine (PCP), and nitrous oxide

Source: Reiff et al 2020.

Psilocybin. Psilocybin (4-phosphoryloxy-N,N-dimethyltryptamine) is a naturally occurring psychedelic compound produced by over 200 species of mushrooms that are commonly known as "magic mushrooms."[15] These secondary metabolites were first introduced to the mainstream in the 1950s, when an article written by Robert Gordon Wasson was published in Life Magazine. The article detailed Wasson's experience in participating in mushroom velada (session) ceremonies in Mexico, which stirred up a great deal of interest. Consequently, individuals wanting to experience the reported hallucinations, went on and searched for these mushrooms in the wooded mountain areas in Mexico.[16] Several years later, psilocybin was synthesized for the first time by a Swiss scientist named Albert Hofmann who also discovered the effects of LSD in 1943. Studies were conducted thereafter to explore the effects associated with psilocybin. However, the Schedule I drug classification of psychoactive/hallucinogenic substances (LSD, mescaline, etc.) in the mid-1960s resulted in a halt of psychedelic research in humans.

Today, findings obtained from promising studies that validate earlier research have renewed interest in the therapeutic potential of psychedelics. Data thus far from research on psychedelic-assisted psychotherapy with psilocybin, has demonstrated signals of efficacy when treating several depressive disorders.[17] The rationale is that psychedelics can be used as catalysts to psychotherapy to reduce social withdrawal behavior in patients, which in turn may improve the outcome of the therapy sessions. Moreover, multiple studies have found psilocybin to be a safe and well-tolerated compound. Altogether, the promising results have led the FDA to grant psilocybin therapy a Breakthrough Therapy designation for treating treatment-resistant depression (TRD) and major depressive disorder (MDD), in October 2018 and November 2019, respectively.

Exhibit 7. Structures of psilocybin and psilocin. Psilocybin is a relatively stable, white crystalline, water soluble material. As a prodrug, psilocybin represents the inactive component of 'magic mushrooms.' When ingested, psilocybin is rapidly metabolized to its active metabolite psilocin (4-hydroxy-DMT), which crosses the blood brain barrier to bind to the 5-HT_{2A} receptor. Unlike psilocybin, psilocin is not water soluble, but more lipid soluble, and slowly decomposes at room temperature.



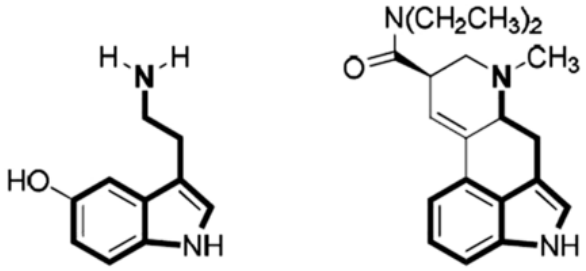
Source: Nichols 2020.[18]

LSD. Lysergic acid diethylamide (LSD) is one of the most potent classical psychedelics and is active at extremely low doses. LSD was first synthesized in the 1930's by Sandoz

[15] Nichols DE. Psilocybin: from ancient magic to modern medicine. The Journal of Antibiotics (2020) 73:679–686. https://doi.org/10.1038/s41429-020-0311-8.
[16] Wasson RG. Seeking the magic mushroom. LIFE. May 1957. http://archive.org/details/bub_gb_Jj8EAAAAMBAJ.
[17] Johnson MW, Griffiths RR. Potential Therapeutic Effects of Psilocybin. *Neurotherapeutics*. 2017;14(3):734-740. doi:10.1007/s13311-017-0542-y
[18] Nichols DE. N,N-dimethyltryptamine and the pineal gland: Separating fact from myth. Journal of Psychopharmacology. 2017;32(1):30-36. doi:10.1177/0269881117736919.

Pharmaceuticals chemist Albert Hofmann.[19] The hallucinogenic properties of LSD were unknown until 1943, when Hofmann accidentally consumed a small dose of LSD, becoming the first subject to experience its effects. Like psilocybin and the other classical psychedelics, LSD alters perception and mood, and users have reported undergoing "spiritual" or "mystical-type" experiences. Recent studies of LSD have reported that even at high doses, it exhibited very low physiological toxicity.[20] In addition to its positive safety profile, LSD has been studied as a potential treatment for several disorders including anxiety, depression, and addiction, where it demonstrated signals of efficacy. It is also currently being assessed in Alzheimer's disease patients. As mentioned, LSD is a classical psychedelic which means it's primary mechanism of action (MOA) involves acting as a 5-HT_{2A} receptor agonist. Notably, LSD binds to the 5-HT_{2A} receptor with greater affinity compared to other psychedelic drugs, which renders long-lasting effects extending up to 12 hours. LSD's effects are also mediated by its activities on dopaminergic and adrenergic receptors.

Exhibit 8. Similar chemical structures of serotonin and LSD. The discovery of serotonin neurotransmitters in the mammalian brain occurred only a decade after the physiological effects of LSD became known. Shown below are the chemical structures of serotonin and LSD which appear to be very similar. The resemblance has led scientists to believe that the effects of LSD result from interactions with the serotonergic system in the brain.[21]



Serotonin; 5-HT **LSD**

Source: Nichols DE (2016).

DMT and ayahuasca. N,N-Dimethyltryptamine (DMT) is a classic psychedelic compound found in a wide variety of plants. Unlike the other compounds, DMT is endogenously produced in animals and humans. In the body, DMT is found in low concentrations in several brain regions; in rodents, its production in the brain has been shown to increase under stress.[22] Additionally, DMT is the major psychoactive compound in Ayahuasca, a psychedelic brew traditionally consumed by ancient Amazonian tribes for ritual or medicinal purposes. Ayahuasca is prepared using the leaves of the *Psychotria viridis* shrub and the stalks of the *Banisteriopsis caapi* vine. *P. viridis* contains the psychedelic DMT, while *B. caapi* is rich in reversible monoamine oxidase A inhibitors (MAOIs) such as harmine, tetrahydroharmine (THH), and harmaline. DMT is not orally active due to the rapid degradation by monoamine oxidases (MAOs) in the gut. As such, the MAOIs in the brew circumvent DMT degradation and allow for its bioavailability. DMT interacts with a variety of receptors including serotonin, glutamate, trace amine-associated, and sigma-1 e. In particular, its binding and activation of the 5-HT_{2A} receptor is what produces effects that are similar to those of other classic

[19] Dyck E. LSD: a new treatment emerging from the past [published online ahead of print, 2015 Aug 4]. CMAJ. 2015;187(14):1079-1080. doi:10.1503/cmaj.141358

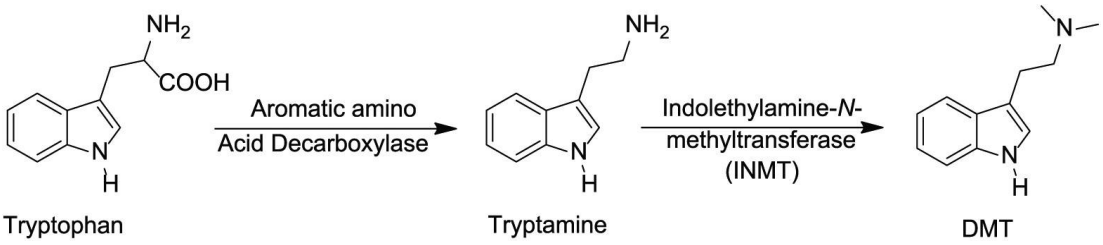
[20] Fuentes JJ. Therapeutic Use of LSD in Psychiatry: A Systematic Review of Randomized-Controlled Clinical Trials.

[21] Nichols DE. Psychedelics. *Pharmacol Rev.* 68:264–355, April 2016. http://dx.doi.org/10.1124/pr.115.011478

[22] Carbonaro TM, Gatch MB. Neuropharmacology of N,N-dimethyltryptamine. *Brain Res Bull*. 2016;126(Pt 1):74-88. doi:10.1016/j.brainresbull.2016.04.016

psychedelics like LSD and psilocybin.[23] These effects include intense perceptual, cognitive, emotional, and affective changes, which can last up to 30-45 minutes if DMT is smoked (inhalation), snorted (intranasal), or injected (intravenous or intramuscular), and anywhere from 2-6 hours if it is orally consumed as ayahuasca. Notably, while other hallucinogens have been reported to produce tolerance in users, studies show DMT does not appear to induce tolerance. From a clinical perspective, research demonstrates that ayahuasca may benefit patients with depression, post-traumatic stress disorder (PTSD), anxiety, and addiction disorders.[24,25]

Exhibit 9. Biosynthesis of DMT. DMT belongs to the class of classical psychedelics, which includes LSD and psilocybin. While found in many plants, a previous debate has been centered around whether DMT is also produced endogenously in the brain. Studies in rats have confirmed the presence of DMT in the brain cortex at levels similar to other monoamine neurotransmitters (e.g., serotonin). The diagram below depicts the biosynthesis process of endogenous DMT.



Source: Nichols DE 2017.

Ketamine. Unlike classic psychedelics, ketamine is a compound that belongs to the family of dissociative anesthetics. For decades, ketamine has been administered as an injectable, short-acting anesthetic prior to surgical procedures. However, the discovery of ketamine's rapid-acting antidepressant effects resulted in a surge of interest for researching its role beyond producing anesthetic effects. Ketamine is a racemic mixture comprising equal parts of (R)-ketamine (arketamine) and (S)-ketamine (esketamine). The approval of intranasal esketamine (Spravato) as a treatment for patients with treatment resistant depression in 2019, led to a paradigm shift for the field of antidepressant drug development. Moreover, this led to a surge of research around psychedelic compounds as well, as ketamine produces several effects similar to those of psychedelics. While the MOA of ketamine (glutamate receptor inhibition) differs from serotonergic psychedelics (activates 5-HT_{2A} receptors), the engagement of the glutamatergic pathway is common for both groups.

MDMA. MDMA (3,4-methlyenedioxymethamphetamine), the compound in the recreational drug "ecstasy," is not a classic psychedelic drug, but an entactogen (or empathogen).[26] MDMA enhances feelings of empathy and bonding by increasing plasma levels of oxytocin, the hormone associated with early infantile bonding (the 'empathogenic' effects). It is well known, however, that MDMA works primarily as a serotonin- and noradrenaline- releasing agent, while to a lesser extent also stimulating the release of dopamine. Through these neural mechanisms, MDMA may reduce fear associated with revisiting traumatic memories. This may facilitate the emotional engagement process of patients during therapy sessions. The beneficial effects of MDMA-assisted psychotherapy have been seen in patients suffering

[23] Palhano-Fontes F, Barreto D, Onias H, et al. Rapid antidepressant effects of the psychedelic ayahuasca in treatment-resistant depression: a randomized placebo-controlled trial. *Psychol Med*. 2019;49(4):655-663. doi:10.1017/S0033291718001356

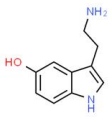
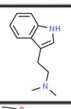
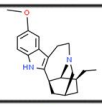
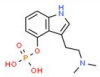
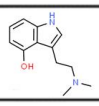
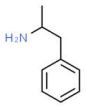
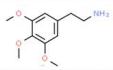
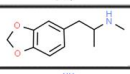
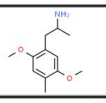
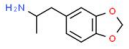
[24] Davis AK, et al. Psychedelic Treatment for Trauma-Related Psychological and Cognitive Impairment Among US Special Operations Forces Veterans. Chronic Stress. January 2020. doi:10.1177/2470547020939564

[25] Osorio FL, et al. Antidepressant effects of a single dose of ayahuasca in patients with recurrent depression: a preliminary report.

[26] Sessa B, Higbed L and Nutt D (2019) A Review of 3,4-methylenedioxymethamphetamine (MDMA)-Assisted Psychotherapy. Front. Psychiatry 10:138. doi: 10.3389/fpsyt.2019.00138

from post-traumatic stress disorder, in which the administration of MDMA in a controlled setting enabled patients to process memories of emotional trauma more effectively. These findings have led to the FDA granting MDMA therapy a breakthrough therapy designation in 2017.

Exhibit 10. Durations of common psychedelics and entactogens. Classic psychedelics can be subdivided into phenethylamines and tryptamines. The latter group comprises of synthetic ergoline LSD and plant-derived indoleamines psilocybin and DMT, of which their core structures resemble that of the neurotransmitter serotonin. The phenethylamine group includes the entactogen MDMA, which is pharmacologically related to mescaline, amphetamine, and methamphetamine. The average dose, onset of time, and duration of effects of the compounds are provided in the table below, including depictions of their molecular structures. Despite having distinct structures and pharmacological profiles, the psychological effects of these compounds overlap. For instance, dissociative anesthetic ketamine (not included) has been demonstrated to induce dose-dependent effects (e.g., perceptual alterations, "mystical-type" effects, etc.) that are experienced as well with classic psychedelics.[27]

	Indolealkylamine		
Serotonin 	LSD (d–lysergic acid diethylamide)		Average dose: 30–300 µg Onset: 5 minutes Duration: 12 hours
	DMT (N,N–dimethyltryptamine)		Average dose: 60–100 mg smoked or intramuscular Onset: 3 minutes Duration: 30 minutes
	Ibogaine (12–methoxy–ibogamine)		Average dose: 2 to 5 grams Onset: 45 minutes Duration: up to 24 hours
	Psilocybin (O–phosphoryl–4–hydroxy–N,N–dimethyltryptamine)		Average dose 10–30 mg Onset: 10–40 minutes Duration: 2–6 hours
	Psilocin (4–hydroxy–N, N–dimethyltryptamine)		(The active metabolite of psilocybin)
	Phenethylamine		
Amphetamine 	Mescaline (3,4,5–trimethoxyphenethylamine)		Average dose: 300–500 mg Onset: 30 minutes Duration: 10–12 hours
	Ecstasy (MDMA; 3,4–methylenedioxymethamphetamine)		Average dose: 80 to 160 milligrams Onset: 30–45 minutes Duration: 6 hours
	DOM (2,5–dimethoxy–4–methylamphetamine)		Average dose: 3–10 mg Onset: 30 minutes to 1 hour Duration: 14–20 hours
	MDA (3,4–methylene–dioxyamphetamine)		Average dose: 80 to 160 mg Onset: 1 to 1.5 hours Duration 6 to 10 hours

Source: Adapted from Meyerhoefer MM, 2010[28] with molecular structures from ChemSpider.com

Mechanisms of Psychedelic Drugs

Significance of 5-HT$_{2A}$ receptor activation. Serotonin (5-hydroxytryptamine, 5-HT) is a small molecule that functions as a neurotransmitter and hormone in the central nervous

[27] Reiff CM, et al. Psychedelics and Pyschedelic-Assisted Psychotherapy. Am J Psychiatry 177:5, May 2020

[28] Meyerhoefer M.M. (2010) Serotonergic Hallucinogens. In: Johnson B. (eds) Addiction Medicine. Springer, New York, NY. https://doi.org/10.1007/978-1-4419-0338-9_27

system (CNS) and peripheral tissues, respectively. Several important roles of serotonin include its regulation of mood, appetite, and sleep, as well as cognition (e.g., memory and learning) and social behaviors.[29] To produce its effects, 5-HT must bind to specific cell membrane receptors. Currently, there have been 14 5-HT receptor subtypes discovered and they are classified into 7 subfamilies (5-HT_1 through 5-HT_7) according to their primary structure and functional properties. With the exception of the 5-HT_3 receptor, a ligand-gated ion channel, 5-HT receptors belong to the family of G protein-coupled receptors (GPCRs). When bound by serotonin, these receptors activate, via G-proteins, an intracellular second messenger cascade to produce an excitatory or inhibitory serotonergic response.[30]

While psychedelic compounds bind to multiple different receptors, their neuropsychological effects are primarily attributed to their agonism at the 5-HT_{2A} receptor. These receptors are located in multiple areas of the brain, including the neocortex, thalamus, locus coeruleus (LC), and ventral tegmental area (VTA). The neocortex, which constitutes 90% of the cerebral cortex (outermost layer of the brain), is responsible for many higher-order brain functions, such as sensory perception, emotion, and cognition. The cerebral cortex (neocortex) consists of six cortical layers that are distinguished from one another by differences in cell type and cell density. Of these layers, 5-HT_{2A} receptors are most highly concentrated in layer V, where they are expressed on the apical dendrites of pyramidal neurons located within the prefrontal cortex (PFC). In addition to their activities in the cortical regions, psychedelics also bind to 5-HT_{2A} receptors located in subcortical areas. These structures include, amongst others, the thalamus, limbic system structures (e.g., amygdala) and basal ganglia.

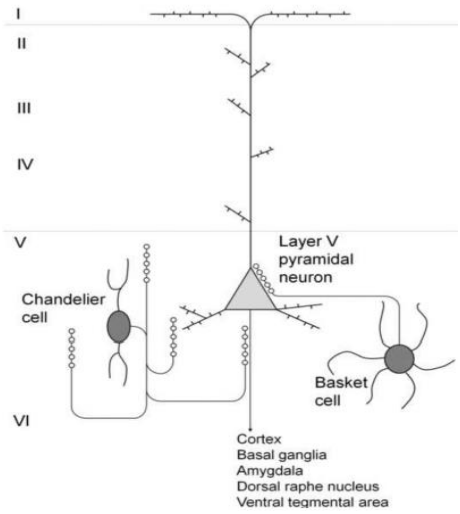
Of great significance with the activation of 5-HT_{2A} receptors within cortical and subcortical regions is that it promotes neuroplasticity – a highly controlled process involving adaptive structural and functional changes in the brain. From a therapeutic perspective, ketamine-induced neuroplasticity is purported to be responsible for the rapid, antidepressant effects seen with ketamine treatment in the clinic. Although ketamine and classic psychedelics have different molecular targets (NMDA and 5-HT_{2A} receptors, respectively), studies have shown that these compounds target similar signaling pathways to promote plasticity. As such, psychedelics may also have therapeutic potential for treating depression and other related disorders (e.g., post-traumatic stress disorder, addiction) that share common abnormalities in neural circuits. Serotonergic psychedelics have demonstrated promising data that highlights their antidepressant, anxiolytic, and anti-addictive properties. Moreover, their therapeutic effects are believed to have resulted from mechanisms that are similar to those of ketamine, which we discuss below.

Exhibit 11. Distribution of 5-HT_{2A} receptors in layer V of PFC. Psychedelic effects are most strongly associated with activation of 5-HT_{2A} receptors, relative to the other receptors. For instance, the head twitch response which is commonly used as a behavioral proxy in rodents for human hallucinogen effect, are seen upon stimulation of only the 5-HT_{2A} and not 5-HT_{2c} or 5-HT_{2b} receptors.[31] While 5-HT_{2A} receptors are expressed by pyramidal neurons in layer V of the PFC, they are also expressed by basket cells and chandelier cells, which indicates the implication of glutamatergic and GABAergic network activities, respectively, in psychedelic MOA.

[29] Lv J and Liu F. The Role of Serotonin beyond the Central Nervous System during Embryogenesis. Front. Cell. Neurosci., 13 March 2017 | https://doi.org/10.3389/fncel.2017.00074

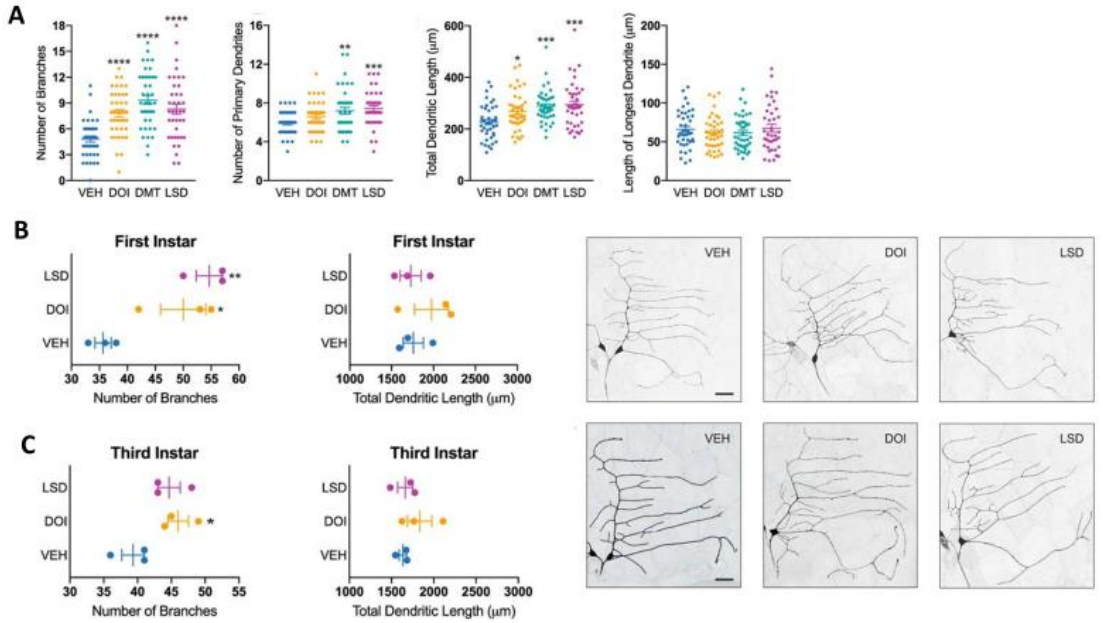
[30] Giulietti, M., Vivenzio, V., Piva, F. *et al.* How much do we know about the coupling of G-proteins to serotonin receptors?. *Mol Brain* **7,** 49 (2014). https://doi.org/10.1186/s13041-014-0049-y

[31] Vollenweider, F.X., Preller, K.H. Psychedelic drugs: neurobiology and potential for treatment of psychiatric disorders. *Nat Rev Neurosci* **21,** 611–624 (2020). https://doi.org/10.1038/s41583-020-0367-2



Source: Halberstadt et al. 2015

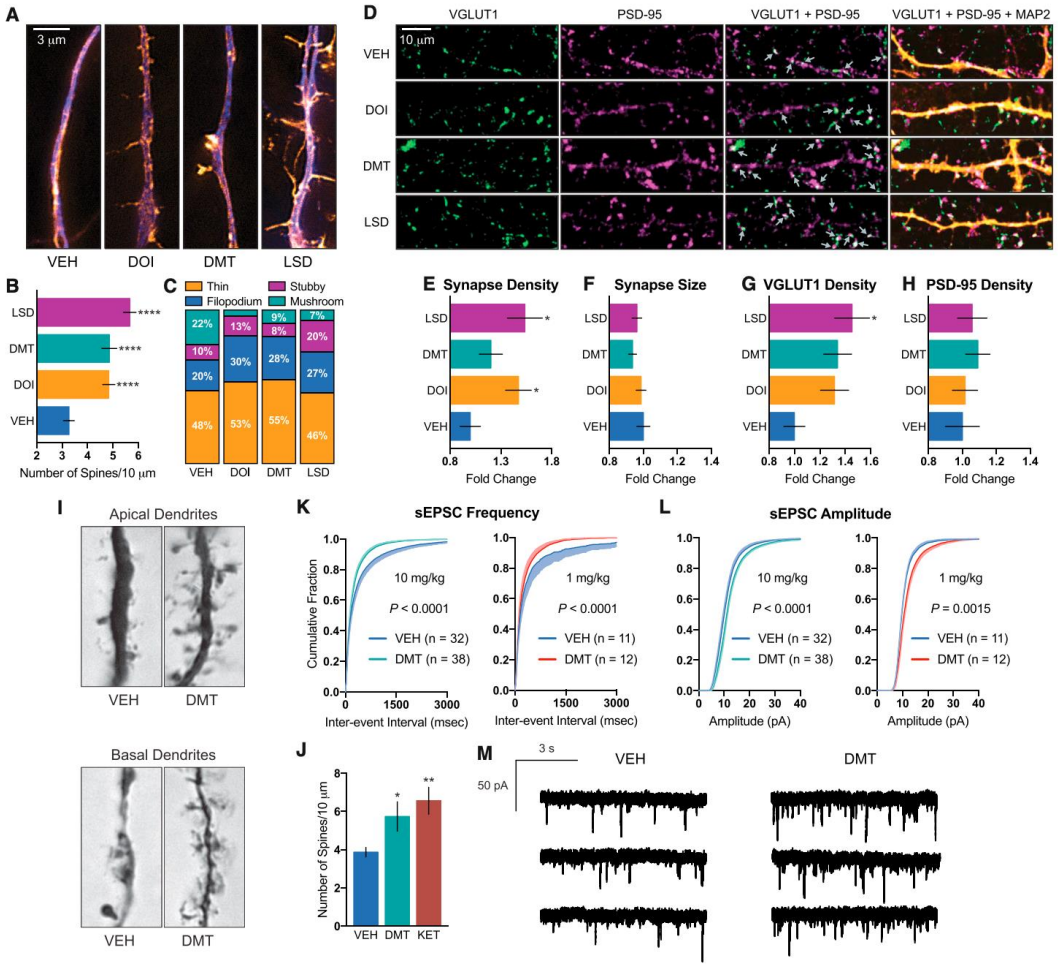
Exhibit 12. Psychedelics promote neuritogenesis. In a study conducted by Ly et al. and his group, serotonergic psychedelics and entactogens demonstrated robust plasticity-promoting properties comparable to or greater than ketamine. (A) Shows the in vitro results from cortical neurons that were treated with psychedelics, demonstrating an increase in the number of branches, primary dendrites, and total length of dendritic arbor. (B, C) In vivo assessments with Drosophila larvae also demonstrated increased branching.



Source: Ly et al 2018.

Exhibit 13. Psychedelics promote spinogenesis, synaptogenesis, and functional plasticity. (A, D) In the study conducted by Ly et al., spinogenesis (increased number of dendritic spines) and synaptogenesis (formation of new synapses in the brain) were also observed in cortical neurons from the PFC of rats after treatment with psychedelics. (I, J) Furthermore, the increase in spinogenesis with DMT was comparable to that of ketamine at the same dose. (K, M) Importantly, DMT-induced increase in dendritic spine density was

accompanied by an increase in both the frequency and amplitude of spontaneous excitatory postsynaptic currents (ESPCs), which indicates the presence of functional plasticity.



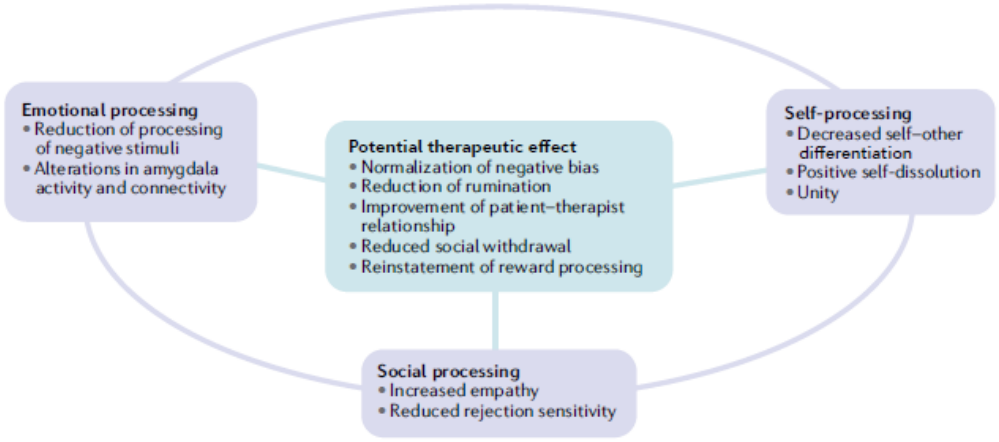
Source: Ly et al 2018.

Serotonergic psychedelics and entactogens (e.g., MDMA) have been shown to promote neuroplasticity by stimulating similar signaling pathways as ketamine. Brain-derived neurotrophic factor (BDNF) is one of the key molecules involved in synaptic plasticity, which refers to the ability of synapses to undergo activity-dependent modification of strength. Importantly, synaptic plasticity is thought to be involved in the antidepressant actions of ketamine. In addition, increases in BDNF expression have also been observed following administration of serotonergic psychedelics and entactogens via 5-HT_{2A} receptor activation. However, a common feature in the signaling pathways involved with ketamine and psychedelics, is the engagement of downstream glutamatergic pathways. When glutamate receptors, amino-3-hydroxy-5-methyl-4-isoxazole propionic acid (AMPA) and N-methyl-d-aspartate (NMDA), are activated, glutamate levels in the cortex are elevated, which leads to an increase of pyramidal neurons in the PFC, and subsequently BDNF synthesis; as mentioned, BDNF is implicated with having plasticity-promoting effects.

Psychedelic-induced plasticity is thought to be instrumental in producing a “window of opportunity” for mediating therapeutic change. It is anticipated that patients may be able to gain meaningful insights into the causes of their distress and/or habits during the treatment session, which could ultimately promote recovery from a wide variety of brain disorders. An important component during the psychedelic experience, is disruption of an area of the brain known as the default mode network (DMN). The DMN is a network of interacting brain regions that includes the medial PFC, posterior cingulate cortex (PCC), and angular gyrus.

These areas are shown to be more active during the resting state compared to times of task-oriented processes and is considered responsible in-part for intrinsic awareness.[32] Psychedelic compounds have been demonstrated to reduce connectivity within the DMN, which is correlated with a temporary sensation of ego-dissolution (e.g., loss of a sense of self). It is reported that during this time, users experience the boundaries between themselves and the world disappearing, leading to temporary formation of new connections in the brain. Although the experience is temporary, treatment with psychedelics has been reported to produce long-lasting beneficial effects in patients suffering from anxiety, depression, and other related disorders.

Exhibit 14. Psychedelic effects on cognitive and emotional functions. In controlled studies, acute psychedelic experiences were shown to induce alterations in emotional, self, and social processing, which may underlie the therapeutic effects of these compounds. Emotional breakthroughs can be experienced after administration of psychedelics, whereby patients may overcome challenging emotions or memories. A mechanism by which this can occur is through a reduction in response to negative emotional stimuli, which is associated with decreased activity of the amygdala (an area primarily linked to fear). Alterations in self-processing can occur as well, including ego dissolution, which is deemed central to the efficacy of psychedelic-assisted therapy. Furthermore, this has been linked to an increase in social cognition, leading to reduced social withdrawal behavior that improves the patient-therapist relationship during treatment sessions.

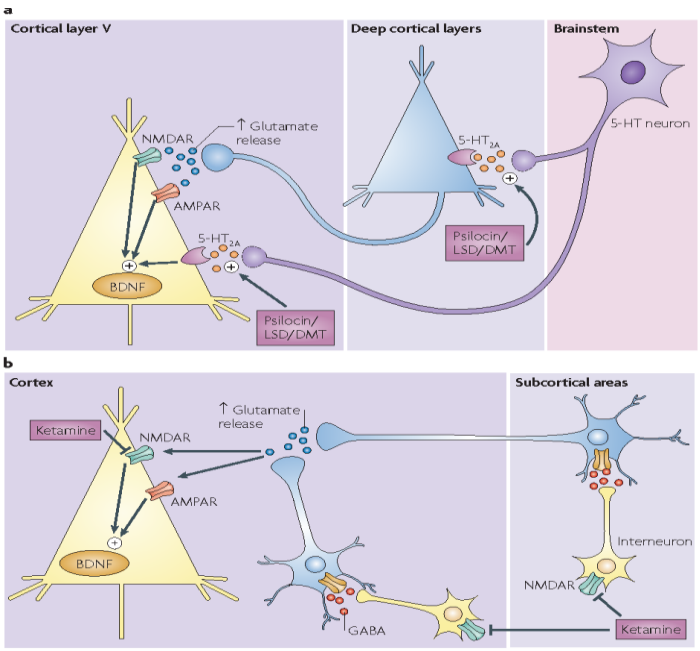


Source: Vollenweider 2020.

Exhibit 15. Glutamatergic-dependent pathways.[33] Serotonergic psychedelics and ketamine both activate the prefrontal network and enables glutamate release, which ultimately increases the expression of BDNF. (A) For psychedelics particularly, stimulation of postsynaptic 5-HT_{2A} receptors located on cortical pyramidal cells of layer V leads to increased glutamate levels in the PFC. This leads to an activation of AMPA and NMDA receptors on cortical pyramidal neurons. In addition, direct activation of 5-HT_{2A} receptors also occur on cortical pyramidal neurons, ultimately leading to increased expression of BDNF. (B) Dissociative NMDA antagonists, such as ketamine, block inhibitory GABA (-aminobutyric acid)-ergic interneurons, which also leads to increased glutamate levels in the PFC. Meanwhile, glutamate release also occurs via ketamine blocking NMDA receptors on cortical pyramidal neurons, which results in increased stimulation of cortical AMPA over NMDA receptors; this also leads to increased expression of BDNF.

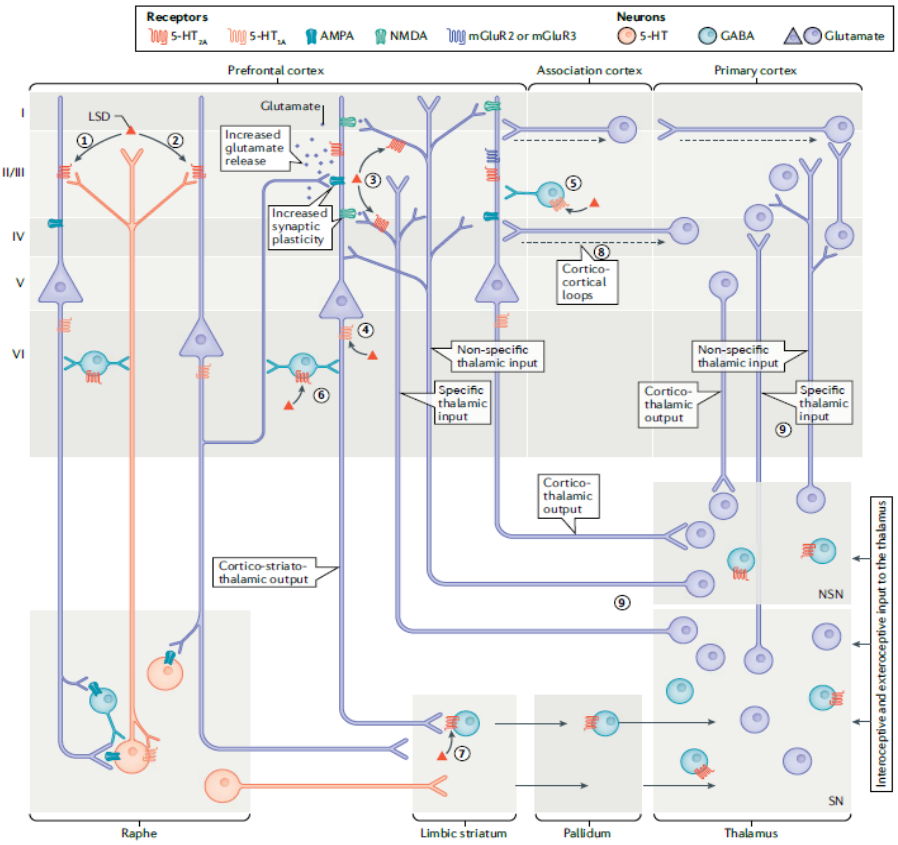
[32] Stephen Ashwal, in Swaiman's Pediatric Neurology (Sixth Edition), 2017

[33] Vollenweider, F., Kometer, M. The neurobiology of psychedelic drugs: implications for the treatment of mood disorders. *Nat Rev Neurosci* **11,** 642–651 (2010). https://doi.org/10.1038/nrn2884



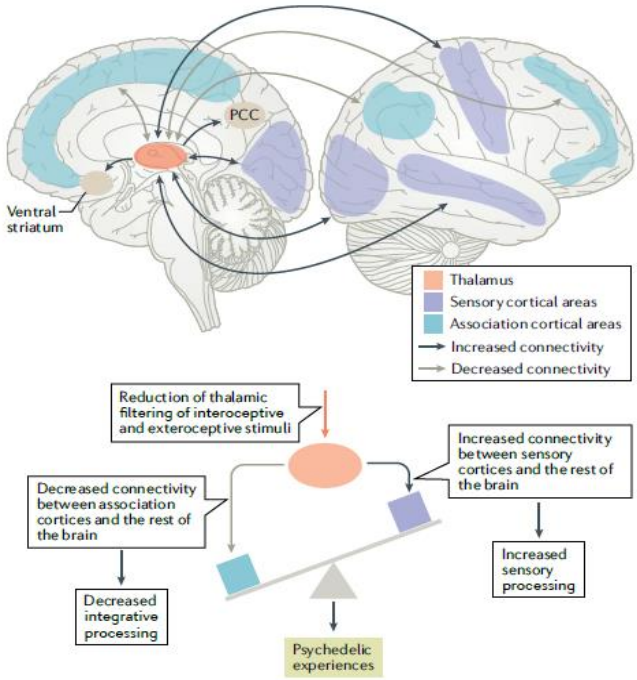
Source: Vollenweider 2010.

Exhibit 16. Altered thalamic gating by psychedelics. Studies have suggested that psychedelic drugs induce an altered state of consciousness via 5-HT_{2A} receptor stimulation which disrupts thalamic gating, and results in disintegration of information processing within cortico-striato-thalamo-cortical (CSTC) feedback loops.



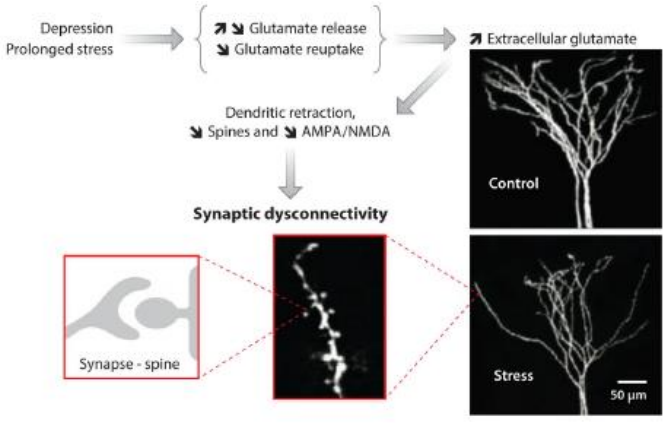
Source: Vollenweider 2020.

Exhibit 17. Potential mechanisms underlying the psychedelic state. According to data from neuroimaging studies, the effects of psychedelics stem from a disbalance between sensory and integrative processing. While psychedelics increase thalamic functional connectivity with sensory cortical regions, it decreases the connectivity with association areas, which creates the psychedelic experience.



Source: Vollenweider 2020.

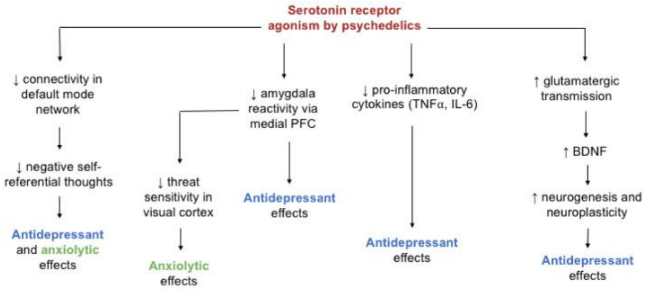
Exhibit 18. BDNF enhancement leads to synaptic formation. As mentioned above, increased levels of BDNF are associated with changes in the brain that result in neuroplasticity. The schematic below demonstrates that in animal models, reduction of BDNF and inhibition of the mammalian target of rapamycin complex 1 (mTORC1) signaling, leads to synaptic deficits and subsequently depressive-like behavior. Conversely, rapid-acting antidepressants like ketamine target the induction of mTORC1 signaling and increase of BDNF levels, which results in overall synaptogenesis and synaptic potentiation.



Source: Abdallah CG, 2015.[34]

[34] Abdallah CG, Sanacora G, Duman RS, Krystal JH. Ketamine and rapid-acting antidepressants: a window into a new neurobiology for mood disorder therapeutics. *Annu Rev Med*. 2015;66:509-523. doi:10.1146/annurev-med-053013-062946

Exhibit 19. Serotonergic psychedelics via direct activation of 5-HT_{2A} receptors, result in cellular mechanisms which are similar to those mentioned above for ketamine, including the stimulation of synapse formation, emergence of structural and functional neuroplasticity, etc. Moreover, the cellular effects below have been demonstrated to result in antidepressant and anxiolytic effects, further supportive of the implications for these substances as treatments of mood disorders.



Source: Muttoni S et al. 2019.[35]

Indications, Clinical Data, and Ongoing Development

Depression. Depression is a common mental disorder that occurs in people of all ages worldwide, it presents individuals with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, and poor concentration often accompanied by anxiety. Depression is a complex disease (as psychiatric disorders tend to be), with a number of environmental stressors and genetic factors playing a role through immunologic and endocrine responses which initiate structural and functional changes in regions of the brain producing dysfunctional neurogenesis and neurotransmission.[36]

Globally, an estimated 350M people of all ages suffer from depression, resulting in enormous social and economic burden. Within the US, the prevalence of major depressive disorder (MDD) over a 12 month period is estimated at 10.4%, with a lifetime prevalence of 20.6%.[37] The total economic burden for MDD in the US is estimated at $210B, with $93B represented by the ~8.9M patients treated with medication and $44B represented by the 2.8M patient with treatment resistant depression (TRD).[38] At its worst, depression can lead to suicide. Every year, over 800,000 people die due to suicide; the disorder is the second-leading cause of death in 15-29 year olds. Rates of depression (and other mental health disorders) have skyrocketed in 2020 with the impacts of the COVID-19 pandemic, with 42% of US adults reporting symptoms of depression/anxiety in December 2020, compared to 11% for the previous year.[39]

Exhibit 20. COVID-19 impact on mental health. The recent emergence of psychedelic therapy into the mainstream has come at an important time as the COVID-19 pandemic has created a greater focus on mental health. Rates of anxiety and depressive disorders are on the rise, more than tripling since before the pandemic. With limited treatment options, novel

[35] Muttoni Silvia, et al. Classical psychedelics for the treatment of depression and anxiety: a systematic review. Volume 258, 1 November 2019, Pages 11-24. https://doi.org/10.1016/j.jad.2019.07.076

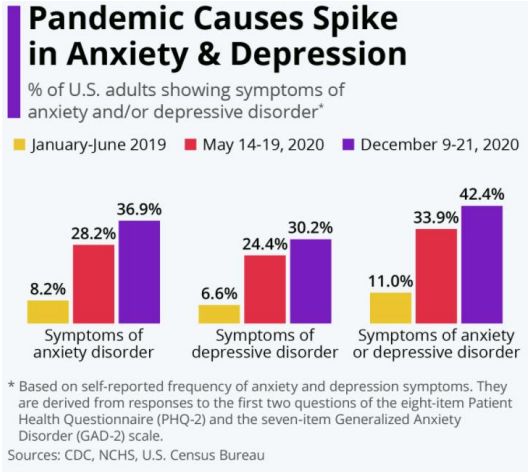
[36] Jesulola, et al. "Understanding the pathophysiology of depression: From monoamines to the neurogenesis hypothesis model - are we there yet?" Behavioural Brain Research Volume 341, 2 April 2018, Pages 79-90.

[37] Hasin DS, Sarvet AL, Meyers JL, et al. Epidemiology of Adult DSM-5 Major Depressive Disorder and Its Specifiers in the United States. JAMA Psychiatry. 2018;75(4):336–346.

[38] Zhdanvana M, et al. The Prevalence and National Burden of Treatment Resistant Depression and Major Depressive Disorder in the United States. J Clin Psychiatry. 2021;82(2):20m13699

[39] Abbott, Alison. COVID's Mental Health Toll: Scientists Track Surge in Depression. Nature News 11 Feb. 2021.

treatments like psychedelics are well positioned to continue to gain adoption to help address the unmet need in mental health.



Source: Statista

Antidepressants and the monoamine hypothesis. While there are non-pharmaceutical interventions for depression including psychotherapy, invasive (deep brain stimulation and electroconvulsive therapy) and non-invasive brain stimulation (transcranial magnetic stimulation), traditional treatment with antidepressant medication remains a mainstay. Traditional antidepressants are based on the monoamine hypothesis of depression, which originates in the 1950s and 60s. This hypothesizes that patients with depression have depleted levels of serotonin, norepinephrine, and dopamine. The original hypothesis does not appear to fully capture what's happening in depression as more recent clinical trials have suggested concentrations of monoamines are not the only factor in depression (for example, monoamine depletion in healthy subjects does not produce depressive symptoms). The revised hypothesis suggests monoamine depletion may play more of a modulatory role in depression or must be present concurrent with certain stressors.[40]

Monoamine-based pharmaceutical interventions.[41] Traditional antidepressants include monoamine oxidase inhibitors (MAOIs), selective serotonin reuptake inhibitors (SSRIs), serotonin-norepinephrine reuptake inhibitors (SNRIs), tricyclic antidepressants (TCAs), and atypical antidepressants.

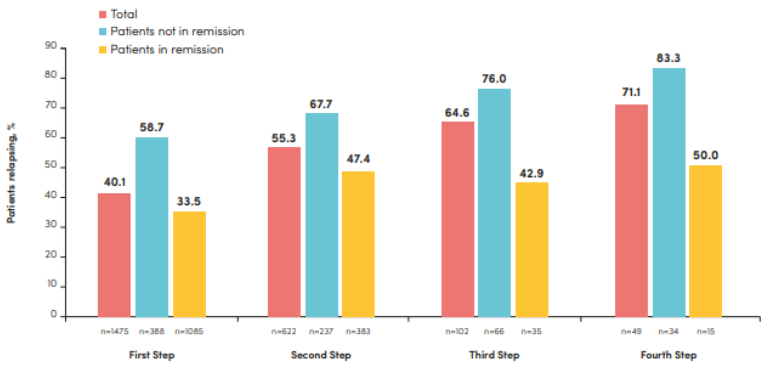
- **MAOIs**. Monoamine oxidases are enzymes produced endogenously to breakdown biogenic amines such as serotonin, dopamine, epinephrine, and norepinephrine via oxidation. MAOIs inhibit this oxidation. This represents the oldest class of antidepressant, starting in the 50s with iproniazid, however this drug was non-selective and irreversible, leading to safety issues and eventual withdrawal from US markets. In the 90s, reversible selective MAOIs like moclobemide were developed, moclobemide has been approved in 50 countries, but not in the US and brofaromine is no longer being developed as an antidepressant drug. In the US there are no selective MAOIs approved for depression and the classical ones which are (Nardl, Marplan, Parnate, etc) are not currently used in first line settings due to food and drug interactions and side effects.
- **Tricyclic antidepressants**. Tricyclic antidepressants were the second class of drug approved for depression and generally act on the reuptake of serotonin and norepinephrine and block post synaptic muscarinic, adrenergic α1 and α2, and histamine H_1 receptors. Since tricyclics are named after their structure, rather than mechanism, their activity can somewhat vary. Tricyclic drugs which preferentially

[40] Hillhouse, T. M., & Porter, J. H. (2015). A brief history of the development of antidepressant drugs: from monoamines to glutamate. Experimental and clinical psychopharmacology, 23(1), 1–21.
[41] Hillhouse, T. M., & Porter, J. H. (2015). A brief history of the development of antidepressant drugs: from monoamines to glutamate. Experimental and clinical psychopharmacology, 23(1), 1–21.

inhibit serotonin reuptake include imipramine and clomipramine. Tricyclics which inhibit reuptake of norepinephrine preferentially include nortriptyline and maprotiline, and drugs which are fairly balanced include amitriptyline and doxepin. Tricyclics are better tolerated than MAOIs, with fewer short term side effects, but may have a link to dementia with longer term use. TCAs aren't often used until patients fail multiple lines of antidepressant therapy.

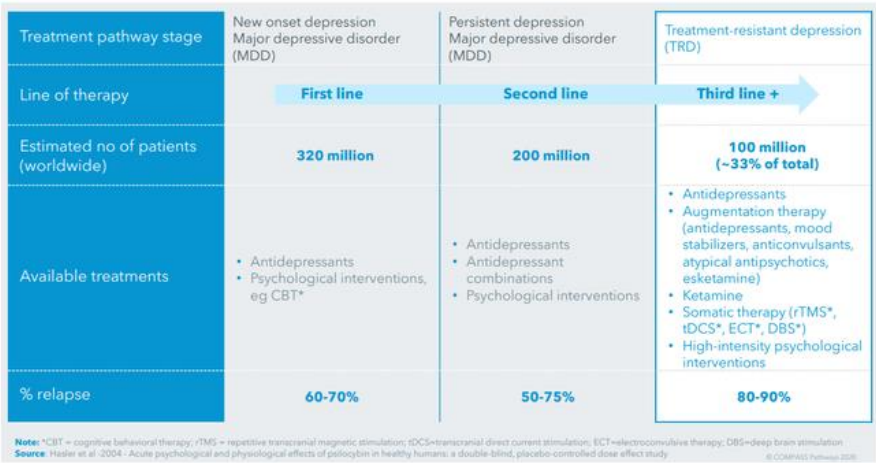
- **SSRIs**. SSRIs date back to the late 1960s when it was first discovered that serotonin played a significant role in depression. These drugs increase serotonin concentration in the brain by blocking reuptake at serotonin transporters. The first SSRI was approved in 1987 by Eli Lilly (LLY - NR) under the name Prozac with peak sales reaching $2.4B in 1998 and driving the overall antidepressant market to its zenith in 2003 with annual sales of $15B. Several other SSRIs achieved blockbuster sales including Lexapro with $3B at its peak in 2011, Zoloft with $2.6B in 2005, and Paxil with $2.2B in 2003. SSRIs remain the most prescribed class of antidepressants and are often used in first-line treatment. However, the class is largely generic, and despite its wide reach, many patients still do not respond to this therapy.
- **SNRIs**. SNRIs are similar to tricyclics in that they target both norepinephrine and serotonin reuptake. However, they do not impact muscarinic, adrenergic α1 and α2, and histamine H_1 receptors, which are thought to contribute to the side effects associated with TCAs. The first SNRI approved in the US was Wythe's (Pfizer, PFE - NR) Effexor, the extended-release version of which achieved peak sales of $2.7M. Other approved SNRIs include Cymbalta, which achieved peak sales of $2.6B in 2013. SNRIs have a similar safety and efficacy profile to SSRIs.
- **Atypical antidepressants**. Atypical antidepressants are drugs which are used for depression and act on the monoamine transport system, but don't belong to the more traditional SSRI or SNRI classes. Bupropion was the first atypical antidepressant and is a dopamine norepinephrine reuptake inhibitor. Bupropion was first approved in 1996 for depression and has a reduced risk of sexual dysfunction compared to other classes of antidepressants by half, while demonstrating similar efficacy. The sustained release formulation was approved in 2003 and achieved peak sales of $1.7B in 2003. More recently, vorioxetine (Trintellix) was approved for major depressive disorder in 2013 and is a piperazine with a multi-modal mechanism, acting as an agonist for 5-HT_{1A}, a partial agonist for 5-HT_{1B}, an antagonist for 5-HT_{3A} and 5-HT_7, as well as being a potent serotonin reuptake inhibitor. The drug also targets dopamine and norepinephrine transporters, but with lower affinity. The drug has similar efficacy and tolerability to other antidepressants, with a low risk for weight gain and sexual dysfunction, potentially improving its safety profile. Trintellix is marketed by Danish company Lundbeck (HLUKF – NR) and generated 3.1B DKK (~$500M) in 2020.

Exhibit 21. Current U.S. drug-treated MDD is substantially underserved. Despite decades of drug development, relapse rates in MDD remain high with 40% of patients relapsing after 1L treatments, 55% after 2L treatments, 65% after 3L treatments, and 71% after 4L treatments.



Source: Field Trip White Paper

Exhibit 22. Progression and population size for treatment resistant depression.



Source: Compass Pathways IR Presentation

Issues with monoamine-based antidepressants. Although there are numerous treatments for depression many of those patients do not achieve remission, requiring second, third, and fourth-line therapy. The efficacy of antidepressants is also controversial, with meta-analyses suggesting efficacy ranges from barely over placebo, to on par with drugs for other disease areas. In one of the largest meta-analyses ever conducted, antidepressants were found to be superior to placebo, but with a modest effect size.[42] Given the low response rates, another challenge for monoamine-based antidepressants is the time to see an effect, which typically requires a "wait and see" period of six weeks. Furthermore, once a patient has responded to their second antidepressant (before being considered treatment resistant depression), the average time to relapse is only 4 months. Side effects also present an issue, including nausea, fatigue, dry mouth, sexual dysfunction, weight gain, and even potentially suicidal ideation.

Glutamatergic hypothesis. Starting in the 1990's clinical research though both indirect and direct measures have found the glutamatergic system to play a key role in depression. Patients with MDD have been found to have higher plasma and cerebrospinal fluid (CSF) concentrations of glutamate, as well as reductions in glutamate/glutamine exchange in subcortical and cortical brain regions of MDD patients. Interestingly, patients on monoamine antidepressants have reductions in glutamate concentrations, which may suggest these drugs also impact the glutamatergic system. Studies have also found reduced concentrations of EAAT2, which is the main source of glutamate reuptake. Post mortem studies have demonstrated changes in the expression of NMDA receptor subunits. Taken together, these findings provide an alternative to the monoamine hypothesis of depression suggesting that disruptions in glutamatergic substrate concentrations and NMDA receptor alterations play a key role in the pathogenesis of depression.[43] Further supporting this hypothesis is the success of ketamine, a noncompetitive NMDA antagonist, which can be considered the first "psychedelic" (though technically a dissociative) therapy.

Ketamine, Spravato, and the rise of NMDA targeting therapeutics. Ketamine is a noncompetitive NMDA receptor antagonist which produces a dissociative effect. The drug was first tested in a randomized controlled trial for depression in the 2000s, demonstrating remarkable results with response rates of up to 70% at sub-anesthetic doses for treatment

[42] Cipriani A, et al. Comparative efficacy and acceptability of 21 antidepressant drugs for the acute treatment of adults with major depressive disorder: a systematic review and network meta-analysis. Lancet. 2018 Apr 7; 391(10128):1357-1366.
[43] Hillhouse, T. M., & Porter, J. H. (2015). A brief history of the development of antidepressant drugs: from monoamines to glutamate. Experimental and clinical psychopharmacology, 23(1), 1–21.

resistant depression.[44] Importantly, these results are rapid, often arising in the hours following treatment, and last as long as 2 weeks following a single dose. The drug started being used off-label for treatment resistant depression in 2014. Ketamine was thrust further into the spotlight with the 2019 approval of Spravato, Jansen's (JNJ - NR) intranasal formulation of esketamine (the S enantiomer of ketamine) in TRD, and subsequent approval in 2020 for MDD.

Spravato's approval in TRD was based on two P3 studies: the TRANSFORM-2 flexible dose short term study and the SUSTAIN-1 long term study. We note that the TRANSFORM-1 fixed dose study and the TRANSFORM-3 study in elderly patients did not meet their endpoints. The TRANSFORM-2 study was a 4-week study with N=223 patients evaluated on the basis of reduction in Montgomery-Åsberg Depression Rating Scale (MADRS). Patients were given twice weekly doses of esketamine or placebo and demonstrated a reduction of -19.8 (from a baseline of 37.0) for the treatment arm vs a reduction of -15.8 (from a baseline of 37.3) for placebo. The SUSTAIN-1 study was an open label study included N=297 patients either with stable remission (n=176, MADRS score ≤12) or stable response (n=121, ≥50% reduction in MADRS). Over the maintenance phase of the study, relapse rates for remission patients were 27% for Spravato vs. 45% for placebo and for responders were 26% vs 58% for placebo.

In MDD, approval was based on the identical ASPIRE I and II studies, which included a total of N=449 patients with MDD and active suicidal ideation. Patients received twice-weekly dosing of Spravato and were evaluated on the basis of change in MADRS score vs placebo 24 hours after the first dose. In ASPIRE I, a change from baseline of -15.9 (from 41.3) was observed compared to -12.0 (from 41.0) for placebo. In ASPIRE II, a change from baseline of -16.0 (from 39.4) was observed compared to -12.2 (from 39.9) for placebo. Both studies demonstrated superiority for esketamine, though we note that the effects increased over the 4-weeks of treatment for both placebo and esketamine. [45]

The approval of Spravato sent ripples throughout the mental health space, being the first major change to the way we treat depression since the discovery of monoamine-based antidepressants. These effects manifested in several ways.

- **NMDA Targeting Therapeutics**. One is the NMDA-targeting therapeutics space, in which companies such as **Relmada Therapeutics (RLMD - NR), VistaGen (VTGN - Buy), Allergan (AGN - NR)** have been developing novel drugs targeting NMDA regulation. Many of these are being developed as alternatives to ketamine/esketamine therapy with reduced side effects (such as dissociation), while maintaining the antidepressant efficacy. This is also the approach being pursued by **XW Pharma (private)**, which is developing an esketamine analogue designed for slow release to provide a sub-dissociative dose for once daily dosing. By removing the dissociative effects, these drugs may be able to avoid the need for clinical supervision during dosing.
- **Further development of ketamine and arketamine**. While esketamine represents the only approved formulation of ketamine approved by the FDA, racemic ketamine continued to see use off-label. The rationale for selecting esketamine is also unsettled, given the somewhat mixed-results from the P3 program (missed on two P3 studies). While esketamine has higher activity on NMDA receptors, the R stereoisomer, arketamine, may contribute to the antidepressant effect. Preclinical studies in mice have actually demonstrated greater potency and longer lasting activity with reduced abuse potential.[46] **atai Life Sciences (ATAI - NR)** is developing its own arketamine based drug for major depressive disorder and a number of psychedelic therapies and **Eleusis (Private)** is developing KET+, a ketamine + ondansetron IV combination to address the nausea side effect, while **Seelos**

[44] Singh JB, et al. A Double-Blind, Randomized, Placebo-Controlled, Dose-Frequency Study of Intravenous Ketamine in Patients With Treatment-Resistant Depression. Am J Psychiatry 2016 Aug 1; 178(8): 816-826.
[45] Spravato FDA Label, 05/2020.
[46] Zhang J, et al. R (−)-ketamine shows greater potency and longer lasting antidepressant effects than S (+)-ketamine. Pharmacol. Biochemistry and Behavior, Volume 116, January 2014, Pages 137-141.

Therapeutics (SEEL - NR) is developing an intranasal formulation of racemic ketamine.

- **Psychedelic Therapy**. Ketamine is essentially the first psychedelic therapy approved and, in our view, opened the floodgates for other psychedelic drugs like psilocybin, LSD, and MDMA to move into the mainstream. Given that MDD/TRD is the first indication for which any psychedelic therapy was approved, and the existing body of data, depression represents one of the most common target indications for clinical development within psychedelics.

Psychedelic medicine in depression. Psychedelic medicine (dissociative and classical psychedelics) has a long history of clinical research within depression, with a strong body of data to support their efficacy. While ketamine targets the NMDA and the glutamatergic system, classical psychedelics such as psilocybin, ayahuasca/DMT, and LSD target the serotonergic system. The mechanism for psychedelics in depression is not fully known, but there are a few models which may help explain their efficacy:

- **Deakin/Graeff hypothesis**. This model, which was refined by Paul and Lowry, 2013, involves the role of serotonin receptors in anxiety and depressive pathways. In depression, 5-HT_{1A} receptors in the dorsal raphe forebrain bundle project to the hippocampus and limbic system. This pathway plays a role in the development of resilience to chronic stressors through hippocampally mediated behavioral adaptation, dysfunction of which is thought to be associated with depression. [47]
- **$5HT_{2A}$ receptor downregulation**. The main hallucinogenic mechanism behind classical psychedelics is 5-HT_{2A} receptor agonism. However, the upregulation of receptors has been observed in postmortem studies of depressed and suicidal patients, and these receptors are thought to play a role in regulation of mood state, as well as learned helplessness.[48] Psychedelics such as psilocybin have been demonstrated to decrease density of 5-HT_{2A} receptors in animal models.[49] Activity on 5-HT_{2C} and 5-HT_{1A} is also thought to play a role in anti-depressant effects.
- **Neuroplasticity and synaptogenesis**. Improved neuroplasticity and synaptogenesis is thought to be one of the more important mechanisms underlying the efficacy of psychedelics. Ketamine has demonstrated the ability to promote the growth of dendritic spines, increase the synthesis of synaptic proteins, and strengthen synaptic responses. This effect on synapto/neurogenesis and neuroplasticity has been demonstrated for serotonin-targeting classical psychedelics as well and may even be greater in magnitude.[50] In depressive disorders, there is growing support for the hypothesis that the disease is largely driven by disruption of functional and structural connections of the neural circuits that underlie the regulation of mood.[51] Increases in synaptogenesis and neuroplasticity brought on by psychedelics (and actually, SSRIs have demonstrated some evidence of this as well) may better enable patients to correct the underlying cause of their disease.

Clinical data in depression. While the precise mechanism by which psychedelics impact depression is not fully defined, the existing body of data speaks for itself. Psychedelics such as psilocybin and DMT have demonstrated durable and rapid responses in MDD, TRD, and illness-related depression.

- **Psilocybin in TRD: Carhart-Harris et al, 2016**. Open label pilot study of psilocybin in N=12 patients with moderate to severe treatment refractory depression. Participants were given two doses of psilocybin 7 days apart in combination with

[47] Baumeister, David et al. "Classical hallucinogens as antidepressants? A review of pharmacodynamics and putative clinical roles." Therapeutic advances in psychopharmacology vol. 4,4 (2014): 156-69.
[48] Ibid.
[49] Raval, Nakul Ravi et al. "A Single Dose of Psilocybin Increases Synaptic Density and Decreases 5-HT2A Receptor Density in the Pig Brain." International journal of molecular sciences vol. 22,2 835. 15 Jan. 2021.
[50] Ly, Calvin et al. "Psychedelics Promote Structural and Functional Neural Plasticity." Cell reports vol. 23,11 (2018): 3170-3182.
[51] Duman, RS et al. "Synaptic plasticity and depression: new insights from stress and rapid-acting antidepressants." Nature medicine vol. 22,3 (2016): 238-49.

supportive psychotherapy. Clinical remission was achieved in 67% of patients at one week with a response rate (≥50% reduction in depression scale) of 58% at month 3. 42% of patients remained in remission.[52]

- **Psilocybin in cancer-related depression/anxiety: Griffiths et al, 2016.** Double-blind randomized controlled crossover trial of psilocybin in N=51 patients with depression and/or anxiety due to terminal cancer. This was conducted in combination with psychotherapy, including a preparatory session and supportive care during the dosing sessions. The study found a 6-month response rate (≥50% reduction in depression scale) of 78% for depression on the GRID-HAM-D-17, with remission achieved in 65% of participants for depression.[53]
- **Psilocybin in cancer-related depression/anxiety: Ross et al, 2016.** Double blind placebo-controlled crossover study of psilocybin in N=29 patients with cancer related depression and anxiety. Patients in this study were given a single high dose of psilocybin (or placebo) and were instructed to lay comfortably on a couch, wear eyeshades, listen to preselected music, and direct their thoughts inward, which is similar to the design of the current ongoing clinical studies with psilocybin. Significant reductions in depression and anxiety (HADS total, HADS-A, HADS-D, BDI, STAI state, STAI trait) were observed in psilocybin patients across all timepoints, while placebo had no sustained reductions, and after crossover, the placebo-first group demonstrated immediate reductions in 5 of the 6 primary outcome measures. Response was maintained at all timepoints, including at the final 26-week endpoint where 60-80% of participants had sustained responder status (≥50% reduction in depression or anxiety measure).[54]
- **Psilocybin in MDD: Davis et al, 2020.** Clinical randomized controlled trial of psilocybin in MDD with a delayed treatment control arm. This study included 2 dosing sessions with supportive psychotherapy with post session assessments at 1- and 4-weeks post treatment and measured response using the GRID-HAM-D scale. For response rate (≥50% reduction in depression scale), 71% of patients were responders at both timepoints, and 58% of patients were in remission at 1 week post dosing vs 54% at 4 weeks.[55]
- **Psilocybin in MDD: Carhart-Harris et al, 2021**. Randomized controlled trial of N=59 patients with MDD assigned 1:1 to receive two separate doses of COMP-360 (25 mg oral psilocybin) 3 weeks apart plus 6 weeks of daily placebo (psilocybin group) or two separate doses of 1 mg of psilocybin 3 weeks apart plus 6 weeks of daily oral escitalopram (escitalopram group), an SSRI. All patients received psychological support and the primary endpoint was change from baseline in the QIDS-SR-16 self-reported depression index. On the primary endpoint in the psilocybin group (n=30) 70% of patients responded compared to 48% of patients on escitalopram (n=29). Remission was achieved in 57% of psilocybin patients compared to 28% for SSRI.[56]
- **Ayahuasca (DMT) in Depression non-responders: Osório et al, 2015.** Open label study of N=6 patients with depression who had not responded to at least one line of therapy. This study evaluated HAM-D and MADRS at multiple timepoints immediately following dosing and out to 21 days later. The study found a mean HAM-D score reduction of 62% at day 1, growing to 72% by day 7 and MADRS was reduced by 82% at 7 days which was maintained out to 21 days.[57] A larger follow-up replication

[52] Carhart-Harris RL, Bolstridge M, Rucker J, et al: Psilocybin with psychological support for treatment-resistant depression: an openlabel feasibility study. Lancet Psychiatry 2016; 3:619–627

[53] Griffiths RR, JohnsonMW, CarducciMA, et al: Psilocybin produces substantial and sustained decreases in depression and anxiety in patients with life-threatening cancer: a randomized double-blind trial. J Psychopharmacol 2016; 30:1181–1197

[54] Ross S, Bossis A, Guss J, et al: Rapid and sustained symptom reduction following psilocybin treatment for anxiety and depression in patients with life-threatening cancer: a randomized controlled trial. J Psychopharmacol 2016; 30:1165–1180

[55] Davis, AK et al. "Effects of Psilocybin-Assisted Therapy on Major Depressive Disorder: A Randomized Clinical Trial." JAMA psychiatry, e203285. 4 Nov. 2020,

[56] Carhart-Harris R et al. Trial of Psilocybin versus Escitalopram for Depression. N Engl J Med 2021; 384:1402-1411.

[57] Osório FdeL, Sanches RF, Macedo LR, et al: Antidepressant effects of a single dose of ayahuascain patients with recurrent depression: a preliminary report. Br J Psychiatry 2015; 37:13–20

study in N=17 patients confirmed the initial results, demonstrating a highly significant reduction in depression scores (p<0.0005).[58]

Exhibit 23. Clinical development for psychedelics in depression. The ongoing clinical development in depression is largely focused on ketamine, psilocybin, and DMT**. Compass Pathways** is the most advanced with their COMP-360 oral psilocybin in ongoing P2b studies in TRD, with an investigator initiated P2 in MDD ongoing as well. Compass received breakthrough designation for psilocybin in TRD in 2018. The company is also involved in an early-stage combination study with atai (ATAI - NR). **Usona Institute (private)** is in an ongoing

P2 for MDD, the organization received breakthrough designation for MDD in 2019. **Cybin** is next, developing CYB001, a sublingual psilocybin moving into P2a (expected 2021) to determine equivalent dose vs oral. The goal behind the sublingual formulation is the potential for faster onset and duration of action, and minimization of food effect. Considering the long duration of traditional psychedelics like LSD (8-12 hours) and psilocybin (6+ hours), the goal of many earlier stage novel psychedelics for depression is to reduce the duration of action. **Filament Health (NEO: FH - NR)** is planning to enter the clinic in a P2 for its psilocybin formulation PEX010 in MDD in 2H21, as well as a P1 study comparing PEX010 to other non-psilocybin mushroom compounds in 3Q21. **Field Trip's** FT104 is a new chemical entity with psilocybin-like activity, but an elimination half-life that is 3x as fast. FT104 is expected to move into the clinic in 1Q22. **Eleusis** is developing an intravenous psilocin which should have a more "ketamine-like" duration of action, with the ability to terminate infusion. **Mindset** is developing several families of psilocybin-like drugs with different PK properties which may be more or less amenable to treatment in the depression setting. We also note **PsyBio**, which is developing synthetic combinations of naturally occurring tryptamines (psilocybin isn't the only compound in psychedelic mushrooms), initially targeting psilocybin followed by combinations of psilocybin and norbaeocystin (entering clinic 2022).

Development of DMT is earlier stage but seems to be a direction of the "next-gen" psychedelic drugs. **GH Research (GHRS - NR)** and **Small Pharma (TSXV: DMT - NR)** are developing closely related tryptamines (5-MeO DMT and DMT) for depression in P1/2. DMT is a much more rapid acting psychedelic, especially when inhaled (can last as little as 5 minutes) and doesn't face the same logistical challenges with dosing as Psilocybin.

Development in Ketamine for depression has not ceased either, despite the approval of Spravato. **Seelos Therapeutics** is developing an intranasal formulation of racemic ketamine in P2, which may have benefits over pure esketamine. **Perception Neurosciences (private)/atai** are developing a formulation of arketamine in P1. **PharmaTher** is developing a combination therapy of ketamine + betaine to block the psychedelic effect in order to produce a "non-psychedelic" ketamine. **Eleusis** is also developing a combination therapy of ketamine + ondansetron, this is intended to reduce nausea, which is a common side effect of ketamine.

Organization	Drug	Description	Indication	Phase I	Phase I/II	Phase II	Phase III
Compass Pathways	COMP-360	Psilocybin (oral)	TRD				
Usona Institute	Psilocybin	Psilocybin (oral)	MDD				
Cybin	CYB001	Psilocybin (sublingual)	MDD				
Seelos Therapeutics	SLS-002	Ketamine (intranasal)	MDD				
PharmaTher	Ketabet	Ketamine + betanine (intranasal)	MDD				
Filament Health	PEX010	Psilocybin Oral	MDD				
GH Research	GH001	5-MeO-DMT (inhaled)	TRD				
Small Pharma	SPL026	DMT (intravenous)	MDD				
Perception Neuroscience/atai	PCN-101	Arketamine	TRD				

Source: Psilocybin Alpha, company reports, & Maxim Research

[58] Sanches RF, de Lima Osório F, Dos Santos RG, et al: Antidepressant effects of a single dose of ayahuasca in patients with recurrent depression: a SPECT study. J Clin Psychopharmacol 2016; 36:77–81

Anxiety disorders. Anxiety is a normal response to stress, alerting us to danger and helping prepare and increase alertness (hyperarousal). Anxiety disorders involve an aberrant fear response with anxiousness or nervousness that is out of proportion to the situation. In the DSM-V anxiety disorder can be broken down into separation anxiety disorder, selective mutism, specific phobia, social phobia, panic disorder, agoraphobia, and generalized anxiety disorder, though previous versions included obsessive compulsive disorders and post-traumatic stress disorder under anxiety. Patients with anxiety disorders are also more likely to face other mental health challenges like depression.

Anxiety disorders are extremely common, with an estimated 12-month prevalence of 21.3%, though specific phobias take up the majority of that at 10.1%, followed by social anxiety disorder at 8%. This makes them more prevalent than depressive disorders and meta-analyses have found that anxiety disorders are responsible for 2.08% of all healthcare expenses. Generalized anxiety disorder had the greatest individual costs at 2.6x the average, followed by social anxiety disorder at 1.6x.[59]

- **Generalized anxiety disorder (GAD).** Characterized by excessive worry and anxiety about a number of life events for at least six months. Symptoms include restlessness, feeling on edge, fatigue, difficulty concentrating, muscle tension, and sleep disturbances. It is estimated that it affects ~6.8M adults in the US and only 43% are treated.
- **Panic disorder.** Characterized by panic attacks, sudden feelings of terror that can strike repeatedly without warning such as chest pain, heart palpitations, shortness of breath, and dizziness, among others. Panic disorder affects ~6M adults.
- **Social anxiety disorder (SAD).** Characterized by the persistent fear of one or more social performance situations where an individual may be exposed to unfamiliar people or potential scrutiny by others. Patients with SAD may also fear that visible symptoms of their anxiety may lead to humiliation or embarrassment. SAD impacts as many as 15M adults, and unlike other anxiety disorders (which are commonly as much as twice as prevalent in women), SAD is equally prevalent in women and men.
- **Phobias**. Phobias are an extreme, disabling, and irrational fear of something that in reality poses little or no danger. This can include fear of heights, spiders (arachnophobia), blood, confined spaces (claustrophobia). Agoraphobia is a non-specific phobia, meaning it is characterized by an intense fear, anxiety, and avoidance of a variety of situations where escape is difficult or help might be unavailable if a panic attack occurs. It is estimated that ~19M people have some form of phobia.

Pathophysiology of anxiety disorders. Anxiety disorders are considered complex genetic diseases, where the disease is driven by a combination of environmental factors and multiple genetic variants. Epigenetic processes are also thought to play a role. Though there is some variation between disorders, amygdala hyperactivity of response to stress is common across disorders. There is also some overlap with neurological signaling pathways between anxiety and other disorders such as depression (as well as comorbidity), including altered monoaminergic signaling (i.e. decreased serotonin). Patients with GAD also display decreased GABA receptor density. [60]

Treatment for anxiety disorders. Treatment for anxiety includes various forms of psychotherapy, as well as medication. The medication used in anxiety disorders is often similar to treatments for depression, with 1L treatments including SSRIs, SNRIs, as well as azapirones, which are agonists for 5-HT_{1A}, dopamine D_2, inverse agonists for α_1 and α_2 adrenergic receptors, and inverse agonists for 5-HT_{2A}. 2L treatments include tricyclic antidepressants, antiepileptics like Lyrica for GAD (inhibits the $\alpha_2\delta$ subunit-containing voltage dependent calcium channel and may act on the GABAergic system), antipsychotics off label

[59] Bandelow, Borwin, and Sophie Michaelis. "Epidemiology of anxiety disorders in the 21st century." Dialogues in clinical neuroscience vol. 17,3 (2015): 327-35.

[60] Martin, Elizabeth I et al. "The neurobiology of anxiety disorders: brain imaging, genetics, and psychoneuroendocrinology." The Psychiatric clinics of North America vol. 32,3 (2009): 549-75.

like Seroquel (dopamine, serotonin, and adrenergic antagonist, and a potent antihistamine with some anticholinergic properties), and antihistamines like hydryoxyzine. 3L treatment is generally off label use of MAOIs. For augmentation treatment, benzodiazepines represent a potent and fast acting option for patients. However, these drugs only provide short term relief, and can build tolerance and dependence, and are also contraindicated in patients with depressive symptoms.[61] Meta-analyses across drug treatments have found response rates ranging from 40-75%, with a mean of 55%. However, clinical remission is often not achieved and a significant number of patients relapse following initial positive treatment response.

Drug development for anxiety disorders has remained a challenge, with no new anxiolytic drugs reaching approval since duloxetine in 2007 in GAD. The approval rates for CNS disorder is less than 10%, with 50-60% failing for efficacy, and 20-30% failing for safety. The low success rates combined with the high cost of development and difficulty in recruitment drove a 50% decline in CNS drug development between the early and mid-2010's.[62] This lack of investment into mental health highlights the need for innovation in the treatment of anxiety disorders, which have a lifetime prevalence of nearly 1/3 of Americans.

Psychedelic medicine in anxiety disorders. Due to the relation between the two disease areas, and the common comorbidity, anxiety has been one of the major focuses for psychedelic research in addition to depression. Research in anxiety has been largely focused on the use of psilocybin, LSD, and MDMA. While psilocybin and LSD are classical hallucinogens, acting primarily on 5-HT_{2A} serotonin receptors, MDMA is an entactogen, acting on release of monoamines, hormones, and other downstream signaling molecules. Within anxiety, there are several theories for efficacy, and many of these are similar to the rationale for depression.

- **Deakin/Graeff hypothesis**. The Deakin/Graeff hypothesis extends beyond the role of the serotonergic system in depression to anxiety as well. In anxiety, this includes the role of the lateral dorsal raphe nuclei, which acts as an inhibitory restraint to diminish fight or flight reactions to stressors, primarily via 5-HT_{1A} and 5-HT_{2A}. Dysfunction in this aspect of the serotonergic system (and thus failure to diminish the fight or flight response to normal levels appropriate for the threat), is thought to be linked with panic attacks. There is also the caudal aspects of the raphe nuclei which project into the limbic system which enhance stress related processes in reaction to stressors, mostly via the 5-$HT_{2A/2C}$ and 5-HT_3. This response is thought to be appropriate for imminent dangers and dysfunction is likely associated with anxiety disorder.
- **5-HT_2 Receptors**. The 5-HT_{2a} receptor is thought to play a role in regulation of mood state, and there is some evidence of modulation of anxiety in animal models. In particular, in rats, the upregulation of 5-HT_{2a} in cortical areas is associated with induction of learned helplessness. 5-HT_{2C} receptors in the forebrain are also associated with anxiety-like behavior in animals, while knockout mice display a blunted response in the amygdala to anxiety stimuli.
- **Neuroplasticity and synaptogenesis**. Like with depression improved neuroplasticity and synaptogenesis are thought to be important mechanisms in anxiety as well. In studies of cognitive behavioral therapy (CBT) in social anxiety, increased neuroplasticity was found to be related to CBT-induced attenuation of amygdala hyperresponsivity.[63] Animal studies have also demonstrated that use of psychedelics have led to increases in hippocampal neuroplasticity and extinction of fear conditioning in adult rats. This extinguishment of fear conditioning may be particularly important in anxiety disorders, especially when used in conjunction with talk therapy.

[61] Locke AB, et. al. Diagnosis and Management of Generalized Anxiety Disorder and Panic Disorder in Adults. Am Fam Physician. 2015 May 1;91(9):617-624.
[62] Sartori SB & Singewald N. Novel pharmacological targets in drug development for the treatment of anxiety and anxiety-related disorders. Volume 204, December 2019, 107402.
[63] Månsson, K N T et al. "Neuroplasticity in response to cognitive behavior therapy for social anxiety disorder." Translational psychiatry vol. 6,2 e727. 2 Feb. 2016.

- **Fear extinction relating to MDMA**. When it comes to MDMA in particular, there is an increase in the release of monoamines such as 5-HT, dopamine, and noradrenaline. MDMA has demonstrated facilitation of fear extinction effects similarly to classical psychedelics, and also in itself is a potent anxiolytic in humans and has self-esteem-raising and pro-social properties. It is thought that MDMA may help patients work through trauma, without experiencing overwhelming fear and may interfere with reconsolidation of fear memories during psychotherapy.[64]

Clinical data in anxiety. The clinical development of psychedelics in anxiety dates as far back as the 1940s. However, many of the earlier studies were less than rigorous, with many amounting largely to collections of cases or relying on subjective evaluations of improvement. That said, the overall trend seems to demonstrate that psychedelics produce a notable improvement in patients. More recently, there has been a resurgence into psychedelic treatment of anxiety, highlighted below.

- **Psilocybin in cancer-associated anxiety: Grob et al, 2011.** Randomized trial in N=12 patients with advanced stage cancer were treated with psilocybin. Subjects were used as their own control and were treated in 2 sessions, one with psilocybin and one with active control (niacin). While there was no change in self-reported State-Trait Anxiety Inventory (STAI) state score, STAI trait scores were significantly decreased at follow-up assessments 1 month (p=0.001) and 3 months (p=0.03) after the second treatment session.[65]
- **Psilocybin in cancer-associated depression/anxiety: Griffiths et al, 2016.** Similar design to Grob et al, 2011, but with a larger sample size. N=57 patients with terminal cancer with depression and anxiety symptoms. This was conducted in combination with psychotherapy, including a preparatory session and supportive care during the dosing sessions. Response rates on the HAM-A (anxiety score, ≥50% decline from baseline) was 83% at 6-months and remission was achieved by 57% of patients.[66]
- **Psilocybin in cancer-associated depression/anxiety: Ross et al, 2016.** Double blind placebo-controlled (niacin) crossover study of psilocybin in N=29 patients with cancer related depression and anxiety. Patients in this study were given a single high dose of psilocybin (or placebo). Significant reductions in depression and anxiety (HADS total, HADS-A, HADS-D, BDI, STAI state, STAI trait) were observed in psilocybin patients across all timepoints, while placebo had no sustained reductions, and after crossover, the placebo-first group demonstrated immediate reductions in 5 of the 6 primary outcome measures. Response was maintained at all timepoints, including at the final 26-week endpoint where 60-80% of participants had sustained responder status (≥50% reduction in depression or anxiety measure).[67]
- **LSD in disease-associated anxiety: Gasser et al, 2014.** Randomized controlled trial in N=12 patients with medical disease meeting the DSM-IV criteria for generalized anxiety disorder. Patients were tapered off medication and received psychotherapy combined with 2 LSD-assisted therapy sessions, with n=8 receiving high dose (200mcg) and n=4 receiving low dose (20 mcg) as an active placebo. At 2 months follow, STAI trait anxiety was not significant reduced but STAI state anxiety was significantly reduced.[68]
- **LSD neuroimaging study on fear response: Mueller et al, 2017.** Double-blind placebo-controlled crossover study in N=20 healthy subjects on amygdalar activity

[64] Sartori SB & Singewald N. Novel pharmacological targets in drug development for the treatment of anxiety and anxiety-related disorders. Volume 204, December 2019, 107402.
[65] Grob CS, Danforth AL, Chopra GS, et al: Pilot study of psilocybin treatment for anxiety in patients with advanced-stage cancer. Arch Gen Psychiatry 2011; 8:71–78
[66] Griffiths RR, JohnsonMW, CarducciMA, et al: Psilocybin produces substantial and sustained decreases in depression and anxiety in patients with life-threatening cancer: a randomized double-blind trial. J Psychopharmacol 2016; 30:1181–1197
[67] Ross S, Bossis A, Guss J, et al: Rapid and sustained symptom reduction following psilocybin treatment for anxiety and depression in patients with life-threatening cancer: a randomized controlled trial. J Psychopharmacol 2016; 30:1165–1180
[68] Gasser P, Holstein D, Michel Y, et al: Safety and efficacy of lysergic acid diethylamide-assisted psychotherapy for anxiety associated with life-threatening diseases. J Nerv Ment Dis 2014; 202:513–520

during processing of fearful stimuli. Patients were given either 100 mcg of LSD or placebo and were imaged under fMRI while viewing images of faces depicting various degrees of fear, anger, happiness, or neutral expressions taken from the Ekman and Friesen series of Pictures of Facial Affect at estimated time of peak effect (2.5 hours after dosing). Patients acted at self-controls and were crossed over to the other group. LSD produced a significant decrease in left amygdala response to fearful stimuli and had impaired recognition of fearful faces, but did not impact recognition of neutral happy or angry faces. Researchers interpreted this as indicating LSD may modify the processing of biases towards negative stimuli, which play a role in depression and anxiety disorders.[69]

- **MDMA in social anxiety: Danforth et al, 2018.** Randomized controlled trial in N=12 autistic adults with very severe social anxiety. Patients received MDMA (n=8, 75-125 mg) or placebo during two 8-hr psychotherapy sessions in a controlled clinical setting spaced 1 month apart with 3 non-drug psychotherapy settings following each. On the primary outcome of change in Leibowitz Social Anxiety Scale (LSAS) which was reduced by -44.1 (from baseline of 91.8) for MDMA vs -19.3 for placebo (from baseline of 83.3) with a p-value of 0.037. We note that for the MDMA group, a baseline of 91.8 is considered severe, while the final mean score of 46.4 is below the LSAS threshold for normal.[70]
- **MDMA in disease-associated anxiety: Wolfson et al, 2020.** Double-blind randomized controlled trial in N=18 patients with anxiety due to a life-threatening illness. Patients were given MDMA (125mg, n=13) or placebo (n=5) in combination with two 8 hour psychotherapy sessions. After unblinding, placebo patients received 3 open label MDMA sessions and MDMA patients received one additional MDMA session. A reduction in STAI trait anxiety score of -23.5 vs. -8.8 was observed for MDMA. This was not significant (p=0.06), however removing one outlier in the placebo group would bring the overall P-value to 0.007. STAI state anxiety also was reduced numerically by -22.1 vs -6.0 for placebo.[71]

Exhibit 24. Clinical development for psychedelics in anxiety. The ongoing clinical development in anxiety disorders is largely focused on MDMA, LSD, and psilocybin. **MAPS (private)** is the most clinically advanced, having completed a P2 pilot study in adults with anxiety associated with a life-threatening illness (see above, Wolfson et al. 2020), as well as for social anxiety in autistic adults (see above, Danforth et al. 2018).

MindMed is developing LSD in a Phase 2 study for anxiety which was acquired from University Hospital Basel's Lietchi Lab and is being led by Dr. Peter Gasser and Dr. Matthias Liechti. The company is preparing to file an IND in 3Q21 and begin a P2b study in 4Q21, data from P2a is also expected in 2022.

Diamond Therapeutics (Private) is developing a low-dose sub-hallucinogenic psilocybin-based drug for undisclosed anxiety disorders. It is expected to enter P1 in early 2021. **Cybin** has also announced that its deuterated tryptamine program CYB004, will be targeting generalized anxiety disorder and social anxiety disorder.

Organization	Drug	Description	Indication	Phase I	Phase I/II	Phase II	Phase III
MAPS	MDMA	MDMA (oral)	Illness-associated anxiety				
MAPS	MDMA	MDMA (oral)	Social anxiety				
MindMed	MM-120	LSD (oral)	Anxiety				
Cybin	CYB004	Deuterated Tryptamine (inhaled)	Anxiety (social and generalized)				
Diamond Therapeutics	Psilocybin	Low-dose psilocybin	Anxiety				

Source: Psilocybin Alpha, company reports, & Maxim Research

[69] Mueller F, Lenz C, Dolder PC, et al: Acute effects of LSD on amygdala activity during processing of fearful stimuli in healthy subjects. Transl Psychiatry 2017; 7:e1084

[70] Danforth AD, et al. Reduction in social anxiety after MDMA-assisted psychotherapy with autistic adults: a randomized, double-blind, placebo-controlled pilot study. Psychopharmacology, September 2018.

[71] Wolfson PE, et al. MDMA-assisted psychotherapy for treatment of anxiety and other psychological distress related to life-threatening illnesses: a randomized pilot study. Sci Rep 10, 20442 (2020).

Post-traumatic stress disorder (PTSD). Post-traumatic stress disorder is a condition related to anxiety (up until the DSM V, it was classified under anxiety disorders along with obsessive compulsive disorders). For diagnosis of PTSD, patients must have experienced or witnessed a major traumatic event and display re-experiencing syndromes (intrusive distressing memories, recurrent distressing dreams, dissociative reactions), active avoidance of internal/external reminders of the trauma, at least two "alterations in cognitions and mood" symptoms (inability to remember important aspect of event, persistent and exaggerated negative thoughts about oneself or the world, distorted cognitions about the cause or consequence of the event, pervasive negative emotions, markedly diminished interest, etc.), and at least two arousal symptoms (irritable behavior, angry outbursts, reckless or self-destructive behaviors, hypervigilance, sleep disturbances).

Lifetime prevalence of PTSD is higher in women, ranging from 13-20% vs 6-8% for men, which comes out overall to ~20% of people who experience a traumatic event. 12-month prevalence is higher in high-incomes regions, such as the US (2.5%), Northern Ireland (2.8%), and New Zealand (2.1%). Interpersonal violence is also more likely to lead to PTSD compared to large scale traumatic events such as natural disaster. It is also worth noting that there is a significant comorbidity with other psychological disorders, with the majority of PTSD patients also experiencing diseases like MDD or anxiety disorders.

Neurobiology of PTSD. Most theories of PTSD involve fear conditioning. The neurobiological model of PTSD posits that the surge of stress hormones at the time of trauma results in a strong associative learning between the cues present and fear response. Recovery is thought to involve fear extinction learnings. There is evidence of neural changes present in patients with PTSD which is known to be related to fear conditioning including in the amygdala, prefrontal cortex, and hippocampus. Noradrenic dysregulation is well documented in PTSD and is thought to be key in the development of intrusive trauma memories. Another focus of PTSD research is the glucocorticoid system. Interestingly, while increased cortisol levels are generally associated with chronic stress, PTSD is often linked to lower cortisol levels, with the thought being that the cortisol binding to glucocorticoid receptors leads to a negative feedback loop promoting homeostasis of the stress response. [72]

Cognitive behavioral models of PTSD. Cognitive behavioral models of PTSD build upon the neurobiology, placing an emphasis on memory organization. These models propose that trauma memories are encoded largely in sensory modalities, with a fragmented and disorganized sequencing, which reduces the likelihood of the memory being adequately embedded into the patient's autobiographical memory base. There is also emphasis placed on the degree to which patients appraise the traumatic event, their responses to it, and the future likelihood of harm, exaggerating the individual's sense of threat. These negative appraisals tend to produce strong avoidance behavior and impair emotional processing of trauma memories and extinction learning. [73]

Treatments for PTSD. Treatment of PTSD is largely focused on psychotherapeutic approaches, rather than pharmacological. There are numerous forms of cognitive behavioral therapy (CBT, i.e. prolonged exposure, eye movement desensitization and reprocessing, cognitive therapy) which are designed to promote emotional processing of the traumatic memory and integrate new corrective information, with the core component being exposure for the purpose of extinction learning. While effective, only 2/3 of patients respond to CBT. There have been attempts to augment this efficacy with device-based methods such as repetitive transcranial magnetic stimulation, which has shown some efficacy in studies. Pharmacological methods are detailed below and include antidepressants or symptomatic therapies, as well as agents to prevent onset of PTSD.

- **Antidepressants**. Two SSRIs have been approved by the FDA for treatment of PTSD, sertraline and paroxetine, though their effect size is small (0.23). There is also some data for the SNRI venlafaxine. Though efficacy is minimal, one of the reasons

[72] Bryant. Post-traumatic stress disorder: a state-of-the-art review of evidence and challenges. World Psychiatry 2019;18:259–269
[73] Ibid.

for the common use of these drugs is the significant comorbidity with MDD and anxiety.

- **Symptomatic drugs**. In treating the symptoms of PTSD, the drug prazosin (α1 adrenergic antagonist) has been found to be effective in reducing nightmares and hyperarousal. Benzodiazepines are also used in PTSD but are typically contraindicated due to limited efficacy and risk of abuse.
- **Preventative drugs**. Due to the notion that PTSD is largely driven by the surge of noradrenaline in the acute post trauma phase, propranolol (β-adrenergic antagonist) has seen some use in the hours and days after trauma based on preclinical evidence that the drug blocks fear memory reconsolidation, though the clinical evidence is mixed. Preliminary studies have also found that administration of cortisol following traumatic event can also benefit patients as low cortisol levels following trauma has been linked to onset of PTSD.[74]

Psychedelic medicine in PTSD. PTSD has also been an area of focus within psychedelic medicine. The largest area of research in PTSD has focused on MDMA. However, there is also some potential for psilocybin to play a role due to classical hallucinogens also having an effect on amygdala activity and fear response.

- **Memory reconsolidation and fear extinction**. MDMA enhances release of monoamines and other downstream signaling molecules such as BDNF to dynamically modulate emotional memory circuits. In doing so, MDMA may be able to enable patients to recall the fear-inducing memories while the influence of MDMA reduces the association of fear/anxiety and stimulates neurochemicals associated with other emotions such as love/affection, combined with increased neuroplasticity. The combination of this with a supportive therapeutic setting may enable traumatic memories to be reconsolidated with less fear. MDMA specifically has been found to reduce response in brain regions involved in fear and anxiety-related regions such as the amygdala and the insula and increase connectivity of the amygdala and the hippocampus. MDMA also releases modulators of memory reconsolidation such as cortisol, norepinephrine and glucocorticoids, which can enhance exposure-based extinction training. MDMA also induces the release of oxytocin, which modulates the amygdala and PFC, which are implicated in PTSD, learning and memory, and fear extinction.[75]
- **Neuroplasticity/Synaptogenesis**. The release of BDNF driven by MDMA is thought to play a key role in the activity of MDMA in PTSD, improving the ability to overcome fear conditioning. Psilocybin and classical hallucinogens have also been found to potently increase neurogenesis in the hippocampus, which is one of the key centers in the brain for emotion and memory.
- **Psilocybin vs MDMA**. Both MDMA and classical hallucinogens elicit similar effects which may be beneficial for the treatment of PTSD. Both reduce amygdala activation, both improve fear memory extinction. However, MDMA is primarily focused on serving as a catalyst to psychotherapy through the emotional side of processing (reducing fear response and shame, increasing openness and trust). Classical hallucinogens like psilocybin may have more potent neurogenic effects, increase divergent thinking and mindfulness capabilities, increase access to traumatic memories, and help resolve existential distress. Classical psychedelics have a number of other effects which may also be relevant for PTSD, including increases in trait openness, increased emotional empathy, and reduced avoidance, as well as emotional breakthrough experiences. [76] In the case of PTSD, both classes of drug may have a role to play and could potentially have complimentary effects for patients.

[74] Bryant. Post-traumatic stress disorder: a state-of-the-art review of evidence and challenges. World Psychiatry 2019;18:259–269

[75] Feduccia AA & Mithoefer MC. MDMA-assisted psychotherapy for PTSD: Are memory reconsolidation and fear extinction underlying mechanisms? Volume 84, Part A, 8 June 2018, Pages 221-228

[76] Krediet, Erwin et al. "Reviewing the Potential of Psychedelics for the Treatment of PTSD." The international journal of neuropsychopharmacology vol. 23,6 (2020): 385-400.

Clinical data in PTSD. The clinical data in PTSD is largely focused on MDMA, though its exploration in a clinical setting is relatively recent, with double blind studies dating back to 1994 to confirm safety. That said, the data thus far in PTSD for MDMA is among the most compelling in psychedelic medicine, highlighted below. Though randomized controlled trials specifically targeting PTSD with classical psychedelics have not occurred, it's worth noting that in the 50s and 60s (when research on psychedelics was starting), the nuances between depression, anxiety, PTSD, etc. were not well understood (prior to 1970, most patients with mental health problems were considered to have "anxiety").[77] Given the imprecision of diagnoses at the time, many of the original psilocybin studies, did likely include patients who today would be considered to have PTSD.

- **MDMA neurobiology study: Bedi et al 2009**. Double-blind randomized fMRI study in N=9 healthy volunteers demonstrated that during peak drug effect, MDMA decreased amygdala reactivity to angry faces, but not fearful faces from the Ekman and Friesen series of Pictures of Facial Affect. Subjects were also better able to identify positive facial expressions and found it more difficult to identify negative facial expressions vs placebo. The results demonstrate a reduced response to threat and increased response to rewards, which likely plays a role in MDMA's effects on emotional processing.[78]
- **MDMA in PTSD: Mithoefer et al, 2011**. Phase 2 randomized controlled trial of MDMA in N=23 patients with chronic PTSD. Patients received two experimental sessions of either MDMA-assisted psychotherapy (N=12) or placebo (N=8). The primary outcome was change in Clinician-Administered PTSD Scale (CAPS), from baseline (79.6 for placebo and 79.2 for MDMA). At 3-5 days post first dose, MDMA patients had a CAPS score of 37.8 vs 74.1 for placebo (p=0.013). This continued to decline at 3-5 days post second dose (29.3 vs 66.8, p=0.002) and two months post second treatment (25.5 vs. 59.1, p=0.013). 83% of MDMA patients met the criteria for categorical response (≥30% decline in CAPS) compared to 25% for placebo. Additionally, 7 out of 8 placebo patients chose to cross over, with all patients demonstrating a response with a mean CAPS decline of -31.7 ($p<0.05$).[79]
- **MDMA in PTSD long term follow-up: Mithoefer et al, 2013**. Importantly, a long-term follow-up was conducted on N=16 patients from the Phase 2, with a mean of 45 months (17-74 months). Among completers, there was no significant change in CAPS scores from the point of exit of the trial (CAPS score of 24.6) to the final assessment (CAPS score of 23.7), with clinically significant PTSD symptom relief.[80]
- **MDMA in PTSD dose-response study: Mithoefer et al, 2018**. Phase 2 randomized controlled study investigating efficacy and dose response in MDMA-assisted psychotherapy in N=26 service personnel with PTSD. Patients had a baseline CAPS score ≥50 and were tapered off psychotropic medication. Patients were randomly assigned to receive a low dose (30mg, n=7), moderate dose (75mg, n=7) or high dose (125mg, n=12), in two blinded psychotherapy sessions spaced a month apart, with the option of receiving a supplemental half dose 1.5-2 hours into the session. The primary outcome was change in CAPS at 1 month post second session. The low dose group experienced a reduction of -11.4, while the moderate group experienced -58.3 (p=0.0005) and the high dose group experienced -44.3 (p=0.004). There was no significant difference between the moderate and high dose groups. Remission was achieved in 29% of low dose patients, 86% of moderate dose patients, and 58%

[77] Horwitz, Allan V. "How an age of anxiety became an age of depression." The Milbank quarterly vol. 88,1 (2010): 112-38.

[78] Bedi G, et al: Effects of MDMA on sociability and neural response to social threat and social reward. Psychopharmacology (Berl) 2009; 207:73–83

[79] Mithoefer MC, Wagner MT, Mithoefer AT, et al: The safety and efficacy of +/23,4-methylenedioxymethamphetamine-assisted psychotherapy in subjects with chronic, treatment-resistant posttraumatic stress disorder: the first randomized controlled pilot study. J Psychopharmacol 2011; 25:439–452.

[80] Mithoefer MC, Wagner MT, Mithoefer AT, et al: Durability of improvement in post-traumatic stress disorder symptoms and absence of harmful effects or drug dependency after 3,4-methylenedioxymethamphetamine-assisted psychotherapy: a prospective long-term follow-up study. J Psychopharmacol 2013; 27:28–39

of high dose patients. On response, 100% of moderate dose and 67% of high dose patients met the response criteria.[81]

- **MDMA in PTSD MAPS P3 study: Mitchell et al, 2021**. Phase 3 MAPP1 trial enrolled N=90 patients with severe chronic PTSD with an average duration of 14 years. Patients were randomized to three sessions of MDMA (n=46) or placebo (n=44) with identical talk therapy. Among patients treated with MDMA, 67% no longer qualified for a diagnosis of PTSD at the end of the MDMA sessions vs 32% for placebo and 88% experienced a clinically meaningful reduction in PTSD, compared to 60% for placebo.[82]
- **Psilocybin/LSD/Ketamine in "concentration camp syndrome": Ossebaard et al, 1999**. Long term follow-up of n=12 Dutch patients treated by Dr. Bastiaans for what he dubbed "Concentration Camp Syndrome." Patients had traumatic experiences related to war (with the exception of n=1 woman) as members of the Dutch resistance, Dutch Civilian population, or Japanese occupation of the Dutch East Indies, all but one were likely to have been in a concentration camp for a period of time. All but one respondent to the survey reported moderate to strong improvements from Dr. Bastiaans intervention.[83]

Exhibit 25. Clinical development for psychedelics in PTSD. The ongoing clinical development in PTSD is largely focused on MDMA and psilocybin. MDMA is actually the most advanced of any psychedelic therapy with an ongoing Phase 3 study being conducted by **MAPS**. MAPS has announced that their first P3 study (MAPP1) was successful and a second P3 study is ongoing. Approval for PTSD is anticipated in 2023, pending positive data and subsequent review. MAPS is also preparing a Phase 2 study to evaluate MDMA facilitated cognitive behavioral conjoint therapy (CBCT) for PTSD and relationship distress in couples with one partner diagnosed with PTSD. **Mydecine** is planning to conduct a Phase 2a study of psilocybin (MYCO-001) in veterans and EMS/frontline workers with PTSD starting in 2H21and is developing a follow-up next gen candidate (MYCO-003), which combines the activity of psilocybin with an entactogen, MDMA-like, effect. **Enveric** is also planning to initiate a study of a novel psychedelic (acquired from the MagicMed acquisition) in cancer-related PTSD/distress.

Organization	Drug	Description	Indication	Phase I	Phase I/II	Phase II	Phase III
MAPS	MDMA	MDMA (oral)	PTSD				
MAPS	MDMA	MDMA (oral) + CBCT	PTSD and Relationship Distress				
Mydecine	MYCO-001	Psilocybin (oral)	PTSD				

Source: Psilocybin Alpha, company reports, & Maxim Research

Substance use disorder. Substance abuse disorders are addictions resulting from the use of 10 separate classes of drugs (according to the DSM-V), including arylcyclohexylamines/hallucinogens (PCP, ketamine, LSD, psilocybin), inhalants, opioids, sedatives (including anxiolytics and hypnotics), stimulants (amphetamines, cocaine), tobacco, and other or unknown substances. In order to be considered substance use disorder, the patients must experience a number of the following symptoms (2-3 for mild, 4-5 for moderate, 6+ for severe):

1. Taking the substance in larger amounts or longer than they are meant to.
2. Wanting to cut down but not managing to.
3. Spending a lot of time getting, using, or recovering from use of the substance.
4. Experiencing cravings.
5. Failing to perform responsibilities at work, school, or home.
6. Continuing to use when the use causes problems for relationships.

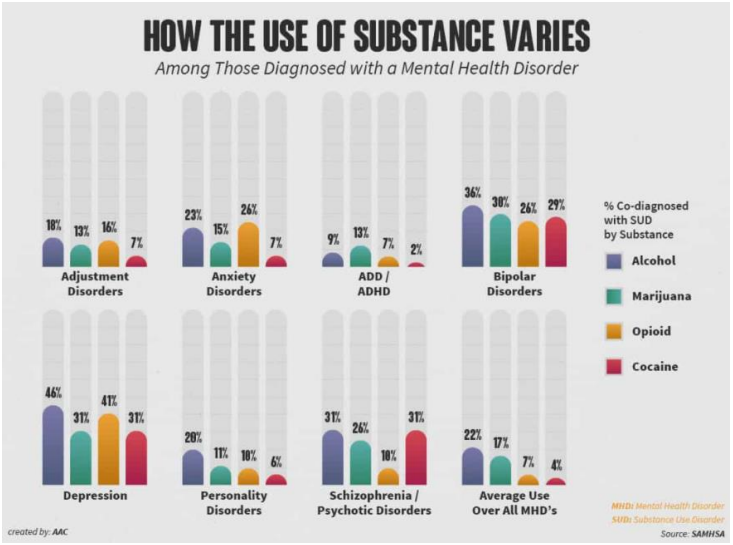
[81] Mithoefer MC, Mithoefer AT, Feduccia AA, et al: 3,4-methylenedioxymethamphetamine (MDMA)-assisted psychotherapy for post-traumatic stress disorder in military veterans, firefighters, and police officers: a randomised, double-blind, dose-response, phase 2 clinical trial. Lancet Psychiatry 2018; 5:486–497

[82] Mitchell et al. MDMA-assisted therapy for severe PTSD: a randomized, double-blind, placebo-controlled phase 3 study. Nature Medicine volume 27, pages1025–1033 (2021)

[83] Ossebaard H, Maalsté N (1999) The bastiaans method of drugassisted psychotherapy. In: MAPS Bulletin 9:3–9.

7. Giving up important social, occupational, or recreational events because of substance use.
8. Using substances repeatedly, even when it places you in danger.
9. Continuing to use in light of a physical or psychological problem which makes it dangerous to do so.
10. Needing more of the substance to get the desired effect, aka tolerance.
11. Development of withdrawal symptoms, which can be relieved by taking more of the substance.

Exhibit 26. Substance use disorders have significant comorbidity. Like many of the previously mentioned mental health conditions, substance use disorders occur in a much greater percentage with patients who already have another mental disorder such as personality disorders, anxiety disorders, or depressive disorders.



Source: americanaddictioncenters.org

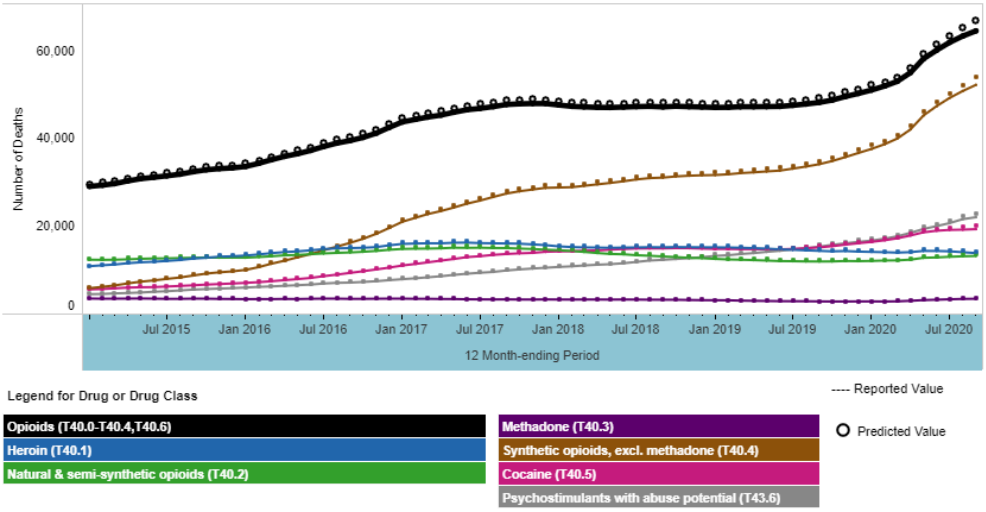
Alcohol use disorder (AUD). AUD, which affects approximately 35M patients in the US, and 55M in Europe (21M in Russia too) derives from the combination of two categories of alcohol abuse and alcohol dependence.[84] The disorder contributes to over 200 different diseases (i.e., certain cancers, tumors, neuropsychiatric conditions, and numerous cardiovascular and digestive diseases)[85] and a significantly large economic burden costing approximately $250B annually. Only ~20% of adults with lifetime AUD ever seek treatment. AUD is associated with higher rates of morbidity and mortality.[86] In 2000, >85K deaths were attributed to excessive alcohol consumption. Heavy alcohol consumption can lead to various forms of cancer, fatty liver disease, and cirrhosis, among other diseases. Alcohol use is another area which has been substantially impacted by the COVID-19 pandemic, with frequency of drinking increasing 14% between mid-2019 and mid-2020 and a 41% increase in heavy drinking among women. Alcohol is known to be tied to other mental health issues, such as depression and anxiety, which have also increased significantly over the pandemic.[87]

Opioid use disorder (OUD) is among one of the most common forms of substance use disorder in the US with an estimated diagnosis of 2.1M individuals in 2018. Drugs under the classification of opioids include the illegal drug heroin, synthetic opioids such as fentanyl, and pain relievers legally available by prescription. While pain is mitigated after taking treatment, long-term use leads to addiction and physical dependence. Individuals with OUD may

[84] Grant et al. 'Epidemiology of DSM-5 Alcohol Use Disorder.' JAMA Psychiatry. August 2015. 72(8): 757-766
[85] Shield, Kevin D., et al. "Focus On: Chronic Diseases and Conditions Related to Alcohol Use." *National Institute on Alcohol Abuse and Alcoholism,* U.S. Department of Health and Human Services, pubs.niaaa.nih.gov/publications/arcr352/155-173.htm.
[86] Kendler S, Ohlsson H, Sundquist J. 'Alcohol Use Disorder and Mortality Across the Lifespan." JAMA Psychiatry 2016. 73(6):575-581
[87] Pollard MS, et al. Changes in Adult Alcohol Use and Consequences During the COVID-19 Pandemic in the US. JAMA Netw Open. 2020;3(9):e2022942.

experience withdrawal symptoms when trying to abstain from opioid use, thereby causing them to relapse and overdose. Current NIH statistics suggest that 21%-29% of patients will misuse opioids, and 8%-12% will develop an opioid use disorder. This has driven an ongoing opioid crisis in the US, and has caused significant settlements with pharmaceutical companies, and other companies, believed to play a role in the promotion of opioid use in spite of the addictive nature. Recently, this included a $573M settlement with the consulting company McKinsey & Co. (private) for their role in helping turbocharge opioid sales.

Exhibit 27. 12-month ending overdose deaths in the US during the COVID-19 pandemic. Over the course of the COVID-19 pandemic, overdose deaths have increased, largely driven by opioid use. In September 2020, the 12-month trailing overdose count increased 34% compared to the same period ending September 2014. Prior to the pandemic, the US had been facing an ongoing opioid crisis, and the increase in isolation, stress, and financial uncertainty brought on by the pandemic and lockdowns has likely played a large role in the observed increases in substance use and resulting increase in overdoses.



Source: CDC

Nicotine dependence. While not quite as detrimental to short term health outcomes as dependence for many other substances, nicotine is among the most addictive and widespread substances used globally. Cigarette smoking is the leading cause of preventable death and disease in the US, causing 480,000 premature deaths annually as well as ~41,000 deaths from second-hand exposure.[88] Coincidentally, about an equal number also become dependent on tobacco yearly. According to the CDC, an estimated 34.3M adults (14%) in the US currently smoke cigarettes. Smoking is also directly responsible for an annual ~7 million deaths worldwide.[89] Globally, tobacco smoking is more widespread than the use of any other addictive substance (such as amphetamines, cannabis, cocaine, and opioids). Accordingly, its contribution to disease burden is greater than alcohol or any illicit drugs.[90] The World Health Organization estimates there are 1.1 billion smokers worldwide.

Tobacco dependence, primarily through cigarette smoking, can lead to various serious health problems, with smoking-related illness costing more than $300B each year in the US and nearly $170B in direct health-related economic losses annually in the US.[91] Indeed, it is estimated that 28.7% of cancer deaths in the US are attributable to cigarette smoking.[92]

[88] Center for Disease Control and Prevention, Secondhand Smoke. https://www.cdc.gov/tobacco/basic_information/secondhand_smoke/index.htm.
[89] World Health Organization, WHO Report on the Global Tobacco Epidemic, 2017. Geneva: World Health Organization, 2017.
[90] Degenhardt L & Hall W, Lancet. 2012; 379(9810): 55-70.
[91] Center for Disease Control and Prevention, Economic Trends in Tobacco. https://www.cdc.gov/tobacco/data_statistics/fact_sheets/economics/econ_facts/index.htm.
[92] Jacobs EJ, et al., Ann Epidemiol.2015; 25(3):, 179-182.e1.

Further, for every smoking-related death, ~30 Americans continue to live with some smoking-related illness. Other health risks associated with long-term nicotine exposure include heart disease, stroke, lung disease, diabetes, and chronic obstructive pulmonary disease (COPD), which includes emphysema and chronic bronchitis. During the COVID-19 pandemic, a somewhat contradictory effect on smoking behavior has occurred, with 71% of patients increasing desire to quit, but 40% of patients reporting increased tobacco use, compared to 17% reducing.[93]

Mechanisms of addiction. While the specific pharmacological mechanisms for each drug can vary, the mechanism for addiction is based on the activation of the reward system, which produces feelings of pleasure or euphoria. This is thought to create a motivational change of conditioned reinforcement through maladaptive stimulus response learning. The acute rewarding properties of drugs of abuse is thought to be based on the dopamine pathway from the ventral tegmental area to the nucleus accumbens, which subsequently flows through the ventral pallidum. This pathway plays a role in reward response and guiding behavior towards reward seeking. In the pathway from use and abuse to addiction, there is also involvement of the hippocampus and amygdala in the encoding and reactivation of memories of drug use, which are especially powerful memories and particularly difficult to overwrite or dislodge. There is also the role of the executive function areas of the brain such as the prefrontal cortex and the anterior cingulate gyrus. These depend on a suitable balance of glutamate and GABA interactions, allowing for top down control of the pleasure and motivation areas. In particular, the orbito-frontal cortex (OFC) evaluated the value rewards or salience and decision to use. In healthy brains, these areas are in a balanced condition and the OFC has the final say for behavioral control to give the “no-go” or “go” signal for drug use. In addicted brains, this balance is disrupted and the motivation to use drugs becomes stronger, drug memories become more dominant, and the executive control mechanisms become weaker such that drug use can no longer be controlled. The system of drug addiction is a complex interplay of neurochemistry, changes in receptor expression, and rewriting of neurocircuitry through conditioned behavior.[94]

Exhibit 28. Treatments for drug addiction. Treatments for addiction vary by the type of addiction, and often focus on disrupting the specific pathways involved in use to prevent cravings or preventing withdrawal for a weening effect.

- **Opioid use disorder**. Some of the most common drugs for opioid use disorder include the use of drugs activating the opioid system itself such as methadone or buprenorphine. These drugs are opioids themselves, and have a potential for addiction and abuse, but are less dangerous than traditionally abused drugs such as heroin and oxycontin. The goal of treatment with these is to provide a substitute for maintenance and to avoid withdrawal symptoms during the acute detoxification phase. Naltrexone, on the other hand, blocks the opioid receptors, reducing cravings and preventing the effect of opioid drugs. Lofexidine is a more recently approved drug (approved in 2018) for opioid withdrawal, which is a central alpha-2 adrenergic agonist, reducing the release of norepinephrine and the restoration of adrenergic outflow of norepinephrine after cessation of opioid is a contributor to many withdrawal symptoms.
- **Alcohol use disorder**. Naltrexone is also approved for alcohol use disorder and works by blocking the endorphin receptors in the body, preventing the effects and feelings of alcohol, and also reducing alcohol cravings to help maintain sobriety. Acamprosate works on the NMDA and GABA receptors, though indirectly. Essentially the drug increases sensitivity in the brain to natural GABA levels, while inhibiting the activity of NMDA which is upregulated after alcohol abuse. Acamprosate has several negative side effects including major depression and anxiety. Disulfiram inhibits

[93] Kowitt S.D. Tobacco quit intentions and Behaviors among cigar smokers in the United States in response to COVID-19. Int. J. Environ. Res. Public Health. 2020;17

[94] https://www.news-medical.net/whitepaper/20190311/The-Biological-Mechanisms-Behind-Addiction.aspx

acetaldehyde dehydrogenase, essentially producing the effects of a hangover almost immediately following alcohol use in even small amounts.

- **Nicotine dependence**. In the treatment of nicotine dependence, several methods are considered. Nicotine replacement therapy is fairly common, with treatments including nicotine patch, gum, or lozenges with the goal of a down stepping to ween the patient off nicotine. Varenicline (or Chantix) is a competitive partial agonist for the α4β2 nicotinic acetylcholine, producing less dopamine on binding and blocking nicotine from binding to the receptors. Bupropion (Welbutrin) is a dopamine and norepinephrine reuptake inhibitor and may prevent withdrawal symptoms after smoking cessation by mimicking the nicotinic effects on monoamines, it is also thought to attenuate the reinforcing effects of nicotine by antagonism of nicotinic receptors.

Substance and Medication	FDA Approval	Mechanism of Action
Opioids		
Methadone	Treatment of opioid dependence	μ-Opioid receptor agonist
Buprenorphine	Treatment of opioid dependence	μ-Opioid receptor partial agonist
Extended-release naltrexone	Treatment of opioid dependence	μ-Opioid receptor antagonist
Lofexidine	Treatment of opioid withdrawal	α_{2A}-Adrenergic receptor agonist
Naloxone	Reversal of opioid overdose	μ-Opioid receptor antagonist
Alcohol		
Acamprosate	Treatment of alcohol dependence	NMDA antagonist, GABA-A allosteric modulator
Naltrexone	Treatment of alcohol dependence	μ-Opioid receptor antagonist
Disulfiram	Treatment of alcohol dependence	Acetaldehyde dehydrogenase inhibitor
Gabapentin	Used off-label to treat alcohol dependence	Unknown; increases GABA concentration
Topiramate	Used off-label to treat alcohol dependence	Voltage-gated sodium channel blocker, GABA-A allosteric modulator, AMPA/kainate receptor antagonist, carbonic anhydrase inhibitor
Nicotine		
Nicotine replacement therapy	Nicotine cessation	Nicotinic acetylcholine receptor agonist
Varenicline	Nicotine cessation	α4β2 Nicotinic acetylcholine receptor antagonist
Bupropion	Nicotine cessation	Dopamine and norepinephrine transporter blocker

[a] AMPA=α-amino-3-hydroxy-5-methyl-4-isoxazole propionic acid; FDA=U.S. Food and Drug Administration; GABA=γ-aminobutyric acid; NMDA=*N*-methyl-D-aspartate.

Source: Volkow ND, 2020.[95]

Psychedelic therapy in substance use disorder. Psychedelic therapies including LSD, psilocybin, and ibogaine have an extensive history of treatment in substance use disorders. Their activity is not fully understood, however drugs like psilocybin appear to improve executive function following treatment, better enabling people to make long term decisions, and seem to give patients greater control over their decisions. Patients have also reported improvements in self-control and their confidence in their ability to remain quit. Ibogaine, works differently, binding to kappa-opioid receptors as well as blocking NMDA (similarly to ketamine). The drug also acts on the serotonergic and nicotinic systems, which may underly its activity across a wide range of addictions. Below we highlight some of the potential mechanisms for psychedelic therapies in addiction:

- **Effects on 5-HT_{2A} and emotional/memory processing and stress**. Similar to MDD, individuals with addiction display dysfunction in the emotional (amygdala-mediated) and stress (HPA-axis mediated) systems. 5-HT_{1A} and 5-HT_{2A} receptors play a central role in the processing of emotions and related memories in the amygdala. Also increases in prefrontal cortex 5-HT_{2A} and decreases in hippocampal 5-HT_{2A} receptor expression/binding have also been shown to contribute to the pathology of disorders like depression and suicide. Considering the role of memory in drug abuse, the activity of classical hallucinogens on the amygdala and hippocampus could play a role in substance use disorder as has been observed in other disorders like PTSD which also involve emotional processing. Classical hallucinogens have also been shown to decrease amygdalar activity, which in SUD has been associated with cue-induced drug craving and anxiety.[96]

[95] Volkow ND. Personalizing the Treatment of Substance Use Disorders. Am J Psychiatry 177:2, February 2020, 113-116.
[96] de Veen BTH, et al. Psilocybin for treating substance use disorders? Expert Review of Neurotherapeutics, Volume 17, 2017 - Issue 2

- **Role of 5-HT_{2A} and 5-HT_{1A} in cognitive inflexibility and compulsivity**. Cognitive flexibility is a necessary component in order to resolve behavior associated with substance use disorder and both psilocybin and LSD have demonstrated enhanced reversal learning in rats and primates. Behavioral inflexibility is strongly modulated by 5-HT_{2A} receptors, and in the orbitofrontal cortex, have been demonstrated to facilitate reversal learning.[97]
- **NMDA activity**. Relating to ketamine and ibogaine, activity on NMDA may be at play. Glutamatergic dysregulation in the prefrontal cortex and mesolimbic regions (including nucleus accumbens and amygdala) have been implicated in the pathology of addiction, as well as the improved ability to learn new behaviors.[98]
- **Ibogaine activity on multiple receptors**. Ibogaine and its metabolite noribogaine have multiple mechanisms which may help in addiction in addition to its activity on serotonin and NMDA. The drug binds to kappa opioid receptors which may contribute to activity against opioid and stimulant addiction, while serotonergic activity is likely more applicable to alcohol. The drug also antagonizes nicotinic receptors which may mediate its effects on nicotine.[99]

Clinical data in addiction and substance use disorder. The clinical data for psychedelics in substance use disorders dates back to the 60s and 70s, where profound effects have been observed across multiple substances, in particular using classical hallucinogens (i.e. LSD studies dating to the 1950s for alcohol use disorder, as well as ayahuasca and psilocybin), as well as case reports of ibogaine and ketamine.

- **Retrospective study of Ibogaine in addiction: Schenberg et al, 2014**. Retrospective study of N=75 users of alcohol, cannabis, cocaine, and crack (72% poly drug users) who were treated with ibogaine + psychotherapy in Brazil (where ibogaine is unregulated). The study found that 61% of patients achieved abstinence and that ibogaine single treatment patients were abstinent for a median of 5.5 months, and those receiving multiple treatments for a median of 8.4 months. This was a statistically significant increase ($p<0.001$) in the duration of abstinence vs prior to the first session.[100]
- **Case series of Ibogaine in opioid and cocaine addiction: Mash et al, 2018**. Open label case series with N=191 patients addicted to either opioids (n=102) or cocaine (n=89) were administered 8-12mg/kg of ibogaine. Patients were measured for drug cravings and evaluated following treatment and at 1 month follow-up using the heroin craving questionnaire (HCQ-29) and the cocaine craving questionnaire (CCQ-29).[101]
    - **Opioids –** For the HCQ-29, negative mood state was 3.5 at baseline, reduced to 2.0 at discharge, and 1.7 at 1 month follow-up (p=0.0001), desire or intent to use was 4.1 at baseline, 2.2 at discharge, and 2.0 at 1 month (p=0.0001), lack of confidence in ability to quit using drug was 3.2 at baseline, 2.0 at discharge, and 1.6 at 1 month (p=0.0001).
    - **Cocaine** – For the CCW-29 negative mood state was 1.9 at baseline, reduced to 1.1 at discharge, and was 1.2 at 1 month follow-up (p=0.0001), desire or intent to use was 2.6 at baseline, 1.5 at discharge, and 1.6 at 1 month (p=0.0001), lack of confidence in ability to quit using drug was 2.5 at baseline, 1.9 at discharge, and 1.8 at 1 month (p=0.0003). For cocaine, the Minnesota cocaine craving score was also evaluated with a baseline for intensity, frequency, and duration of 5.5, 2.3, and 2.5, respectively, reduced

[97] Ibid.
[98] Jones, Jennifer L et al. "Efficacy of Ketamine in the Treatment of Substance Use Disorders: A Systematic Review." Frontiers in psychiatry vol. 9 277. 24 Jul. 2018
[99] Glick SD, Maisonneuve IS. Mechanisms of antiaddictive actions of ibogaine. Ann N Y Acad Sci. 1998 May 30;844:214-26.
[100] Schenberg EE, de Castro Comis MA, Chaves BR, da Silveira DX. Treating drug dependence with the aid of ibogaine: a retrospective study. J Psychopharmacol. 2014 Nov;28(11):993-1000.
[101] Mash, Deborah C et al. "Ibogaine Detoxification Transitions Opioid and Cocaine Abusers Between Dependence and Abstinence: Clinical Observations and Treatment Outcomes." Frontiers in pharmacology vol. 9 529. 5 Jun. 2018.

to 1.5, 0.3, and 1.4 at discharge, and 2.0, 0.5, and 1.2 at one month (p=0.0001).

- **Psilocybin in nicotine dependence: Johnson et al, 2014.** Open label trial of psilocybin in N=15 patients who wanted to quit smoking. Patients engaged in cognitive behavioral therapy for 4 weeks followed by psilocybin sessions at weeks 5 and 7, with an optional third session at week 13. At 6-month follow-up, 80% of patients were abstinent, with 67% at 12 months and 75% at the 2.5-year follow-up (n=12 patients evaluated). Data from a follow up study in N=95 patients is expected in the near future.[102]
- **Psilocybin in alcohol use disorder: Bogenschutz et al, 2015**. Open label study of N=10 patients with alcohol dependence. Patients completed 7 psychotherapy sessions, 3 preparatory sessions, 2 psilocybin assisted psychotherapy sessions, and 2 debriefing sessions. Abstinence was significantly increased after the first psilocybin session and largely sustained through week 36. Data from a follow-up study in N=180 patients is expected in the near future.[103]
- **MDMA in alcohol use disorder: Sessa et al, 2021**. Open-label proof of concept study (Bristol Imperial MDMA in Alcoholism study, or BIMA study) included N=14 patients with AUD to determine if MDMA is safe to use in patients post detoxification. Patients received two MDMA sessions with psychological support. At 9 months post detox, average alcohol consumption was 18.7 units per week, from 130.6 units prior to detox, which compares favorably to prior observational studies in a similar population.
- **Ketamine in cocaine use disorder: Dakwar et al, 2014 & 2017**. Three arm study of ketamine in N=8 non-treatment seeking patients with cocaine use disorder were treated with ketamine or 2mg lorazepam as an active control. The study found that ketamine significantly increased motivation to quit over lorazepam and reduced cocaine use on visual analogue scale by 60% (p=0.012). There was a significant reduction in frequency of use during the 4-week followup from 22/28 days at baseline to 5/28 days (p=0.012).[104] In a related follow-up study in N=20 non-treatment seeking patients, patients received either ketamine or midazolam as active control, patients demonstrated a 66% reduction in cocaine self-administration from baseline (p<0.0001).
- **Ketamine in opioid use disorder: Krupitsky et al, 2002**. Randomized controlled trial of ketamine in N=70 heroin dependent patients. Patients were randomized to high dose (2.0 mg/kg) vs low dose ketamine (0.2 mg/kg) plus psychotherapy with a primary endpoint of abstinence between 1 month and 24 months. At 1 month, abstinence rates for high dose were 85% vs 55% (p<0.01) for low dose and 24% vs 5% (p<0.05) at 1 year. The study also found that multiple doses were more efficacious compared to single dose at 1 year with 50% abstinence rates compared to 22% for single session patients (p<0.05).[105]
- **Ketamine in alcohol use disorder: Krupitsky et al, 1997**. Cohort study involving N=211 patients with alcohol use disorder following a 3-month inpatient detox study. One cohort of n=111 patients volunteered for ketamine-assisted psychotherapy, while the second cohort of n=100 patients were only followed up with as usual to act as a comparator cohort. 1 year abstinence rates were 65.8% in the ketamine group,

[102] Johnson MW, Garcia-Romeu A, Cosimano MP, et al: Pilot study of the 5-HT2AR agonist psilocybin in the treatment of tobacco addiction. J Psychopharmacol 2014; 28:983–992.

[103] Bogenschutz MP, Forcehimes AA, Pommy JA, et al: Psilocybinassisted treatment for alcohol dependence: a proof-of-concept study. J Psychopharmacol 2015; 29:289–299.

[104] Dakwar E, Levin F, Foltin RW, Nunes EV, Hart CL. The effects of subanesthetic ketamine infusions on motivation to quit and cue-induced craving in cocaine-dependent research volunteers. Biol Psychiatry (2014) 76:40–6.

[105] Krupitsky E, Burakov A, Romanova T, Dunaevsky I, Strassman R, Grinenko A. Ketamine psychotherapy for heroin addiction: immediate effects and two-year follow-up. J Subst Abus Treat. (2002) 23:273–83.

compared to 24% in the comparator ($p<0.01$). It should be noted that the study was not randomized and did not have a true control group.[106]

Exhibit 29. Clinical development in addiction. Clinical development in substance use disorders is among the most diverse, stretching across multiple classes of psychedelics. Like in PTSD, MDMA is among the most advanced, with **Awakn (NEO: AWKN - NR)** having completed a P2a study (the BIMA study) for safety in treating patients with alcohol use disorder and planning to move into Phase 2b. We also note that the company is planning to administer ketamine off-label through its clinic business for substance use disorder.

DemeRx (private) is currently developing a formulation of noribogaine (a longer acting metabolite of ibogaine), which is planned to enter P2 proof of concept studies for opioid use disorder and is developing a second drug candidate based on ibogaine for opioid detoxification. This second program is in collaboration with atai and has been greenlit to enter a P1/2a study for opioid detoxification. **MindMed** is also taking a similar approaching with 18-MC, a derivative of ibogaine which is non-hallucinogenic, with a P2a planned for late 2021/early 2022.

For classical hallucinogens, **Mydecine** is developing MYCO-001, a naturally extracted psilocybin for nicotine addiction. The compound is expected to move into a late-stage study in 2022, pending FDA greenlight (IND meeting 2021, potentially P3 though the FDA may require earlier stage studies). The company also has a follow-up next gen candidate, MYCO-004, which is a solubilized psilocybin delivered via patch which could reduce the duration of therapy to 2 hours or shorter. **Entheon Biomedical (OTC: ENTBF - NR)** is developing an IV formulation of DMT for multiple forms of addiction, including opioid use disorder, nicotine cessation, and alcoholism. A Phase 1/2a POC study in nicotine users is planned to initiate around YE21. **Journey Colab (private)** is developing mescaline for the treatment of alcohol use disorder with a Phase 1 study planned for 2021. **Cybin** is also developing a next-gen deuterated tryptamine product, CYB003, for alcohol use disorder, with a P1 planned for 2022.

Organization	Drug	Description	Indication	Phase I	Phase I/II	Phase II	Phase III
Awakn	MDMA	MDMA (oral)	Alcohol use disorder				
DemeRx	DMX-NB1	Noribogaine	Opioid use disorder				
Mydecine	MYCO-001	Psilocybin (oral)	Nicotine cessation				
DemeRx (w/ Atai)	DMX-1002	Ibogaine	Opioid detoxification				
MindMed	MM-110	18-MC (Non-halucinogenic ibogaine derivative)	Opioid use disorder				
Entheon Biomedical	DMT	DMT (IV)	Multiple substance use disorders				
Journey Colab	Mescaline	Synthetic mescaline	Alcohol use disorder				
Cybin	CYB004	Deuterated Tryptamine (inhaled)	Alcohol use disorder				

Source: psilocybin alpha, company reports, Maxim research

Attention deficit hyperactivity disorder (ADHD). ADHD is a neurodevelopmental disorder characterized by an ongoing pattern of inattention and/or hyperactivity-impulsivity and is associated with clinically significant impairments in executive functioning. Consequently, ADHD can have a significant social impact on patients' lives, causing disruption at school, work, and in relationships, as well as increasing risk-taking or criminal behavior. The disease is common in children but continues into adulthood in up to 65% of patients.

According to the CDC, an estimated 9.4% (6.1 million) of children and 4.4% (5.4 million) of adults in the US, are currently diagnosed with ADHD. Notably, a study conducted by the Blue Cross Blue Shield Association found that rates of ADHD diagnosis have increased by 30% over 2010 to 2017, a trend indicating the need to focus on the diagnosis and treatment for a growing number of patients.

A number of cognitive deficits exist in ADHD, but some theories propose that the top-down "executive system" is at the core, driving a deficit in behavioral inhibition, which leads to impairments to working memory, self-regulation, internalization of speech and reconstitution.

[106] Krupitsky EM, Grinenko AY. Ketamine psychedelic therapy (KPT): a review of the results of ten years of research. J Psychoact Drugs (1997) 29:165–83.

This is supported by children with ADHD displaying deficits in functions that demand executive control with reduced and more variable reaction times, and more errors made. The role of reward pathways is also an important factor for understanding ADHD, since patients display reduced levels of dopamine in the brain, producing a reward/motivation deficit. This leads patients to get easily distracted during tasks and a failure to delay gratification.[107]

Treatments for ADHD. The therapeutic landscape in ADHD largely consists of stimulant medications such as Vyvanse, Adderall, and Ritalin; drugs that are amphetamine and/or methylphenidate formulations. However, these are classified as Schedule II controlled substances which have high risk of abuse and various side effects, while also carrying black box warnings for safety. Despite these limitations, ADHD medications represent a significant market.

- **Methylphenidate**. Drugs like Ritalin and Concerta work by blocking the reuptake of dopamine and norepinephrine, while also promoting the release of additional dopamine. The increase in dopamine in the patient's brain resolves the dopamine deficit, allowing the patient to focus on tasks.
- **Amphetamine**. Drugs like Adderall and Vyvanse are amphetamines which work by increasing the release of dopamine and norepinephrine, while reuptake is a less significant mechanism.

Psychedelics in ADHD. The research of psychedelics in ADHD is fairly limited, and largely focused on subperceptual doses (microdoses) of LSD. However, there are several mechanisms by which classical hallucinogens may improve ADHD.

- **Changes to neural structures and increase neuroplasticity**. Long term exposure to psychedelics like DMT have been found to increase the thickness of the anterior cingulate cortex (ACC). This part of the brain is reduced in volume in ADHD patients and is involved in attention and cognitive control. Alterations in BDNF activity (a neurogenic factor), also may play a role, as it can lead to impairments in the dopaminergic system. Psychedelics have been demonstrated to restore BDNF levels. LSD in particular has been demonstrated to increase transcription of genes which promote neuroplasticity and increase the number and density of dendritic spines in the prefrontal cortex. Considering ADHD patients have reduced grey and white matter in the prefrontal cortex, this may be a method by which LSD exposure could help treat ADHD.
- **Impact on dopaminergic system**. While the primary activity of psychedelics is on the serotonergic system, activation of serotonin receptors may also increase concentrations of dopamine, contributing to the euphoric effect of psychedelics. In particular, LSD has a high affinity to bind to dopamine receptors.

Clinical data for psychedelics in ADHD. The data in ADHD is more limited, in particular for microdosing, which is an unproven paradigm. That said, there is some data, largely in healthy patients, as well as case reports which do show an effect:

- **Microdose LSD in healthy subjects: Hutten et al, 2020**. Placebo controlled study in N=24 healthy subjects with 3 different doses of LSD (5, 10, and 20 mcg). The study included a battery of attention, working memory, and overall executive function tests. The medium dose, 10 mcg, demonstrated an increase in subjective feelings of productivity and showed minor cognitive improvements.
- **Retrospective study of LSD in microdosers: Polito and Stevenson, 2019**. Systematic survey on N=98 microdosing participants who ingested a dose once every three days for 6 weeks and provided daily ratings of their psychological state. Patients demonstrated reductions in self-reported stress and negative mood, as well as decreased distractibility and mind wandering, while reporting increase absorption of information and general psychological functioning. Participant's initial beliefs about microdosing did not seem to be associated with the measured outcomes.

[107] Volkow, Nora D et al. "Evaluating dopamine reward pathway in ADHD: clinical implications." JAMA vol. 302,10 (2009): 1084-91.

Exhibit 30. Clinical development for ADHD. While the existing body of data for microdosing LSD in ADHD is not as robust as other indications, when taken in combination with anecdotal reports from patients using LSD microdoses to treat ADHD, and even substituting prescribed stimulants due to the improved side effect profile, more robust clinical studies are warranted. **MindMed** is developing a low-dose (sub-perceptual, commonly referred to as microdose) formulation of LSD for ADHD in adults, which is set to be evaluated in a Phase 2 study in collaboration with Maastricht University.

Organization	Drug	Description	Indication	Phase I	Phase I/II	Phase II	Phase III
MindMed	MM-290	Low dose LSD	Adult ADHD				

Source: Psilocybin Alpha, company reports, & Maxim Research

Neurodegenerative brain diseases (NBDs). NBDs are a group of diseases which are caused by the loss of structure or function of neurons. This can cause problems with movement called ataxias (e.g., Parkinson's disease) or problems with mental functioning called dementias (e.g., Alzheimer's). NBDs can occur by several different mechanisms including genetic mutation, protein misfolding, intracellular mechanisms, programmed cell death (PCD), and protein binding through transglutaminase.

Alzheimer's Disease (AD) is a slow progressing neurological disorder that is characterized by impairment of cognitive function (i.e., memory, thinking, language, and learning capacity) with irreversible brain effects. AD is the most common form of dementia in the elderly, responsible for 60% - 70% of dementia cases.[108] While the disease can often start with mild symptoms, in the advanced stages, the individual may lose control of all bodily functions, with severe brain damage leading to death. Of note, AD differs from normal age-related cognitive function decline, which is more gradual and associated with less disability.

AD is climbing in frequency with increased life expectancies worldwide; and as the sixth leading cause of death in the United States, poses a major threat to public health.[109] The majority of people with AD are diagnosed at age 65 or older. Currently, an estimated 5.5M individuals (>65 years of age; 5.7M all ages) in the United States live with Alzheimer's dementia in 2018, and this number is projected to grow to ~14M by 2050.[110]

Pathology of AD. As Alzheimer's disease progresses, atrophy of the brain occurs. Although the cause of AD is unknown, the hallmark of the AD brain is the abnormal formation of two types of lesions: extracellular amyloid plaques (αβ) and intracellular neurofibrillary tangles (NFTs). Neurofibrillary tangles occur when the tau proteins, which stabilize microtubules in the neuron, become deformed and detach from the microtubules. This causes the neuron to degenerate. This stage of the disease is accompanied by neuroinflammatory changes in the brain.[111] More specifically, microglial activation triggers inflammation, which leads to synaptic pruning and neuronal death. Taken together, these pathological features, coupled with synaptic and neuronal loss, result in cognitive decline.

Current treatments for Alzheimer's. Despite decades of intense research and investment, there remains no approved disease-modifying or curative therapies for AD. Current treatments for the disease merely offer symptomatic control, and are palliative in nature, consisting of medication, psychosocial intervention, and caregiving, though the recent approval of aducanumab may provide patients with a therapy that can slow the progression of AD.

- **Acetylcholinesterase inhibitors**. Acetylcholinesterase inhibitors include tacrine, rivastigmine (Exelon), galantamine, and donepezil (Aricept), which reduce the rate at which acetylcholine is broken down. These agents combat the decrease in acetylcholine released from the death of cholinergic neurons. There is some evidence of efficacy in mild-to-moderate AD, but there has not been any significant

[108] Brookmeyer R, et al. Alzheimers Dement. 2007; 3(3):186–191.
[109] Modern Health Talk. https://www.mhealthtalk.com/alzheimers-statistics.
[110] Alzheimer's Association. 2017 Alzheimer's disease facts and figures. Alzheimers Dement. 2017; 13(4): 325-373.
[111] Selkoe DJ and Hardy J. EMBO Mol Med. 2016; 8(6):595-608.

evidence to show delay of onset of AD in patients with mild cognitive impairment (MCI).[112]

- **NMDA receptor antagonists**. NMDA receptor antagonists, such as memantine (Namenda), work by blocking NMDA receptors, inhibiting their overstimulation by glutamate. As a result, cell death from excess glutamate levels is prevented. Drawing some caution, a small benefit has been observed using memantine in patients with moderate-to-severe AD (versus patients with mild-to-moderate AD).[113,114] Even so, the failure rate for AD drug development has been ~99%, while the failure rate of the development of disease-modifying therapies for AD has been near 100%.[115]
- **Aducanumab.** Aducanumab is an amyloid beta targeting antibody which received accelerated approval in June 2021, making it the first approval in the space since 2003. The drug faced a controversial approval process after failing to meet the primary endpoint of slowing clinical decline in one of its two P3 studies and a negative AdCom meeting citing lack of efficacy. Biogen (BIIB – NR) submitted a BLA for adacanumab in July 2020, which included data from the company's Phase 3 trials, Study 302 (EMERGE) and 301 (ENGAGE), as well as its Phase 1b PRIME study. The EMERGE study (N=1,638) met its primary endpoint, achieving a significant 23% reduction in clinical decline in Clinical Dementia Rating-Sum of Boxes (CDR–SB) scores at 78 weeks compared to placebo (p=0.01). While the ENGAGE study (N=1,647) failed to meet its primary endpoint, a subset of the data was considered to complement and support the results seen in the EMERGE study. Despite the miss on the primary, the drug did demonstrate a consistent reduction in the presence of amyloid beta across studies, which the FDA considered a surrogate endpoint for clinical benefit. While the FDA concluded that the potential benefits outweigh the risks for aducanumab, the surrounding controversy and lack of definitive efficacy data highlight the need for continued development in the space.

Psychedelics in Alzheimer's disease. In Alzheimer's disease, there also may be a role for psychedelic therapies based on the role of the serotonergic system in AD. In particular, activity on the 5-HT_{2A} receptors, which is responsible for the effects of classical hallucinogens.

- **Impact on amyloid precursor protein (APP)**. 5-HT_{2A} receptor agonism has been demonstrated in animal models to reduce the presence of amyloid beta, including chronic administration of LSD.
- **Neuroplasticity**. Aging is associated with reduced neuroplasticity and is a primary risk factor for dementia. Age-related decline in neuroplasticity may contribute to synaptic and neuronal loss in AD. BDNF in particular has been associated with cognitive impairment, neurodegeneration, and increased Aβ plaque and neurofibrillary tangle burden in patients with AD. Additionally, patients with the ε4 ApoE allele variant, who
  have more susceptibility to MCI and conversion to AD, exhibit disproportionate and progressive hippocampal atrophy, which is associated with reduced levels of BDNF and 5-HT_{2A} receptors. Increases in genes related to synaptic plasticity and increased BDNF levels have been shown to attenuate hippocampal atrophy in animal models.
- **Neuroinflammation.** 5-HT_{2A} agonism has also been shown to play a role in protecting the brain from oxidative stress and may be able to directly attenuate inflammation through the 5-HT_{2A} receptors on microglia themselves.[116]

Exhibit 31. Clinical development in Alzheimer's. Clinical development of psychedelics in Alzheimer's disease is largely focused on microdose LSD. **Eleusis** is developing ELE-LSD and has completed a P1 in healthy subjects, demonstrating that microdose LSD is safe in elderly patients. A P1b exploratory study is planned to start in 4Q21.

[112] Raschetti R, et al. PLoS Medicine. 2007; 4(11):e338.
[113] van Marum RJ. Neuropsychiatr Dis Treat. 2009; 5:237-247.
[114] Mcshane R, et al. Cochrane Database Syst Rev. 2006; 19(2):CD003154.
[115] Cummings J, et al. Alzheimers Dement (NY). 2018; 4:330-343.
[116] Glebov K, et al. (2015) Serotonin stimulates secretion of Exosomes from microglia cells. Glia 63(4):626–634

Organization	Drug	Description	Indication	Phase I	Phase I/II	Phase II	Phase III
Eleusis	ELE-LSD	Microdose LSD	Alzheimers disease				

Source: Psilocybin Alpha, company reports, & Maxim Research

Parkinson's disease (PD). Parkinson's disease is a neurodegenerative brain disease which leads to shaking (dyskinesia), stiffness, and difficulty with walking, balance, and coordination. PD is caused by the loss of dopaminergic neurons in the brain. Patients are treated with levodopa (L-DOPA) to increase dopamine concentration.

There are approximately 430,000 patients with Parkinson's Disease (PD) in the U.S. About 65% have moderate-to-severe disease and another 25% have severe PD. About 50% or 215,000 of these advanced patients experience levodopa-induced dyskinesia (LID). LID starts to take effect in ~50% of patients who have been taking L-dopa for 5-10 years, and up to 80% in those taking L-DOPA for 10-12 years.

Treating L-DOPA induced dyskinesia. LID is not fully understood, however, NMDA signaling seems to play a role. We note that in 2017, Adamas Pharmaceuticals (ADMS - NR) got its drug Gocovri (amantadine) FDA-approved for LID. Gocovri acts as an NMDA receptor antagonist and as a mild dopamine agonist and was able to reduce symptoms by 37% and is considered one of the most effective therapeutics in LID. That said, the benefit from amantadine is not thought to be long term and is only effective in a subset of patients. Furthermore, the drug carries psychiatric side effects.[117]

Psychedelics in LID. The support for psychedelics in levodopa induced dyskinesia is largely focused on ketamine, which targets NMDA. Ketamine is thought to act as a sort of "chemical deep brain stimulation" by disrupting the neuroelectric oscillations involved in LID. There is also a role of neuroplastic effects underpinning the dyskinetic effects of ketamine, with the effects being found to be dependent on BDNF in mouse models. These anti-dyskinetic effects have also been demonstrated to be long acting, remaining several weeks after treatment. This is thought to be due to neuroplastic activity, which has been demonstrated in mice where ketamine reduced mushroom spines in the striatum (the dyskinetic striatum has previously been demonstrated to display increased mushroom spine density related to L-DOPA exposure), in line with a healthy striatum.[118] Additionally, depression has a high rate of incidence in Parkinson's patients, so treatment with ketamine could have the additional benefit of treating depression as well.

Clinical data in Parkinson's disease. The clinical data in Parkinson's disease is earlier stage compared to other indications such as depression or substance use disorder, relying largely on a single case study. That said, there is evidence for other NMDA receptor antagonists like amantadine, as well as supporting preclinical data, which provides further support for development of ketamine in LID.

- **Ketamine in LID Case Study - Sherman et al, 2016**. Case report of N=5 patients with levodopa induced dyskinesia and comorbid indications for which ketamine was already approved such as pain. Patient 1 was a 64-year-old patient with PD for 20 years. He was given sub-aesthetic ketamine for chronic lower back pain exacerbated by dyskinesia. The patient continued his dosage of L-DOPA and was found to be free of dyskinesia following infusion. Patient 2 was a 62-year-old male with 10+ years of PD and received ketamine for pain exacerbated by LID. Amantadine had failed to improve LID. This patient demonstrated a substantial reduction in dyskinesia for at least 3 weeks post ketamine infusion. Patient 3 was an 84-year-old male with 12 years of PD and was treated with ketamine for severe back pain and depression. Though the patients only had minor dyskinesia, it is noteworthy that it completely subsided following ketamine infusion and there was an acute improvement in the Unified Parkinson's Disease Rating Scale (UPDRS) part III exam (28 during infusion, from 40.5 at baseline), as well as reductions to depression and pain. The final two

[117] Rascol O, et al. New treatments for levodopa-induced motor complications. Movement Disorders 2015 Volume 30, Issue 11 p. 1451-1460
[118] Bartlett MJ, et al. Preclinical evidence in support of repurposing sub-anesthetic ketamine as a treatment for L-DOPA-induced dyskinesia. Experimental Neurology 333 (2020) 113413.

patients were females aged 46 and 54, who were receiving deep brain stimulation which resolved dyskinesia. These were added more for safety than efficacy, however it is worth noting that one of the patients was able to reduce the intensity of deep brain stimulation without loss of motor benefit.[119]

Exhibit 32. Clinical development in Parkinson's disease. PharmaTher is developing ketamine for the treatment of levodopa-induced dyskinesia. A Phase 2 study is planned for 2H21 and the company intends to pursue a 505(b)2 pathway, positioning for data relatively quickly (expected 2022). The company is also developing a proprietary microneedle patch which could potentially add some additional flexibility for dosing, however this is a longer-term opportunity.

Organization	Drug	Description	Indication	Phase I	Phase I/II	Phase II	Phase III
Pharmather	Ketamine	Ketamine (IV)	Levodopa-induced Dyskinesia				

Source: Psilocybin Alpha, company reports, & Maxim Research

Central nervous system injury. Acute CNS injuries include a number of causes of nerve damage to the spine and brain including stroke, traumatic brain injury, and spinal cord injury.

Spinal Cord Injury (SCI). Spinal cord injury refers to damage to the spinal cord resulting from trauma, such as a car accident, or disease, such as cancer. The level of SCI can be grouped according to the vertebrae in which the damage occurred; the higher the injury on the spinal cord, the more dysfunction can occur. Damage to upper cervical regions of the spine can produce paralysis of the arms, trunk and legs, the patient may have difficulty breathing, controlling bowel movements, and even speaking and typically will require around the clock care. Injury to the lower cervical nerves is less severe, patients may be able to breathe on their own and speak normally but will typically have limited arm or leg movement. Thoracic spinal injuries mostly affect the legs, but high thoracic injuries typically affect the trunk as well. These patients can often move with a manual wheelchair and in some cases walk with the help of braces. Injuries to the lumbar and sacral spine will typically result in some loss of function to hips and legs. Patients with lumbar injury may need a wheelchair or braces. All spinal injuries can result in loss of bladder and bowel control.[120]

Approximately 90% of SCI cases occur due to trauma with an estimated global incidence of 250k-500k per year.[121] Healthcare costs for these patients can run as high as $30k to $60k per year.[122]

Stroke. A stroke results from an obstruction of blood flow to the brain, which often leads to loss of function and death of the affected tissue. Strokes can be classified into two categories: acute ischemic strokes (AIS) and hemorrhagic strokes. AIS is characterized by a blood clot that cuts off circulation (ischemia). A hemorrhagic stroke, on the other hand, results from the rupture of a blood vessel or irregular vascular structure. The core ischemic zone suffers from a near complete loss of blood flow, leading to substantial oxygen and glucose deprivation. Almost immediately, energy reserves are depleted, and ion gradients are impacted, severely affecting the cell's ability to function. An ischemic cascade driving neuroinflammation also occurs producing further damage (even after the ischemic event is resolved) and highlighting the importance of clearing the blockage in the immediate hours. Neuronal cell death is typically the result.

In the US, more than 795K people have a stroke each year, resulting in an estimated combined economic burden of $34B.[123] Stroke is one of the largest causes of death, responsible for as many as 140K per year, or ~5% of all deaths in the US. Since stroke often

[119] Sherman SJ, et al. Case Reports Showing a Long-Term Effect of Subanesthetic Ketamine Infusion in Reducing L-DOPA-Induced Dyskinesias. Case Rep Neurol 2016;8:53–58

[120] Levels of Injury, Understanding Spinal Cord Injury, *Shepherd Center*, http://www.spinalinjury101.org/details/levels-of-injury

[121] Spinal Cord Injury, *World Health Organization,* November 19, 2013. https://www.who.int/news-room/fact-sheets/detail/spinal-cord-injury

[122] Furlan JC, Gulasingam S, Craven BC. The Health Economics of the spinal cord injury or disease among veterans of war: A systematic review. J Spinal Cord Med. 2017 Nov;40(6):649-664. doi: 10.1080/10790268.2017.1368267. Epub 2017 Sep 6.

[123] Benjamin et al (2017) Circulation 135, e146-e603;

causes brain damage in the first minutes and hours following an incident, patients are often left with significant lasting mental, physical, and/or emotional disability. Though the severity can vary greatly based on the location of the stroke, stroke disability is significant enough to impact employability in as many as 75% of patients.[124]

Traumatic Brain Injury (TBI). Traumatic brain injury is a complex process of temporary or permanent neurological deficit resulting from primary (external impact to the brain) and secondary (molecular, chemical, and inflammatory cascade following primary injury) injury. This secondary injury is related to a cascade including release of excitatory neurotransmitters such as glutamate and aspartate that increase intracellular calcium driving degradation of cells either directly or indirectly through apoptotic processes. There is also a neuroinflammatory response which further damages the neurons.[125]

TBI incidence has increased in recent decades, with an estimated 69M patients per year and 1.3k cases per 100k people in North America. In 2013, there were an estimated 2.5M emergency department visits and 282k hospitalization due to TBI in the US.[126]

Treatments for CNS injuries. Treatments for CNS injuries vary by the type of injury, but all have limited options and often require the patient to be treated quickly after the injury in order to be fully effective.

- **Spinal cord injury**. Treatments for spinal cord injury are highly limited, focusing largely on preventing further damage such as immediate immobilization and surgery, followed by rehabilitation to improve function. Clinical studies in SCI are ongoing for agents that are either neuroprotective or neuroregenerative, however the evidence is limited. Cell therapy represents a promising option as it can replace the cells, with groups such as **Lineage Cell Therapeutics (LCTX - Buy)** demonstrating positive early results for oligodendrocyte progenitor cells.
- **Stroke**. In ischemic stroke, treatment of the disease is largely focused on thrombolysis (removing the occlusion or blood clot), which can be done with thrombolytic drugs. If done within the first few hours, it can significantly reduce the mortality and disability resulting from the stroke. Surgical removal of the clot is also an option and can be done within 6 hours but has demonstrated benefit out to 24 hours. Therapies in the clinic have had some difficulty improving the window for which stroke can be treated, including multiple fails for signaling-based cell therapy, though some newer approaches such as **Diamedica's (DMAC - Buy)** KLK1-based therapy have potential to address some of the near-term effects (through improved angiogenesis), as well as addressing the longer term impact of the ischemic cascade (inhibiting apoptosis and neuroinflammation).
- **Traumatic brain injury**. There is little that can be done to reverse the initial brain injury in TBI, so most treatment (like many other CNS injuries) focuses on preventing further injury. Primarily, this means ensuring proper oxygen supply and blood flow, as well as rehabilitation to improve management in severe cases. In terms of medication, treatment is often focused on reducing secondary damage, such as using anti-seizure medication to prevent seizures in the first week after the injury, diuretics to reduce fluid in tissue and intracranial pressure, and coma inducing medication to reduce oxygen requirements of brain tissue.

Psychedelics in CNS injury. The rationale for the use of psychedelics in CNS injury is largely based on the neuroprotective effects, and impact on neuroplasticity and

[124] Coffey C. Edward; Cummings Jeffrey L; Starkstein Sergio; Robinson Robert (2000). Stroke - the American Psychiatric Press Textbook of Geriatric Neuropsychiatry (Second ed.). Washington DC: American Psychiatric Press. pp. 601–617.
[125] Galgano, Michael et al. "Traumatic Brain Injury: Current Treatment Strategies and Future Endeavors." Cell transplantation vol. 26,7 (2017): 1118-1130.
[126] Taylor CA, et al. Traumatic Brain Injury-Related Emergency Department Visits, Hospitalizations, and Deaths - United States, 2007 and 2013. MMWR Surveill Summ. 2017;66(9):1. Epub 2017 Mar 17.

synaptogenesis, potentially helping recover past the normal window for treatment. This has been demonstrated across serotonergic psychedelics, amphetamines, and ketamine.[127]

Data in CNS injury. The data in CNS injury is largely limited to preclinical studies. However, observations regarding the impact on neuroplasticity and synaptogenesis combined with signals suggesting a neuroprotective effect and a regenerative effect do warrant further research in humans, in our view.

- **DMT in brain ischemia in rats – Nardai et al, 2020**. Pre-clinical study of ischemic brain injury in N=30 rats with induced transient middle cerebral occlusion. The treatment group was treated with DMT prior to the injury, a second group was treated with DMT in parallel with a sigma 1 receptor antagonist + DMT, and a third was used as a control treated with vehicle only. The DMT treated rats displayed lower ischemic lesion volume (p=0.0373) and better functional recovery (p=0.0084) compared to control. The DMT induced changes were hindered by the sigma 1 antagonist. In DMT treated rats, higher levels of BDNF and decreased levels of TNF-α, IL1-β, IL-6 and increased IL-10 expressions indicated anti-inflammatory potential.[128]

Exhibit 33. Clinical development in CNS Injury. **Algernon Pharmaceuticals** is among the most advanced companies developing psychedelic therapy for CNS Injuries. The company is planning to enter the clinic in FY21 with a microdose infusion of DMT (AP-188) for post-stroke recovery. The company has filed its IND for the product and is expected to enter the clinic in 2021.

There are also preclinical companies planning to enter the clinic for traumatic brain injury including **Lobe Sciences (CSE: LOBE - NR)** with a combination therapy consisting of N-acetylcysteine and psilocybin and **Wesana Health (Private)** with psilocybin alone. **MINDCURE** is also planning to enter the clinic for traumatic brain injury with a synthetic ibogaine drug candidate.

Organization	Drug	Description	Indication	Phase I	Phase I/II	Phase II	Phase III
Algernon	AP-188	Microdose DMT (IV)	Post-stroke Rehabilitation				

Source: Psilocybin Alpha, company reports, & Maxim Research

Cluster headaches. Cluster headaches are an excruciating primary headache disorder resulting in extreme pain, typically around the eye, to one side of the head and lasting 15 minutes to three hours. The attacks come in clusters which can last for weeks or months. The condition is also known colloquially as “suicide headaches” due to the severity of the pain, which has described as being worse than childbirth.[129]

Cluster headache is a rare disorder, affecting 0.1% of the population at some point in their life and 0.05% in any given year. The condition is around 4x more common in men than women, however women experience longer and more severe attacks.[130]

Pathology of cluster headaches. The precise cause of cluster headaches is not fully understood, though the condition is neurovascular, rather than vascular, being driven by effects of the trigeminal-autonomic reflex pathway, which consist of a brainstem connection between the trigeminal nerve and facial cranial nerve. The hypothalamus is thought to play a central role in the mechanism of cluster headaches, partially based on the observation that the headaches often occur in a circannual pattern, particularly during the change in clocks to daylight savings in seasons. This is postulated to suggest a link to length of daylight and an inability within the hypothalamus to synchronize with environmental light cues. Functional neuroimaging has demonstrated activity in the posterior hypothalamus during spontaneous

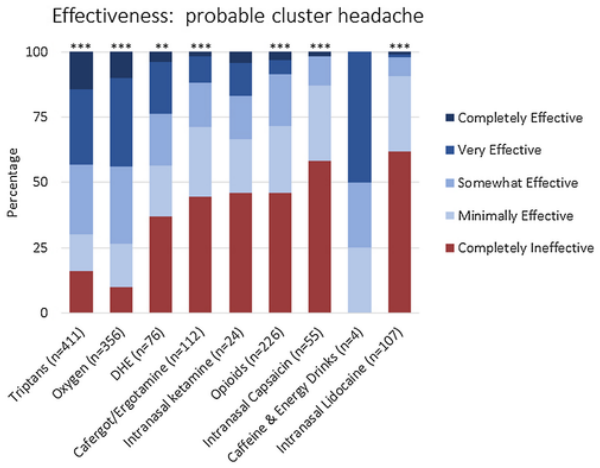
[127] Ly, Calvin et al. “Psychedelics Promote Structural and Functional Neural Plasticity.” Cell reports vol. 23,11 (2018): 3170-3182.
[128] Nordai, S et al. N,N-dimethyltryptamine reduces infarct size and improves functional recovery following transient focal brain ischemia in rats. “
[129] Weaver-Agostoni, J (2013). "Cluster headache". American Family Physician. 88 (2): 122–8.
[130] Fischera, M; Marziniak, M; Gralow, I; Evers, S (2008). "The Incidence and Prevalence of Cluster Headache: A Meta-Analysis of Population-Based Studies". Cephalalgia. 28 (6): 614–8.

cluster headaches, further supported by the therapeutic effect of deep brain stimulation on the posterior hypothalamic gray in cluster headache patients.[131]

Treatment for cluster headaches. Cluster headache treatment involves three different strategies: abortive (terminating the headache during the attack), transitional (given at the onset of a cluster to reduce frequency), and preventative (used for the duration of the cluster to reduce frequency, duration, and severity of individual attacks).

- **Abortive**. For abortive treatment of cluster headaches, the main treatments are oxygen therapy and triptans (migraine medicine). Triptans have been found to be fairly effective with oral zolmitriptan being found effective in episodic, but not chronic cluster headaches. Triptans are also available in injectable and intranasal formulations, which are well suited for cluster headache due to their rapid action. Inhalable oxygen therapy has been found to be a highly effective treatment, with 78% of patients reporting response in an RCT.
- **Transitional**. For transitional treatments, oral options are mostly limited to steroids with clinical studies demonstrating complete relief in the majority of patients and moderate relief in most other patients. Injected steroids have also demonstrated some benefit but have not been adequately studied.
- **Preventative**. The most common preventative treatments for cluster headaches are oral medications. In particular, Verapamil, a calcium channel blocker and antihypertensive drug, though no high-quality studies have been carried out. Lithium also has some use with open label studies comparable efficacy to verapamil. Melatonin has also been found to be somewhat efficacious in episodic cluster headaches, but not in chronic headaches. The only treatment with a Level A recommendation from the AHS (meaning established as effective) is sub occipital steroid injection.[132]

Exhibit 34. Effectiveness of cluster headache treatments. While there are a number of treatments available, as many as 25% of patients find no effective treatment. Oxygen appears to be the most efficacious abortive therapy, but patient access and misdiagnosis remain issues.



Source: Pearson, SM et al. 2019.[133]

[131] Wei, Diana Yi-Ting et al. "Cluster Headache: Epidemiology, Pathophysiology, Clinical Features, and Diagnosis." Annals of Indian Academy of Neurology vol. 21,Suppl 1 (2018): S3-S8.

[132] Kingston, William S, and David W Dodick. "Treatment of Cluster Headache." Annals of Indian Academy of Neurology vol. 21,Suppl 1 (2018): S9-S15.

[133] Pearson SM, Burish MJ, Shapiro RE, et al. Effectiveness of oxygen and other acute treatments for cluster headache: Results from the Cluster Headache Questionnaire, an international survey. Headache 2019;59(2):235–249.

Psychedelics in cluster headaches. Despite a number of treatment options, many cluster headache sufferers report misdiagnosis by healthcare professionals and dissatisfaction with current available therapies. Many find that nothing works for them, driving patients to seek alternative treatments, including illicit substances. Across patient support forums, psychedelic tryptamines are a recurring treatment which comes up, in particular LSD and psilocybin. Though the mechanism has not been fully elucidated it is thought that they act similarly to triptans, constricting blood vessels through activation of the serotonin receptors.

Data in cluster headaches. The data in cluster headaches is largely anecdotal, relying on reporting from patient forums and case studies.

- **LSD and Psilocybin in cluster headaches - Sewell et al, 2006**. Interview with N=53 cluster headache patients who had used psilocybin or LSD for the treatment of cluster headaches. As an abortive treatment, 85% of psilocybin patients (n=26) reported that psilocybin aborted attacks. Additionally, 52% of psilocybin patients (n=48) and 88% of LSD patients (n=8) reported cluster period termination. For extension of the remission period 95% of psilocybin patients (n=19) and 80% of LSD patients (n=5) reported extension of remission period.[134]

Short-lasting unilateral neuralgiform headache attacks (SUNHA). SUNHA is a primary headache disorder which is characterized by unilateral stabbing pain, usually around the eye which is similar to cluster headache, although occurring in much shorter attacks, ranging from five seconds to several minutes, and occurring up to 100 times per day. SUNHA is also associated with cranial autonomic systems. Similarly to cluster headache, activation of the posterior hypothalamus is implicated as is the brain stem. As for treatment, anti-epileptic medications seem to improve symptoms and lamotrigine has demonstrated some prevention and reduction in patients. The drug verapamil also has some supporting evidence for its efficacy in reducing frequency and duration of attacks, but also seems to worsen symptoms in some patients.[135] The disease is rare and incidence and prevalence are uncertain, but a study in Australia found a prevalence of 6.6 per 100k and an incidence of 1.2 per 100k.[136]

Exhibit 35. Clinical development in headache disorders. For clinical development in cluster headache, MindMed is developing LSD for the treatment of pain disorders generally but has an ongoing Phase 2 in cluster headaches through its collaboration with the University of Basel as a preventative treatment in cluster headache patients. The trial is expected to complete in 4Q23. **Ceruvia Lifesciences (private)** is developing a pipeline of compounds for headache disorders including migraine and cluster headaches. The company has a synthetic psilocybin candidate, SYNP-101, as well as a non-hallucinogenic analogue of LSD, NYPRG-101 (2-Bromo-LSD), in Phase 1 studies. Two studies on psilocybin are ongoing through universities. **Beckley Psytech (private)** is developing psilocybin in P1 as a potential treatment for SUNHA.

Organiza+D260+A254:H265	Drug	Description	Indication	Phase I	Phase I/II	Phase II	Phase III
Mindmed	LSD	LSD (oral)	Cluster headache				
Ceruvia Lifesciences	NYPRG-101	2-bromo-LSD (non-halucinogenic analogue)	Cluster headache				
Ceruvia Lifesciences	NYPRG-101	2-bromo-LSD (non-halucinogenic analogue)	Migraine				
Beckley Psytech	Psilocybin	Psilocybin	SUNHA				

Source: Psilocybin Alpha, company reports, & Maxim Research

[134] Sewell RA, Halpern JH, Pope HG Jr. Response of cluster headache to psilocybin and LSD. Neurology. 2006 Jun 27;66(12):1920-2.
[135] Levy, Andrew, and Manjit S Matharu. "Short-Lasting Unilateral Neuralgiform Headache Attacks." Annals of Indian Academy of Neurology vol. 21,Suppl 1 (2018): S31-S38.
[136] Williams MH, Broadley SA. SUNCT and SUNA: clinical features and medical treatment. J Clin Neurosci. 2008 May; 15(5):526-34.

Exhibit 36. Summary* of clinical development in psychedelics.

	Company/Group	ticker	Drug	Description	Phase	Timing*	clinicaltrials.gov
Depression	Compass Pathways	CMPS	COMP360 (psilocybin)	Treatment-resistant depression (TRD), Breakthrough Therapy status, bipolar depression	II	mid-2021	NCT03775200
	Usona Institute	n/a	Psilocybin	For major depressive disorder (MDD), Breakthrough Therapy status	II	Complete	NCT03866174
	Seelos Therapeutics	SEEL	SLS-002 (ketamine)	Acture suicidal ideation and behavior (ASIB) in major depressive disorder (MDD) (open-label portion complete 5/17/21)	II	4Q22	NCT04669665
	Cybin	OTC: CLXPF	CYB001, (psilocybin, sublingual)	Major depressive disorder (MDD), also have CYB003 (deuterated tryptamine) and CYB004 (discovery)inhaled deuterated tryptamine for treatment resistand psych/neuro conditions, P1s planned	II	planned	n/a
	Atai Life Sciences	ATAI	Portfolio of programs	Strategic investor in CMPS, some program/companies are note in the tables below (targeting TRD, schizophrenia, anxiety, OUD, TBI, PTSD)	I/IIs	Ongoing, planned	n/a
	Field Trip Health	TSX: FTRP, OTC: FTRPF	FT-104 (5-HT2A agonist molecule)	Depression	I	planned, 2021	n/a
	GH Research	GHRS	5-MeO-DMT (short acting DMT)	undisclosed indication	preclin	n/a	n/a
	Eleusis	private	ELE-Psilo+ (combination)	Adjunctive therapy for major depressive disorder (MDD)	I/II	planned, 1Q22	n/a
	Eleusis	private	ELE-Ket+ (combination)	Adjunctive therapy for major depressive disorder (MDD)	I/II	planned, 4Q21	n/a
	Bexson Biomedical	private	Sub-cut ketamine wearable pump	Depression (also post-op pain, compled pain, cancer pain)	preclin	n/a	n/a
	BetterLife Pharma	OTC: BETRF	TD-0148A (non-hallucinogentic LSD derivative, 'bromo-LSD')	Treatment-resistant depression (TRD), (also migraine)	preclin	n/a	n/a
	PharmaTher	CSE: PHRM, OTC: PHRRF	Ketamine, KETABET	Depression	II	planned, 4Q21	n/a
	Lophora	private	LPH-5 (5-HT2A agonist)	Treatment-resistant depression (TRD)	I	planned, 2022	n/a
Anxiety	MAPS	n/a	MDMA	Anxiety associated with life-threatening illness	II	Complete	NCT02427568
	MAPS	n/a	MDMA	Social anxiety in autistic adults	II	Complete	NCT02008396
	MindMed	MNMD	LSD	Anxiety disorder	IIb	planned 2H21	NCT03153579
	Cybin	OTC: CLXPF	CYB004 (deuterated tryptamine, inhaled)	Generalized anxiety disorder	preclin	n/a	n/a
	Diamond Therapeutics	private	low-dose Psilocybin	undisclosed anxiety disorders	I	planned, 2021	n/a
PTSD	MAPS	n/a	MDMA	PTSD, Breakthrough Therapy Status, 1st P3 completed 1H21)	III	4Q21	NCT04077437
	ATAI	private	Portfolio of programs	Strategic investor in CMPS, some program/companies are note in the tables below (targeting TRD, schizophrenia, anxiety, OUD, TBI, PTSD)	preclin	n/a	n/a
	EmpathBio	private	MDMA-derivative	Associated with ATAI Life Sciences, discovery stage	discovery	n/a	n/a
	Seelos Therapeutics	SEEL	SLS-002 (ketamine)	Acture suicidal ideation and behavior (ASIB) in major depressive disorder (MDD)	II	4Q22	NCT04669665
Substance abuse	Awakn Life Sciences	NEO: AWKN	MDMA	Alcohol use disorder (AUD)	II	planned	n/a
	DemeRx	private	Noribogaine	Opioid use disorder (OUD), joint venture with ATAI Life Sciences (private)	I	planned	n/a
	MindMed	MNMD	non-hallucinogenic ibogaine derivative	Opioid withdrawal and potetnial in OUD	II	1Q22	NCT04292197
	Entheon Biomedical	CSE: ENBI, OTC: ENTBF	DMT (intravenous)	undisclosed substance abuse disorders	I	planned, 3Q21	n/a
	Journey Colab	private	Synthetic mescaline	Alcohol use disorder (AUD)	I	planned, 2021	n/a
	Gilgamesh Pharmaceuticals	private	GM-300X (ibogaine analogue)	Opioid use disorder (OUD)	preclin	n/a	n/a
	Alvarius	private	5-MeO-DMT	Cocaine use disorder	preclin	n/a	n/a
Eating disorders	MAPS	n/a	MDMA	Eating disorders (anorexia nervosa, binge-eating)	II	1Q22	NCT04454684
	Tryp Therapeutics	OTC: TRYPF	TRP-8802 (Psilocybin, oral)	Prader-Willie Syndrome hyperphagia, also fibromyalgia	preclin	n/a	n/a
	NeonMind Biosciences	CSE: NEON, OTC: NMBDF	Psiliocybin	weightloss	preclin	n/a	n/a
CNS-based	PharmaTher	CSE: PHRM, OTC: PHRRF	Ketamine, KETABET	Parkinson's disease, depression (IND P2 planned), ALS (preclin)...microneedle patch delivery (discovery/preclin)	II	planned, 2H21	n/a
	MindMed	MNMD	LSD	Attention deficit hyperactivity disorder (ADHD)	II	planned, 2H21	n/a
	MindMed	MNMD	LSD	Pain indication(s)	II	planned, 2022	NCT03781128
	Eleusis	private	ELE-LSD (low dose LSD)	Alzheimer's disease	I	planned, 4Q21	n/a
	Algernon Pharmaceuticals	OTC: AGNPF	AP-188 (Intravenous DMT)	Ischemic stroke, post-stroke rehabilitation	I	planned, 2021	n/a
	Gilgamesh Pharmaceuticals	private	GM-200X (non-hallucinogenic 5-HT2A agonist)	Attention deficit hyperactivity disorder (ADHD)	preclin	n/a	n/a
	Wesana Health	private	Psilocybin	Traumatic brain injury	preclin	n/a	n/a
	Lobe Sciences	CSE: LOBE, OTC: GTSIF	Psilocybin and NAC (N-acetylcysteine) combo	Mild traumatic brain injury (TBI),also PTSD	preclin	n/a	n/a
OTHER	MindMed	MNMD	DMT	undisclosed indication	I	2022	NCT04353024
	MindMed	MNMD	LSD and MDMA	undisclosed indication	I	2022	NCT04516902
	Perception Neurosciences	private	PCN-101 (R-ketamine, 'arketamine')	Associated with ATAI Life Sciences, Australian registered P1 healthy subjects vs esketamine	I	3Q21	ACTRN12620000226909 (Austrailia)
	Beckley Psytech	private	5-MeO-DMT	undisclosed indication	I	planned, 2021	n/a
	Beckley Psytech	private	Psilocybin	Short-lasting unilateral neuralgiform headache attacks (SUNHA)	I	planned, 2021	n/a
	Sacred Medicines	private	Ayahuasca tea	undisclosed indication , group therapy setting	I	planned	n/a
	CaaMTech	n/a	psychoactive compounds	Preclin program with National Institute on Drug Avuse Intramural Research Program to determine which compounds should move to human trials			
	Field Trip Health	TSX: FTRP, OTC: FTRPF	FT-104 (5-HT2A agonist molecule)	undisclosed indication	I	TBD	n/a
	Enveric Biosciences	ENVB	MagicMed acquired in May 2021, portfolio of psychedelics, as well as CBD/cannibinoids in Everic pipeline	Undisclosed indication(s), potential cancer-related PTSD, see Enveric pipeline for CBD/cannabinoid programs	tbd	TBD	n/a
	Psybio Therapeutics	TSX: PSYB, OTC: PSYBF	Portfolio of tryptamine-derived drugs, bacterial biosynthesis	Includes psilocybin, norbaecystein. Synthesis platform	preclin	n/a	n/a
	Viridia Life Sciences	private	DMT	undisclosed indication, Launched by ATAI Life Sciences	preclin	n/a	n/a
	GH Research	GHRS	5-MeO-DMT (short acting DMT)	undisclosed indication	preclin	n/a	n/a
	Small Pharma	private	Tryptamine compounds	undisclosed indication	preclin	n/a	n/a
	Psilera Bioscience	private	psychedelic analogues	undisclosed indication	preclin	n/a	n/a
	Delix Therapeutics	private	Psychoplastogens (non--hallucinogenic compounds)	Lead is Tabernanthalog (TBG, ibogain analogue), undisclosed indications	preclin	n/a	n/a
	Bright Minds Biosciences	CSE: DRUG, OTC: BMBIF	5-HT2C, 5-HT2A (mono, combo)	5-HT2C: undisclosed seizure disorder, opioid withdrawal, binge eating disorder, and Alzheimer's disease. 5-HT2A for depression and PTSD	preclin	n/a	n/a
	Mindset Pharma	CSE: MSET, OTC: MSSTF	Portfolio of synthesized 5-HT2As	Announced lead candidate, awaiting inidication selection, as well as additional lead compounds for preclin development, undisclosed indications	discovery	n/a	n/a
	Tactogen	private	Portfolio of synthesized entactogens (MDMA-like, others)	developing portfolio,select lead for preclin in 2021	discovery	n/a	n/a
	EmpathBio	private	MDMA-derivative	Associated with ATAI Life Sciences, discovery stage	discovery	n/a	n/a
	Entheogenics	private	unknown	intended indications not clear	n/a	n/a	n/a

Source: Psilocybin Alpha, company reports, & Maxim Research **We note that this list is non-exhaustive, there may be other small companies in the space, academic institutions, or new entrant which are not included in this summary*

Important Considerations

Clinical Trial. Psychedelic medicine has been investigated in clinical studies since the mid-1900s, though the renewed interest in clinical development is relatively recent. Due to the highly variable nature of psychedelic medicine and the mental health indications which make up the bulk of clinical investigation, it is important to ensure clinical studies are sufficiently rigorous, which was an issue with many of the early studies. Taking the lessons learned from earlier psychedelic studies and advancements in the understanding and treatment of mental health disorders, there are several key challenges and considerations which must be accounted for when designing a clinical trial for psychedelic medicine.

- **Washout periods**. Particularly in depression, the decision to include a washout period is an important one, as there is some evidence suggesting drugs like SSRIs (which target serotonin) or monoamine oxidase inhibitors may impact the potency of classical psychedelics. This has driven companies like Compass Pathways to include a washout period in their Phase 2b study for antidepressants. The risks and benefits of a washout period need to be balanced, as patients can experience worsening of depression, as well as antidepressant discontinuation syndrome, which includes flu-like symptoms, insomnia, nausea, imbalance, sensory disturbances, and hyperarousal. [137]
- **Placebo blinding**. Placebo blinding and selection is another challenge for designing clinical trials for psychedelics (at least at macrodose levels) due to the potent perceptual effects, patients and investigators are likely to know relatively quickly whether they're in a placebo group or a treatment group. Additionally, placebo control is particularly important within psychiatric indications where a robust placebo response is common within studies. It is important to note that this issue may not be as significant as it initially appears, given that in double blind studies on antidepressants, 78% of patients and 87% of clinicians have been able to accurately guess which group the patient belongs to.[138] Within psychedelic medicine, an ideal control would be an active placebo, which lacks antidepressant activity, but mimics subjective effects of a study drug. Earlier studies have used a variety of active placebos such as first-generation antihistamines, methylphenidate, and niacin, as well as sub-perceptual doses of active drug, but this has the potential to reduce the effect size since microdoses may still have efficacy in a given indication.
- **Psychological support**. In psychedelic-assisted psychotherapy, the psychiatric support given to the patient is an important component of the therapy, and a potential additional source of variability in clinical trials. Generally, studies in psychedelic medicine have therapists in a supportive, but non interventional role, which minimizes the variability within the psychedelic sessions. However, there is also the importance of the preparatory and integrative sessions, which have a much higher degree of therapist intervention. These are minimized by the need for therapist training to administer the drug. The number of sessions, length of sessions, and structure of integrative and preparatory sessions is also likely to vary between different investigators**.** Set and setting is also important when considering the patients comfort undergoing a potent psychedelic experience. To manage this, a number of approaches exist from minimizing the number of sites conducting the study, to exercising direct control by running the study at a company's own, purpose build centers, such as is planned by Field Trip and Awakn, who have constructed or acquired (and plan to continue acquiring) commercial dosing clinics for ketamine which can be repurposed for their own clinical trials. [139]

[137] O'Donnell et al. Psilocybin for depression: Considerations for clinical trial design. Journal of Psychedelic Studies, Volume 3: Issue 3, 01 Sep 2019, 269–279.
[138] Rabkin, J. G., Markowitz, J. S., Stewart, J., McGrath, P., Harrison, W., Quitkin, F. M., & Klein, D. F. (1986). How blind is blind? Assessment of patient and doctor medication guesses in a placebo-controlled trial of imipramine and phenelzine. Psychiatry Research, 19(1), 75–86.
[139] O'Donnell et al. Psilocybin for depression: Considerations for clinical trial design. Journal of Psychedelic Studies, Volume 3: Issue 3, 01 Sep 2019, 269–279.

- **Attrition**. Patients who undergo a perceptually and psychologically uneventful session are likely to assume they are on the control and feel a sense of disappointment, which may reduce their motivation to attend follow-up sessions. This is a particular concern in protocols which require multiple dosing sessions, which can run for several hours (ketamine is only ~2 hours, while psilocybin is often 6 or longer). One way to reduce this is to offer an open label extension at the end, however this confounds long term follow-up and between group comparisons. Crossover designs have also been a popular approach, used by Ross and Griffiths in cancer associated anxiety and depression, where the patients receive drug or placebo in one blinded session, and then the other in a second blinded session. Regardless of the approach, it is generally recommended that all patients in the study are able to at some point undergo treatment with active drug.[140]

Regulatory. On the regulatory side, many substances of interest for psychedelic therapy are considered schedule 1, meaning the drug has a high potential for abuse and no accepted medical use. This includes drugs such as LSD, psilocybin, mescaline, DMT, and MDMA. Ketamine is a schedule 3 drug, which is considered to have a lower abuse potential. Interestingly, cannabis and tetrahydrocannabinols (THC) are considered schedule 1 substances, despite cannabis being available for medicinal use in many jurisdictions and THC (its active ingredient) being approved for the treatment of AIDS-associated anorexia and chemo associated nausea under the name dronabinol, and a cannabis extract approved under the name Sativex for relief of multiple sclerosis and neuropathic cancer pain.

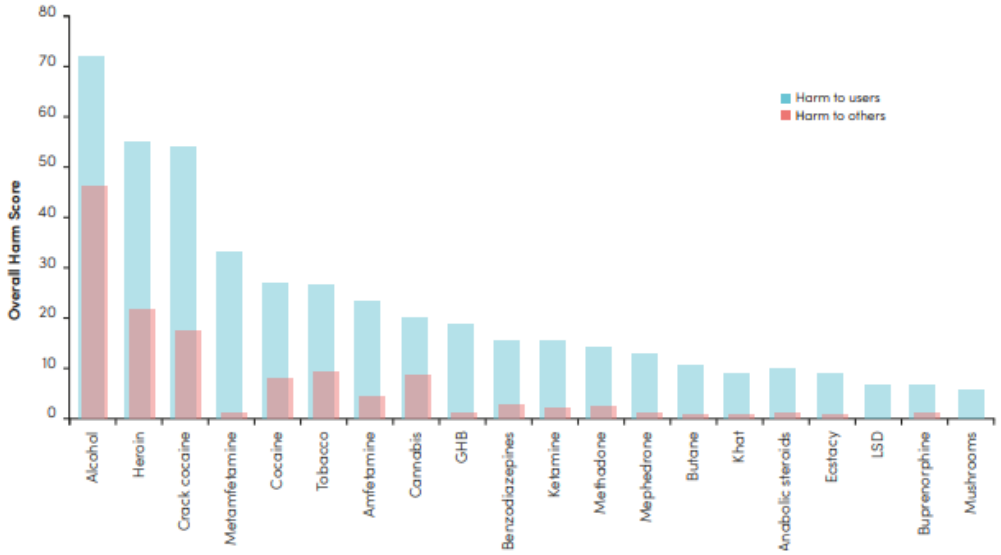
- **Researching controlled substances**. The first consideration is how companies can actually obtain permission to research a controlled substance. In the US, this means gaining a schedule 1 license from the DEA in a process which can take years, though the DEA has recently taken steps to streamline the process through an online web portal, and we note that in late 2017, there were more than 590 researchers registered to study Schedule 1 drugs. There are also storage requirements, the DEA requires controlled substances to be kept in a safe room with only one entrance and exit, with regular weight measurement to ensure all of the substance is accounted for. Considering the challenges in the US, many psychedelic research has been conducted by companies north of the border. While still heavily controlled, Canada has historically been among the more progressive health regulatory/investment environments with emerging treatments (think the cannabis industry), and Canada has become a hotbed for psychedelic research as well, including approval of compassionate use protocols for patients to be treated with psychedelics for depression/anxiety associated with terminal disease. Decriminalization has also started to progress, including for psilocybin in DC and Oregon. Oregon took this a step further, legalizing psilocybin for the treatment of depression related to terminal illness.
- **Public support for research**. Considering the stigma and illegality surrounding psychedelics, public support remains a consideration, however it appears to be increasing. In 2017, 63% of Americans supported allowing clinical research with psilocybin, while 12% opposed and 25% probably would not support it.[141] This isn't too far off from current support for cannabis legalization, which sits around 68% according to Gallup, which is an encouraging sign. Politics also plays a role. In 2019, Representative Alexandria Ocasio-Cortez proposed a measure to overturn a longstanding rider from 1996 which prohibits the use of federal funds for "any activity that promotes the legalization of any drug or other substance in Schedule I," which failed 91-331 in the House, with nearly all Republicans and the majority of Democrats voting against it. This seemingly commonsense measure would have made it easier to support research into psychedelics. But politically, there seem to be signs of

[140] O'Donnell et al. Psilocybin for depression: Considerations for clinical trial design. Journal of Psychedelic Studies, Volume 3: Issue 3, 01 Sep 2019, 269–279.
[141] Percentage of U.S. adults who supported allowing researchers to conduct medical trials with psilocybin as of 2017. YouGov; June 2 to 5, 2017.

shifting perception as well, with the Texas State House of Representatives overwhelmingly approving a bill to study psilocybin in veterans with PTSD.

- **Reimbursement and expense**. Pricing and reimbursement make up another important factor for gaining adoption in the market. Current medications for psychiatric diseases are cheap and often generic. For example, generic SSRIs can run $50 a month, and even brand medication like Celexa only costs $100. Spravato, which is considered the first psychedelic medicine, costs between $33,000 and $49,200 per year. This high cost was determined by ICER (Institute for Clinical and Economic Review) in 2019 to result in an incremental cost of $198k per quality adjusted life year in treatment resistant depression, above the commonly accepted $100k-$150k cost-effectiveness threshold range.[142] This led to initial challenges with securing reimbursement and market penetration. That said Janssen released a subsequent analysis suggesting that when factoring the response, remission, and relapse rates, Spravato produces an additional savings of $20k per patient over oral antidepressant alone and that these costs triple when taking lost productivity into account. It appears that Spravato has since gained increased acceptance among payers. Additionally, this math is not going to break down the same for every drug, and every indication, if one looks at MAPS' analysis of MDMA-assisted psychotherapy in PTSD, there is a net cost per quality adjusted life year of only $26.4k in the first year, and the direct medical costs actually reach a break even after 3.1 years, and produce a net savings of $36k per patient over 10 years, and $103k over 30 years.[143]

Exhibit 37. Safety of different drugs of abuse. One of the key reasons for the challenges associated with psychedelic medicine is the illegality and associated perceived harm of the drugs. However, the data suggests that the harm associated with these drugs is much less than their scheduling implies. A multicriteria analysis was conducted across 20 drugs across 16 criteria (9 relating to harm to the user, and 7 relating to harm to others). The criteria were weighted by importance and drugs were then scored out of 100 for total harm. This analysis found that drugs which are considered schedule 1 such as LSD, MDMA (ecstasy), and psilocybin (mushrooms), were among the least harmful to the user, coming behind drugs which are much less regulated such as tobacco, cannabis, amphetamine, cocaine, and alcohol.[144]



[142] Agboola et al. The Effectiveness and Value of Esketamine for the Management of Treatment-Resistant Depression. J Manag Care Spec Pharm. 2020;26(1):16-20.
[143] Marseille E, Kahn JG, Yazar-Klosinski B, Doblin R (2020) The cost-effectiveness of MDMA-assisted psychotherapy for the treatment of chronic, treatment-resistant PTSD. PLOS ONE 15(10): e0239997.
[144] Nutt et al. Drug harms in the UK: a multicriteria decision analysis. The Lancet Volume 376, Issue 9752, P1558-1565, November 06, 2010

Source: Nutt et al. 2010

Dosing and administration. Delivery of psychedelic drugs is another challenge, in particular for classical hallucinogens, which have long durations of action (psilocybin can last upwards of 6 hours and LSD upwards of 8, when taken orally). Even MDMA and Ketamine, which have shorter durations, can last for 4 and 2 hours. This creates challenges of how and where to actually administer the drug. If you take Spravato as an example, the drug can only be distributed through the company's REMS (risk evaluation and mitigation strategy) program. The drug has to be delivered in an inpatient or outpatient setting which has been certified under the REMS program, and the patient is required to be observed for 2 hours. While 2 hours is still a logistical challenge, it's more of a speed bump when compared to some of the other therapies in development. The potential solutions to this can be separated into building out the logistics and modifying the dosing form (or the drug itself) to have a more desirable PK profile.

Logistics side. In order for the psychedelic industry to take off, the infrastructure to actually dose patients needs to be in place. Centers which have therapists on staff and can provide a patient with a safe and comfortable setting to receive treatment for several hours. This is one factor which may have impeded Spravato's initial launch, the requirement for third party clinics and psychiatry centers to certify and figure out how to administer the drug. For the next wave of psychedelic therapies, several companies have begun to set up dedicated infrastructure, including companies like **Field Trip**, **Awakn**, **Novamind (CSE: NM - NR)**, and **Eleusis**, who have their own dedicated ketamine-infusion centers for psychiatric therapy (though **Field Trip** is actually opening a psilocybin truffle center in Amsterdam).

Psychiatrist training is also an important factor. Companies which have their own clinics can train therapists to administer the drugs, exercising further control over outcomes. Other companies are focused more on this side. **TheraPsil (private)** is focused on training psychiatrists to administer therapeutic psilocybin in Canada under the exemption for patients with Terminal illness.

Exhibit 38. Summary of clinical infrastructure companies.

Organization	Ticker	Market	Description
Field Trip	TSX: FTRP	Ketamine and Psilocybin clinics	Fieldtrip has several ketamine clinics operating in the US and Canada and a location in Amsterdam for administration of psilocybin truffles. While the company has its own pipeline, it is also leveraging its clinic platform to support other pychedelic clinical trials and eventually treat patients with psychedelic medicine on approval.
Eleusis	Private	Ketamine clinics	Eleusis acquired Kalypso wellness centers in late-2020, bringing several ketamine clinics in house, which has potential synergies for their drug development pipeline.
Novamind	CSE: NM	Ketamine clinics and psilocybin retreats	Novamind has severel clinics and clinical research sites operating in the North America, Central America, and Amsterdam focused on ketamine infusion and Spravato, as well as psilocybin retreats in legal jurisdictions. The company intends to expand to other psychedelics as they reach approval.
Braxia	CSE: BRAX	Ketamine clinics	Braxia has clinics operating in Canada for delivery of ketamine infusion and Spravato.
Numinus	TSX: NUMI	Ketamine clinics	Numinus operates clinics for ketamine assisted psychotherapy in Canada, and intends to expand to other psychedelics as they reach approval or can obtain special access. Additinoally, the company is conducting compassionate access studies for MDMA and psilocybin at its Vancouver site.
Awakn	NEO: AWKN	Ketamine clinics	Awakn is operating a ketamine clinic in the UK, with plans to expand into continental europe.
Pychadelic Insights	Private	Psilocybin experiences	Psychedelic Insights offers guided psilocybin truffle sessions at its location in Amsterdam.
ATMA Journey Centers	Private	Psilocybin clinics	Operates psychedelic therapy sessions and retreats in Canada and Costa Rica for delivery of psilocybin under Health Canada exemptions as well as Ayahuasca, Ibogaine, and Huachuma retreats in Costa Rica.

Source: Psilocybin Alpha, company reports, & Maxim Research

Drug delivery. Another solution to minimize the logistical challenge is through improved drug delivery. The duration of action of any drug is often dependent on its method of delivery. For the most part, psychedelics are traditionally delivered via oral administration, with the exception of ketamine, which is often intravenous, or esketamine, which is a nasal spray. For drugs like psilocybin, LSD, and even MDMA, the optimal dosage form is one with rapid onset and reduced duration, reducing the total time commitment for the patient and the treatment center. Something like the 2-hour requirement for Spravato represents a target since there is already expanding infrastructure for the drug.

Exhibit 39. Summary of drug delivery companies.

Organization	Ticker	Technology	Description
Cybin	NEO: CYBN	Psilocybin oral film	Cybin's oral thin film formulation of psilocybin is absorbed into the bloodstream through the mucous membranes in the mouth. This could potentially reduce onset of action by bypassing first pass metabolism, and also potentially require a lower dose, further reducing the total duration. The company is also developing pipeline candidates using intranasal and oral disolving tablet delivery.
Mindmed	MNMD	LSD-termination technology	Mindmed is developing an LSD-termination technology, essentially allowing the treating physician to end the effects at will.
Eleusis	Private	IV infusion of Psilocin	Eleusis is pursuing an infusion strategy, using the active metabolite of psilocybin, psilocin. By using infusion, as opposed to oral, the company is able to more precisely control duration and conentration and terminate treatment relatively quickly by stopping the infusion.
Mydecine	NEO: MYCO	Transdermal delivery of psilocin analogue	Mydecine is developing a lipid-solublized formulation of psilocin for transdermal delivery. The compound, MYCO-004, has the poptential for substantially reduced duration.
PharmaTher	CSE: PHRM	Microneedle patch	Pharmather is developing a proprietary microneedle patch which uses a hydrogel to enable prcised control of delivery. While this could be used to reduce duration of treatment by having a more rapid bolus, it also has potential applications for non-clinical microdose applications, enabling a lower concntration of drug to be delivered over an extended duration.
Stilo Wellness	Private	Psilocybin nasal spray	Stilo wellness is developing a metered dose nasal spray technolgoy for psilocybin, largely for the consumer microdose market in Jamaica.
Lobe Sciences	CSE: LOBE	Nasal Mist	Lobe is developing a nasal mist delivery device for multiple psychedelic medicines. The device delivers the drug to the olfactory bulb and Lobe intends to combine the psychedelic with other compounds to create memory odor imprint pairing.

Source: Psilocybin Alpha, company reports, & Maxim Research

Modified drug substance, analogues, and novel chemicals. Besides delivery, another way to impact the PK curve, is to modify the substances themselves, or produce next-generation psychedelics. There's no reason that the classical psychedelic drugs derived/discovered in the early 20th century, are necessarily the best candidates for therapeutic treatment. This process takes much longer as companies cannot rely on the existing wealth of data for the drugs to expedite the clinical pathway, but it also has several advantages since you can choose the compounds which have the best properties inherently or modify the drugs to have those properties, rather than having to create a treatment infrastructure to fit the drugs.

Exhibit 40. Summary of companies developing novel compounds.

Organization	Ticker	Drug	Description
Cybin	NEO: CYBN	Deuterated tryptamines	Cybin is using deuteration to increase the molecular weight of compounds, in particular DMT. This increase in molecular weight should slow metabolism of the drug, allowing for a longer duration of action.
Fieldtrip	TSX: FTRP	FT-104	FT-104 is a drug which produces psilocybin-like effects, but has a shorter duration of action. The precise duration still needs to be tested, but the elimination half life could be as much as 3x faster.
Mindset	CSE: MSET	Multiple families of psilocybin and DMT analogues	Mindset is producing three families of psilocybin analogues with different properties. The first is deisgned to be-pilocybin like, while Family 2 has stronger receptor activation with reduced half life. The third family has a longer half life, and is designed for microdose applications. The company is also developing a family of DMT/5-MeO-DMT analogues with extended half lives (shorter than psilocybin).
Mydecine	NEO: MYCO	MYCO-003/MYCO-004	MYCO-003 is a combination of a psilocybin-like compound and an entactogen (MDMA-like), which is being evaluated for PTD to combine the beneficial effects of both classe. MYCO-004 is a lipid solublized formulation of a psilocin analogue for transdermal delivery. The analogue is designed for shorter duration of action compared to psilocin, as well as shelf stability.
Enveric	ENVB	Psybrary	Enveric, through its acquisition of MagicMed, acquired a library of thousands of psychedelic derivatives and analogues known as the Psybrary.

Source: Psilocybin Alpha, company reports, & Maxim Research

Manufacturing. Another important factor to consider is the actual production of the active drug. The difficulty of this varies greatly between drugs. Synthetic compounds like MDMA, LSD, and ketamine are all fairly straight forward to chemically synthesize being that they were developed by pharmaceutical companies. Even DMT, which is a naturally occurring compound, can also be chemically synthesized with relative ease. Psilocybin has proven slightly more difficult, with many companies relying on naturally extracted psilocybin.

Natural extraction does have its drawbacks, extraction from mushrooms is a lengthy process, which requires growing, harvest, extraction, and purification. Overall, this can be a resource-intensive process with a large carbon footprint and QA/QC issues. It is also expensive and takes weeks to months for a single production batch. However, it avoids IP constraints around synthetic processes. Chemical synthesis represents an attractive alternative due to stability and consistency, **Compass Pathways** for example, has their own patented chemical synthesis process, which produces a high-quality pharmaceutical grade psilocybin, as does **Mindset**. The drawback to chemical synthesis is it can be expensive to set up or acquire inputs, is often time consuming, and produces a large quantity of chemical waste. The Compass process relies on 4-hyrdoxyindole as a precursor, which currently costs $224 per gram.

Biosynthesis has emerged as an attractive alternative, with potentially lower production/setup costs since it's a 1 pot autocatalytic process. Similar to the cannabinoid space, yeast-based approaches have emerged as an initial target for biosynthesis. Yeast-based approaches take in the range of 4-10 days to produce a batch and avoid many of the environmental concerns such as toxic solvents and catalysts. However, bacterial synthesis, such as the method being developed by **PsyBio**, may have further advantages over yeast due to increased stability during the reaction process and a shorter time of production (2-4 days).

Exhibit 41. Summary of companies developing psychedelic manufacturing techniques.

Organization	Ticker	Technology	Description
PsyBio	TSXV: PSYB	Bacterial biosynthesis of tryptamines	PsyBio Therapeutics is exploring the production of biosynthesised psilocybin and other psychoactive molecules. The process involves the use of genetically modified bacteria (such as E. coli) as part of a patent-pending process.
Mindset	CSE: MSET	Chemical synthesis of psilocybin	Mindset has a patent pending synthesis process for Psilocybin which has fewer steps and lower cost inputs, making it among the most cost effective processes in development. A 1 kg GMP batch through a CDMO is expected to be complete by YE21.
MINDCURE	CSE: MCUR	Synthetic ibogaine manufacturing	MINDCURE has a proprietary synthesis process for producing ibogaine, which could position it as one of the first suppliers for research and eventual clinical use of ibogaine. Ibogaine is a naturally derived psychedelic extracted from the iboga plant, which is endangered leading Gabon (one of the major regions to which iboga is indigenous) to ban its export.
Psygen	Private	Chemical synthesis of multiple psychedelics	Psygen manufactures synthetic psychedelic drugs, which they provide to organisations conducting clinical research. The company's pilot project is licenced to manufacture psilocybin, MDMA, LSD, DMT, mescaline and 2C-B. The company has manufactured 420g of psilocybin and 60g of DMT with sales pending and serves 15 active clients.
CB Therapeutics	Private	Yeast bioynthesis of tryptamines	CB Therapeutics has a yeast based biosynthesis process for production of pilocybin, psilocin, and analogues with patent protection
Octarine Bio	Private	Yeast bioynthesis of tryptamines	Octarine Bio has a yeast-based biosynthesis method to produce a range of natural and novel cannabinoid and psilocybin derived moliclues to improve PK and therapeutic properties.
Mydecine	CSE: MYCO	Cultivation of psilocybin mushrooms	Mydecine has a cultivation facility in Jamaica and has a schedule 1 Dealer's License at its Canadian R&D facility. The schedule 1 license allows the company to import, export, and cultivate psilocybin muhrooms.

Source: Psilocybin Alpha, company reports, & Maxim Research

Intellectual property. IP is important in psychedelics. The issue is similar to the cannabinoid space, where the classical compounds such as psilocybin, LSD, MDMA, ketamine are all in the public domain, making them essentially generic drugs. This means these drugs cannot be granted composition of matter patents, limiting IP protection to use, formulation, and process patents. This has driven a scramble for IP protection, to justify the significant expense required for clinical development, including some unusual filings, from holding hands to use of soft furniture. Alternate strategies for marketing exclusivity are also possible such as orphan exclusivity, unique methods of delivery, combination therapies or novel formulations such as cocrystallization, deuteration, or analogues. One thing to keep in mind for the enforceability of IP, in order to be considered for a patent, the invention must be novel, useful and non-obvious.

- **Proprietary Delivery Methods.** As mentioned before, proprietary delivery methods are a common strategy to improve the properties of psychedelics. This strategy was also common in the CBD space. This can include patches, nasal sprays, oral thin films, sublingual tablets, etc.
- **New chemical forms**. Another strategy is to use either a unique form of matter, or a modified drug. This can include cocrystallization, deuteration, etc. This potentially allows the drug to qualify as pharmaceutically distinct according to the US Patent Office (USPTO). These can also be used to improve pharmaceutical properties or to improve stability, which makes them attractive. This also allows for a composition of matter patent to be filed, which confers strong IP protection under which no other manufacturer can create, manufacture, develop, or provide the product without permission from the patent holder.
- **Novel compounds and analogues**. Another approach, which avoids many of the IP challenges with developing generic drugs, is to develop novel compounds or analogues. Analogues are new chemicals which act in the same or a similar way to the compound they're attempting to imitate but are chemically different. In developing an analogue, a company can secure the typical IP protection associated with drug development.

PART II: INITIATION REPORTS

COMPASS Pathways plc – CMPS (Standalone Report, **LINK**)

Cybin Inc – OTC: CLXPF, NEO: CYBN (Standalone Report, **LINK**)

Enveric Biosciences Inc – ENVB (Standalone Report, **LINK**)

Field Trip Health Ltd – OTC: FTRPF, TSX: FTRP (Standalone Report, **LINK**)

Mind Cure Health Inc. – OTC: MCURF, CSE: MCUR (Standalone Report, **LINK**)

Mind Medicine Inc – MNMD (Standalone Report, **LINK**)

Mindset Pharma Inc – OTC: MSSTF, CSE: MSET (Standalone Report, **LINK**)

Mydecine Innovations Group Inc – OTC: MYCOF, NEO: MYCO (Standalone Report, **LINK**)

PharmaTher Holdings Ltd – OTC: PHRRF, CSE: PHRM (Standalone Report, **LINK**)

Psybio Therapeutics Corp – OTC: PSYBF, TSXV: PSYB (Standalone Report, **LINK**)

Initiation reports in this section are reprinted from previously published reports produced by Maxim Research. Reports may be modified from their original form for formatting purposes. Full disclosures and disclaimers on individual companies may be obtained as described on page 221 of this report, or in the published individual company initiation reports.

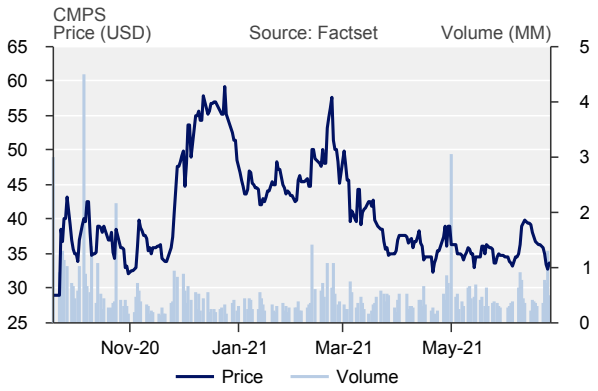
Biotechnology – Psychedelics

CMPS - NSQ June 27, 2021

Closing Price 6/25/21	**$33.49**
Rating:	Buy
12-Month Target Price:	$70.00
52-Week Range:	$22.51 - $61.69
Market Cap (M):	1,337.3
Shares O/S (M):	39.9
Float:	95.5%
Avg. Daily Volume (000):	468.3
Debt (M):	$0.0
Dividend:	$0.00
Dividend Yield:	0.0%
Risk Profile:	Speculative
Fiscal Year End:	December

Total Expenses ('000)

	2020A	2021E	2022E
1Q	13,460	13,602A	14,950
2Q	12,935	13,800	15,600
3Q	13,479	14,700	16,900
4Q	11,519	15,500	17,550
CY	51,393	57,602	65,000



Jason McCarthy, Ph.D.
(212) 895-3556
jmccarthy@maximgrp.com

Michael Okunewitch
(212) 895-3579
mokunewitch@maximgrp.com

COMPASS Pathways plc — Buy

A Psychedelic-Based Pathway to Relief of Mental Health Disorders – Initiating Coverage with a Buy Rating & $70 PT

Summary

- **Compass Pathways is developing lead asset COMP360 psilocybin for mental health disorders and was the first company in the rapidly evolving psychedelics-based therapeutics space to list on NASDAQ (3Q20).**
- **COMP360 is a synthetic, high-purity, polymorphic, crystalline psilocybin formulation. The drug is in the largest psilocybin clinical study to date; the ongoing P2b (n=216) study for treatment-resistant depression (TRD). Data is expected later in 4Q21. Other programs include a long-term followup study of the P2b patients as well as a study as adjunct therapy to SSRI treatment. The outcome of the TRD program should set the stage for a pivotal P3 trial. Compass also has numerous collaborations exploring COMP360 via investigator-initiated studies (IISs), several of which are in P2 trials, and updates could provide additional catalysts.**
- **Conclusion. The depression space, particularly in TRD, remains an unmet need with available depression therapies insufficient for millions of patients. The emergence of ketamine and the approval of Spravato, ushered in the NMDA depression drug development space, and with it, rapidly rising valuations. The next chapter in depression is psychedelics, and Compass is a leading, well-funded (~$340M in cash) player in the space, with catalysts ahead.**

Details

COMP360 psilocybin. Psilocybin is the active compound in some certain species of mushrooms and its potential for treating mental health disorders has been well-documented in scientific literature. Compass is developing COMP360, a synthetic, high-purity, polymorphic, crystalline, psilocybin formulation as 1mg, 5mg and 25mg oral capsule formulation. The drug is being evaluated as part of an ongoing P2b study in treatment-resistant depression (TRD), which represents the largest psilocybin study to date (n=216). COMP360 has Fast-Track designation in TRD and data from the P2b trial is expected in 4Q21, which should position the company, pending a positive outcome, to move into a pivotal P3 trial in 2022. COMP360 has Breakthrough designation and protective IP. The use of psilocybin in the treatment of TRD requires both the drug and drug-assisted psychotherapy with highly trained therapists. The latter involves the "integration" period (followup psychotherapy sessions) to leverage the drug experience to help the patient alleviate their depression (or other mental health disorders), perhaps even permanently.

Market opportunity in treatment-resistant depression (TRD). In the US alone, there are an estimated 20M people with major depressive disorder, ~3M+ of whom have TRD. The antidepressant market generated ~$15B in 2020, and note the market is largely generic. The antipsychotic, Abilify, at its peak, generated over ~$7.5B. Considering TRD alone and pricing in the $20K-$25K range (Spravato therapy can cost up to $30K-$49K annually) and only a 3% market share, points to a ~$2.5B opportunity. Compass also has a COMP360 pipeline with multiple IIS programs, several of which are in P2; anorexia nervosa, TRD, bipolar depression, body dysmorphic disorders, and major depression in cancer patients. Compass is positioned to exclusively license intellectual property from these programs.

Valuation. We model commercialization of COMP360 psilocybin in 2025 in the US and in 2026 in the EU for TRD. A 60% risk adjustment is factored in based on stage of development, clinical trial risk, commercial risk and other factors. A 20% discount is then applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $70.

CORPORATE PROFILE

Compass Pathways plc
London, UK
www.compasspathways.com

Investment Risk: Compass Pathways' products are not approved, and the company currently does not generate revenue.

Regulatory Risk: Compass Pathways' products may not be successful in clinical trials and may not meet the requirements for regulatory approval(s).

Commercial Risk: Compass Pathways' products are not approved and commercialized, and if/when they become commercially available, they may not achieve significant market share. In addition, the company lacks commercial infrastructure to support commercialization.

Financial Risk: Compass Pathways is not profitable and may need to raise additional capital to support operations.

Dilution Risk: Capital raises to fund operations may dilute investors.

Ownership:
Institutional: 15.1%
Insiders: 4.5%

Balance Sheet Summary (as of 3/31/21):
Cash: $179.5M
Debt: $0
*Subsequent to quarter-end, the company raised $165M.

Analysts Covering the Stock (other than Maxim): 6 (Buy)

Company Background. COMPASS Pathways (NASDAQ: CMPS) is a mental health care company dedicated to accelerating patient access to evidence-based innovation in mental health. The company's focus is on improving the lives of those who are suffering with mental health challenges and who are not helped by current treatments. Compass Pathways is pioneering the development of a new model of psilocybin therapy, in which its proprietary formulation of synthetic psilocybin, COMP360, is administered in conjunction with psychological support. COMP360 has been designated a Breakthrough Therapy by the US Food and Drug Administration (FDA), for treatment-resistant depression (TRD), and the company is currently conducting a phase 2b clinical trial of psilocybin therapy for TRD in 22 sites across Europe and North America. Compass Pathways is headquartered in London, UK, with offices in New York, US. The company's vision is that of a world of mental wellbeing.

Senior Management:

George Goldsmith, Chairman, Co-Founder, Chief Executive Officer – Mr. Goldsmith's early training and experience was a multi-disciplinary blending of cognitive psychology, clinical psychology, and computer science. His first company, The Human Interface Group, was a pioneer in collaborative software and was acquired by Lotus Development. Mr. Goldsmith led the Lotus Institute and developed software and services to support high-performance, distributed teamwork. George then created TomorrowLab, which provided strategic guidance to internet businesses in the late 1990s. At the same time, he became a senior advisor to McKinsey & Company's leadership, and eventually joined McKinsey as CEO of TomorrowLab@McKinsey. Subsequently, as a member of the Young Presidents Organization (YPO) and its International Board of Directors, George founded YPO Networks. In 2002, George founded Tapestry Networks, an organization committed to improving leadership performance and governance effectiveness in regulated sectors. He still serves as Tapestry Networks' Non-Executive Chairman.

Ekaterina Malievskaia, M.D. Chief Innovation Officer, Co-Founder – Ms. Malievskaia received her medical degree from St. Petersburg Medical Academy in St Petersburg, Russia, and then moved to the US where she completed her residency training in internal medicine. She has worked in private practice, academic medicine, and the public health sector for more than 15 years in the greater New York area. She was a Clinical Instructor of Medicine at Mount Sinai School of Medicine, as well as a Research Professor at City University of New York. After moving to London in 2011, Ms. Malievskaia worked in global health and medical philanthropy, focusing on improving outcomes in maternal and child health. She founded Compass Pathways with her husband George Goldsmith in 2016, having experienced at first hand the challenges in accessing evidence-based and effective mental health care for a family member.

Lars Christian Wilde, President, Chief Business Officer, Co-Founder – Mr. Wilde is an active serial entrepreneur in tech and biotech. He is also an angel investor and has helped successfully build several companies. Before joining COMPASS, Mr. Wilde was the founder and CEO of Springlane, a leading European direct-to-consumer kitchen and BBQ brand and the largest German cooking magazine. He previously was an investor at Waterland Private Equity, one of the world's best performing private equity funds. Among his other buy-and-build investments, was VivaNeo, the largest European in-vitro fertilization group, providing patients with cutting edge medical solutions. Mr. Wilde has also spent time with Boston Consulting Group in Munich, Germany and São Paulo, Brazil. Mr. Wilde holds a master's degree in finance from IE Business School in Spain and a Bachelor of Science in business administration from Rotterdam School of Management, Erasmus University in the Netherlands. He spent exchange semesters at the University of Münster, the Copenhagen Business School, and the Ross School of Business at the University of Michigan.

Additional Compass Pathways team members and their associated bios can be found here.

INVESTMENT SUMMARY

Bull Case. The emergence of psychedelic-based medicines continues to evolve in the healthcare space targeting a range of indications related to mental health including depression, anxiety, addiction, PTSD and others, as well as having potential in neurodegenerative diseases and other indications. The potential of psychedelic-based medicines for mental health has a long history of clinical development stemming from the 1950s through the early 1970s, re-emerging in the early 1990s, and in recent years, interest in psychedelic-based treatments has been accelerating quite significantly again. Bulls also see the emergence and eventual approval of Spravato (intra-nasal ketamine) as playing a part in triggering acceleration of psychedelics into the mainstream. Compass Pathways is perhaps the most advanced, or one of the most advanced players in the space with its lead asset COMP360; a synthetic, high-purity, crystalline psilocybin. The lead indication for COMP360 is treatment-resistant depression (TRD). COMP360 has completed a P1 study in healthy volunteers and is currently in an ongoing P2b study in TRD (n=216, psychedelic-assisted therapy; step one is preparing the patient in person or virtually, step two is the patient taking the drug and having the experience without psychoanalysis, and step three is in person or virtual post-experience analysis or 'integration'), which is expected to report top-line data in 4Q21. Compass is conducting a P2 open-label study in TRD for COMP360 as an adjunct to SSRI therapy and a long-term followup for the P2b. From an expansion perspective, COMP360 is also the subject of a range of investigator-initiated studies (IISs) the most advanced of which includes anorexia nervosa (P2), bipolar depression (P2), body dysmorphic disorders (P2), and major depressive disorder in cancer patients (P2), each is expected to report data over the course of 2022. The preclinical work has been extensive as well and points to potential in a number of other indications. COMP360 has breakthrough designation for TRD and the company has rights to exclusively license IP around IIS programs and broad patent protection surrounding chemical synthesis of psilocybin. The importance of IP is critical and from a psilocybin perspective, a Compass held composition patent has already been challenged twice and held up both times. Compass was the first psychedelic-based therapeutics company to list on NASDAQ and is well-capitalized with ~$340M in cash on the balance sheet. The company has also invested and continues to invest significantly in data and technology. Catalysts lay ahead in 2021/2022 with the P2b data in TRD and updates around IIS programs, as well as patent updates. Considering the TRD space alone and the ~3M diagnosed patients in the US, it's a multi-billion-dollar opportunity and points to upside in the Compass story from its current ~$1.4B market capitalization.

Bear Case. The data around psychedelic-based medicines stems initially from a flurry of activity from the 1950-1970 period pointing to therapeutic potential but is based on clinical studies that would not stand up to the rigorous clinical trial requirements today, thus making that data suggestive and not conclusive. Though more rigorous studies have been conducted in the 2000s and 2010s, n-values remain small. As such, Bears remain skeptical around the potential of psychedelics and would wait to see more data from current and upcoming trials to draw conclusions as to their potential as effective and safe therapeutics, and how that may translate into potential value. Bears would point to issues around dosing, administration, and delivery, particularly the need for highly trained therapists and specialized settings for administration. This is partially what hurt the Spravato launch, and that's only for a 2-hour treatment, psilocybin likely requires at least 6, compounding the logistical problem surrounding scalability, and not to mention potential complications around intellectual property. In addition, with so many private and public companies emerging, and the ensuing 'rush' to reach US national stock exchanges and capital raising, Bears wonder if it is just 'hype', or are psychedelics a real emerging therapeutics category.

Our Take. Tens of billions of dollars in revenue with essentially no innovation for decades with anti-depressants; SSRI, SNRI, MAOI, and even the atypical anti-psychotics. The atypical Abilify was even a $7.5B drug at its peak before going generic. The trial-and-error model by doctors for the 15M-20M people in the US with major depressive disorder (MDD) is to roll patients from one drug to the next, each taking 12 weeks to see if anything works, and with unwanted side effects. Still, the majority of patients get no relief and for ~3M that fail two or more therapies, they end up with treatment-resistant depression (TRD). The potential for psychedelic-based therapeutics to change the course of mental health disorders, including depression, has been well-documented in over 1000 publications stemming from the 1950s-1970s period. Does it stand up to current clinical trial parameters? That in part is the bear argument. Not exactly, it was a different time and it was exploratory, but the impact on mental health disorders seems almost irrefutable. With this work re-invigorated in the early 1990s and into the 2000s and 2010s with well-designed studies, positive data, and the subsequent acceleration of work in this therapeutic category, the stage has been set for groups like Compass Pathways, which with its lead asset COMP360 can take psychedelic-based treatments to the next level. We would also point to the emergence of ketamine into the public space with ketamine infusion clinics and then ultimately by the approval of Spravato as contributing to what we see as a burgeoning psychedelic-based therapeutics space. The rationale, put simply, is to use the psychedelic (in this case of COMP360 psilocybin) to induce synaptic plasticity ("freeing the mind" so to speak) that can be leveraged via psychotherapy with highly trained therapies to ameliorate, or even permanently correct, mental health disorders.

Compass was the first psychedelic company to emerge into the mainstream with a NASDAQ listing and is a leader in the space with COMP360, a synthetic, highly pure, crystalline psilocybin. We would also note the IP around psilocybin, including a composition patent that held up to a challenge after it was granted. Seems when it comes to psilocybin, there may be IP issues around the space for basically everyone but Compass. We'll see how this plays out over time. COMP360 is the subject of an ongoing P2b study in TRD, combining drug and psychotherapy, which is expected to report data in 4Q21. COMP360 is also the subject of an open-label P2 study as an adjunct to SSRI (more to confirm that COMP360 is best as a monotherapy) and a long-term followup of the P2b. COMP360 is also being evaluated across a number of investigator-initiated studies, several of which are in P2 and expected to report data in 2022. Updates and data readouts over 2021 and 2022 should position CMPS shares to rise in value. In addition, much like we saw with NASH, cannabinoid-focused companies, CAR-T, or gene therapy for example, the rapid expansion of companies in the psychedelic space onto US national exchanges could indirectly impact CMPS shares as enthusiasm in the space builds. There is risk in the space, notably, we think around intellectual property as bears would point out. However, Compass is a first mover and the leader in psilocybin-based therapeutics, and if the company is the first to reach approval, it would be able to obtain 5-year exclusivity, protecting its initial market. The size of the depression market as noted above and the unmet need, particularly for the ~3M TRD

patients in the US points to a multi-billion dollar opportunity for Compass, and with multiple potential catalysts ahead for COMP360, we would be buyers of CMPS at current levels.

Finances. On September 22, 2020, Compass Pathways announced the closing of its IPO offering of 8,625,000 American Depository Shares (ADS), representing 8,625,000 ordinary shares priced at $17 per ADS. Total gross proceeds from the IPO were $146.6M and the company listed on NASDAQ under the ticker "CMPS". On April 30, 2021 Compass announced pricing of a 4,000,000 ADS offering at $36 per ADS, raising gross proceeds of $165M.

On May 13, 2021, Compass reported 1Q21 with a net loss of ($12.7M) and ended the period with $179.5M in cash on the balance sheet, excluding the April equity financing, which brought in ~$165M in gross proceeds (includes overallotment, fully executed). Combined, the company has ~$340M on the balance sheet, and with operating expenses of ~$12M-$15M a quarter currently, which will likely rise as clinical programs advance, the company should have funding through 2023, though this will be determined by the number, size, and scope of clinical programs. We note that the company may require additional equity financings and associated dilution to fund operations as Compass is not a revenue generating company, however we consider the company to be well financed for the foreseeable future.

Exhibit 1. Upcoming Catalysts for Compass Pathways.

Product	Indication	Event	Timeline	Impact
COMP360 Psilocybin	Treatment-resistant depression (TRD)	Phase 2b data	4Q21	+++
COMP360 Psilocybin	Multiple	Expansion of IP portfolio*, partering/collaboration announcements	ongoing	+
COMP360 Psilocybin	Multiple	Updates from investigor initiated studies	ongoing	+
COMP360 Psilocybin	Treatment-resistant depression (TRD)	Phase 3 trial design, protocol announcment	2H21/2022	++
COMP360 Psilocybin	Treatment-resistant depression (TRD)	Phase 2b long-term followup study	2H22	+++

Stock Significance Scale: + of moderate importance; ++ higher level; +++ very important

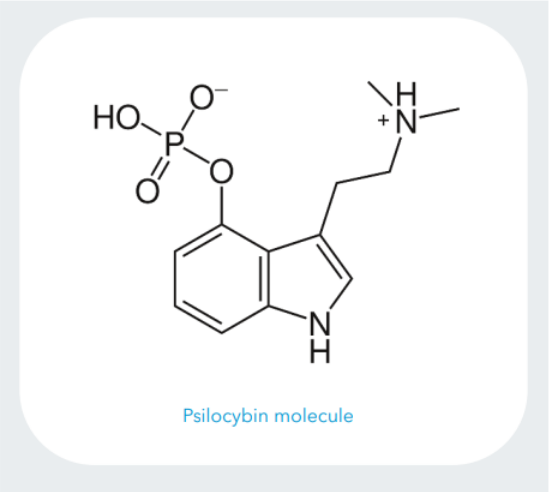
Source: Company reports and Maxim Forecasts

*Intellectual property is a singifcant area of attention as psychedelic-based drugs emerge

COMP360 Psilocybin

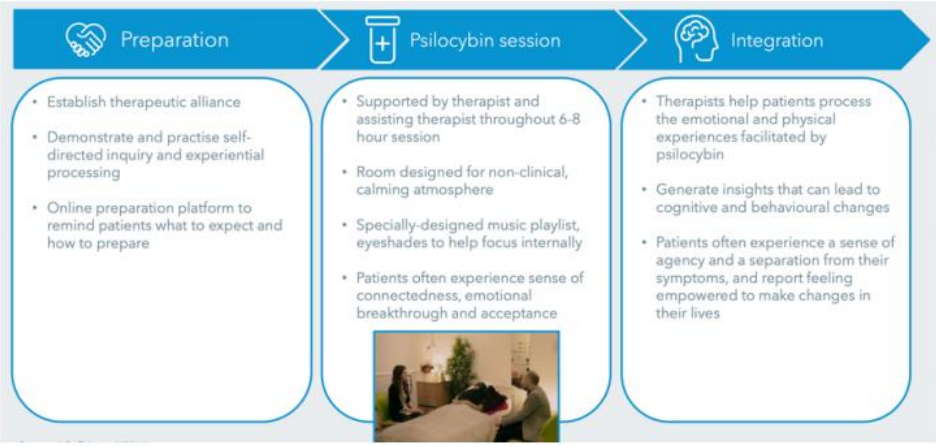
For a general review of psilocybin from a mechanism of action perspective, please refer to the corresponding section of our industry report. Also discussed in the industry report is the utility of psychedelics, including psilocybin as it relates to concurrent psychotherapy and integration, as well as the role of specially trained therapists as part of the therapeutic process.

Exhibit 2. COMP360 psilocybin overview.



Source: Compass Pathways presentation

Exhibit 3. Psilocybin therapeutics process; drug and combined psychological support.



Source: Compass Pathways presentation

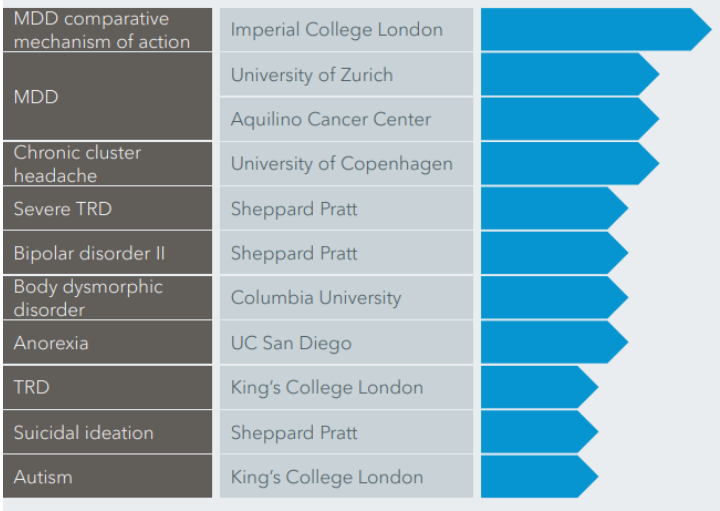
Exhibit 4. COMP360 psilocybin current clinical programs; Compass-sponsored and/or collaborations with investigator-initiated studies (IISs). Data and timelines compiled from clinicaltrials.gov.

Drug	Indication	ClinicalTrials.gov Identifier	Type	Participants	Description	Listed completion
COMP360 Psilocybin	Treatment-resistant depression (TRD)	NCT04739865	P2b Open-label	n=20	Evaluating 25mg dose in TRD, adjunct therapy to SSRI. Primary endpoint is change in MADRS total score from baseline to 3 weeks post psilocybin administration	2Q21
COMP360 Psilocybin	Treatment-resistant depression (TRD)	NCT03775200	P2b Randomized 1:1:1	n=216	Dose ranging (low, med, high) study in TRD. Primary endpoint is change in MADRS up to 12 weeks	4Q21
COMP360 Psilocybin	Treatment-resistant depression (TRD)	NCT04519957	Long-term followup	n=150	Study is COMP004, long-term followup of patients in COMP001 (1mg, 10mg, 25mg) and COMP003 (25mg). Primary endpoint is long-term efficacy of psilocybin up to 52 weeks	3Q22
COMP360 Psilocybin	Anorexia Nervosa[1]	NCT04661514	P2 Open-label	n=20	Evaluating 25mg dose of psilocybin in adults with DSM-V diagnosis of anorexia nervosa. Primary endpoints are around safety, as well as suicide severity rating scale. Secondary endpoints include Eating Disorder Examination score, weight change, physical appearance and anxiety scoring, others.	4Q21
COMP360 Psilocybin	Treatment-resistant depression (TRD)[2]	NCT04433858	P2 Open-label	n=150	Evaluating 25mg dose of psilocyin in TRD. Primary endpoint is change in MADRS score up to 3 weeks post-psilocybin adminstration	1Q22
COMP360 Psilocybin	Type 2 Bipolar Depression[3]	NCT04433845	P2 Open-label	n=12	Evaluating 25mg dose of psilocybin in adults with bipolar depression. Primary endpoint is change in MADRS score up to 3 weeks post-psilocybin adminstration	1Q22
COMP360 Psilocybin	Body dysmorphic disorders[4]	NCT04656301	P2 Open-label	n=12	Evaluating 25mg dose of psilocybin in 12 adults with BDD that have not had response in an adequate trial with an SSRI. Primary endoint is change in Yale-Brown Obsessive Compulsive Disorder Scale (BDD-YBOCS) up to 3 months post psilocybin adminstration.	3Q22
COMP360 Psilocybin	Major-depressive disorder (MDD) in cancer patients[5]	NCT04593563	P2 Open-label	n=30	Evaluating 25mg dose of psilocybin in adult cancer patients with MDD	4Q22

1-5: Compass Pathways collaborations
1- Sponsor: University of California, San Diego
2- Sponsor: Sheppard Pratt Heath System
3- Sponsor: Sheppard Pratt Heath System
4- University of California, Los Angeles
5- Maryland Oncology Hematology, PA

Source: Data and timelines compiled from clinicaltrials.gov by Maxim Research.

Exhibit 5. Investigator-initiated studies (IISs); current (also see above) and/or past. The following programs are investigator-initiated and are exploring the utility of COMP360 psilocybin in multiple areas. Compass has patent-pending applications that include the indications listed in the table below and has the right to exclusively license new intellectual property (IP) generated through these studies.



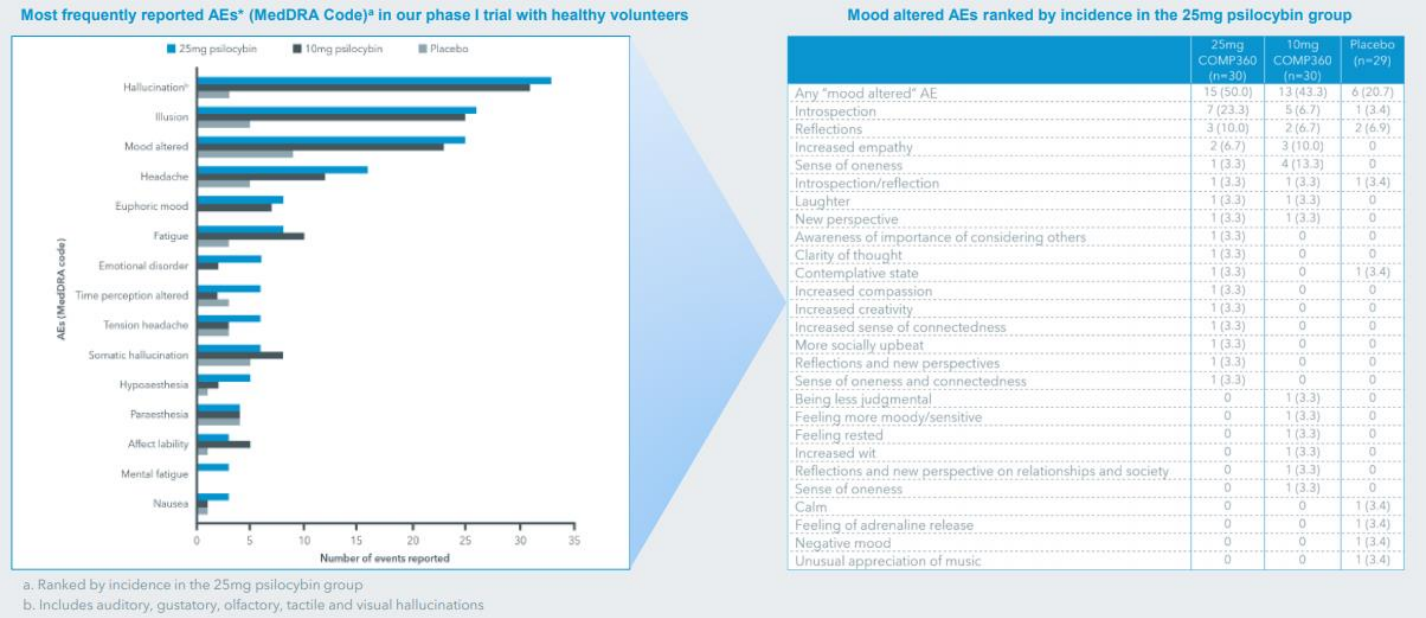
Source: Compass Pathways presentation

Clinical development, Compass Pathways.

A phase 1 feasibility and safety trial of COMP360 psilocybin was published in December 2019 (EudraCT 2018-000978-30). The study was conducted in conjunction with the Institute of Psychiatry, Psychology and Neuroscience, King's College London. This was the largest randomized controlled study of psilocybin; 89 healthy volunteers were randomized 1:1:1 to 25mg psilocybin, 10mg psilocybin, or placebo. The trial evaluated multiple measures around safety and adverse events with an outcome of COMP360 psilocybin being generally well-tolerated with no serious adverse events including no clinically relevant negative effects on cognitive and emotional functioning. A phase 2b (NCT03775200) in treatment-resistant depression (TRD) will enroll up to n=216 patients and is currently ongoing with data expected later in 2021. Also ongoing Compass-sponsored studies include a P2b open-label study (NCT04739865) of psilocybin 25mg dose as an adjunctive therapy to SSRI in TRD and a long-term followup study (NCT04519957) of low-, med-, and high-dosing of psilocybin out to 12 weeks. The open-label study is expected to complete in 2Q/3Q 2021 and the long-term followup study in 2022. Please refer to the tables in exhibits 2 and 3 for additional information on Compass-sponsored studies and/or investigator-initiated studies of COMP360.

Recent publication of Imperial College, 4/15/21. As announced on 4/15/21, a COMP360 psilocybin study designed and conducted by a group at Imperial College London was published in the New England Journal of Medicine (abstract link), Trial of Psilocybin versus Escitalopram for Depression. This was an exploratory, randomized, double-blind study evaluating psilocybin with an SSRI. The study enrolled 59 subjects with MDD and randomized them 1:1 to psilocybin or escitalopram. Psilocybin was given at 25mg in two doses, three weeks apart with supportive psychotherapy. These subjects then received six weeks of daily placebo capsules in place of the SSRI. The escitalopram arm received 1mg psilocybin in two doses, three weeks apart, equivalent psychotherapy support and six weeks of escitalopram therapy (10mg first 3 weeks and up to 20mg for the following three weeks. The trial was not powered for stat-sig between arms. Quick Inventory of Depressive Symptomatology (QIDS-SR-16) at 6 weeks had a two-point difference in favor of psilocybin. MADRS score favored psilocybin by 7.2pts and Hamilton Depression Rating Scale (HAM-D-17) showed a 5.3pt difference. Response rates (defined as 50% or greater reduction in QIDS) was 70.2% vs. 48% and remission rates (defined as QIDS score of 5 or less) were 57.1% vs. 29.1%. Overall, there was a trend toward the psilocybin arm, but again, this trial was not powered to show stat. sig. differences. Let's look at some of the P1 data in healthy adults as noted above.

Exhibit 6. COMP360 induced psychedelic experiences, phase 1 trial in healthy volunteers.

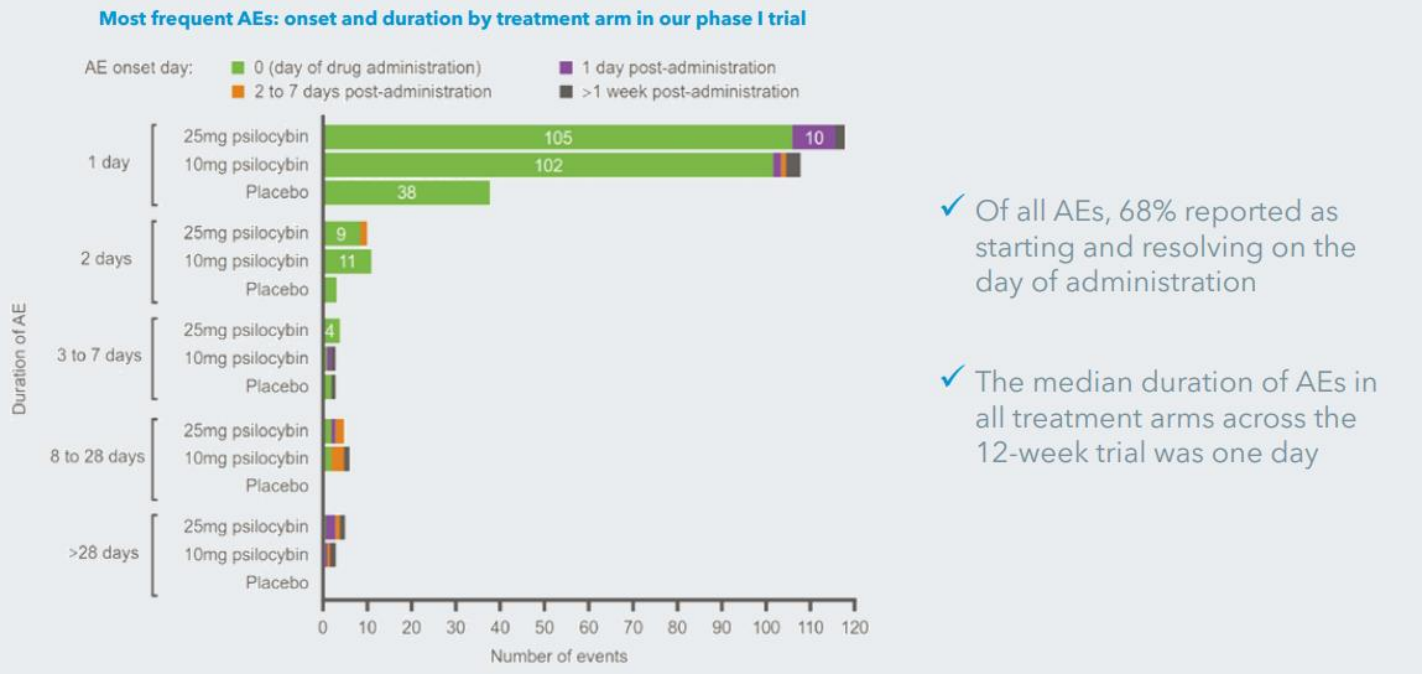


Mood altered AEs ranked by incidence in the 25mg psilocybin group

	25mg COMP360 (n=30)	10mg COMP360 (n=30)	Placebo (n=29)
Any "mood altered" AE	15 (50.0)	13 (43.3)	6 (20.7)
Introspection	7 (23.3)	5 (6.7)	1 (3.4)
Reflections	3 (10.0)	2 (6.7)	2 (6.9)
Increased empathy	2 (6.7)	3 (10.0)	0
Sense of oneness	1 (3.3)	4 (13.3)	0
Introspection/reflection	1 (3.3)	1 (3.3)	1 (3.4)
Laughter	1 (3.3)	1 (3.3)	0
New perspective	1 (3.3)	1 (3.3)	0
Awareness of importance of considering others	1 (3.3)	0	0
Clarity of thought	1 (3.3)	0	0
Contemplative state	1 (3.3)	0	1 (3.4)
Increased compassion	1 (3.3)	0	0
Increased creativity	1 (3.3)	0	0
Increased sense of connectedness	1 (3.3)	0	0
More socially upbeat	1 (3.3)	0	0
Reflections and new perspectives	1 (3.3)	0	0
Sense of oneness and connectedness	1 (3.3)	0	0
Being less judgmental	0	1 (3.3)	0
Feeling more moody/sensitive	0	1 (3.3)	0
Feeling rested	0	1 (3.3)	0
Increased wit	0	1 (3.3)	0
Reflections and new perspective on relationships and society	0	1 (3.3)	0
Sense of oneness	0	1 (3.3)	0
Calm	0	0	1 (3.4)
Feeling of adrenaline release	0	0	1 (3.4)
Negative mood	0	0	1 (3.4)
Unusual appreciation of music	0	0	1 (3.4)

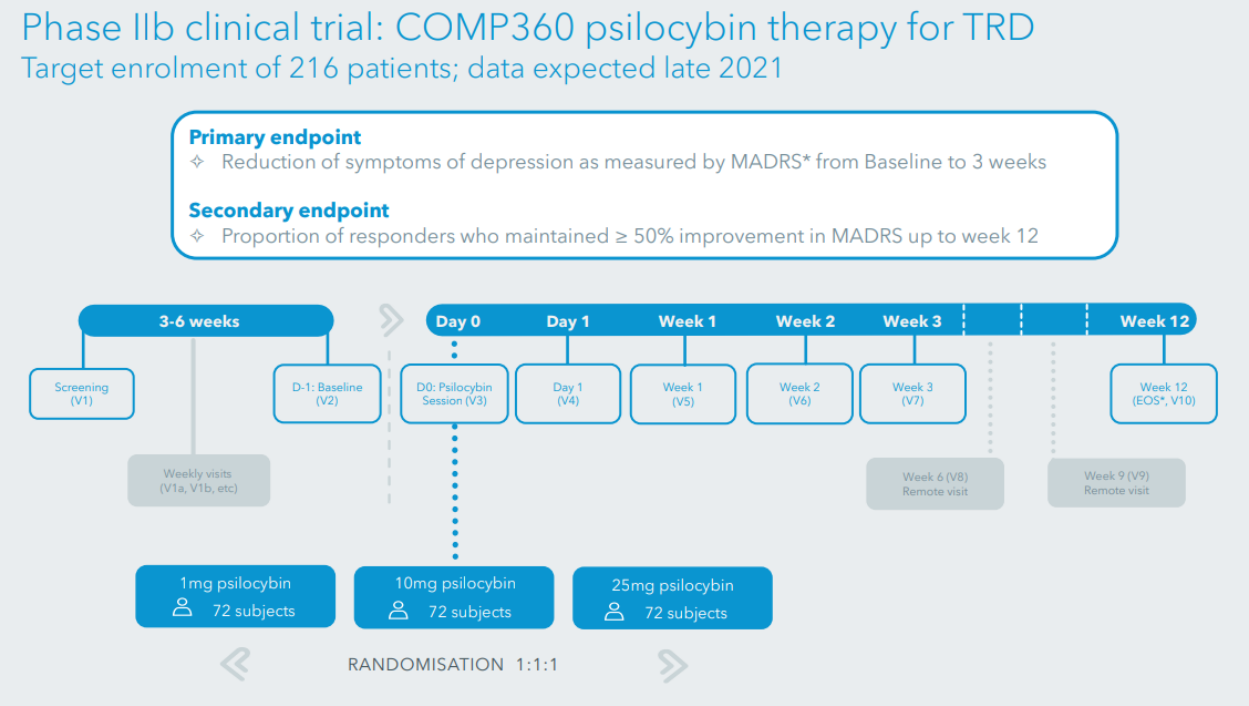
Source: Compass Pathways presentation

Exhibit 7. Adverse events profile, COMP360 phase 1 trial in healthy volunteers. The most common AEs as shown in table above, were mood alteration (any), introspection, reflections, increased empathy, and sense of oneness. As shown below, these events were primarily resolved on the day of administration of COMP360.



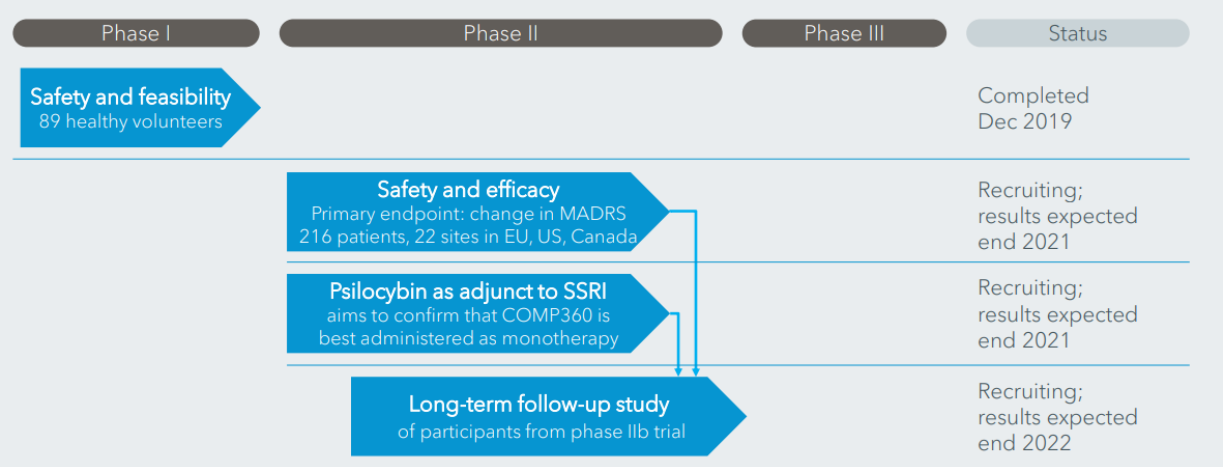
Source: Compass Pathways presentation

Exhibit 8. COMP360 phase 2b trial in treatment-resistant depression (TRD). The phase 2b trial is evaluating 1mg, 10mg, or 25mg of psilocybin in 216 adults with TRD. The primary endpoint oof the study is change in MADRS score (Montgomery-Asberg Depression Rating Scale) from baseline to three weeks. Secondary measures will include MADRS score maintenance in responders out to 12 weeks. The trial is being conducted across 22 centers in the US and EU. Several of these centers are also evaluating COM360 as part of investigator-initiated programs as well (see table above).



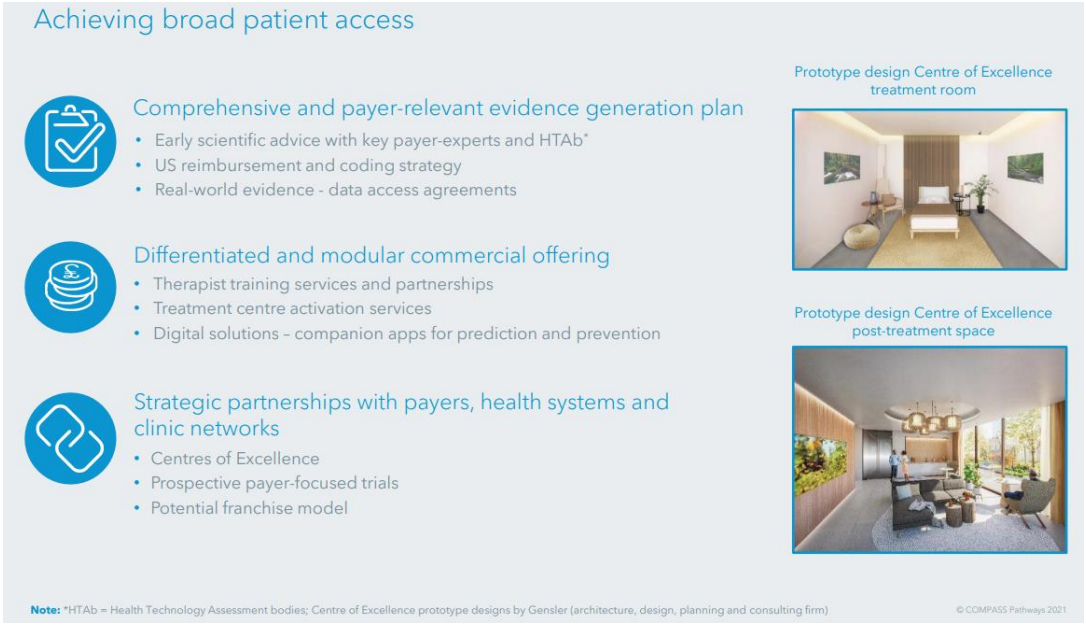
Source: Compass Pathways presentation

Exhibit 9. COMP360 timelines; three trials coming into focus in TRD. Shown below is a review of the three ongoing COMP360 trials Compass is conducting in TRD and expected timelines to data readout.



Source: Compass Pathways presentation

Exhibit 10. Potential commercial strategies. While there are multiple groups targeting clinical programs with psilocybin, Compass has first-mover advantage and the most advanced clinical programs in the space. Given how psychedelic-based therapies must be administered, the need for very carefully designed treatment rooms, the psychotherapy component and needed training of therapists, and multiple other aspects for these mental-health solutions are critical components that are essentially unlike any other therapeutic category, in our view. This is where Compass is keenly focused.

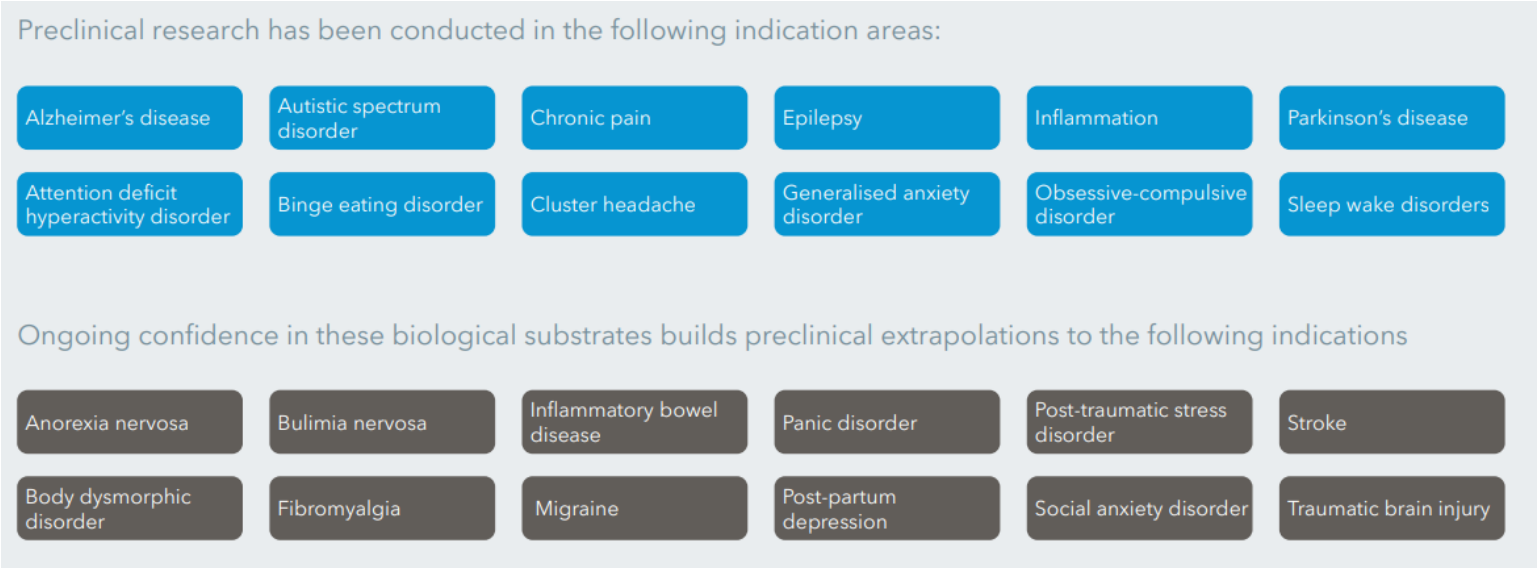


Source: Compass Pathways presentation

Exhibit 11. Intellectual property, commercial exclusivity strategy for COMP360.

Source: Compass Pathways presentation

Exhibit 12. COMP360 psilocybin potential indications. The following table is a compilation of potential indications for COMP360. Some have been highlighted in exhibits above.



Source: Compass Pathways presentation

MODELING ASSUMPTIONS

1. We assume that COMP360 psilocybin is commercialized in 2025 in the US and in 2026 in the EU for treatment-resistant depression (TRD). While the company is conducting a number of exploratory studies in MDD, cluster headache, bipolar disorder II, anorexia, suicidal ideation, autism, and others with multiple institutions, these studies are too early stage to include in our model at this point.
2. The US adult population (over age 18) is ~245M and in this population the prevalence of major depressive disorder is 6.7%, or ~16.5M. We assume only 60% of people with MDD seek treatment and of these, 30% (~3M) have TRD. TRD is defined as someone with MDD failing 2+ therapeutic options. The TRD population in the US of 3M, with a similar number in the EU, is what we use to estimate potential market penetration.
3. We assume pricing of $25K in the US and $20K in the EU. This is a discount to nasal ketamine therapy (Spravato), which has pricing of $4,700-$6,800 in the first month and then $2,500-$3,500 for maintenance. All in, Spravato can cost $33K-$49K per year. Given that psilocybin therapy is likely to be used once, or possibly a handful of times, we believe pricing may be at a discount to what Spravato costs. Our model also assumes that Compass will only have revenue from COMP360 and not participate in the revenue streams that could be generated from the psychotherapy, patient care, and facility/delivery aspects of psychedelic therapy. That said, we include a line for this in each of our models for now with no revenue and we'll see if this becomes a part of the strategy as Compass makes progress.
4. Given the cost, the type of therapy and experience that psychedelics may bring, and commercial risks, we assume only a modest market share in TRD of up to 5% in out years in the US, and 3% in the EU.
5. We do not factor in additional indications for COMP360 at this time.
6. A risk adjustment of 60% is factored in based on stage of development, clinical trial risk, commercial risk and other factors.

Exhibit 13. COMP360 in Treatment Resistant Depression Market Model (US).

COMP360 psilocybin, Treatment-Resistant Depression (TRD) (US)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
US population	330,000,000	333,300,000	336,633,000	339,999,330	343,399,323	346,833,317	350,301,650	353,804,666	357,342,713	360,916,140	364,525,301	368,170,554	371,852,260
US Adult population 18+ (74.3%)	245,190,000	247,641,900	250,118,319	252,619,502	255,145,697	257,697,154	260,274,126	262,876,867	265,505,636	268,160,692	270,842,299	273,550,722	276,286,229
Major Depressive Disorder (MDD) (Adult. 6.7%)	16,427,730	16,592,007	16,757,927	16,925,507	17,094,762	17,265,709	17,438,366	17,612,750	17,788,878	17,966,766	18,146,434	18,327,898	18,511,177
MDD diagnosed, seeking treatment (60%)	9,856,638	9,955,204	10,054,756	10,155,304	10,256,857	10,359,426	10,463,020	10,567,650	10,673,327	10,780,060	10,887,860	10,996,739	11,106,706
Treatment-reistant depression (2+ failed therapies) (30%)	2,956,991	2,986,561	3,016,427	3,046,591	3,077,057	3,107,828	3,138,906	3,170,295	3,201,998	3,234,018	3,266,358	3,299,022	3,332,012
Market Penetration							0.10%	0.30%	0.75%	1.25%	2.50%	3.75%	5.00%
Total Patients Treated							3,139	9,511	24,015	40,425	81,659	123,713	166,601
Cost of Treatment (drug, COMP360)							25,000	26,250	27,563	28,941	30,388	31,907	33,502
Psychotherapy, patient monitoring, facility fees- portion to Compass (TBD)							-	-	-	-	-	-	-
Increase in Cost							5%	5%	5%	5%	5%	5%	5%
Total revenue ('000)							$ 78,473	$ 249,661	$ 661,913	$ 1,169,931	$ 2,481,424	$ 3,947,326	$ 5,581,518
Risk adjustment							60%	60%	60%	60%	60%	60%	60%
Total Revenue ('000)	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 31,389**	**$ 99,864**	**$ 264,765**	**$ 467,973**	**$ 992,570**	**$ 1,578,930**	**$ 2,232,607**

Source: Maxim Estimates

Exhibit 14. COMP360 in Treatment Resistant Depression Market Model (EU5).

COMP360 psilocybin, Treatment-Resistant Depression (TRD) (EU5)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
EU5 population	322,924,057	329,382,538	335,970,189	342,689,593	349,543,385	356,534,252	363,664,937	370,938,236	378,357,001	385,924,141	393,642,624	401,515,476	409,545,786
US Adult population 18+ (74.3%)	239,932,574	244,731,226	249,625,850	254,618,367	259,710,735	264,904,949	270,203,048	275,607,109	281,119,252	286,741,637	292,476,469	298,325,999	304,292,519
Major Depressive Disorder (MDD) (Adult. 6.7%)	16,075,482	16,396,992	16,724,932	17,059,431	17,400,619	17,748,632	18,103,604	18,465,676	18,834,990	19,211,690	19,595,923	19,987,842	20,387,599
MDD diagnosed, seeking treatment (60%)	9,645,289	9,838,195	10,034,959	10,235,658	10,440,372	10,649,179	10,862,163	11,079,406	11,300,994	11,527,014	11,757,554	11,992,705	12,232,559
Treatment-reistant depression (2+ failed therapies) (30%)	2,893,587	2,951,459	3,010,488	3,070,698	3,132,111	3,194,754	3,258,649	3,323,822	3,390,298	3,458,104	3,527,266	3,597,812	3,669,768
Market Penetration								0.10%	0.50%	1.00%	1.50%	2.50%	3.00%
Total Patients Treated							-	3,324	16,951	34,581	52,909	89,945	110,093
Cost of Treatment (drug, COMP360)								20,000	21,000	22,050	23,153	24,310	25,526
Psychotherapy, patient monitoring, facility fees- portion to Compass (TBD)								-	-	-	-	-	-
Increase in Cost								5%	5%	5%	5%	5%	5%
Total revenue ('000)								$ 66,476	$ 355,981	$ 762,512	$ 1,224,975	$ 2,186,581	$ 2,810,194
Risk adjustment								60%	60%	60%	60%	60%	60%
Total Revenue ('000)	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 26,591**	**$ 142,393**	**$ 305,005**	**$ 489,990**	**$ 874,632**	**$ 1,124,078**

Source: Maxim Estimates

VALUATION

We model commercialization of COMP360 psilocybin in 2025 in the US and in 2026 in the EU for treatment-resistant depression (TRD). A platform value is assigned to the remaining programs given their earlier stage of development and lack of clarity, which will be carried forward. A 60% risk adjustment is factored in based on stage of development, clinical trial risk, commercial risk, and other factors. A 20% discount is then applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $70.00.

Exhibit 15. Free Cash Flow Model.

Average	70

DCF Valuation Using FCF (mln):

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
units ('000)	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**
EBIT	(60,302)	(56,044)	(65,000)	(78,500)	(80,070)	(70,580)	(329)	221,412	537,549	1,116,008	2,003,953	2,791,820
Tax Rate	0%	0%	0%	0%	0%	0%	0%	2%	5%	10%	15%	18%
EBIT (1-t)	(60,302)	(56,044)	(65,000)	(78,500)	(80,070)	(70,580)	(329)	216,984	510,672	1,004,407	1,703,360	2,289,292
CapEx	-	-	-	-	-	-	-	-	-	-	-	-
Depreciation	-	-	-	-	-	-	-	-	-	-	-	-
Change in NWC												
FCF	(60,302)	(56,044)	(65,000)	(78,500)	(80,070)	(70,580)	(329)	216,984	510,672	1,004,407	1,703,360	2,289,292
PV of FCF	(72,362)	(56,044)	(54,167)	(54,514)	(46,337)	(34,037)	(132)	72,668	142,519	233,593	330,123	369,733
Discount Rate	20%											
Long Term Growth Rate	1%											
Terminal Cash Flow	12,169,396											
Terminal Value YE2030	1,965,425											
NPV	2,868,830											
NPV-Debt												
Shares out ('000)	42,908	2031E										
NPV Per Share	67											

Source: Maxim estimates

Exhibit 16. Discounted-EPS Model.

Current Year	2021
Year of EPS	2031
Earnings Multiple	8
Discount Factor	20%
Selected Year EPS	53.35
NPV	69

Source: Maxim estimates

	Discount Rate and Earnings Multiple Varies, Year is Constant						
	68.93	**5%**	**10%**	**15%**	**20%**	**25%**	**30%**
Earnings Multiple	**0**	0	0	0	0	0	0
	5	163.77	102.85	65.94	43.08	28.64	19.35
	10	327.54	205.70	131.88	86.17	57.29	38.70
	15	491.32	308.55	197.82	129.25	85.93	58.05
	20	655.09	411.40	263.76	172.34	114.58	77.40
	25	818.86	514.25	329.70	215.42	143.22	96.75
	30	982.63	617.10	395.64	258.51	171.86	116.10
	35	1146.40	719.95	461.58	301.59	200.51	135.46

Exhibit 17. Sum-of-the-Parts Model.

Compass Pathways inc.	LT Gr	Discount Rate	Yrs to Mkt	% Success	Peak Sales (MM's)	Term Value
COMP360 psilocybin TRD (US/EU)	1%	20%	4	50%	$3,357	$17,667
NPV						$58.93
Platfrom	1%	20%	5	50%	$1,000	$5,263
NPV						$15
Net Margin						59%
MM Shrs OS (2031E)						43
Total						$74

Source: Maxim estimates

Compass Pathways, CMPS.: Income Statement ($000)																
YE December 31	2020A	1Q21A	2Q21E	3Q21E	4Q21E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Revenue:																
COMP360 psilocybin treatment-resistant depression (US, EU)										31,389	126,455	407,158	772,977	1,482,560	2,453,563	3,356,685
Psilocybin tech platform										-	25,000	100,000	200,000	250,000	350,000	500,000
										-	-	-	-	-	-	-
										-	-	-	-	-	-	-
Net revenue	-	-	-	-	-	-	-	-	-	31,389	151,455	507,158	972,977	1,732,560	2,803,563	3,856,685
Collaborative revenue:																
Revenues																
Other Income										-	-	-	-	-	-	-
										-	-	-	-	-	-	-
Total Collaborative Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	-	-	-	-	-	-	-	-	-	31,389	151,455	507,158	972,977	1,732,560	2,803,563	3,856,685
Gross Margins:																
Cost of Goods Sold										12,556	60,582	192,720	340,542	519,768	700,891	964,171
%Gross Margin										60%	60%	62%	65%	70%	75%	75%
Gross Profit	-	-	-	-	-	-	-	-	-	18,833	90,873	314,438	632,435	1,212,792	2,102,672	2,892,514
Operating Expenses:																
Research and Development	23,366	6,884	7,000	7,200	7,500	28,584	35,000	45,500	46,410	47,338	48,285	49,251	50,236	51,240	52,265	53,311
%R&D																
Selling, General and Administrative	27,862	6,718	6,800	7,500	8,000	29,018	30,000	33,000	33,660	42,075	42,917	43,775	44,650	45,543	46,454	47,383
%SG&A																
General and administrative - fees due to a related party	165															
Total Expenses	51,393	13,602	13,800	14,700	15,500	57,602	65,000	78,500	80,070	101,969	151,783	285,745	435,428	616,552	799,610	1,064,865
Operating Income (Loss)	(51,393)	(13,602)	(13,800)	(14,700)	(15,500)	(57,602)	(65,000)	(78,500)	(80,070)	(70,580)	(329)	221,412	537,549	1,116,008	2,003,953	2,791,820
						-	-	-	-	-	-	-	-	-	-	-
Other income, net	319	1				1										
Foreign exchange losses	(11,702)	(643)				(643)										
Fair value change of convertible notes	(1,041)															
Fair value change of convertible notes - due to a related party	(730)															
Benefit from R&D tax credit	4,245	1,557				1,557										
	-					-										
	-					-										
	-					-										
Total Other Income	**(8,909)**	**915**	**-**	**-**	**-**	**915**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Pretax Income	(60,302)	(12,687)	(13,800)	(14,700)	(15,500)	(56,687)	(65,000)	(78,500)	(80,070)	(70,580)	(329)	221,412	537,549	1,116,008	2,003,953	2,791,820
Income tax expense	(32)	(28)	-	-	-	(28)	-	-	-	-	-	4,428	26,877	111,601	300,593	502,528
Tax Rate												2%	5%	10%	15%	18%
GAAP Net Income (Loss)	(60,334)	(12,715)	(13,800)	(14,700)	(15,500)	(56,715)	(65,000)	(78,500)	(80,070)	(70,580)	(329)	216,984	510,672	1,004,407	1,703,360	2,289,292
Foreign currency translation adjustment	14,683	1,988	-	-	-	1,988										
Total comprehensive loss	(45,651)	(10,727)	(13,800)	(14,700)	(15,500)	(56,715)	(65,000)	(78,500)	(80,070)	(70,580)	(329)	216,984	510,672	1,004,407	1,703,360	2,289,292
GAAP-EPS	(3.55)	(0.35)	(0.33)	(0.36)	(0.38)	(1.42)	(1.57)	(1.89)	(1.92)	(1.68)	(0.01)	5.14	12.05	23.60	39.86	53.35
GAAP-EPS (Dil)	(3.55)	(0.35)	(0.33)	(0.36)	(0.38)	(1.42)	(1.57)	(1.89)	(1.92)	(1.68)	(0.01)	5.14	12.05	23.60	39.86	53.35
Wgtd Avg Shrs (Bas) - '000s	16,992	36,569	41,206	41,247	41,288	40,078	41,392	41,557	41,724	41,891	42,059	42,227	42,397	42,566	42,737	42,908
Wgtd Avg Shrs (Dil) - '000s	16,992	36,569	41,206	41,247	41,288	40,078	41,392	41,557	41,724	41,891	42,059	42,227	42,397	42,566	42,737	42,908

Source: Company reports and Maxim

Biotechnology – Psychedelics

CLXPF - OTCQB June 27, 2021

Closing Price 6/25/21	**$2.21**
NEO: CYBN	C$2.72
Rating:	Buy
12-Month Target Price:	$5.00
52-Week Range:	$0.04 - $2.26
Market Cap (M):	324.2
Shares O/S (M):	146.7
Float:	95.9%
Avg. Daily Volume (000):	422.5
Debt (M):	$0.0
Dividend:	$0.00
Dividend Yield:	0.0%
Risk Profile:	Speculative
Fiscal Year End:	March

Total Expenses ('000)

	2021E	2022E	2023E
1Q	C$3,897A	C$6,900	C$8,538
2Q	C$2,561A	C$7,200	C$8,909
3Q	C$11,379A	C$7,800	C$9,651
4Q	C$7,280	C$8,100	C$10,022
FY	C$25,116	C$30,000	C$37,120

Cybin is listed on the NEO Exchange in Canada under the symbol "CYBN" and OTCMKTS under the symbol "CLXPF". The stock does not trade on a US National Exchange. Financial data is reported in Canadian dollars (C$) and is represented as such in our models. Market data including the stock price and target price are translated into US dollars (USD).

Jason McCarthy, Ph.D.
(212) 895-3556
jmccarthy@maximgrp.com

Michael Okunewitch
(212) 895-3579
mokunewitch@maximgrp.com

Cybin Inc.

Buy

Differentiation Matters in Psychedelics: Adulteration, Sublingual – Initiating Coverage with a Buy Rating & $5 PT

Summary

- **Cybin is developing lead asset CYB001, currently the only sublingual (under-the-tongue) film formulation of psilocybin in clinical development, for major depressive disorder (MDD).**
- **The rationale for the sublingual delivery approach is to enable a rapid absorption of psilocybin into the bloodstream via bypassing the first metabolism, which results in a shorter treatment duration.**
- **CYB001 is expected to enter a P2a bioequivalence study (vs. 25mg oral capsule) in C3Q21, followed by a global P2b study to evaluate its safety and efficacy in patients with MDD by YE21.**
- **The company's pipeline also includes next-generation deuterated tryptamines, CYB003 and CYB004, which are focusing on extending (vs. shortening with CYB001) the duration of short-acting tryptamines for a more ideal therapeutic profile.**
- **Conclusion. Cybin is among the most advanced companies in developing psilocybin, addressing the time and logistical burden associated with longer-acting oral psilocybin (duration of 6+ hours), with its shorter-acting CYB001. Additionally, Cybin's team has experience within the psychedelic drug development area, as several members were previously involved with the development of the ketamine-based drug Spravato. Combined with IP protection and a high-value pipeline, at a $250M USD market cap, we consider Cybin undervalued.**

Details

CYB001 – sublingual film formulation psilocybin. Cybin is developing psilocybin as a dissolvable thin film formulation (CYB001) using IntelGenx's (IGXT - NR) VersaFilm technology. Psilocybin is a naturally occurring compound that has been shown to act as a 5-HT2a agonist. It has demonstrated the potential to treat mental health disorders, including major depressive disorder (MDD). The goal for CYB001, via its differentiated delivery, is to achieve faster onset, shorter treatment duration, and a lower effective dose. Shorter acting treatment is one of the key factors for differentiating psychedelics, as the 6+ hour duration of oral psilocybin places a high logistical burden on patients and treatment centers. Also, through differentiated delivery, CYB001 has the potential for IP protection, which remains a challenge in the space. The P2a bioequivalence study (vs. COMP360) is expected to initiate in C3Q21, with data readout anticipated 2H21. If positive, the results should enable a P2b study of CYB001 in N=120 MDD patients thereafter.

CYB003 and CYB004 – deuterated tryptamines. Deuteration is a well-established process that substitutes one or more hydrogens in a compound with deuterium to increase its molecular weight and alter certain PK properties, without significantly altering the activity or structure. Cybin's pipeline includes two next-generation deuterated tryptamine molecules, CYB003 and CYB004. By extending the duration of short-acting tryptamines, it may provide greater scalability and produce a more ideal duration of treatment in clinical settings. Moreover, this method could provide IP around composition of matter patentability as CYB003 and 004 represent new chemical entities. Both molecules are expected to enter a P1 study in 2022 for the treatment of alcohol use disorder and anxiety disorders, respectively.

Valuation. We model commercialization of CYB001 for MDD in FY26 for the US and FY27 in the EU. A 70% risk adjustment is factored in based on stage of development, clinical trial risk, commercial risk and other factors. A 30% discount is then applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $5 USD.

CORPORATE PROFILE

Cybin Inc. (NEO: CYBN)
5600-100 King St W, Toronto
ON M5X 1C9
www.cybin.com

Investment Risk: Cybin's products are not approved and the company currently does not generate revenue.

Regulatory Risk: Cybin's products may not be successful in clinical trials and may not meet the requirements for regulatory approval(s).

Commercial Risk: Cybin's products are not approved and commercialized, and if/when they become commercially available they may not achieve significant market share. In addition the company lacks commercial infrastructure to support commercialization.

Financial Risk: Cybin is not profitable and may need to raise additional capital to support operations.

Dilution Risk: Capital raises to fund operations may dilute investors.

Ownership:
Institutional: 2.8%
Insiders: 4.1%

Balance Sheet Summary (as of 12/31/20):
Cash: C$40M
Debt: $0
*Subsequent to quarter-end, the company raised C$34M.

Analysts Covering the Stock (other than Maxim): 3 (Buy)

Company Background. Cybin is a life sciences company focused on advancing pharmaceutical therapies, delivery mechanisms, novel compounds, and protocols as potential therapies for various psychiatric and neurological conditions. The company is developing technologies and delivery systems aiming to improve the pharmacokinetics of its psychedelic molecules while retaining the therapeutics benefit. The new molecules and delivery systems are expected to be studied through clinical trials to confirm safety and efficacy.

Senior Management:

Doug Drysdale, Chief Executive Officer – Doug has chaired the Board of Directors of a NASDAQ-listed company, has served as a CEO for the past 12 years, and has built and turned around three pharmaceutical companies. During Mr. Drysdale's 30 years of experience in the healthcare sector, he has formed cohesive management teams, recruited board members, completed 15 corporate acquisitions across three continents, and has raised $4 billion in both public and private capital. He also led the turnaround of Norwich Pharmaceuticals alongside investors and became the Founding CEO of parent company, Alvogen Group. During his 5.5 year tenure as CEO, Alvogen grew from inception to $450 million in revenues across 35 countries. In early 2014, Mr. Drysdale led the recapitalization of NASDAQ-listed Pernix Therapeutics and raised $65 million. Within the first year of taking the helm as Chairman and CEO, he rebuilt the management team and Board of Directors, combined several operating locations, and grew the company's enterprise value from $80 million to around $800 million. Under Mr. Drysdale's leadership, Pernix raised $465 million of capital. From November 2017 to July 2020, he was a Director and CEO of Tedor Pharma, a family owned contract manufacturing business. Mr. Drysdale's efforts to turnaround the business resulted in 60% revenue growth in 2019, leading to Tedor being recognized as one of America's fastest-growing companies, making it to the 2020 Inc 5000 list. Former Head of M&A at Actavis Group, leading 15 corporate acquisitions across three continents between 2004 and 2008, including a high-profile public hostile takeover attempt in Central Eastern Europe. Over this period, Mr. Drysdale raised approximately $3 billion of capital and managed lending syndicates including 25+ banks, to fund the company's growth. Actavis was sold to Watson Pharmaceuticals in 2012 for EUR4.25 billion. Mr. Drysdale holds a bachelor's degree in microbial and molecular biology from the University of East Anglia in the UK and was recognized as Entrepreneur of the Year by Ernst and Young in 2012. Mr. Drysdale is an enthusiastic traveler, having traveled to over 45 countries, is an avid reader, and enjoys cooking and boating.

Eric So, Co-founder and President – Eric So is a Co-founder and President of Cybin. He is a veteran owner and operator of various public and private companies over the last 15 years and has led C-level corporate strategy, development and finance at all stages of the business life cycle from start-up to high growth and multinational. He began his career practicing in the areas of corporate commercial, securities, finance and mergers and acquisitions at Torys LLP. Eric holds a Bachelor of Science major in anatomy and cell biology and minor in psychology from McGill University. He also holds a Bachelor of Laws from the University of Windsor.

Greg Cavers, Chief Financial Officer – Greg Cavers has over 20 years of experience specializing in transforming and revitalizing corporate finance departments. Mr. Cavers has experience in service operations in varying stages of growth leading; business unit start-ups, restructuring, system implementations, and merger integrations while increasing profitability, minimizing risk and dedicated to meeting financial reporting, IFRS; as well as regulatory reporting OSFI, MFDA requirements.

Additional Cybin team members and their associated bios can be found here.

INVESTMENT SUMMARY

Bull Case. The development of psychedelic-based medicines has gained traction in recent years as a growing body of evidence points to their therapeutic efficacy in treating various mental health and neuropsychiatric disorders (depression, anxiety, PTSD, addiction etc.), as well as neurodegenerative diseases. Psychedelic compounds like psilocybin, DMT, and others, have been the subject of clinical research stemming from the 1950s and the resurgence of interest has led to a race in the clinic to approve these compounds, and while Compass Pathways (CMPS - Buy) is in the lead with its psilocybin, COMP-360, Cybin is close behind with a differentiated approach. Due to the history of its clinical and non-clinical use, there is a large body of data supporting safety profiles, major effects associated with use, and durations. The latter is of particular importance when focusing on drug development, as it directly translates to the overall therapy duration in the clinic. In the case of longer acting psychedelics, such as psilocybin (duration of 6+ hours), there is a significant time and logistical burden placed on the patients, facility, and personnel involved, including therapists for when there is a psychotherapy component included. As such, reduced duration of action has become a key target for improving psychedelic therapy. Through its partnership with IntelGenx (IGXT – NR), Cybin is developing its lead asset, CYB001, as an orally dissolving sublingual (under-the-tongue) film formulation of psilocybin to treat major depressive disorder (MDD). We note the big players in the space have taken notice of the importance of drug delivery. In particular, ATAI (ATAI - NR) has taken a 25% stake in IntelGenx for its oral thin film platform, which provides further validation for the approach. Sublingual delivery of psilocybin may enable a more rapid absorption into the bloodstream via bypassing first pass metabolism in the liver. This prevents gastro-intestinal absorption of the molecule, which is expected to result in superior drug bioavailability and shorter onset, reducing the overall time on drug. Furthermore, this may decrease the amount of psilocybin required per dose compared to oral capsules (like COMP-360), which could have additional effects on duration. With novel delivery technology, Cybin has the significant advantage of IP protection, which remains a challenge in the space, since psilocybin is a generic. CYB001 is anticipated to enter a Phase 2a bioequivalence study by C3Q21 followed by a Phase 2b study in patients with MDD planned for C2H21. Cybin is not stopping at psilocybin, however, with its deuterated tryptamine program, which takes the opposite, and potentially easier, approach, extending the duration of short acting tryptamines. Bulls see Cybin as undervalued, with one of the most advanced psilocybin candidates in the space, IP protection, and with an improved delivery method, which could drive increased adoption.

Bear Case. Despite the existing clinical and anecdotal evidence for psychedelic therapy, there is a lack of data obtained from rigorous, large-scale clinical trials. As such, historical data available on these compounds are not as credible as the data that will readout from currently ongoing clinical studies. Bears prefer a wait and see approach to the space as we wait for those results to provide a more definitive proof-of-concept. For Cybin, data readout is expected to happen in 2022. In addition, while Cybin offers a differentiated method of delivery with its psilocybin candidate, sublingual delivery can be relatively more difficult to formulate than oral capsules. Moreover, the desired effects and/or rapidity of onset have not been proven in the clinic, so there's still risk. Other players in the space, such as Compass Pathways (CMPS – BUY), are also targeting the development of psilocybin, but are in later-stage of development. This increases the potential for competition in the space.

Our Take. MDD remains one of the most common mental health conditions in the US, yet there has been a lack of 'real' innovation in the space for several decades, with the exception of the approval of Spravato (esketamine) in 2020. Though ketamine is a dissociative, this event was a major catalyst for the resurgence of the psychedelic space. The potential use of psychedelic compounds as treatments for a variety of mental health disorders continues to be supported by a growing body of evidence being published by both large and small healthcare players in the space, as well as academic institutions. For psilocybin, numerous datasets have been reported that support its therapeutic benefits in various depressive disorders (treatment-resistant depression, MDD, etc.), as well as its positive safety profile with low toxicity and no serious adverse events. While there are a number of synthetic psilocybin molecules currently being developed and evaluated in the clinic, CYB001 is differentiated from the rest due to its sublingual delivery method, which is designed to deliver faster onset of action, shorter treatment duration, and a lower effective dose. This could significantly increase the convenience for both the patients and physicians/therapists during treatment sessions, while reducing the logistical burden on facilities as well, therefore improving scalability. CYB001 is the subject of an ongoing P2a study (N=40) comparing several doses of sublingual film vs. oral capsule (25mg), with the goal of finding a bioequivalent dose. The data readout from this study is expected in C2H21, followed by the initiation of a P2b study in MDD (N=120). It is also critical to note, that by targeting sublingual delivery, Cybin can take advantage of IP protection, which is a challenge for many in the space given that psilocybin is in the public domain. The company is well-funded allowing it to reach these milestones with ~C$60M in cash. Aside from its psilocybin program, the company's development pipeline also includes next-generation deuterated tryptamine molecules, which were acquired in December 2020 via the company's acquisition of Adelia Therapeutics. Cybin plans to focus initially on the development of its candidates, CYB003 and CYB004, for the potential treatment of alcohol use disorder and anxiety disorders, respectively. Importantly, deuterated tryptamines have the potential to circumvent challenges of long duration and may provide the company with stronger IP around composition of matter. Deuteration is an established strategy to increase the duration of therapy and reduce onset time, and while the focus for CYB001 is reduced duration, CYB003 and CYB004 are taking the opposite approach, using a tryptamine that is shorter than ideal, and extending its duration to achieve an ideal therapeutic profile. For CYB003, proof-of-concept data has already been reported, demonstrating PK modification can occur without affecting the drug's receptor binding. Cybin is among the most advanced players in the psychedelic space and could be the second to market for psilocybin, with a differentiated shorter-acting product, which should be attractive to both patients and treatment centers. In our view, Cybin remains attractive at its ~C$300M market cap with its lead asset CYB001 targeting MDD, which has an unmet need despite its large market size, in addition to its pipeline of next-gen deuterated molecules.

Finances. Cybin reported F3Q21 (Dec) on 2/16 with a net loss of ($11.4M) and ended the period with C$40M. In F4Q21 (Mar), the company raised a total of C$34.3M (upsized from C$20M) in Feb. for 13.3M units consisting of one share and one warrant for 0.5 shares (C$3.25 exercise with the ability to accelerate the expiration if shares trade above C$5 for 10 consecutive days) at C$2.25 per unit. The proceeds from this offering are expected to provide cash runway for 24-36 months. We estimate a burn rate of ~$7M per quarter and factor multiple capital raises

into our model. Cybin went public on the Canadian-based Neo Exchange with the ticker CYBN on 11/10/20 through a reverse takeover transaction with Clarmin Explorations and began trading on the OTCQB Venture Market under the ticker CLXPF on 3/08/21.

Exhibit 1. Upcoming Catalysts (calendar year).

Product	Indication	Event	Timeline	Impact
CYB001 (sublingual film)	Major Depressive Disorder	Initiate Phase 2a study	3Q21	+
CYB001 (sublingual film)	Major Depressive Disorder	Report Phase 2a data	2H21	+++
CYB001 (sublingual film)	Major Depressive Disorder	Initiate Phase 2b study	YE21	+
CYB003 (ODT* deuterated tryptamine)	Alcohol Use Disorder	Initiate Phase 1 study	1Q22	+
CYB001 (sublingual film)	Major Depressive Disorder	Report Phase 2b data	1H22	+++
CYB004 (Inhalated deuterated tryptamine)	Anxiety Disorders	Initiate Phase 1 study	1H22	+

** ODT = Orally Disintegrating Tablet*

Stock Significance Scale: + of moderate importance; ++ higher level; +++ very important

Source: Company reports and Maxim Forecasts

Exhibit 2. Pipeline.

Product	Indication	Discovery	Preclinical	Phase I	Phase II	Phase III	Marketed
CYB001 (Sublingual Film of Psilocybin)	Major Depressive Disorder						
CYB003 (ODT* form of Deuterated Tryptamine)	Alcohol Use Disorder						
CYB004 (Inhalation form of Deuterated Tryptamine)	Anxiety Disorders						
CYB005 (Phenethylamines)	Psychiatry/Neurology						

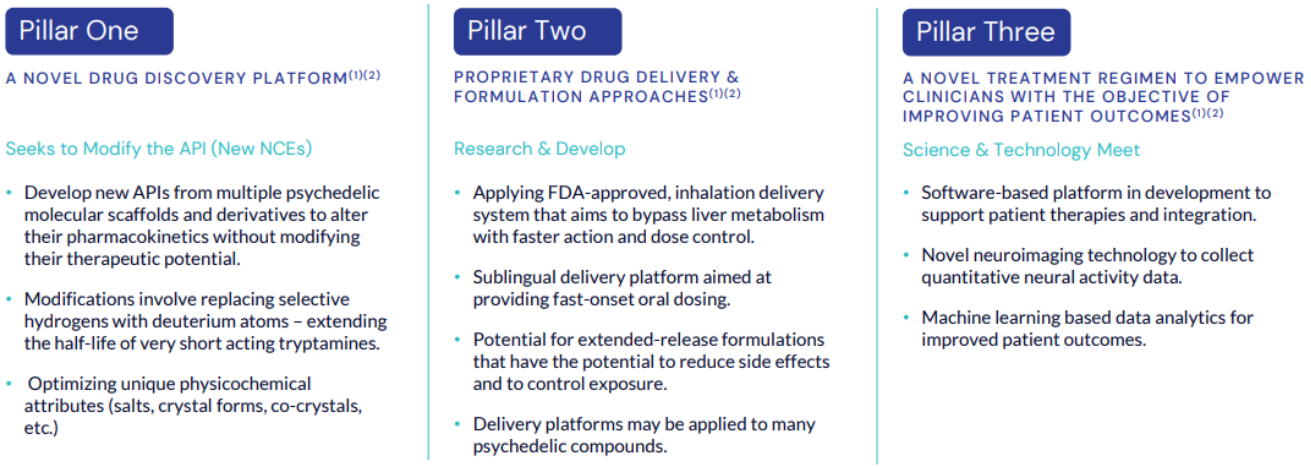
Zydis Technology

** ODT = Orally Disintegrating Tablet*

Source: Company Reports and Maxim

CYB001 – Sublingual Psilocybin Strips

Exhibit 3. Cybin's development strategy. The company is utilizing the following development strategies for its psychedelic therapeutics that target various psychiatric disorders. **Pillar 1 –** involves novel drug discovery via developing new active pharmaceutical ingredients (APIs) from multiple psychedelic molecular scaffolds. The goal is to alter the pharmacokinetic profiles of these molecules without modifying their therapeutic potential. **Pillar 2 –** the company's proprietary drug delivery mechanism and formulation approaches, include inhalation delivery, sublingual delivery, and extended-release formulations. Applying these delivery platforms to psychedelic compounds may provide faster onset of action and dose control. **Pillar 3 –** through incorporating a novel neuroimaging technology into its psychedelic treatments, the company aims to obtain quantitative measurements that may improve the development, delivery, and scaling of its psychedelic therapeutics.



Source: Cybin Presentation

Differentiated delivery approach of psilocybin. Currently, most companies that are developing psilocybin for use in psychedelic-assisted therapy employ a 25mg dose of synthetic compound in a capsule. As discussed in the industry section above, the effects of psilocybin usually last up to 6+ hours; the long duration is likely due to ingesting psilocybin via an oral route of administration, whereby psilocybin will have to pass through the digestive system to become converted to its active metabolite, psilocin. During this process, much of the psilocin undergoes first-pass metabolism in the liver, where approximately 50% of the dose is lost and unable to reach the brain, and the effects could possibly take 30 minutes or more to 'kick in.' From a clinical perspective, a drug that provides a more rapid onset and shorter duration of action could represent a more ideal product, especially if this could potentially reduce the hours of treatment session per patient in the clinical setting. To date, Cybin is the only company to our knowledge that is currently developing a sublingual (under-the-tongue) formulation of psilocybin, with its lead asset **CYB001**. Through its partnership with IntelGenx (IGXT – NR), Cybin is utilizing the company's VersaFilm technology platform to develop a dissolvable thin film formulation of psilocybin. As a dissolvable thin film placed under the tongue, CYB001 is designed to be absorbed through the mucous membranes in the mouth. As such, CYB001 could potentially allow psilocybin to bypass first pass metabolism and enter the bloodstream directly, resulting in increased bioavailability of the compound. In addition, through this method of delivery, a lower dose of psilocybin could potentially be required (vs. oral capsules), which could potentially further reduce the total duration while increasing safety.

Exhibit 4. CYB001 – Phase 2a/2b clinical trial in major depressive disorder (MDD). On 5/18/21, Cybin announced its Phase 2 clinical study of CYB001 psilocybin in major depressive disorder (MDD), was granted approval to initiate at the University of the West Indies Hospital, in Jamaica. First to commence will be the open-label, parallel-group, P2a study (N=40), which seeks to determine the bioequivalent dose of CYB001 sublingual film (1, 3, 5, or 7mg) vs. 25mg oral capsule. Provided that positive results are achieved from the P2a study, a double-blind, P2b (N=120; 80 in CYB001-treatment group, 40 in placebo group) study is expected to follow in North America (including US sites). The duration for this study will be approximately 12 months with a 4-week follow-up period. MDD patients with moderate depression as measured by Montgomery-Åsberg Depression Rating Scale (MADRS) score of 18-34 will be enrolled into the study, which has a primary endpoint of change in MADRS score at day 30. The safety, tolerability, and efficacy data readout from this trial is anticipated in 2022. The initial P2a bioequivalence study is anticipated to initiate in C2Q21, followed by the P2b study initiation in C2H21.

PHASE IIa

	Psilocybin (PY)					
	Sublingual Film				Caps	Total Patients
Randomized Parallel Group Open Label BE Study	1 mg	3 mg	5 mg	7 mg	25 mg	
	8	8	8	8	8	40

PHASE IIb

Randomized Double Blind Placebo Controlled Safety & Efficacy Study	Selected Dose PY Sublingual Film	Placebo	Total Patients
	80	40	120

- MDD Patients with moderate depression (MADRS Montgomery-Åsberg Depression Rating Scale score 18 34).
- Primary efficacy at 30 days.
- Patients will be followed for 4 months for safety and efficacy.

Duration: Approx. 12 Months
Clinical trial will adhere to ICH and GCP guidelines, with the aim to utilize clinical data in jurisdictions such as USA, Canada and Europe.(1)(2)

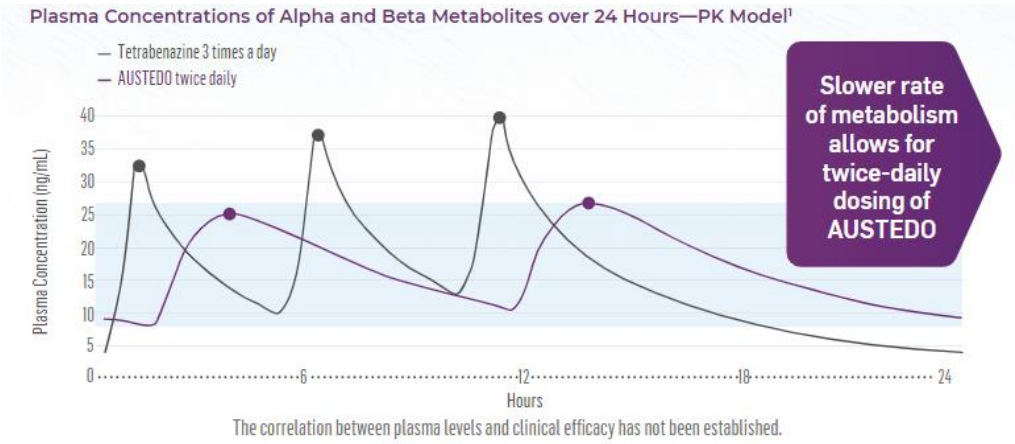
Source: Cybin Presentation

Deuterated Tryptamines

Deuteration. Deuterium is the second most common hydrogen isotope and contains one extra neutron making it twice the molecular weight, while maintaining largely identical physical properties. Deuteration is the process of substituting one or more hydrogens in a compound with deuterium, increasing its molecular weight and altering certain properties, without significantly altering the activity or structure of the molecule. Some of the advantages for this include a change in reaction rate through the kinetic isotope effect (more difficult to break the deuterium bonds), increasing the half-life of a drug by lowering metabolism. This generally has to do with breakdown in the liver, which is typically done through breaking of the C-H bonds, so placing in a few deuterium atoms can have a marked increase in the time the drug stays in the bloodstream. Deuteration can also increase the stability of a drug, reducing interactions with other molecules. Currently, there are more than 20 deuterated

molecules in development, of which approximately half a dozen are in P3 clinical development. There has also been activity on the M&A side, with Vertex (VRTX – HOLD) purchasing a deuterated formulation (VX-561) for $160M from Concert Pharmaceuticals' (CNCE – NR) in 2017.

Exhibit 5. Example of deuteration effect on PK properties – Austedo. The first approval for a deuterated compound was Teva's (TEVA – NR) Austedo in 2017 for movement disorders, which is a deuterated version of tetrabenazine, an older compound used for treatment of movement disorders. Austedo contains six deuterium atoms and 21 hydrogen atoms, increasing the molecular weight to 323.5, from 317.4. Teva generated $637M in revenue from Austedo in 2020, and expects to generate $950M in 2021.



Source: www.austedohcp.com

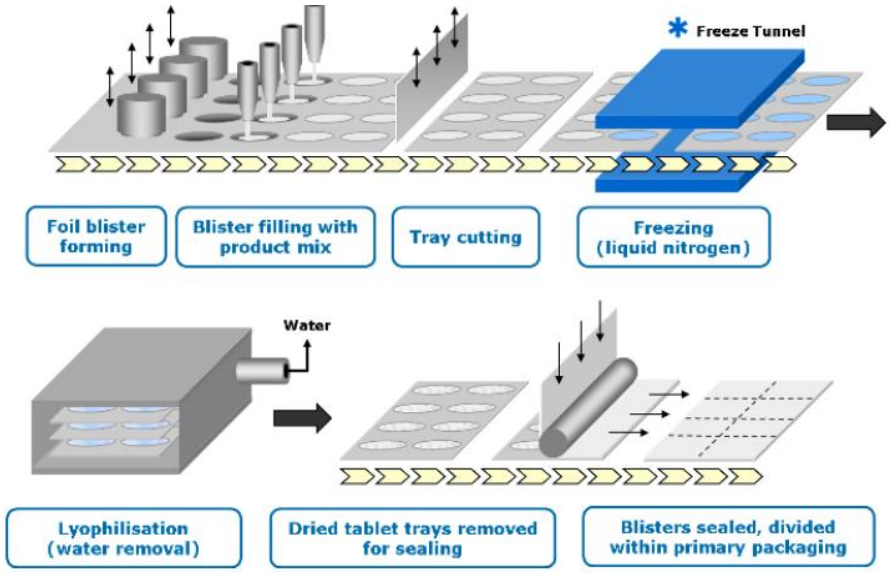
Deuterated tryptamine technology platform. In the psychedelic space, duration of therapy and IP are critical factors for any drug candidate. Cybin's approach of using deuteration to adjust the PK properties of compounds has the potential to address both. On the IP side, deuterated drugs can be considered new chemical entities, avoiding the IP constraints of generic drugs like DMT or phenylethylamines, while reducing the risk of using completely new compounds, since they are structurally the same drug minus the deuterium substitutions. As for duration of therapy, much of the focus in the space has been on reducing the duration of drugs like psilocybin, which can last 6+ hours which is inconvenient for patients and psychotherapists. Ketamine at 2 hours, is often viewed as a baseline. Cybin's deuterated tryptamine compounds, CYB003 and CYB004, take a differentiated approach from much of the space, extending the duration of shorter acting tryptamines to achieve the same end. In the case of DMT, deuteration has also been found to inhibit MAO activity, reducing or eliminating the need for coadministration of an MAOI for oral administration as well as decreasing onset time, which is also useful for psychedelic therapies.[1,2]

Preclinical programs. Cybin has developed a discovery pipeline of ~50 different proprietary psychedelic molecules to date, which fall under three major therapeutic programs: 1) psilocybin formulations, 2) deuterated tryptamines, and 3) phenethylamines. In accordance with the acquisition of Adelia Therapeutics in December 2020, Cybin has expanded and diversified its development pipeline by acquiring preclinical programs of deuterated tryptamine and phenethylamine molecules. Specifically on the deuterated tryptamines side, CYB003 and CYB004 are the two candidates that the company will initially advance toward the clinic. Proof-of-concept (POC) studies have confirmed the molecules retained their full therapeutic pharmacology following selective deuteration. This was demonstrated by comparing the effects of deuterated vs. non-deuterated parent molecules across a serotonin selectivity panel. Moreover, the results support the advancement of these molecules into the clinic, with the initiation of P1 studies anticipated in 2022.

- **CYB003 in alcohol use disorder.** Through its partnership development program with Catalent (CTLT – NR), Cybin is leveraging the Zydis technology to develop CYB003 as an orally disintegrating tablet (ODT), for the treatment of alcohol use disorder (AUD). The Zydis platform represents a best-in-class ODT technology, designed to create a freeze-dried tablet that disperses almost instantly in the mouth with no water required. This approach is designed to enable pre-gastric delivery of the molecule, thereby preventing first pass metabolism, which could potentially improve the drug's PK profile. Prior POC data have provided support for an IND filing of CYB003.
- **CYB004 in psychiatry/neurology indications.** The second candidate in this program, CYB004, is an inhaled formulation of deuterated tryptamine indicated to treat psychiatry/neurology conditions with high unmet medical needs. Cybin has partnered with Covance, a LapCorp Company (LH – NR) to advance CYB004 into the clinic. The company announced on 6/16 that it would be advancing CYB004 into development for generalized anxiety disorder (GAD) and social anxiety disorder (SAD).

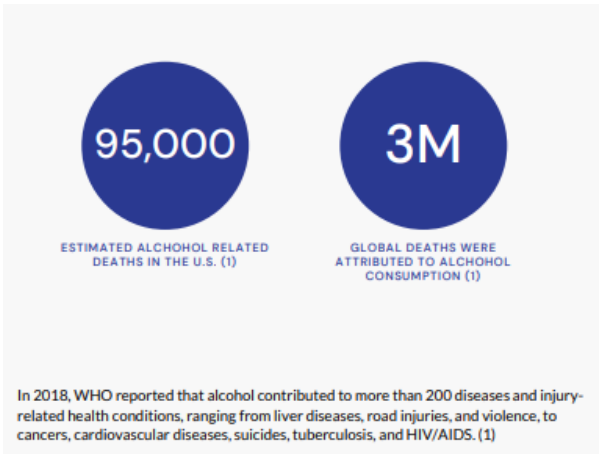
[1] Halberstadt AL, et al. Behavioral effects of α,α,β,β-tetradeutero-5-MeO-DMT in rats: comparison with 5-MeO-DMT administered in combination with a monoamine oxidase inhibitor. Psychopharmacology. 2012 Jun;221(4):709-718.
[2] Beaton JM, et al. A comparison of the behavioral effects of proteo-and deutero-N, N-dimethyltryptamine. Pharmacol Biochem Behav. 1982 May;16(5):811-4.

Exhibit 6. Zydis technology used to develop CYB004. The orally disintegrating tablets created with the Zydis technology undergo four stages: **(1) Mixing** – the compound is formulated into a liquid solution or suspension; **(2) Filling and freezing** – the liquid is filled into pre-formed blisters and passed through a cryogenic freezing process to control the size of the ice crystals; **(3) Lyophilization** – the frozen units are transferred to freeze dryers; **(4) Sealing** – the blisters containing the dried units are then sealed via a heat-seal process to protect the product from varying environmental conditions and ensure long-term stability.



Source: www.catalent.com/oral-dose/oral-technologies/orally-disintegrating-tablets/

Exhibit 7. National Institute on alcohol abuse and alcoholism. Patients with substance use disorders, including AUD, are currently the subjects of clinical studies evaluating psychedelic compounds as treatments. AUD is a chronic relapsing brain disorder characterized by an impaired ability to stop or control alcohol use despite adverse social, occupational, or health consequences. In 2018, the World Health Organization (WHO) reported that alcohol contributed to more than 200 diseases and injury related health conditions, ranging from liver diseases, road injuries, and violence, to cancers, cardiovascular diseases, suicides, tuberculosis, and HIV/AIDS.[3]



Source: Cybin Presentation

[3] https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/alcohol-facts-and-statistics

Kernel Neuroimaging Technology

Quantifying brain activity with Flow neuroimaging. Cybin has established a partnership agreement with Kernel (private) to utilize its Flow neuroimaging technology, which enables quantification of brain activity in real time during psychedelic experiences. Flow is a head-worn, scalable, non-invasive neuroimaging system that leverages time-domain functional near-infrared spectroscopy (TD-fNIRS) – a gold standard optical method for detecting cortical hemodynamics (brain's blood flow). In comparison to traditional NIRS devices, which apply light to the head continuously and is detected at various locations upon exiting the head, TD-fNIRS captures a much richer signal by applying light in short pulses and precisely capturing the arrival time distribution of scattered photons from each pulse. This "time-of-flight" measurement exhibits depth-dependent information and optical properties of the brain. Integration of a neuroimaging component into future clinical trials could potentially improve patient outcomes, as data gathered during the sessions could assist in designing more targeted treatment plans for patients. Cybin anticipates the use of Kernel Flow will be incorporated in clinical studies at academic research institutions in C2H21. The data provided from these studies could potentially help the company inform the design of future clinical studies.

Exhibit 8. Kernel Flow: first commercially scalable, time-domain, functional, near-infrared, spectroscopy system. Flow is a full-head coverage, TD-fNIRS that pulses light through the skull and into the bloodstream in order to measure how much oxygen the blood is carrying at any given time. Comprehensive real-time data sets obtained during patients' psychedelic experiences can translate to quantifiable brain data that could potentially improve the safety and efficacy of drug development and treatment regimens.

Source: Cybin Presentation; Cybin Website.

MODELING ASSUMPTIONS

1. We assume that CYB001 psilocybin is commercialized in FY2026 in the US and in FY2027 in the EU for major depressive disorder (MDD).
2. The US adult population (18+) is ~244M and in this population, the prevalence of MDD is 6.7% or ~16M. We assume only 60% (9.8M) of people with MDD seek treatment.
3. We assume pricing of $25K in the US and $20K in the EU. This is a discount to nasal ketamine therapy (Spravato) which is priced at $4,700-$6,800 in the first month, followed by $2,500-$3,500 for maintenance treatment. All in, Spravato can cost $33K-$49K per year. Given that psilocybin therapy is likely to be used once, or possibly a handful of times, we believe pricing may be at a discount to what Spravato costs. Our model also assumes that Cybin will only have CYB001 drug and not participate in the revenue streams that could be generated from the psychotherapy, patient care, and facility/delivery aspects of psychedelic therapy.
4. A risk adjustment of 70% is factored in based on stage of development, clinical trial risk, commercial risk, and other factors.

Exhibit 9. CYB001, US Market Model.

CYB001 Psilocybin, Major Depressive Disorder (MDD) (US)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
US Population	328,200,000	331,482,000	334,796,820	338,144,788	341,526,236	344,941,498	348,390,913	351,874,823	355,393,571	358,947,506	362,536,982	366,162,351	369,823,975
US Adult population 18+ (74.3%)	243,852,600	246,291,126	248,754,037	251,241,578	253,753,993	256,291,533	258,854,449	261,442,993	264,057,423	266,697,997	269,364,977	272,058,627	274,779,213
Major Depressive Disorder (MDD) (Adult 6.7%)	16,338,124	16,501,505	16,666,520	16,833,186	17,001,518	17,171,533	17,343,248	17,516,681	17,691,847	17,868,766	18,047,453	18,227,928	18,410,207
MDD diagnosed, seeking treatment (60%)	9,802,875	9,900,903	9,999,912	10,099,911	10,200,911	10,302,920	10,405,949	10,510,008	10,615,108	10,721,259	10,828,472	10,936,757	11,046,124
Market Penetration								0.06%	0.08%	0.20%	0.40%	0.60%	0.80%
Total Patients Treated								6,306	8,492	21,443	43,314	65,621	88,369
Cost of Treatment (CYB001)								$ 25,000	$ 26,250	$ 27,563	$ 28,941	$ 30,388	$ 31,907
Increase in Cost								5%	5%	5%	5%	5%	5%
Total revenue ('000)								$ 157,650	$ 222,917	$ 591,009	$ 1,253,531	$ 1,994,054	$ 2,819,593
Risk adjustment								70%	70%	70%	70%	70%	70%
Total Revenue ('000)								**$ 47,295**	**$ 66,875**	**$ 177,303**	**$ 376,059**	**$ 598,216**	**$ 845,878**

Source: Maxim Estimates

Exhibit 10. CYB001, EU Market Model.

CYB001 Psilocybin, Major Depressive Disorder (MDD) (EU)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
EU5 Population	322,924,057	329,382,538	335,970,189	342,689,593	349,543,385	356,534,252	363,664,937	370,938,236	378,357,001	385,924,141	393,642,624	401,515,476	409,545,786
Adult population 18+ (74.3%)	239,932,574	244,731,226	249,625,850	254,618,367	259,710,735	264,904,949	270,203,048	275,607,109	281,119,252	286,741,637	292,476,469	298,325,999	304,292,519
Major Depressive Disorder (MDD) (Adult 6.7%)	16,075,482	16,396,992	16,724,932	17,059,431	17,400,619	17,748,632	18,103,604	18,465,676	18,834,990	19,211,690	19,595,923	19,987,842	20,387,599
MDD diagnosed, seeking treatment (60%)	9,645,289	9,838,195	10,034,959	10,235,658	10,440,372	10,649,179	10,862,163	11,079,406	11,300,994	11,527,014	11,757,554	11,992,705	12,232,559
Market Penetration									0.06%	0.12%	0.20%	0.40%	0.75%
Total Patients Treated									6,781	13,832	23,515	47,971	91,744
Cost of Treatment									$ 20,000	$ 21,000	$ 22,050	$ 23,153	$ 24,310
Increase in Cost									5%	5%	5%	5%	5%
Total revenue ('000)									$ 135,612	$ 290,481	$ 518,508	$ 1,110,644	$ 2,230,313
Risk adjustment									70%	70%	70%	70%	70%
Total Revenue ('000)									**$ 40,684**	**$ 87,144**	**$ 155,552**	**$ 333,193**	**$ 669,094**

Source: Maxim Estimates

VALUATION

We model commercialization of CYB001 psilocybin in FY2026 in the US and in FY2027 in the EU for major depressive disorder (MDD). A platform value is assigned to the remaining programs (deuterated tryptamines and phenethylamines) due to their earlier stage of development. A 70% risk adjustment is factored in based on stage of development, clinical trial risk, commercial risk and other factors. A 30% discount is then applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $5.00 USD.

Exhibit 11. Free Cash Flow Model.

Average	5

DCF Valuation Using FCF (mln):

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
units ('000)	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**
EBIT	(814)	(24,266)	(30,000)	(37,120)	(42,241)	(42,664)	(27,226)	10,527	107,237	314,840	594,126	1,002,041
Tax Rate	0%	0%	0%	0%	0%	0%	0%	0%	2%	5%	8%	10%
EBIT (1-t)	(814)	(24,266)	(30,000)	(37,120)	(42,241)	(42,664)	(27,226)	10,527	105,092	299,098	546,596	901,837
CapEx	-	(90)	-	-	-	-	-	-	-	-	-	-
Depreciation	-	13	-	-	-	-	-	-	-	-	-	-
Change in NWC												
FCF	(814)	(24,343)	(30,000)	(37,120)	(42,241)	(42,664)	(27,226)	10,527	105,092	299,098	546,596	901,837
PV of FCF	(1,376)	(31,646)	(30,000)	(28,554)	(24,995)	(19,419)	(9,533)	2,835	21,773	47,666	67,007	85,043

Discount Rate	30%
Long Term Growth Rate	1%
Terminal Cash Flow	3,140,880
Terminal Value YE2030	296,184
NPV	376,361
NPV-Debt	
Shares out ('000)	124,951
NPV Per Share	3

2031E

Source: Maxim estimates

Exhibit 12. Discounted-EPS Model.

Current Year	2022
Year of EPS	2031
Earnings Multiple	10
Discount Factor	30%
Selected Year EPS	7.22
NPV	7

Source: Maxim estimates

	Discount Rate and Earnings Multiple Varies, Year is Constant						
	6.81	**5%**	**10%**	**15%**	**20%**	**25%**	**30%**
Earnings Multiple	**0**	0	0	0	0	0	0
	5	23.26	15.30	10.26	6.99	4.84	3.40
	10	46.52	30.61	20.52	13.99	9.69	6.81
	15	69.79	45.91	30.78	20.98	14.53	10.21
	20	93.05	61.22	41.03	27.98	19.37	13.61
	25	116.31	76.52	51.29	34.97	24.22	17.02
	30	139.57	91.83	61.55	41.96	29.06	20.42
	35	162.84	107.13	71.81	48.96	33.91	23.82

Exhibit 13. Sum-of-the-Parts Model.

Cybin Inc.	LT Gr	Discount Rate	Yrs to Mkt	% Success	Peak Sales (MM's)	Term Value
CYB001 psilocybin MDD (US/EU)	1%	30%	3	40%	$1,515	$5,224
NPV						$3.81
Platform	1%	30%	5	30%	$800	$2,759
NPV						$1
Net Margin						50%
MM Shrs OS (2031E)						125
Total						$5

Source: Maxim estimates

Cybin, Inc.: Income Statement ($000 CAD)	Jan-Mar20	Apr-Jun20	Jul-Sept20	Oct-Dec20	Jan-Mar21	Jan-Mar21	Jan-Mar22	Jan-Mar23	Jan-Mar24	Jan-Mar25	Jan-Mar26	Jan-Mar27	Jan-Mar28	Jan-Mar29	Jan-Mar30	Jan-Mar31
YE December 31	**2020A**	**1Q21A**	**2Q21A**	**3Q21A**	**4Q21E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**
Revenue:																
CYB001 psilocybin treatment for Major Depressive Disorder (US, EU)											47,295	107,559	264,447	531,612	931,410	1,514,972
Hand cream products	-	864				864	-	-	-							
Net revenue	-	864	-	-	-	864	-	-	-	-	47,295	107,559	264,447	531,612	931,410	1,514,972
Collaborative revenue:																
Revenues																
Other Income	-					-	-	-	-	-	-	-	-	-	-	-
	-					-	-	-	-	-	-	-	-	-	-	-
Total Collaborative Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	-	864	-	-	-	864	-	-	-	-	47,295	107,559	264,447	531,612	931,410	1,514,972
Gross Margins:																
Cost of Goods Sold	-	664		-	-	664	-	-	-	-	18,918	40,872	100,490	159,484	279,423	454,492
%Gross Margin											60%	62%	62%	70%	70%	70%
Gross Profit	-	200	-	-	-	200	-	-	-	-	28,377	66,686	163,957	372,128	651,987	1,060,480
Operating Expenses:																
Research and Development	134	705	435	644	708	2,492	18,000	25,000	30,000	30,300	30,603	30,909	31,218	31,530	31,846	32,164
%R&D						-										
Selling, General and Administrative	616	31	1,339	6,506	6,571	14,448	12,000	12,120	12,241	12,364	25,000	25,250	25,503	25,758	26,015	26,275
%SG&A						-										
Share-based compensation	64	2,487	786	4,213		7,486										
Depreciation				13		13										
Accretion on convertible debt		10				10										
Travel				3		3										
Total Expenses	814	3,897	2,561	11,379	7,280	25,116	30,000	37,120	42,241	42,664	74,521	97,031	157,211	216,771	337,284	512,931
Operating Income (Loss)	(814)	(3,033)	(2,561)	(11,379)	(7,280)	(24,252)	(30,000)	(37,120)	(42,241)	(42,664)	(27,226)	10,527	107,237	314,840	594,126	1,002,041
	-					-	-	-	-	-	-	-	-	-	-	-
Interest and other income	-			(14)		(14)	-	-	-	-	-	-	-	-	-	-
	-					-	-	-	-	-	-	-	-	-	-	-
	-					-	-	-	-	-	-	-	-	-	-	-
	-					-	-	-	-	-	-	-	-	-	-	-
	-					-	-	-	-	-	-	-	-	-	-	-
	-					-	-	-	-	-	-	-	-	-	-	-
Total Other Income	-	-	-	**(14)**	-	**(14)**	-	-	-	-	-	-	-	-	-	-
Pretax Income	(814)	(3,033)	(2,561)	(11,393)	(7,280)	(24,266)	(30,000)	(37,120)	(42,241)	(42,664)	(27,226)	10,527	107,237	314,840	594,126	1,002,041
Taxes on income	-	-	-	-	-	-	-	-	-	-	-	-	2,145	15,742	47,530	100,204
Tax Rate													2%	5%	8%	10%
GAAP Net Income (Loss)	(814)	(3,033)	(2,561)	(11,393)	(7,280)	(24,266)	(30,000)	(37,120)	(42,241)	(42,664)	(27,226)	10,527	105,092	299,098	546,596	901,837
Foreign currency translation loss	(4)	(133)	(99)	(54)		(286)										
Total comprehensive loss	(814)	(3,166)	(2,561)	(11,446)	(7,280)	(24,266)	(30,000)	(37,120)	(42,241)	(42,664)	(27,226)	10,527	105,092	299,098	546,596	901,837
GAAP-EPS	(0.02)	(0.07)	(0.04)	(0.10)	(0.07)	(0.29)	(0.27)	(0.33)	(0.36)	(0.35)	(0.22)	0.09	0.85	2.41	4.39	7.22
GAAP-EPS (Dil)	(0.02)	(0.07)	(0.04)	(0.10)	(0.07)	(0.29)	(0.27)	(0.33)	(0.36)	(0.35)	(0.22)	0.09	0.85	2.41	4.39	7.22
Wgtd Avg Shrs (Bas) - '000s	49,977	45,000	69,150	110,223	110,333	83,677	110,609	113,554	116,515	121,989	122,478	122,968	123,461	123,956	124,452	124,951
Wgtd Avg Shrs (Dil) - '000s	49,977	45,000	69,150	110,223	110,333	83,677	110,609	113,554	116,515	121,989	122,478	122,968	123,461	123,956	124,452	124,951

Source: Company reports and Maxim

Biotechnology – Psychedelics

ENVB - NASDAQ June 27, 2021

Closing Price 6/25/21	**$2.17**
Rating:	Buy
12-Month Target Price:	$6.00
52-Week Range:	$1.85 - $15.04
Market Cap (M):	46.4
Shares O/S (M):	21.4
Float:	74.4%
Avg. Daily Volume (000):	1,565.3
Debt (M):	$0.0
Dividend:	$0.00
Dividend Yield:	0.0%
Risk Profile:	Speculative
Fiscal Year End:	December

Total Expenses ('000)

	2020A	2021E	2022E
1Q	—	6,765A	2,693
2Q	—	2,500	2,811
3Q	—	2,540	3,045
4Q	—	2,581	3,162
CY	5,617	14,386	11,711

Jason McCarthy, Ph.D.
(212) 895-3556
jmccarthy@maximgrp.com

Michael Okunewitch
(212) 895-3579
mokunewitch@maximgrp.com

Enveric Biosciences, Inc.

Buy

Novel Psychedelics + Cannabinoids = a Broad Portfolio in Cancer Supportive Care – Initiating with a Buy and $6 PT

Summary

- **Enveric Biosciences' recent acquisition of MagicMed Industries expands the company's novel cannabinoid-focused pipeline, bringing in a library of psychedelic compounds (the "Psybrary").**
- **Enveric is initially focused on cancer and supportive care with a glioblastoma P1/2 CBD combination study planned for 4Q21 and a P1/2 study for CBD in radiation dermatitis in 1H22.**
- **For psychedelics, the company is initially remaining focused on the cancer supportive care market with a novel psychedelic for cancer-related post-traumatic stress syndrome (PTSD). However, cancer-related PTSD is just the start, as the company has a portfolio of compounds that could expand to a number of central nervous system (CNS) diseases.**
- **The MagicMed acquisition brings in a library of hundreds of derivatives of psychedelic compounds – the Psybrary, with 15 patents filed to date, covering more than 100M possible tryptamines, as well as entactogen compounds.**
- **Conclusion. Enveric Biosciences is one of the few psychedelic companies listed on the NASDAQ and is a rare dual play in both psychedelics (with IP protection) and cannabinoids. We expect investor interest to rise as programs across both sides of the oncology-focused pipeline advance into the clinic.**

Details

Cannabinoid program. Cannabinoids are a class of over 100 compounds originally derived from cannabis. There are two primary cannabinoids, cannabidiol (CBD) and tetrahydrocannabinol (THC), which have different physiological effects. Importantly, CBD is not psychoactive, whereas THC is. Accumulating evidence has demonstrated several therapeutic benefits of CBD, including its ability to reduce inflammation, relieve neuropathic pain, relieve anxiety, stabilize mood, modulate the immune system, and provide anti-tumor activity. Enveric is developing CBD therapies as potential treatments for glioblastoma multiforme (GBM), radiation dermatitis, and chemotherapy-induced peripheral neuropathy (CIPN), of which the first Phase 1/2 study to initiate will be for GBM in 4Q21, with data readout expected in 1Q23. Studies in radiodermatitis and CIPN are planned for 2022 and 1H23, respectively.

MagicMed acquisition brings in a "Psybrary" with hundreds of novel psychedelics. On 5/24/21, Enveric announced the acquisition of MagicMed, bringing in two psychedelic drug discovery/development platforms: the Psybrary and PsyAI. Psybrary can be viewed as a "collection of keys" whereby novel psychedelic derivatives contained in the library are viewed as "keys" and the disease-related receptor, the "lock." The combination of synthetic biology and traditional chemistry enables the company to create a library of molecules larger and more diverse than what chemistry alone can achieve. The Psybrary is initially focused on tryptamines with 200+ compounds produced and 100M covered by filed patents; expansion to entactogens, ibogaine derivatives, and LSD derivatives is planned. On the other hand, PsyAI is a tool designed to predict structure, manufacturing, and pharmacological effects, in an effort to expedite R&D and pre-clinical timelines. Combined, the Psybrary and PsyAI result in a large-scale novel molecule creation platform, intended to accelerate development of psychedelic NCEs.

Valuation. We model commercialization of EV101 for GBM and EV102 for radiodermatitis in 2026 for the US and EU with an 80% and 70% risk adjustment, respectively. A 30% discount is applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $6.

CORPORATE PROFILE

Enveric Biosciences, Inc.
4851 Tamiami Trail N, Suite 200
Naples, FL 34103
https://www.enveric.com/

Investment Risk: Enveric Biosciences' products are not approved, and the company currently does not generate revenue.

Regulatory Risk: Enveric Biosciences' products may not be successful in clinical trials and may not meet the requirements for regulatory approval(s).

Commercial Risk: Enveric Biosciences' products are not approved and commercialized, and if/when they become commercially available, they may not achieve significant market share. In addition, the company lacks commercial infrastructure to support commercialization.

Financial Risk: Enveric Biosciences is not profitable and may need to raise additional capital to support operations.

Dilution Risk: Capital raises to fund operations may dilute investors.

Ownership:
Institutional: 5.2%
Insiders: 25.6%

Balance Sheet Summary (as of 3/31/21):
Cash: $22.6M
Debt: $0

Analysts Covering the Stock (other than Maxim): 0

Company Background. Enveric is an early-development-stage biosciences company that is developing innovative, evidence-based prescription products and combination therapies containing cannabinoids to address unmet needs in cancer care. The company seeks to improve the lives of patients suffering from cancer, initially by developing palliative and supportive care products for people suffering from certain side effects of cancer and cancer treatment such as pain or skin irritation. Enveric is also aiming to advance a pipeline of novel cannabinoid combination therapies for hard-to-treat cancers, including glioblastoma multiforme (GBM) and several other indications, which are currently being researched.

Of the potential cannabinoids to be used in therapeutic formulations, THC, which is responsible for the psychoactive properties of marijuana, can result in undesirable mood effects. Cannabidiol (CBD) and cannabigerol (CBG), on the other hand, are not psychotropic and are therefore more attractive candidates for translation into therapeutic practice. These product candidates will then be studied through a typical FDA drug approval process.

MagicMed is a neuro-pharmaceutical drug discovery and development platform. MagicMed has focused on assembling a portfolio of intellectual property (referred to as the Psybrary™) relating to the synthesis, production and manufacturing of novel psychedelic molecular compounds and derivatives ("Psychedelic Derivatives") along with processes relating to their synthesis, production and manufacturing. These Psychedelic Derivatives are intended to be essential building blocks in the development of psychedelic therapies and medicines for diverse psychological and neuropsychiatric indications. MagicMed considers its business and related activities to be typical for a biopharma business focused on preclinical drug discovery and development. The goal of preclinical drug discovery and development is to identify, screen and select new Psychedelic Derivatives that have efficacy characteristics and a safety profile that would make them promising and acceptable candidates to bring to the clinical (*i.e.*, human) trials.

Senior Management:

Dr. Joseph Tucker, Chief Executive Officer – On May 24, 2021, Dr. Joseph Tucker entered into an employment agreement with Enveric Biosciences pursuant to which he will become the Company's CEO, effective as of the Effective Date. Dr. Tucker has served as CEO and president of MagicMed since May 2020. From 2019 until 2020, Dr. Tucker acted as the Executive Chairman and Chief Operating Officer of Willow Biosciences Inc. (TSX:WLLW) until leaving to join MagicMed in May 2020. From 2015 to 2019, his principal employment was acting as CEO, President, Director and Founder of Epimeron Inc., which merged with BioCan Technologies Inc. in 2018 and then listed by reverse-takeover with Makena Resources Inc. in 2019 as Willow Biosciences Inc. Dr. Tucker earned a Ph.D. in Biochemistry and Molecular Biology from the University of Calgary.

David Johnson, Executive Chairman – David Johnson has served as Enveric's Chairman and CEO of Enveric since December 30, 2020 and has been most recently appointed Executive Chairman. Mr. Johnson also has served on the board of directors and as the CEO of Aquamed Technologies, Inc. since April 2019. Mr. Johnson formerly served on the board of directors and as the President and Chief Executive Officer of Alliqua BioMedical, Inc. from November 2012 until April 2019. Johnson was formerly President of the ConvaTec Division of Bristol-Myers Squibb, Inc. until 2008 when he orchestrated a sale of the division from its pharmaceutical parent to Avista Capital Partners and Nordic Capital in a deal valued at $4.1 billion. Concurrently, he acquired and integrated the assets of Copenhagen-based Unomedical to expand ConvaTec Inc.'s manufacturing and infrastructure into Europe. From 2008 through 2012, Mr. Johnson served as the CEO of ConvaTec Inc. Prior to his tenure with ConvaTec Inc., Mr. Johnson held several senior positions in the U.S., Europe and Canada with Zimmer Inc., Fisher Scientific, and Baxter Corporation. Mr. Johnson received an Undergraduate Business Degree in Marketing from the Northern Alberta Institute of Technology in Edmonton, Alberta, Canada, completed the INSEAD Advanced Management Program in Fontainbleau, France, and is a fellow from the Wharton School of the University of Pennsylvania.

INVESTMENT SUMMARY

Bull Case. Oncology-related supportive care is an area of significant unmet need in which patients already suffering from cancer must simultaneously deal with additional side effects caused by the cancer itself and/or cancer treatment (e.g., pain, skin irritation, anxiety/depression). Enveric aims to improve the lives of cancer patients by developing a pipeline of cannabinoid- and psychedelic-based therapies that offer palliative and supportive care, as well as potential direct cancer treatment. The CBD program comprises three planned Phase 1/2 studies, which are initially targeting the treatment of glioblastoma multiforme (GBM), radiation dermatitis, and chemotherapy-induced peripheral neuropathy (CIPN). A growing body of evidence supports the use of cannabidiol (CBD) and cannabigerol (CBG) to provide clinical benefits in patients, as these cannabinoids have the potential to alleviate symptoms without the psychoactive effects of THC. It is important to not only deal with disorders of the body, but also the mind, as many cancer patients suffer from mental health disorders. This is where the psychedelics side of the company comes into play. Enveric plans to initially target cancer-related distress, such as post-traumatic stress disorder (PTSD), which affects nearly 22% of patients six months after their cancer diagnosis. The psychedelics program was acquired recently through the company's acquisition of MagicMed Industries, which was announced on 5/24/21. The acquisition brought in-house clinical development capabilities as well via the Psybrary and PsyAI technology platforms. Psybrary is the company's psychedelic derivatives library, which can contain millions of novel derivatives developed by combining synthetic biology and traditional chemistry techniques. Once new compounds are added to the Psybrary, the company's artificial intelligence technology, PsyAI, will streamline the candidate selection process and create a process for data feedback and machine learning. Combined, the two components result in a large-scale novel molecule creation platform, which creates an opportunity to accelerate the development of psychedelic-based candidates for cancer-related mental health indications. However, with a broad range of compounds (200+ synthesized so far), the company has the opportunity to further expand into other central nervous system (CNS) disorders and other psychedelics, driving value in the long term. IP is a particularly important consideration in the psychedelic space, however Enveric/MagicMed's novel compound strategy addresses this concern with a strong IP potential (15 patents filed covering hundreds of millions of derivatives). Bulls see the recent acquisition as diversifying Enveric's cancer-supportive care pipeline to cover the mental health aspects, as well as provide an opportunity for long term growth beyond oncology. The company will initially focus on the development of its CBD therapies, with the initiation of two Phase 1/2 studies approaching; GBM study in 2H21, followed by radiodermatitis study in late 2021/early 2022. In GBM, CBD will be used as a combination therapy with current standard of care treatments to enhance antitumor activity for difficult to treat tumors. Enveric is targeting both the cannabinoids and psychedelics space, which Bulls see as reducing the overall risk of its pipeline, and at the current ~$50M valuation, Bulls see upside for Enveric as the company moves its CBD program into P1/2 this year.

Bear Case. The psychedelics space is high risk, and though there is a substantial body of data, many of the larger scale well designed studies are still ongoing. As such, Bears prefer a wait and see approach to the space. While the company's Psybrary + PsyAI platform provides a large-scale discovery platform, there is a lack of validating data to confirm its accuracy in identifying optimized pharmaceutical candidates. Furthermore, Enveric/MagicMed uses a derivative strategy for their psychedelic compounds, so while data exists for the template psychedelic compounds (psilocybin, MDMA, etc.) as potential treatments for mental health disorders, Enveric has yet to initiate a study to evaluate its own novel compounds adding additional risk. On the cannabinoid side, Enveric's lead program is advancing into its first human clinical study later this year, with data not expected until 2023. Overall, bears see the company as early stage, and as such, are likely to remain on the sidelines until data begins to emerge.

Our Take. Enveric's recent acquisition of MagicMed provides a synergistic and complimentary approach, with the acquired R&D and discovery platform representing a "missing piece of the puzzle" to Enveric's clinical development platform, in our view. Combined, this enables the expansion and accelerated development of new drug candidates that belong in either categories of cannabinoid or psychedelic derivatives. In particular, there are synergies for Enveric's target market of cancer supportive care, where the company now has drug candidates that could address both physical and mental health side effects experienced by cancer patients. Enveric's lead cannabinoid programs are novel combination therapies, combining CBD with standard of care treatments. These will be evaluated in Phase 1/2 studies targeting various indications, including difficult-to-treat glioblastoma multiforme (GBM), radiation dermatitis, and chemotherapy-induced peripheral neuropathy (CIPN). Prior preclinical and human case studies have previously demonstrated the clinical benefits of using CBD as a therapeutic agent, with properties including its ability to reduce inflammation, relieve neuropathic pain, relieve anxiety, stabilize mood, modulate the immune system, and provide anti-tumor activity. On the psychedelics side, the company is initially targeting cancer-related distress, anxiety, depression, and PTSD, in line with company's goal of improving cancer patients' lives. Disease-related mental health disorders represent one of the most well researched and supported indications for psychedelics, reducing the risk, in our view. IP is a highly important consideration in psychedelics and with the Psybrary, Enveric has a significant IP estate covering hundreds of millions of potential compounds in both classical hallucinogens, as well as entactogens. With a wide range of potential novel compounds, cancer-related distress is only the beginning. The company has plans to expand into new, broader indications, as well as new families of drugs (i.e., ibogaine derivatives and LSD derivatives). The company has already produced hundreds of novel tryptamines and considering that not every company has a next-gen psychedelic, Enveric could potentially gain non-dilutive funding by out licensing non-priority compounds, or compounds which fit an indication Enveric is not targeting. Bottom line, Enveric is one of the few players with exposure to both the cannabinoid space and the psychedelics space and is one of five psychedelic companies to be listed on the NASDAQ. As programs across both sides of the oncology-focused pipeline advance into the clinic, we expect ENVB shares to rise in value.

Finances. Enveric Biosciences reported 1Q21 with a net loss of ($3.2M) and a cash balance of ~$22.6M. We expect expenses to increase in coming quarters as the company begins clinical development for its cannabinoid program. On 5/24 Enveric announced the acquisition of MagicMed Industries via an all-stock transaction consisting of an aggregate of 9.9M common stock of Enveric, as well as warrants, options, and restricted stock units; current Enveric shareholders will own approximately 63.4% and MagicMed shareholders will own 36.6% of the combined company's common stock, as calculated on a fully diluted basis. Enveric will also receive $4M CAD in cash from the MagicMed Treasury.

Exhibit 1. Upcoming Catalysts.

Product	Indication	Event	Timeline	Impact
EV101	Glioblastoma Multiforme	Initiate Phase 1/2 study	2H21	+
EV102	Radiation Dermatitis	Initiate Phase 1/2 study	Late 2021 / Early 2022	+
EV101	Glioblastoma Multiforme	Complete patient enrollment	2Q22	+
MM101	Cancer-related PTSD	Select lead compound	2022	++
EV101	Glioblastoma Multiforme	Phase 1/2 study data readout	2023	+++

Stock Significance Scale: + of moderate importance; ++ higher level; +++ very important

Source: Company reports and Maxim Forecasts

Exhibit 2. Pipeline.

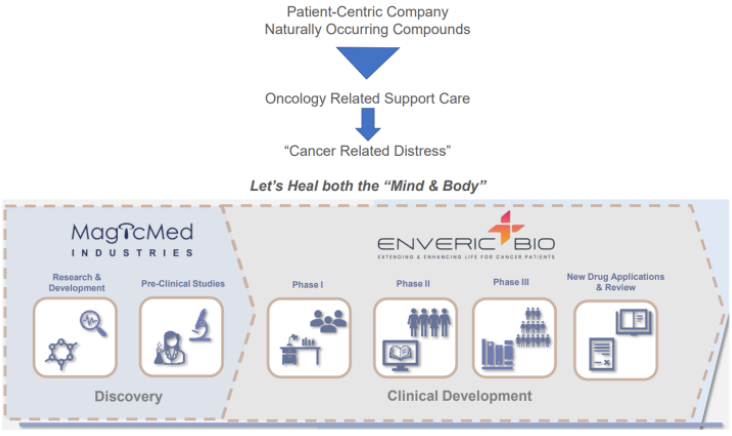
Product	Indication	Discovery	Preclinical	Phase I	Phase II	Phase III	Marketed
EV101	Glioblastoma Multiforme						
EV102	Radiation Dermatitis						
EV103	Chemotherapy-Induced Peripheral Neuropathy						

Source: Company Reports and Maxim

Cannabinoids + Psychedelics = Healing the Mind and Body of Cancer Patients

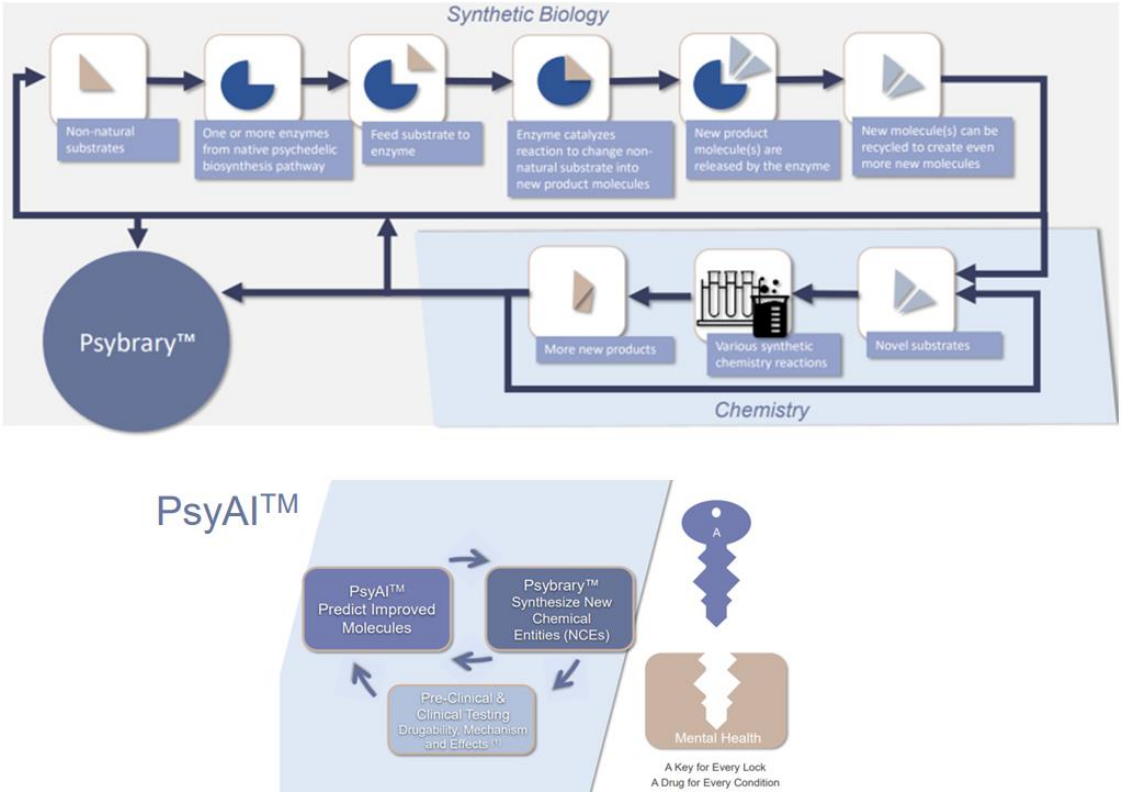
Enveric Biosciences' pipeline comprises both cannabinoid- and psychedelic- based medicines that are being developed to address unmet needs in oncology-related supportive care. The company's initial pipeline of cannabinoids is being developed as combination therapies with standard of care treatments to address the large unmet need in supportive care for cancer patients. Current targeted indications for this program include radiation dermatitis (also called radiodermatitis), chemotherapy-induced peripheral neuropathy (CIPN), and the difficult to treat glioblastoma multiforme (GBM). On the psychedelics side, this pipeline was recently acquired through the company's acquisition of MagicMed announced on 5/24/21. Subsequently, a portfolio of psychedelic derivatives has been added to the company's pipeline, which already has 15 patents filed for over 1 million tryptamine-based molecules as well as additional patent applications underway covering psilocybin, DMT, mescaline, etc. The company is also expanding into the mental health space as it initially developing a tryptamine-based therapy for the treatment of post-traumatic stress disorder (PTSD) experienced by cancer patients. Additionally, a large-scale novel molecule creation platform was also acquired, which incorporates two components: a psychedelic derivatives library (Psybrary) and an artificial intelligence technology (PsyAI). This platform is expected to provide in-house clinical development capabilities, thus streamlining the movement of drug candidates through to the New Drug Application process.

Exhibit 3. Expansion into the psychedelics space. Enveric seeks to develop cannabinoid and psychedelic derivates as potential treatments for cancer-related supportive care and central nervous system (CNS) indications. While the cannabinoid program focuses on treating cancer-related indications related to the "body," such as GBM, radiation dermatitis, and CIPN, the psychedelics program addresses disorders of the "mind" like PTSD. Through this recent acquisition, Enveric has been transformed into an end-to-end drug developer in both cannabis and psychedelics sectors, as the company now owns an R&D discovery platform (Psybrary + PsyAI).



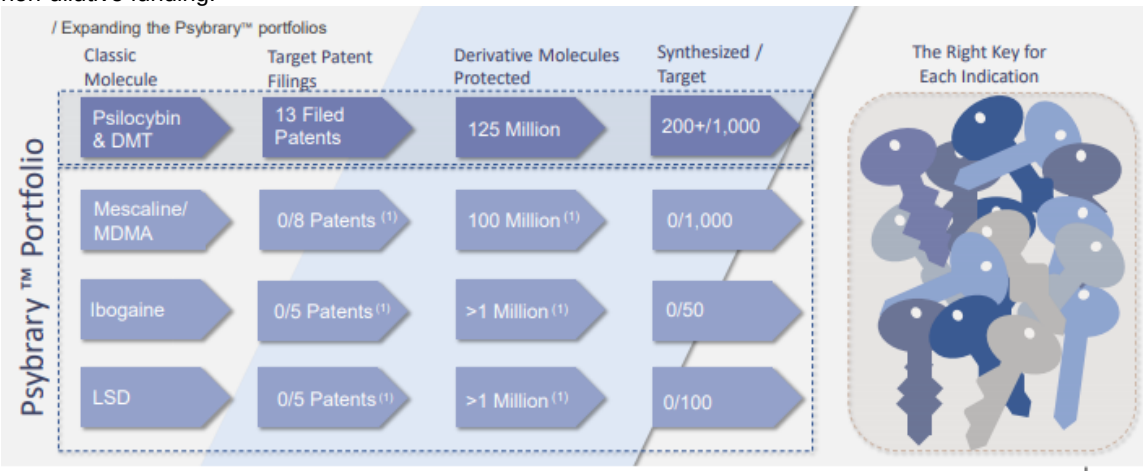
Source: Adapted from Enveric Biosciences and MagicMed Presentations

Exhibit 4. Streamlined development of psychedelic drug candidates. The Psybrary can be viewed as a "collection of keys" whereby novel psychedelic derivatives contained in the library are viewed as "keys" that bind to the disease-related receptor, the "lock." The combination of synthetic biology and traditional chemistry techniques enables the company to create a library of molecules that is larger and more diverse than what chemistry techniques alone can achieve. On the other hand, PsyAI is a tool designed to predict structure, manufacturing capabilities, and pharmacological effects, in an effort to expedite R&D and the pre-clinical timelines. Combined, the Psybrary and PsyAI results in a large-scale novel molecule creation platform, intended to accelerate the development of novel psychedelic drug candidates.



Source: MagicMed Presentation

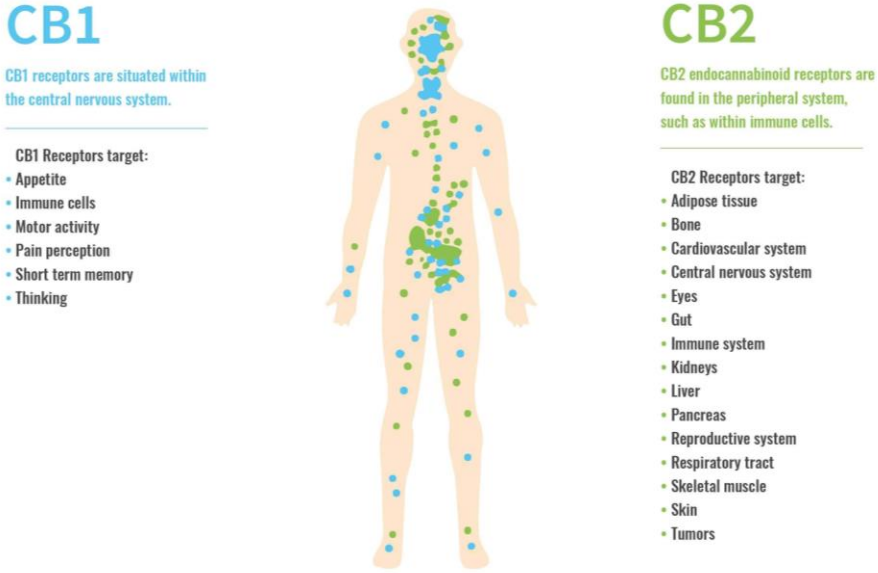
Exhibit 5. The Psybrary Portfolio. MagicMed's Psybrary contains an extensive portfolio of psychedelic derivative compounds. The company has thus far synthesized more than 200 compounds under its tryptamine portfolio and has filed 13 patients covering more than 125M potential derivatives. The Psybrary does not stop at tryptamines, with plans to expand into entactogens (mescaline and MDMA-like), ibogaine derivatives, and LSD derivatives. With a broad portfolio of proprietary next-gen psychedelics, Enveric has the potential for out licensing as well to provide non-dilutive funding.



Source: MagicMed Presentation

Cannabinoid program. Cannabinoids are a class of over 100 compounds originally derived from cannabis plants. There are two primary cannabinoids in cannabis, which are cannabidiol (CBD), and delta-9-tetrahydrocannabinol (THC). CBD and THC have different physiological effects; most importantly, CBD is not psychoactive, whereas THC is. While cannabis extract was considered a popular medicinal drug in the 1800s, it later became categorized as a Schedule I drug as a result of the 1970 passage of the Controlled Substances Act (CSA), which prohibited its use completely. However, in more recent years, there has been increasing legislative changes in the European Union, US, and Canada allowing for medicinal and/or recreational use of cannabis, which have led to more research being conducted around its therapeutic value in a wide range of indications. Accumulating evidence thus far has demonstrated several therapeutic benefits of CBD, including its ability to: reduce inflammation, relieve neuropathic pain, suppress appetite, relieve anxiety, stabilize mood, reduce nausea, promote bone growth, modulate the immune system, provide neuroprotection, act as a potent antioxidant, and provide anti-tumor activity. When present, CBD mitigates the psychoactivity and effects on memory attributed to THC so patients can alleviate their symptoms while remaining clear-minded and focused. As for Enveric, the company has three Phase 1/2 trials planned to evaluate its pipeline of cannabinoid-containing combination therapies for glioblastoma multiforme (GBM), radiation dermatitis, and chemotherapy-induced peripheral neuropathy (CIPN), of which the first to initiate will be the GBM study in 4Q21, followed by initiation of the radiation dermatitis study in 1H22.

Exhibit 6. Endocannabinoid system. The ECS is a biochemical control system of neuromodulatory lipids (fat, waxes, sterols) cell receptors, ligands (substances that attach to the cell receptors), protein transports, and metabolic enzymes. The primary purpose of the ECS is to create homeostasis, or balance, within the organism and it is believed that deficiencies within this system can lead to chronic illness, such as migraines, irritable bowel syndrome, fibromyalgia and disruptions within other functional conditions. The ECS is believed to have more receptors than any other system in the human body, of which cannabinoid receptors type 1 (CB1) and type 2 (CB2) are the most well-known. CB1 is found mostly in the CNS, connective tissues, gonads, glands, and organs, and are the most abundant receptors in the brain, whereas CB2 receptors are found mostly in the CNS and immune systems throughout the body.



Source: Dr.GreenRelief.com[1]

Glioblastoma multiforme (GBM). Glioblastoma, the most common form of malignant brain cancer (or GBM), is one of the deadliest and most aggressive cancers with limited therapeutic options. According to the National Cancer Institute's SEER database, an estimated 23,820 new cases of brain and other nervous system cancers were diagnosed in the US in 2019, resulting in 17,760 deaths.[2] Glioblastoma accounts for 54% of all gliomas, and 16% of all primary brain and central nervous system neoplasms.[3,4] It presents most commonly in older patients, at a median age of 64. GBM typically originates in the glial cells that are found in the supportive tissue of the brain. The majority (90%) of GBM cases develop de novo (primary glioblastoma) without clinical evidence of a precursor lesion from normal glial cells via multistep tumorigenesis. The remaining 10% are from secondary neoplasms that develop through progression from low-grade tumors, which takes about 4–5 years. While survival rates for GBM rose modestly in the 1980s when radiation became part of the standard treatment protocol (up to a year, from 4-6 months

[1] https://www.drgreenrelief.com/blog/endocannabinoid-system-cb1-cb2-receptors/
[2] SEER: https://seer.cancer.gov/statfacts/html/brain.html.
[3] Thakkar JP, Dolecek TA, Horbinski C, et al. Epidemiologic and molecular prognostic review of glioblastoma. Cancer Epidemiol Biomarkers Prev. 2014;23(10):1985-1996. doi:10.1158/1055-9965.EPI-14-0275.
[4] Ostrom, Quinn T et al. "CBTRUS statistical report: Primary brain and central nervous system tumors diagnosed in the United States in 2006-2010." Neurooncology vol. 15 Suppl 2,Suppl 2 (2013): ii1-56. doi:10.1093/neuonc/not151.

after diagnosis), the introduction of chemotherapy temozolomide (TMZ) in 1999 increased survival by another few months. However, patient survival rates have since essentially stalled. Although glioblastoma cells rarely metastasize to other organs in the body, they exhibit a high level of aggressiveness and infiltration within the brain tissues. GBM is typically heterogeneous in cellular composition, and among the most highly vascularized of tumor types. As the cancer cells spread, the growth affects the brain by compressing on adjacent structures. Surgical resection also cannot completely eliminate the tumor. Taken together, GBM unavoidably leads to recurrence, and is typically fatal.

CBD combination therapy in GBM. Several studies have shown the promising anti-tumor activity of CBD when evaluating the drug in cancer patients as well as preclinical animal models. This is likely due to CBD's binding at the CB1 and CB2 receptors, which are upregulated in tumor tissue; for instance, GBM tumors particularly express high levels of CB2 receptors. Further, preclinical data suggests that CBD-based combination therapies may enhance the anti-tumor activity of certain chemotherapies or dendritic cell-based cancer immunotherapies, potentially enabling more potent or longer-lasting therapeutic effects. Additionally, when CBD is combined with clomiphene, an FDA approved anti-estrogen binding site (AEBS) inhibitor, it was shown to synergistically reduce cell viability and increase rates of programmed cell death in certain cancer cell lines, while also inhibiting tumor growth in vivo. This may potentially lead to a lower dose of chemotherapy being required during treatment, which could minimize the risk and severity of side effects associated with higher doses of chemotherapeutic agents.

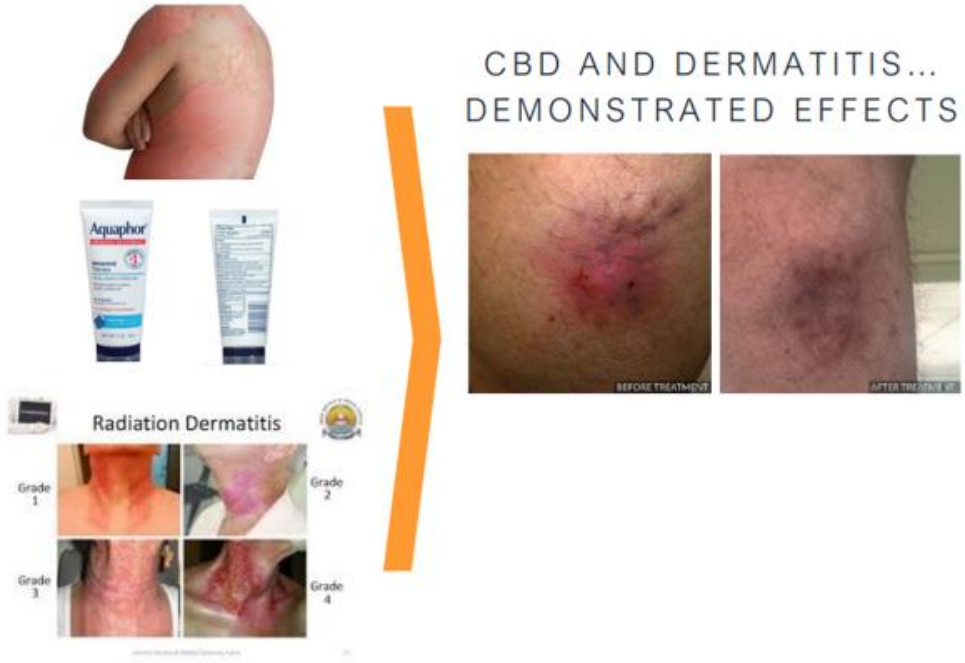
Enveric plans to evaluate its product candidate EV101 in an open-label, two-arm, randomized prospective P1/2 trial in recurrent or progression GBM patients who will receive oral CBD extra either alone or in combination with clomiphene concurrently with temolozomide chemotherapy. The P1 portion of the study will involve assessment of dose-limiting toxicity in an initial cohort, followed by enrollment of 40 patients who will undergo 1:1 randomization into either: (A) synthetic CBD extract plus clomiphene and TMZ or (B) synthetic CBD extra plus TMZ. The primary endpoint will be progression free survival, measured via a Response Assessment in Neuro-Oncology (RANO) and MRI scans, and safety will be measured as well.

Radiation dermatitis. Radiation dermatitis (also called radiodermatitis) is a side effect of external beam ionizing radiation that affects approximately 90% of all cancer patients receiving radiation therapy. Radiodermatitis generally manifests within 1-4 weeks of treatment and its severity ranges from mild erythema (red rash) to dry desquamation (itchy, peeling skin) to the more severe moist desquamation (open wound) and severe ulceration. According to a 2018 study, breast cancer patients reported that radiodermatitis significantly impacted their quality of life and even caused some women to withdraw from treatment.[5] Radiation-induced skin injury is expected to occur due to a disturbance in cell regulation, leading to electrolyte imbalance and fluid loss within the cells. The radiation also disrupts the natural wound healing within the skin, and inflammation can trigger several factors, including impairment of the skin's endothelial cells and skin-cell necrosis, resulting in cell dehydration and infection. Radiodermatitis persists for the duration of radiation therapy and recovery usually takes 2-4 weeks after completion of treatment. While the current standard of care involves using a topical product with petrolatum (petroleum jelly) to provide moisturization to the irradiated area, there is an unmet medical need for a more effective treatment option.

As mentioned, CBD therapy works by interacting with the CB1 and CB2 receptors of the endocannabinoid system, which plays an essential role in regulating skin health. When binding to these receptors, CBD has been shown to play a role in controlling inflammation levels and bolsters the immune response. As CB1 receptor agonists inhibit the activation of mastocytes and the release of histamine, topical application of CBD has been shown to reduce skin inflammation in preclinical animal models. As for CB2, the receptor inhibits inflammatory skin reaction mediated by immunoglobin E, thereby preventing intense spontaneous pruritus (itchy skin) from occurring. CBD is also known to have antibacterial activity, as demonstrated by its efficacy against Gram-positive bacteria strains, which cause skin infections. Enveric is formulating a CBD-infused ointment or other topical drug product for oncology-related skincare conditions, such as radiodermatitis, dry skin, and pruritus. As an estimated 50% of cancer patients undergo radiation therapy at some point during the course of their treatments, it is inevitable that a large percent of patients (85%) will experience a moderate to severe skin reaction at one point during their course of disease. The company will initiate a P1/2 study in 1Q22 (N=42) to evaluate its drug candidate EV102 as a treatment for patients with radiodermatitis.

Exhibit 7. Topical administration of CBD is effective for radiodermatitis. Radiodermatitis has a profound effect on quality of life, as patients have reported itching, burning, stinging, pain, irritation, embarrassment, depression, decreased social interaction, and diminished ability to show affection. An alternative treatment with greater efficacy is much needed. CBD has been shown to improve patients' skincare conditions, as shown in shown in the images below.

[5] Beamer LC and Grant M. Eur J Oncol Nurs. 2018 Apr;33:22-27. doi: 10.1016/j.ejon.2018.01.008. Epub 2018 Feb 3.

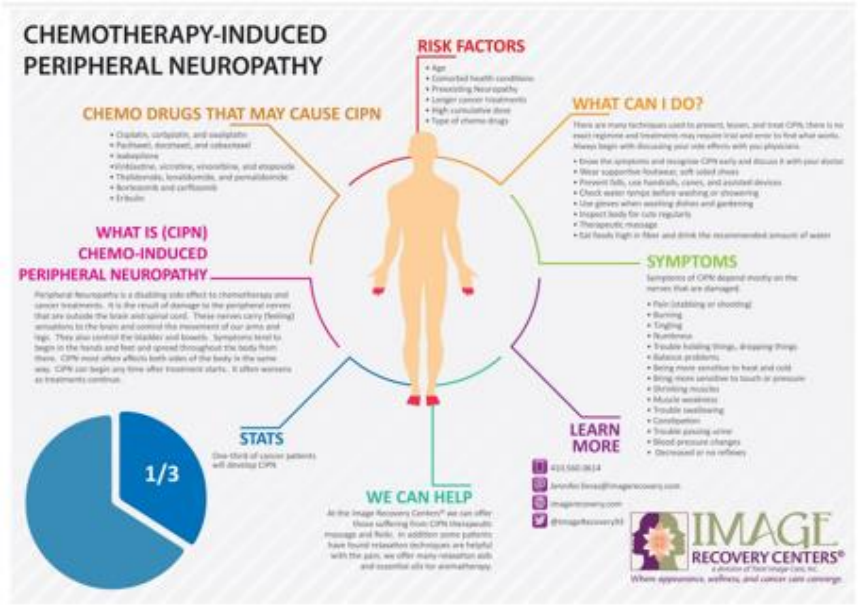


Source: Enveric Biosciences Presentation

Chemotherapy-induced peripheral neuropathy (CIPN). The peripheral nervous system (PNS) consists of nerves that lie outside of the CNS (brain and spinal cord). These nerves extend from the CNS to the outermost areas of the body, allowing information to be sent from the CNS to other areas of the body. Peripheral neuropathy is a set of symptoms caused by damage to the peripheral nerves that carry sensations to the hands and feet. Symptoms can range from mild to disabling and depend on the type of nerve fibers affected and the type and severity of damage. Chemotherapy-induced peripheral neuropathy (CIPN) is a common problem that occurs in approximately 30%-40% of cancer patients treated with chemotherapeutic agents. Patients with CIPN most commonly complain of tingling ("pins and needles") in their toes and fingers, in addition to pain pressure, and thermal hyperalgesia in a specific area. CIPN adversely affects the quality of life of patients, and can interfere with treatment, resulting in a reduction of dosage or even discontinuation of medications. Unfortunately, there are currently no drugs approved for CIPN.

In preclinical studies, CBD therapy has been demonstrated to have a beneficial effect in mouse models of CIPN, whereby intense symptoms were diminished, and neuropathic pain and other signs of CIPN became reduced. CBD has the potential to treat other neuropathic conditions as well those that involve chronic pain. Its ability to provide pain relief and anti-inflammatory activity is believed to arise via its inhibition of glutamate release as well as direct activation of serotonin receptors related to pain, depression/anxiety, addiction, appetite, nausea/vomiting, and sleep. Additionally, cannabinoids also work to eliminate excessive, immune-related, oxidative stress, resulting in the body's ability to heal itself more efficiently. Enveric plans to conduct a clinical study to evaluate the efficacy of topical cream or oral medication infused with high-potency cannabinoid in treating the painful discomfort of CIPN.

Exhibit 8. CBD for chemotherapy-induced peripheral neuropathy. Currently there are no drugs approved by the FDA for the treatment of CIPN. As such, patients may take prescription opioids to alleviate severe pain, but in addition to being highly addictive, these do not effectively control pain over the long term. CBD represents a novel and much needed alternative to treatment options such as opioid.



Source: Enveric Biosciences Presentation

MODELING ASSUMPTIONS

1. We model commercialization of EV101 and EV102 in Glioblastoma and Radiation Dermatitis in 2026 in the US and EU.
2. We assume that there are ~18k glioblastoma diagnoses in the US and ~22k in the EU, and that 90% of patients fail 1L treatment.
3. We assume initial pricing in GBM of $65M in the US and $60M in the EU, increasing at 5% per year.
4. We assume that there are ~1.7M patients diagnosed with cancer in the US per year and ~2.25M in the EU, and that 50% receive radiation therapy, and of those, 95% will develop radiation dermatitis.
5. We assume initial pricing in radiation dermatitis of $5k in the US and $3.5k in the EU, increasing at 5% per year.
6. We apply an 80% risk adjustment to GBM and a 70% risk adjustment to radiation dermatitis based on the stage of development, clinical trial risks, commercial risks, and other factors.

Exhibit 9. Glioblastoma Multiforme (GBM) Market Model (US).

EV101, Glioblastoma Multiforme (US)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Newly diagnosed GBM patients in the US	18,180	18,362	18,545	18,731	18,918	19,107	19,298	19,491	19,686	19,883	20,082	20,283	20,486
Growth Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Patients failing frontline treatment (90%)	16,362	16,526	16,691	16,858	17,026	17,197	17,369	17,542	17,718	17,895	18,074	18,255	18,437
Market Penetration								4.00%	12.00%	18.00%	21.00%	23.00%	25.00%
Total Patients Treated								702	2,126	3,221	3,796	4,199	4,609
Cost of Treatment								$ 65,000	$ 68,250	$ 71,663	$ 75,246	$ 79,008	$ 82,958
Increase in Cost								5%	5%	5%	5%	5%	5%
Total revenue ('000)								$ 45,610	$ 145,108	$ 230,831	$ 285,595	$ 331,719	$ 382,378
Risk adjustment								80%	80%	80%	80%	80%	80%
Total Revenue ('000)								**$ 9,122**	**$ 29,022**	**$ 46,166**	**$ 57,119**	**$ 66,344**	**$ 76,476**

Source: Maxim Estimates

Exhibit 10. Glioblastoma Multiforme (GBM) Market Model (EU).

EV101, Glioblastoma Multiforme (EU5)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Newly diagnosed GBM patients in the EU	22,000	22,220	22,442	22,667	22,893	23,122	23,353	23,587	23,823	24,061	24,302	24,545	24,790
Growth Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Patients failing frontline treatment (90%)	19,800	19,998	20,198	20,400	20,604	20,810	21,018	21,228	21,441	21,655	21,872	22,090	22,311
Market Penetration								3.00%	10.00%	16.00%	19.00%	20.00%	21.00%
Total Patients Treated								637	2,144	3,465	4,156	4,418	4,685
Cost of Treatment								$ 60,000	$ 63,000	$ 66,150	$ 69,458	$ 72,930	$ 76,577
Increase in Cost								5%	5%	5%	5%	5%	5%
Total revenue ('000)								$ 38,211	$ 135,076	$ 229,196	$ 288,637	$ 322,210	$ 358,789
Risk adjustment								80%	80%	80%	80%	80%	80%
Total Revenue ('000)								**$ 7,642**	**$ 27,015**	**$ 45,839**	**$ 57,727**	**$ 64,442**	**$ 71,758**

Source: Maxim Estimates

Exhibit 11. Radiation Dermatitis Market Model (US).

EV102, Radiation Dermatitis (US)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Newly diagnosed cancer patients in the US	1,762,450	1,780,075	1,797,875	1,815,854	1,834,013	1,852,353	1,870,876	1,889,585	1,908,481	1,927,566	1,946,841	1,966,310	1,985,973
Growth Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Patients receiving radiation therapy (50%)	881,225	890,037	898,938	907,927	917,006	926,176	935,438	944,792	954,240	963,783	973,421	983,155	992,986
Patients developing radiation dermatitis (95%)	837,164	845,535	853,991	862,531	871,156	879,868	888,666	897,553	906,528	915,594	924,750	933,997	943,337
Market Penetration								1.00%	3.00%	5.00%	6.00%	6.50%	7.00%
Total Patients Treated								8,976	27,196	45,780	55,485	60,710	66,034
Cost of Treatment								$ 5,000	$ 5,250	$ 5,513	$ 5,788	$ 6,078	$ 6,381
Increase in Cost								5%	5%	5%	5%	5%	5%
Total revenue ('000)								$ 44,878	$ 142,778	$ 252,361	$ 321,154	$ 368,966	$ 421,387
Risk adjustment								70%	70%	70%	70%	70%	70%
Total Revenue ('000)								**$ 13,463**	**$ 42,833**	**$ 75,708**	**$ 96,346**	**$ 110,690**	**$ 126,416**

Source: Maxim Estimates

Exhibit 12. Radiation Dermatitis Market Model (EU5).

EV102, Radiation Dermatitis (EU5)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Newly diagnosed cancer patients in the EU	2,252,134	2,274,655	2,297,402	2,320,376	2,343,580	2,367,015	2,390,686	2,414,592	2,438,738	2,463,126	2,487,757	2,512,635	2,537,761
Growth Rate	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Patients receiving radiation therapy (50%)	1,126,067	1,137,328	1,148,701	1,160,188	1,171,790	1,183,508	1,195,343	1,207,296	1,219,369	1,231,563	1,243,879	1,256,317	1,268,880
Patients developing radiation dermatitis (95%)	1,069,764	1,080,461	1,091,266	1,102,179	1,113,200	1,124,332	1,135,576	1,146,931	1,158,401	1,169,985	1,181,685	1,193,501	1,205,436
Market Penetration								1.00%	3.00%	5.00%	6.00%	6.50%	7.00%
Total Patients Treated								11,469	34,752	58,499	70,901	77,578	84,381
Cost of Treatment								$ 3,500	$ 3,675	$ 3,859	$ 4,052	$ 4,254	$ 4,467
Increase in Cost								5%	5%	5%	5%	5%	5%
Total revenue ('000)								$ 40,143	$ 127,714	$ 225,734	$ 287,269	$ 330,036	$ 376,927
Risk adjustment								70%	70%	70%	70%	70%	70%
Total Revenue ('000)								**$ 12,043**	**$ 38,314**	**$ 67,720**	**$ 86,181**	**$ 99,011**	**$ 113,078**

Source: Maxim Estimates

VALUATION

We model commercialization of EV101 for GBM starting in 2026 in the US and EU with an 80% risk adjustment and EV102 for radiodermatitis in the US and EU5 in 2026 with a 70% risk adjustment. A 30% discount is applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $6.00.

Exhibit 13. Free Cash Flow Model.

Average	6

Price Target	5
Year	2021

DCF Valuation Using FCF (mln):

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
units ('000)	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
EBIT	(15,241)	(10,871)	(11,711)	(14,882)	(19,370)	(23,557)	6,729	82,695	168,935	226,022	272,100	313,630
Tax Rate	0%	0%	0%	0%	0%	0%	0%	0%	2%	5%	8%	10%
EBIT (1-t)	(15,241)	(10,871)	(11,711)	(14,882)	(19,370)	(23,557)	6,729	82,695	165,557	214,721	250,332	282,267
CapEx	-	-	-	-	-	-	-	-	-	-	-	-
Depreciation	-	-	-	-	-	-	-	-	-	-	-	-
Change in NWC												
FCF	(15,241)	(10,871)	(11,711)	(14,882)	(19,370)	(23,557)	6,729	82,695	165,557	214,721	250,332	282,267
PV of FCF	(19,814)	(10,871)	(9,008)	(8,806)	(8,816)	(8,248)	1,812	17,132	26,384	26,322	23,606	20,475
Discount Rate	30%											
Long Term Growth Rate	1%											
Terminal Cash Flow	983,067											
Terminal Value YE2030	71,310											
NPV	141,293											
NPV-Debt												
Shares out ('000)	29,252	2031E										
NPV Per Share	5											

Source: Maxim estimates

Exhibit 14. Discounted-EPS Model.

Current Year	2021
Year of EPS	2031
Earnings Multiple	10
Discount Factor	30%
Selected Year EPS	9.65
NPV	7

Source: Maxim estimates

	Discount Rate and Earnings Multiple Varies, Year is Constant						
	7.00	5%	10%	15%	20%	25%	30%
Earnings Multiple							
0	0	0	0	0	0	0	0
5	32.79	20.59	13.20	8.63	5.74	3.87	
10	65.58	41.19	26.41	17.25	11.47	7.75	
15	98.38	61.78	39.61	25.88	17.21	11.62	
20	131.17	82.37	52.81	34.51	22.94	15.50	
25	163.96	102.97	66.02	43.13	28.68	19.37	
30	196.75	123.56	79.22	51.76	34.41	23.25	
35	229.54	144.16	92.42	60.39	40.15	27.12	

Exhibit 15. Sum-of-the-Parts Model.

Enveric Biosciences	LT Gr	Discount Rate	Yrs to Mkt	% Success	Peak Sales (MM's)	Term Value
EV101, Glioblastoma Multiforme (US)	1%	30%	5	50%	$76	$264
NPV						$0.9
EV101, Glioblastoma Multiforme (EU)	1%	30%	5	50%	$72	$247
NPV						$0.8
EV102, Radiation Dermatitis (US)	1%	30%	5	60%	$126	$436
NPV						$1.8
EV102, Radiation Dermatitis (EU)	1%	30%	5	60%	$113	$390
NPV						$1.6
Net Margin						73%
MM Shrs OS (2031E)						29
Total						$5

Source: Maxim estimates

Enveric Biosciences.: Income Statement ($000)																
YE December 31	2020A	1Q21A	2Q21E	3Q21E	4Q21E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Revenue:																
EV101, Glioblastoma Multiforme (US)										-	9,122	29,022	46,166	57,119	66,344	76,476
EV101, Glioblastoma Multiforme (EU)											7,642	27,015	45,839	57,727	64,442	71,758
EV102, Radiation Dermatitis (US)										-	13,463	42,833	75,708	96,346	110,690	126,416
EV102, Radiation Dermatitis (EU)											12,043	38,314	67,720	86,181	99,011	113,078
Net revenue	-	-	-	-	-	-	-	-	-	-	42,270	137,184	235,434	297,373	340,486	387,728
Collaborative revenue:																
Revenues																
Other Income	-					-	-	-	-	-	-	-	-	-	-	-
	-					-	-	-	-	-	-	-	-	-	-	-
Total Collaborative Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	-	-	-	-	-	-	-	-	-	-	42,270	137,184	235,434	297,373	340,486	387,728
Gross Margins:																
Cost of Goods Sold	-	-	-	-	-	-	-	-	-	-	8,454	24,693	35,315	38,659	34,049	38,773
%Gross Margin											80%	82%	85%	87%	90%	90%
Gross Profit	-	-	-	-	-	-	-	-	-	-	33,816	112,491	200,119	258,715	306,438	348,955
Operating Expenses:																
Research and Development	174	158	1,000	1,010	1,020	3,188	5,000	7,500	11,250	14,625	16,088	17,696	17,873	18,052	18,232	18,415
%R&D						-										
Selling, General and Administrative	5,443	6,607	1,500	1,530	1,561	11,198	6,711	7,382	8,120	8,932	11,000	12,100	13,310	14,641	16,105	16,910
%SG&A						-										
Depreciation and Amortization	-					-										
Total Expenses	5,617	6,765	2,500	2,540	2,581	14,386	11,711	14,882	19,370	23,557	35,542	54,489	66,498	71,351	68,386	74,098
Operating Income (Loss)	(5,617)	(6,765)	(2,500)	(2,540)	(2,581)	(14,386)	(11,711)	(14,882)	(19,370)	(23,557)	6,729	82,695	168,935	226,022	272,100	313,630
						-	-	-	-	-	-	-	-	-	-	-
Interest expense	445					-	-	-	-	-	-	-	-	-	-	-
Other income	-					-	-	-	-	-	-	-	-	-	-	-
Inducement expense	802	(299)				(299)	-	-	-	-	-	-	-	-	-	-
Change in fair value of warrant liabilities		3,813				3,813										
	-					-	-	-	-	-	-	-	-	-	-	-
Total Other Income	**1,247**	**3,514**	**-**	**-**	**-**	**3,514**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Pretax Income	(15,241)	(3,251)	(2,500)	(2,540)	(2,581)	(10,871)	(11,711)	(14,882)	(19,370)	(23,557)	6,729	82,695	168,935	226,022	272,100	313,630
Taxes on income	-	-	-	-	-	-	-	-	-	-	-	-	3,379	11,301	21,768	31,363
Tax Rate													2%	5%	8%	10%
GAAP Net Income (Loss)	(6,865)	(3,251)	(2,500)	(2,540)	(2,581)	(10,871)	(11,711)	(14,882)	(19,370)	(23,557)	6,729	82,695	165,557	214,721	250,332	282,267
Dividend on preferred stock	-															
Foreign currency translation loss	(170)	36				36										
Total comprehensive loss	(7,034)	(3,215)	(2,500)	(2,540)	(2,581)	(10,836)	(11,711)	(14,882)	(19,370)	(23,557)	6,729	82,695	165,557	214,721	250,332	282,267
GAAP-EPS	(1.19)	(0.20)	(0.15)	(0.16)	(0.16)	(0.67)	(0.72)	(0.74)	(0.85)	(0.87)	0.23	2.87	5.73	7.40	8.59	9.65
GAAP-EPS (Dil)	(1.19)	(0.20)	(0.15)	(0.16)	(0.16)	(0.67)	(0.72)	(0.74)	(0.85)	(0.87)	0.23	2.87	5.73	7.40	8.59	9.65
Wgtd Avg Shrs (Bas) - '000s	5,754	16,221	16,237	16,253	16,269	16,245	16,310	20,129	22,714	27,062	28,673	28,788	28,904	29,019	29,136	29,252
Wgtd Avg Shrs (Dil) - '000s	5,754	16,221	16,237	16,253	16,269	16,245	16,310	20,129	22,714	27,062	28,673	28,788	28,904	29,019	29,136	29,252

Source: Company reports and Maxim

Biotechnology – Psychedelics

Field Trip Health Ltd.

Buy

FTRPF - OTCQX June 27, 2021

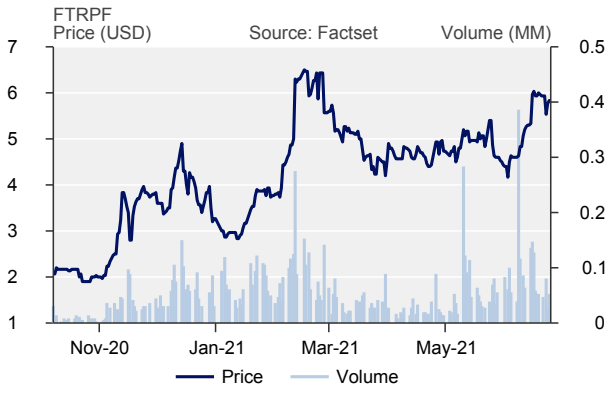
Closing Price 6/25/21	**$5.80**
TSX: FTRP	C$7.23
Rating:	Buy
12-Month Target Price:	$11.00
52-Week Range:	$1.87 - $7.71
Market Cap (M):	332.4
Shares O/S (M):	57.3
Float:	88.3%
Avg. Daily Volume (000):	57.2
Debt (M):	$0.0
Dividend:	$0.00
Risk Profile:	Speculative
Fiscal Year End:	March

Total Revenues ('000)

	2021A	2022E	2023E
1Q	C$59	C$750	C$4,509
2Q	C$59	C$1,713	C$7,280
3Q	C$316	C$2,696	C$8,892
4Q	C$526	C$3,295	C$11,138
FY	C$961	C$8,454	C$31,819

Total Expenses ('000)

	2021A	2022E	2023E
1Q	C$3,191	C$6,371	C$13,350
2Q	C$3,191	C$8,219	C$15,759
3Q	C$5,922	C$9,820	C$17,738
4Q	C$7,743	C$11,143	C$19,906
FY	C$20,046	C$35,553	C$66,752



Field Trip is listed on the Toronto Stock Exchange (TSE) under the symbol "FTRP" and OTCMKTS under the symbol "FTRPF". Financial data is reported in Canadian dollars (C$). Market data including the stock price and target price are translated into US Dollars (USD).

Jason McCarthy, Ph.D.
(212) 895-3556
jmccarthy@maximgrp.com

Michael Okunewitch
(212) 895-3579
mokunewitch@maximgrp.com

Dual Play in Psychedelic Drug Development & Clinical Infrastructure – Initiating Coverage with a Buy and $11 PT

Summary

- **Field Trip is building a dual model business in the psychedelic space: constructing clinical infrastructure to facilitate treatment and developing a next-generation psychedelic, FT-104.**
- **FT-104 is a novel prodrug, which has similar activity to psilocybin, but is shorter acting (expected to be <4 hours) and has potential for composition of matter IP, addressing two of the major challenges in psychedelics. The drug is expected to enter P1 in C1Q22.**
- **Field Trip has seven clinics in North America and Europe, with 20 planned by YE21 (open or under construction) and 75 by 2024, positioning it as a leader in clinical infrastructure for the psychedelic medicine space.**
- **Conclusion. One of the most significant challenges to the psychedelic medicine space is the infrastructure and logistical requirements for therapy. Field Trip is addressing these challenges directly through its clinical business, which positions it to benefit tangentially from growth in the space, as well as through its next-gen psychedelic, FT-104, which has a reduced duration and thus a reduced logistical requirement versus longer-acting psychedelics like psilocybin.**

Details

FT-104 – a shorter-acting, next-gen, psilocybin-like therapeutic. One of the key areas for differentiation in next-gen psychedelics is duration of therapy. Ketamine is often viewed as the baseline, lasting ~2 hours. Psilocybin, however, lasts upwards of 6 hours, which is a challenge for both patients and clinics. FT-104 is a novel prodrug (patent filed) of a compound that produces similar effects to psilocybin (in anecdotal experiential reports) and has a similar receptor binding profile as demonstrated in preclinical assays. What differentiates FT-104 is its much more rapid elimination half-life (~36 minutes vs. 90-120 minutes for psilocybin). The company is expecting to achieve a total duration of <4 hours, which would make it attractive versus psilocybin. FT-104 is in preclinical IND-enabling studies and is expected to enter a P1 study in C1Q22.

Field Trip Health – building out clinical infrastructure to meet the needs of the psychedelic medicine space. In order for the clinical success observed for psychedelics to translate into commercial success, there needs to be significant investment into the clinical infrastructure for dosing these drugs, which can require 4, 6, or even 8+ hours. This is the focus of Field Trip's clinic business. The company operates six ketamine-assisted psychotherapy clinics in North America and one psilocybin truffle clinic in Europe which has completed construction; the plan is to expand to 20 clinics open or under construction by YE21 and 75 by 2024. The company plans to expand into additional psychedelics as those drugs reach approval. Since Field Trip trains its own psychotherapists and designs the treatment setting, management has increased control over the psychotherapy component and can gain experience and the know-how to optimize psychedelic-assisted psychotherapy. Field Trip has collaborated with other leading organizations like MAPS (private) to run a P2 study for MDMA in Field Trip Health clinics, as well as with USONA (private) for training of therapists. In F4Q21 (Mar), Field Trip generated revenue of C$526K, though at steady-state the company is expected to generate ~C$3M per site.

Valuation. We factor in clinic revenues as well as revenues from FT-104 in treatment-resistant depression starting in FY28 for the US and in FY29 in the EU. We apply an 80% risk adjustment to FT-104 based on stage of development. A 25% discount is applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $11 USD.

CORPORATE PROFILE

Field Trip Health Ltd.
Torronto, ON, Canada
www.meetfieldtrip.com

Investment Risk: Field Trip's pipeline products are not approved and the company's revenue-generating clinic business is early stage.

Regulatory Risk: Field Trip's pipeline products may not be successful in clinical trials and may not meet the requirements for regulatory approval(s).

Commercial Risk: Field Trip's pipeline products are not approved and commercialized, and if/when they become commercially available, they may not achieve significant market share. In addition the company has limited commercial infrastructure to support commercialization.

Financial Risk: Field Trip is not profitable and may need to raise additional capital to support operations.

Dilution Risk: Capital raises to fund operations may dilute investors.

Ownership:
Institutional: 2.5%
Insiders: 11.7%

Balance Sheet Summary (as of 3/31/21):
Cash: C$111.8M
Debt: C$0

Analysts Covering the Stock (other than Maxim): 2 (Buy)

Company Background. Field Trip Health (OTC: FTRPF, TSX: FTRP) is the global leader in the development and delivery of psychedelic therapies with Field Trip Discovery leading the development of the next generation of psychedelic molecules and conducting advanced research on plant-based psychedelics, Field Trip Health hubs for psychedelic therapies opening across North America, and Field Trip Digital building the digital and technological tools to support psychedelic experiences and consciousness expansion.

Field Trip Health is reimagining the mental health clinic with intentionally designed, technologically empowered, psychedelic-assisted psychotherapy centers across North America. The Field Trip Health approach is an evidence-based, medically supervised, psychedelic therapy protocol personalized by client background and goals. The company supports individuals who are looking to heal from tough-to-beat mental illnesses like PTSD and depression, as well as those simply looking to grow and expand empathy, increase creativity, and feel a deeper connection to themselves, others, and the planet. Field Trip's spaces are thoughtfully designed for the healing journey with great care from its design team. Serene, quiet, and alive with light and plant life, Field Trip Health clinics offer a calming oasis inspired by all of the peaceful aspects of nature to ease and support clients before, during, and after their experiences.

Field Trip Discovery's primary focus is in developing novel, patented, regulated medicines targeting the serotonin 5HT2A serotonin receptor, which is believed to be the primary receptor involved in psychedelic experiences and responsible for the use of these substances to treat mental disorders, including depression and anxiety. Discovery's first molecule in development, FT-104, is a synthetic psychedelic molecule for which anecdotal information indicates unique and useful pharmacological features that could make FT-104 a more commercially viable alternative to naturally derived substances, such as DMT, 5-MeO-DMT, psilocybin, and LSD. The pharmacological activity of FT-104 has been confirmed and it is currently in preclinical evaluation. Field Trip anticipates initial Phase 1 clinical studies in 2021. A provisional patent relating to FT-104 composition and use has been filed with the USPTO (63,045,901; June 30, 2020).

Senior Management:
Joseph del Moral, Co-Founder & CEO – Joseph del Moral is a serial entrepreneur and a founder of Field Trip. He, along with Ronan Levy, helped found CanvasRx and Canadian Cannabis Clinics, where he served as CEO. After CanvasRx Inc. was acquired by Aurora Cannabis Inc. (NYSE: ACB) in 2016, Mr. del Moral joined Aurora's Board of Directors and, along with his partners, led Aurora's mergers/acquisitions and corporate development efforts. Following his time at Aurora, Joseph became CEO of Trait Biosciences Inc., a leading cannabis biotechnology company. Prior to working in cannabis he co-founded Newten Home Comfort, a fast-growing home services company, which was acquired by Just Energy Inc.

Ronan Levy, Co-Founder & Executive Chairman – An entrepreneur and a visionary, Ronan is one the founders of Field Trip. Concurrent with his work at Field Trip, he is a partner at Grassfed Ventures, a venture capital and advisory firm focused on the cannabis and biotech industries, and is Chief Strategy Officer and a member of the Board of Directors for Trait Biosciences Inc., a leading biotech company in the hemp and cannabis industries. Prior to his current roles, Ronan Mr. Levy (along with Joseph) co-founded Canadian Cannabis Clinics and CanvasRx Inc., the latter of which was acquired by Aurora Cannabis Inc. (NYSE: ACB) in 2016, after which he served as Senior Vice President, Business and Corporate Affairs for Aurora. A lawyer by training, Ronan started his career as a corporate lawyer at Blake, Cassels Graydon LLP and Legal Counsel at CTVglobemedia Inc. (now Bell Media Inc.) He holds a Juris Doctor and a Bachelor of Commerce degree, both from the University of Toronto.

Dr. Nathan Bryson, Chief Scientific Officer - Dr. Bryson joins Field Trip after having served as Chief Scientific Officer at Cynapsus Therapeutics and at Acerus Pharmaceuticals. He brings more than 25 years of experience in various aspects of pharmaceutical development from early stage drug delivery design and development through to regulatory affairs for market approval and medical affairs support for sales. Dr. Bryson holds a Bachelor of Science in chemistry from Auburn University and a Ph.D. in radiopharmaceutical chemistry from the Massachusetts Institute of Technology (MIT). He performed

post-doctoral research under two well-esteemed chemists, the late Dr. John Osborn at the University Louis Pasteur (Strasbourg, France) and Dr. Dietmar Seyferth at MIT.

INVESTMENT SUMMARY

Bull Case. The psychedelic medicine space is rapidly advancing into the mainstream as profound data emerges across psychiatric disease. In order for the space to take off, however, the clinical infrastructure needs to be in place…these drugs aren't analogous to SSRIs, where a patient can pick up the prescription and head home. Furthermore, the evidence points to the importance of a psychotherapy component to maximize the benefits of the psychedelic medicine. Field Trip is helping address this in two ways: 1) building out that clinical infrastructure to support psychedelic therapy, and 2) developing novel, next-gen psychedelics with shorter duration to reduce the logistical burden on treatment centers. Regarding the latter, Field Trip is developing FT-104. FT-104 is a prodrug, derived from a compound discovered through research conducted in the 1960s and 1970s, and according to experiential reports, produces a similar effect to psilocybin, but with a shorter duration (likely less than 4 hours). For next-generation psychedelics, shorter acting is among the most desirable properties that can help improve scalability by reducing the time patients are on the drug and require observation and a treatment room. Field Trip is an early mover in identifying a novel compound in the literature and applying a prodrug strategy to turn it into a marketable drug and as such, is likely to be among the first "next-gen" players to reach the market. The compound is moving into P1 in C1Q22, which should give a better idea of the PK profile. As for efficacy, Bulls view the compound as de-risked due to its similar receptor-binding profile to psilocybin, as well as comparable experiential effects in anecdotal reports. Importantly, the compound also has the potential for composition of matter IP protection. On the other side of the psychedelic market, Field Trip is creating the infrastructure to make psychedelics commercially viable, by building out psychedelic therapy centers for the administration of IM ketamine for multiple indications (depression, anxiety, PTSD, etc.). With ketamine clinics operating across major cities in North America and a psilocybin clinic Europe constructed, and 20 planned (open or under construction) by YE21, Field Trip is leading the way on the logistics side of the space. Though the company is initially targeting ketamine, the plan is to expand into other psychedelics like MDMA and psilocybin as they reach approval. These drugs have an even greater need for treatment infrastructure compared to ketamine due to longer durations (4+ and 6+ hours, respectively). This positions Field Trip to grow tangentially in the space, no matter who wins the races to approval. Additionally, there are synergies with Field Trip's internal development pipeline, it can provide a location to run a clinical trial and commercial infrastructure to support a potential launch. Field Trip is well capitalized with ~$110M in cash and generates revenue from its clinical business with centers that have a short path to cash flow neutral. As the psychedelic space continues to grow, Field Trip is well-positioned with exposure to both the clinical delivery side and the drug development side with next-generation psychedelics.

Bear Case. Psychedelic therapy is still in the early stages, despite data reaching back decades, few large scale, well-designed trials have read out and more data is needed for definitive proof-of-concept (POC). The clinical business is generating some revenue for the company, but revenues are not yet significant, and it is likely to take considerable time and capital to reach profitability. There is also the issue of scalability within ketamine-assisted psychotherapy. While Spravato is approved, IM ketamine is off-label, which presents challenges for reimbursement, potentially leaving patients with a significant cost burden if their insurance only covers the psychotherapy component. Drugs like MDMA and psilocybin appear to be on track for approval, but the process for authorization to treat patients may be more complicated and presents an additional regulatory challenge for Field Trip. On the development side, FT-104 is very early stage, without a significant body of data supporting more well-established psychedelics, adding development risk to an already high-risk space.

Our Take. Psychedelic medicines continue to emerge into the mainstream as larger data sets confirm their transformative potential for the mental health space. In our view, the question is less "if", and more "how" and "when". Field Trip is helping address the "how", by building out the necessary infrastructure for this new therapeutic paradigm and developing a compound that requires less infrastructure (shorter duration means higher potential throughput). FT-104 represents a novel strategy in psychedelics, taking an existing compound with a similar profile to psilocybin and formulating it as a prodrug to create a next-gen psychedelic with reduced duration. FT-104 is entering Phase 1 studies 1Q22 and if the expected sub-4 hour duration is confirmed, FT-104 could be attractive to patients and have greater scalability compared to longer-acting drugs like psilocybin (6+ hours). Development for FT-104 is also partially de-risked due to the similar receptor binding and subjective reports. On the clinic side, Field Trip is well funded, allowing the company to aggressively expand its clinic base from the 7 currently operating (or complete) to 20 open or under construction by YE21 and 75 by 2024, which would position it as a leading provider for psychedelic medicine. The clinic model has a short path to cash flow neutral (~15 months for a given clinic), and the potential to achieve ~C$3M at steady state, with up to C$1M in EBITDA. The dual model de-risks the company, enabling it to benefit from overall growth in the psychedelic space, no matter who reaches approval. There is also an inherent synergy between the drug development and clinic model, where Field Trip already has centers to conduct its own clinical trials (it is currently collaborating with MAPS for a P2 MDMA study) as well as the experience/know-how in psychedelic-assisted psychotherapy to insure the best chances of success in its own trials. There are also potential synergies for a launch of FT-104; having its own, internally trained therapists and treatment centers, the company should be able to launch relatively quickly and avoid some of the challenges Spravato faced such as having to train third-party psychiatrists. Field Trip is also building out digital infrastructure (a patient portal and Trip app to introduce patients to the Field Trip ecosystem) to help support scaling psychedelics. This shouldn't be understated as the technological infrastructure and know-how in scaling psychedelic assisted psychotherapy could extend beyond Field Trip's own clinics. In our view, Field Trip remains attractive at its ~C$400M market cap with the opportunity to take advantage of growth in the psychedelic medicine space tangentially through its clinical infrastructure business, as well as directly with FT-104 (and potential future pipeline candidates).

Finances. Field Trip reported F4Q21 (Mar) on 6/25 with revenues of C$526K from its clinic services and a net loss of (C$8.0M), ending the period with C$111.8M. In F4Q21 (Mar), the company raised a total of C$115M from a C$20M capital raise in early Jan. for 4.4M units consisting of one share and one warrant for 0.5 shares (C$5.60 exercise with the ability to accelerate the expiration if shares trade above C$9 for 10 consecutive days) at C$4.50 per unit and a second capital raise for C$95M (upsized from C$50M) in mid Mar. for 14.7M shares at a price of

C$6.50. At the current burn rate of C$7k-C$8k per quarter, the company has runway through 2023, though we expect expenses to rise as more clinics enter the start-up phase and FT-104 moves into the clinic. Total burn rate and runway is partially dependent on uptake/profitability of Field Trip Health clinics, which generate revenue and could significantly offset burn, so though the company is not profitable and may require equity financings over time to support operations, we consider the company well financed for the foreseeable future. Field Trip went public on the Canadian Securities Exchange with the ticker FTRP on 10/2/20 through a reverse merger transaction with Newton Energy Corporation and has since uplifted to the TSX, it also began trading on the OTCQX Best Market under the ticker FTRPF on 1/28/21. The company has also recently announced its application to list on the NASDAQ.

Exhibit 1. Upcoming Catalysts (calendar year).

Product	Indication	Event	Timeline	Impact
FT-104	n/a	GLP tox studies	3Q21	+
Clinics	Multiple	20 clinics open or under constuction	2021	++
Pipeline	n/a	Announce 1-2 new pipeline compounds	2021	++
n/a	n/a	Uplist to US Exchange	2021	++
FT-104	n/a	Initiate Phase 1 Studies	1Q22	+
FT-104	n/a	Phase 1 data (PK profile)	2022	+++
FT-104	Depression	Initiate Phase 2a	2022	+

Stock Significance Scale: + of moderate importance; ++ higher level; +++ very important

Source: Company reports and Maxim Forecasts

Exhibit 2. Pipeline.

Product	Indication	Development	Pre-IND	Phase I	Phase II	Phase III
FT-104	Depression					

Source: Company Reports and Maxim

Field Trip Discovery – Drug Development

The challenges associated with psilocybin. While ketamine is fairly easy to administer, with a 2-hour duration, many of the second-generation psychedelics present additional challenges due to far longer durations-of-action. MDMA can last 4-6 hours, psilocybin can last 6-8, and LSD can last upwards of 8 hours. While increased clinical infrastructure is a necessary part of addressing the logistical challenge, it can also be reduced by improving the properties of the drugs themselves. Field Trip Discovery is Field Trip's drug development division for next-generation psychedelic medicines. The primary focus is on novel $5HT_{2A}$ targeting therapeutics, which can replicate, or improve upon, the effects of classical psychedelics.

FT-104. The lead asset for Field Trip Discovery is FT-104, a synthetic psychedelic molecule, which has a similar receptor-binding profile to psilocybin, but a shorter duration-of-action. The active compound is not fully novel; having been discovered by exploring existing data dating back to the 1960s combined with anecdotal experiential reports. The company found an active molecule that produces very similar effects to psilocybin, but with a much shorter duration-of-action. Upon finding the chemical, the company evaluated the drug properties, and discovered that despite having the right activity and duration profile, the overall drug profile was not ideal. As a result, they developed a prodrug with a natural moiety to avoid toxicity. The non-active moiety is also rapidly cleaved to minimally impact PK. The new compound, named FT-104, was found to have a 3x faster elimination half-life, with most of the drug removed from the system within 3 hours, and a more consistent PK profile in preclinical studies than the active compound on its own.

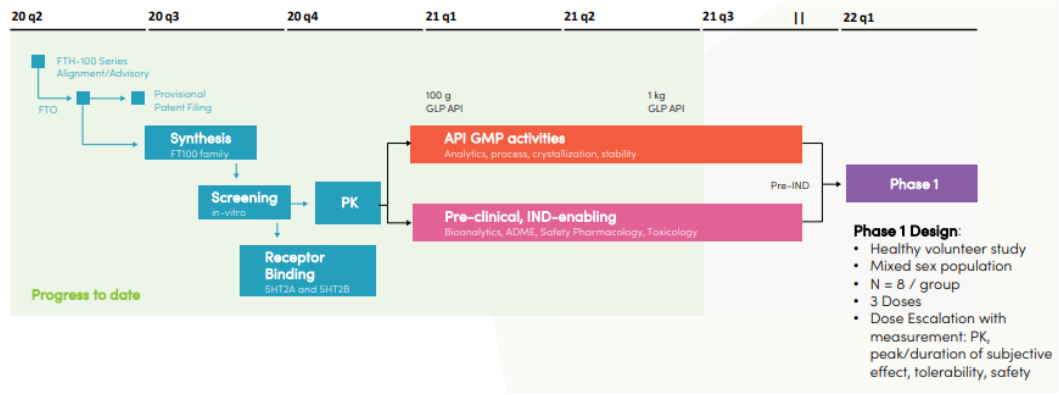
Field Trip has completed initial preclinical drug metabolism and pharmacokinetic (DMPK) studies for FT-104 demonstrating that it is rapidly metabolized and that the prodrug is metabolized into active form with relatively few metabolites. The company has also secured a Good Manufacturing Practices compliant (cGMP) contract manufacturer and has completed the first kg scale engineering batch of FT-104, which should provide a supply for preclinical development. The drug is expected to enter GLP tox studies in C3Q21 and the clinic for P1 before YE21. Though FT-104 is later to the clinic and is likely to be the third or fourth to market, it is differentiated with shorter duration (this is very important, as it not only increases throughput, but decreases the time commitment for patients, who may not want to spend 6-8 hours on drug, plus therapy, plus travel time), and also the ability to protect IP through composition of matter patents (filed).

Exhibit 3. Discovery of FT-104. In order to develop FT-104, Field Trip screened scientific and anecdotal data to find an active compound that matched its ideal target profile of a psilocybin-like pharmacology, a short duration, and positive subjective effects. This included academic and

scientific data from the first wave of psychedelic research in the 1960s, such as that from A. Hofmann from Sandoz, (NVS - NR) and the 1970s, such as A. Shulgin from Dow Chemical (DOW - NR), as well as experiential report databases such as Erowid and Trip Report. To take the drug from an experimental chemical to a true drug candidate, the company formed a chemically stable prodrug that rapidly forms into active in vivo to avoid impacts to the PK profile and psychedelic experience.

Source: Field Trip Corporate Presentation

Exhibit 4. FT-104 timelines.

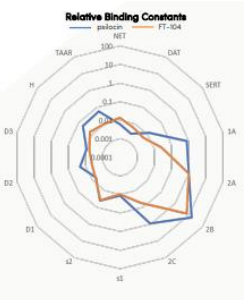


Source: Field Trip Corporate Presentation

Exhibit 5. Pharmacological profile. FT-104 was selected due to its similar activity to psilocybin, binding to many of the same receptors with similar activity to psilocybin at a comparable dose.

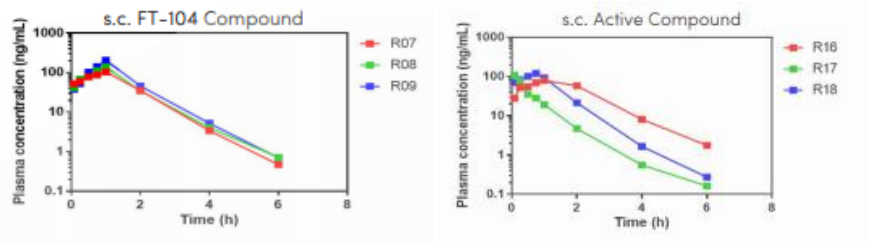
	Psilocybin	FT-104
Active	110 nM Psilocin	120 nM Dose <30mg, oral
Prodrug	>10,000 nM Psilocybin Dose 25 mg, oral	1200 nM FT-104

Anecdotal reports indicate FT-104 Active is psychedelic, modestly hallucinogenic and produces positive subjective experience.



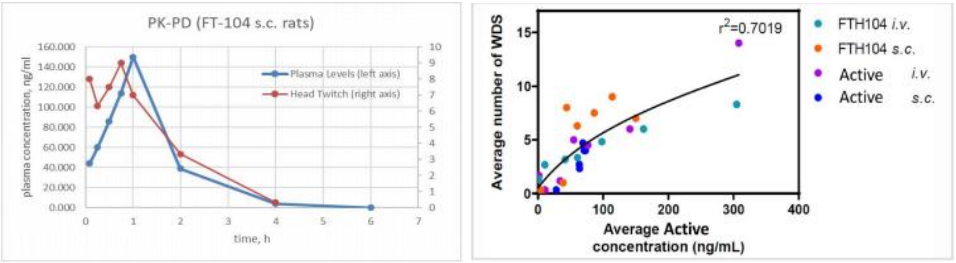
Source: Field Trip Corporate Presentation

Exhibit 6. FT-104 prodrug produces a consistent PK profile. In preclinical studies, Field Trip has found that FT-104 produces low variability and favorable solubility characteristics compared to the active compound on its own. The elimination half-life has been found to be 36 minutes, ~3x faster than psilocybin (90-120 minutes) and the plasma level at 3 hours is ~3% of peak dose, suggesting a duration of <4 hours, which is consistent with the anecdotal data with the active species.



Source: Field Trip Corporate Presentation

Exhibit 7. Correlation between head twitch response and plasma concentration of active ingredient validates $5HT_{2A}$ activity. The correlation between head twitch response and concentration of active drug highlights $5HT_{2A}$ activation by FT-104. The chart on the left compared the plasma concentration of subcutaneous administration of FT-104 in rats to head twitch rate and demonstrates that the frequency of head twitches (a well-validated measure of $5HT_{2A}$ agonism)[1] maps well to the concentration of drug. The chart on the right compares the average active concentration to the number of "wet dog shakes" (WDS, another commonly used term for head twitches in rats, which frequently involve the head, neck, and trunk), demonstrating a strong positive, dose dependent correlation.



Source: Field Trip Corporate Presentation

Research on psilocybin producing fungi. In addition to FT-104, Field Trip is conducting research on psilocybin producing fungi and non-psilocybin active chemicals in psychedelic mushrooms. There is likely more happening inside a natural "magic mushroom" that contributes to various aspects of the effects when the mushroom is ingested. Botanical materials are complex and have many additional compounds, which may contribute directly or indirectly to the activity at serotonin, dopamine, and other receptors, as well as within the cellular transport and accumulation mechanisms in the brain. This includes the so-called "entourage effect, where a synergistic interaction of two or more molecules occurs when those molecules are administered together. The company operates a cultivation and botanical research facility in Jamaica in collaboration with the University of West Indies.

Field Trip Health – Clinical Model

Delivery and logistics. While the data behind psychedelic therapy is certainly compelling, in order for the space to take off, the actual infrastructure to deliver these drugs still needs to be created. This is the focus of Field Trip's clinic business. The company operates ketamine-assisted psychotherapy clinics using off-label IV ketamine with its own internally trained therapists and clinics designed to promote a calming environment. Due to the psychological nature of the therapy, set, and setting is an important component to maximize the benefit for the patient, and by using its own clinics, Field Trip is able to better control these aspects as opposed to companies that use third-party clinics. Field Trip also trains its own psychotherapists, which gives the company greater control over the outcomes, as well as expertise and know-how in best practices. While initially targeting ketamine for a variety of mental health indications (not just depression, but PTSD, anxiety, and others), the company does not plan to stop there. Field Trip plans to use MDMA and psilocybin as those drugs become approved, as well as the clinics as

[1] Halberstadt, Adam L, and Mark A Geyer. "Characterization of the head-twitch response induced by hallucinogens in mice: detection of the behavior based on the dynamics of head movement." Psychopharmacology vol. 227,4 (2013): 727-39.

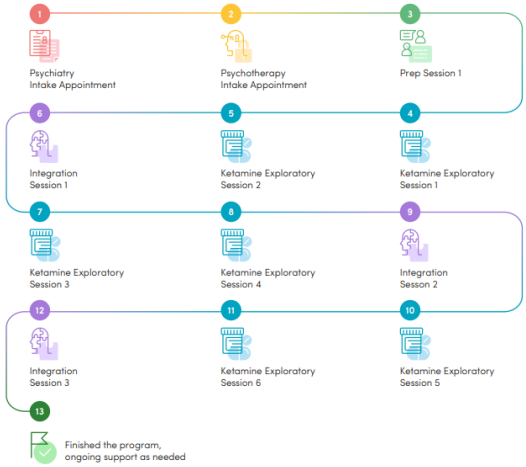
trial sites for its own internal pipeline candidate, FT-104. Field Trip is currently collaborating with leading organizations like MAPS to run a P2 study for MDMA in Field Trip Health clinics, as well as with USONA for training of therapists.

Exhibit 8. Field Trip Health Clinic. Field Trip Clinics are designed to provide a comfortable and calming environment for patients to provide the right set and setting for a patient's psychedelic treatment, this includes features such as soft lighting, calming colors, and elements of nature included in the treatment rooms. Images below feature a treatment room from the company's NYC center and the lobby from the company's LA center.

Source: Field Trip Corporate Website

The company is already operating multiple locations with 6 currently open across North America in Toronto, New York, Los Angeles, Chicago, Atlanta, and Houston and a location in Amsterdam for the administration of psilocybin truffles. Field Trip is targeting 20 clinics open or under construction by YE21 (the next 5 locations have been leased in San Diego, CA, San Carlos, CA, Seattle, WA, Washington DC, and Fredericton, NB, Canada) and 75 clinics by 2024. The cost of treatment is currently ~$2,500-$5,700 per treatment and depending on the patient's needs, can be broken up into modular blocks. The first block involves consultation, meeting the therapist, a preparatory session, and two dosing sessions, and two integration sessions spanning 1-2 weeks, costing $2,400. Additional modular blocks include two psychedelic experiences, two exploratory sessions, and one integration session costing $1,750. Most patients are expected to cover two additional modules after the first initial one, over a course of 3-4 weeks, although for more complex conditions such as PTSD and trauma, longer courses may be beneficial. The company also recently announced two new therapy protocols, one for group therapy, and one of longer term maintenance.

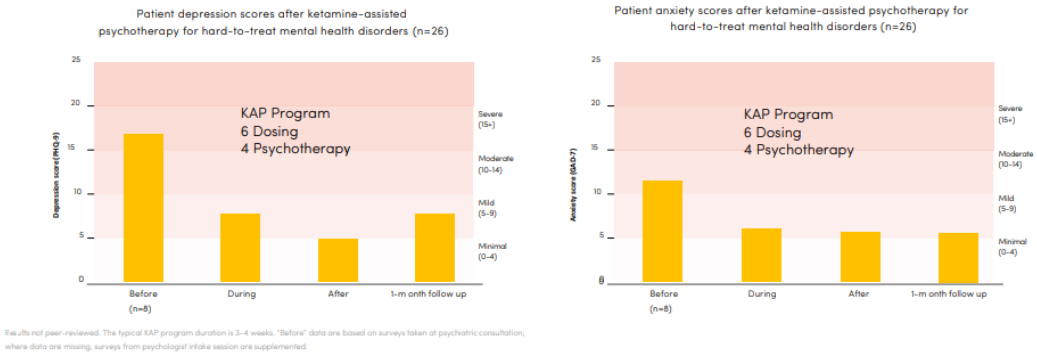
Exhibit 9. Ketamine-assisted psychotherapy program (CORE). The core program consists of one preparatory session (essentially an introductory session to prepare the patient for what to expect from a psychedelic session), six ketamine dosing sessions (with exploratory follow-ups), and three integrated sessions. During the exploratory sessions (which immediately follow the dosing), therapists spend time helping patients reflect, discuss, and explore the experiences during the session. The integration session helps patients derive meaning from the psychedelic therapy experience and translate it into everyday practices to help produce a tangible, sustainable impact. For a typical course of treatment, patients receive two ketamine sessions per week with exploratory follow-up with one integrated session for ~3 weeks, before moving into a maintenance phase (when the patient comes back as needed for two dosing sessions and an integrated session).



Source: Field Trip Corporate Presentation

Importance of psychotherapy. The psychotherapy component is key to the success of the overall treatment. Though ketamine alone, for example, has demonstrated rapid relief of symptoms in 1-2 weeks, the evidence supporting combination with psychotherapy enhances effects.[2] Additionally, for drugs such as psilocybin and MDMA, psychotherapy is an integral part of the treatment paradigm that is being explored in late-stage clinical trials with durable responses past 6 months. The prevailing hypothesis for the importance of the psychotherapy component in psychedelic therapy is based on the neuroplastic state, which is induced by psychedelics.[3] By adding a psychotherapy component, psychiatric professionals can help facilitate insights and formation of new thought patterns can provide lasting relief from the treatment.

Exhibit 10. Data on ketamine-assisted psychotherapy from Field Trip Centers. Through the company's ketamine clinics, Field Trip has been able to obtain data on the combination of ketamine with its psychotherapy approach, determining that the clinical protocol produces profound and durable reductions in depression and anxiety.

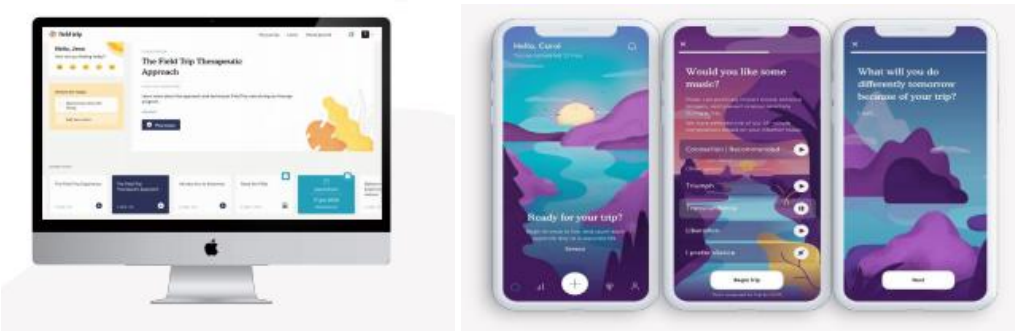


Source: Field Trip Corporate Presentation

Field Trip Digital

Field Trip digital. In order to support patients beyond the clinic, Field Trip has developed digital tools to take therapy outside the clinic. Trip is the company's Android and iOS app, which is designed to support self-guided therapies outside of Field Trip Health Centers and leverages protocols developed by treatment center clinicians. The app has been featured in Wired, Product Hunt, Yahoo, Business Insider, DoubleBlind, Green Entrepreneur, Market Watch, and FreeThink, and has experienced 20% monthly user growth. Ultimately, the app serves as an entry point to the Field Trip ecosystem. Field Trip Portal is a patient tool that supplements and extends the patient experience outside of the in-clinic experience, keeping patients informed and comfortable at each step of the treatment. With the Portal, patients can manage and review their personalized treatment plan, contact their therapy team, and access exclusive content and tools designed by Field Trip's expert integration psychotherapists for processing self-discoveries and converting them into healing that lasts, all from the web or mobile device.

Exhibit 11. Field Trip Portal (left) and Trip app (right).



Source: Field Trip Corporate Presentation

[2] Dore et al. "Ketamine Assisted Psychotherapy (KAP): Patient Demographics, Clinical Data and Outcomes in Three Large Practices Administering Ketamine with Psychotherapy." Journal of Psychoactive Drugs Volume 51, 2019 - Issue 2, 189-198.
[3] Vollenweider FX, Preller KH. Psychedelic drugs: neurobiology and potential for treatment of psychiatric disorders. Nat Rev Neurosci. 2020 Nov;21(11):611-624. doi: 10.1038/s41583-020-0367-2. Epub 2020 Sep 14

MODELING ASSUMPTIONS – Field Trip Health

1. We model Field Trip Health Clinics starting in FY22 (Mar YE).
2. We assume clinic locations reach breakeven 1 year after launch and reach steady-state 2 years after launch.
3. We assume clinics make an annual revenue of C$200k in the startup phase, C$1.8M in the post-breakeven phase, and C$3M at steady-state, increasing 5% per year.
4. We assume clinics have an annual operating cost of C$600K in the startup phase, C$1.2M in the post-breakeven phase, and C$2.2M at steady-state, increasing 5% per year.

Exhibit 12. Field Trip Health Psychedelic-Assisted Psychotherapy Market Model.

Field Trip Health Clinic Model	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Clinics at steady state (Assuming 3 years)		1	4	19	37	55	72	86	95	100	102	104
Clinics post-breakeven (Assuming 1 year)	1	4	15	18	18	17	14	9	5	2	2	2
Clinics in start-up	4	15	18	18	17	14	9	5	2	2	2	2
Total Clinics	5	20	37	55	72	86	95	100	102	104	106	108
Growth rate		*300%*	*90%*	*50%*	*30%*	*20%*	*10%*	*5%*	*2%*	*2%*	*2%*	*2%*
Revenue Model												
		-	-	-	-	-	-	-	-	-	-	-
Revenue at steady state		3,000	3,150	3,308	3,473	3,647	3,829	4,020	4,221	4,432	4,654	4,887
Revenue post-breakeven		1,800	1,890	1,985	2,084	2,188	2,297	2,412	2,533	2,659	2,792	2,932
Revenue at startup		200	210	221	232	243	255	268	281	295	310	326
Increase in Cost		*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*
Total Clinic Revenue ('000 CAD)		**$ 8,454**	**$ 31,819**	**$ 102,329**	**$ 170,482**	**$ 241,726**	**$ 310,849**	**$ 369,331**	**$ 413,637**	**$ 448,059**	**$ 479,871**	**$ 513,942**
Operating Cost Model												
		-	-	-	-	-	-	-	-	-	-	-
Costs at steady state		2,200	2,310	2,426	2,547	2,674	2,808	2,948	3,096	3,250	3,413	3,584
Costs post-breakeven		1,200	1,260	1,323	1,389	1,459	1,532	1,608	1,689	1,773	1,862	1,955
Costs at startup		600	630	662	695	729	766	804	844	886	931	977
Increase in Cost		*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*	*5%*
Total Clinic Operating Costs ('000 CAD)		**$ 10,812**	**$ 30,110**	**$ 81,883**	**$ 131,173**	**$ 182,775**	**$ 230,748**	**$ 272,340**	**$ 303,805**	**$ 329,586**	**$ 352,986**	**$ 378,048**

Source: Maxim Estimates

MODELING ASSUMPTIONS – FT-104

1. We model commercialization of FT-104 in FY28 (Mar YE) in the US and in FY29 in the EU5 (Germany, UK, France, Spain, and Italy) in treatment-resistant depression for adults, which represents ~74.3% of the US population and ~79% of the EU population.
2. We assume that 6.7% of adults have major depressive disorder, and that 60% of those patients are seeking treatment, and 30% have failed at least 2 therapies.
3. We assume initial pricing of $25K in the US based on a discount to Spravato pricing and $20K in the EU, increasing 5% per year.
4. We apply an 80% risk-adjustment based on the stage of development.

Exhibit 13. FT-104 in TRD Market Model (US).

FT-104, Treatment-Resistant Depression (TRD) (US)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
US population	336,633,000	339,999,330	343,399,323	346,833,317	350,301,650	353,804,666	357,342,713	360,916,140	364,525,301	368,170,554	371,852,260	375,570,783
US Adult population 18+ (74.3%)	250,118,319	252,619,502	255,145,697	257,697,154	260,274,126	262,876,867	265,505,636	268,160,692	270,842,299	273,550,722	276,286,229	279,049,091
Major Depressive Disorder (MDD) (Adult. 6.7%)	16,757,927	16,925,507	17,094,762	17,265,709	17,438,366	17,612,750	17,788,878	17,966,766	18,146,434	18,327,898	18,511,177	18,696,289
MDD diagnosed, seeking treatment (60%)	10,054,756	10,155,304	10,256,857	10,359,426	10,463,020	10,567,650	10,673,327	10,780,060	10,887,860	10,996,739	11,106,706	11,217,773
Treatment-reistant depression (2+ failed therapies) (30%)	3,016,427	3,046,591	3,077,057	3,107,828	3,138,906	3,170,295	3,201,998	3,234,018	3,266,358	3,299,022	3,332,012	3,365,332
Market Penetration								0.50%	1.25%	2.00%	2.25%	2.40%
Total Patients Treated								16,170	40,829	65,980	74,970	80,768
Cost of Treatment								25,000	26,250	27,563	28,941	30,388
Increase in Cost								5%	5%	5%	5%	5%
Total revenue ('000)								$ 404,252	$ 1,071,774	$ 1,818,586	$ 2,169,686	$ 2,454,349
Risk adjustment								80%	80%	80%	80%	80%
Total Revenue ('000)								**$ 80,850**	**$ 214,355**	**$ 363,717**	**$ 433,937**	**$ 490,870**

Source: Maxim Estimates

Exhibit 14. FT-104 in TRD Market Model (EU5).

FT-104, Treatment-Resistant Depression (TRD) (EU5)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
EU5 population	251,239,823	253,752,221	256,289,743	258,852,641	261,441,167	264,055,579	266,696,135	269,363,096	272,056,727	274,777,294	277,525,067	280,300,318
EU5 Adult population 18+ (79%)	198,479,460	200,464,255	202,468,897	204,493,586	206,538,522	208,603,907	210,689,946	212,796,846	214,924,814	217,074,063	219,244,803	221,437,251
Major Depressive Disorder (MDD) (Adult. 6.7%)	13,298,124	13,431,105	13,565,416	13,701,070	13,838,081	13,976,462	14,116,226	14,257,389	14,399,963	14,543,962	14,689,402	14,836,296
MDD diagnosed, seeking treatment (60%)	7,978,874	8,058,663	8,139,250	8,220,642	8,302,849	8,385,877	8,469,736	8,554,433	8,639,978	8,726,377	8,813,641	8,901,777
Treatment-reistant depression (2+ failed therapies) (30%)	2,393,662	2,417,599	2,441,775	2,466,193	2,490,855	2,515,763	2,540,921	2,566,330	2,591,993	2,617,913	2,644,092	2,670,533
Market Penetration									0.50%	1.25%	2.00%	2.25%
Total Patients Treated									12,960	32,724	52,882	60,087
Cost of Treatment									20,000	21,000	22,050	23,153
Increase in Cost									5%	5%	5%	5%
Total revenue ('000)									$ 259,199	$ 687,202	$ 1,166,045	$ 1,391,164
Risk adjustment									80%	80%	80%	80%
Total Revenue ('000)									**$ 51,840**	**$ 137,440**	**$ 233,209**	**$ 278,233**

Source: Maxim Estimates

VALUATION

We factor in clinic revenues as well as revenues from FT-104 in treatment-resistant depression starting in FY28 for the US and in FY29 in the EU. We apply an 80% risk adjustment to FT-104 based on stage of development. A 25% discount is applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $11 USD.

Exhibit 15. Free Cash Flow Model.

Average	11

Price Target	9
Year	2022

DCF Valuation Using FCF (mln):

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
units ('000)	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
EBIT	(23,118)	(27,098)	(34,933)	(26,739)	(20,802)	(12,857)	1,879	80,332	250,870	454,685	598,386	687,741
Tax Rate	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	5%	8%
EBIT (1-t)	(23,118)	(27,098)	(34,933)	(26,739)	(20,802)	(12,857)	1,879	80,332	250,870	445,591	568,467	632,722
CapEx	(1,979)	3,727	4,501	4,614	4,152	3,599	2,159	1,188	499	509	519	529
Depreciation	1,394	-	-	-	-	-	-	-	-	-	-	-
Change in NWC												
FCF	(23,702)	(23,372)	(30,433)	(22,125)	(16,650)	(9,259)	4,038	81,519	251,369	446,100	568,986	633,251
PV of FCF	(29,628)	(23,372)	(24,346)	(14,160)	(8,525)	(3,792)	1,323	21,370	52,716	74,843	76,368	67,995

Discount Rate	25%
Long Term Growth Rate	3%
Terminal Cash Flow	2,663,887
Terminal Value YE2030	357,541
NPV	509,966
NPV-Debt	
Shares out ('000)	59,486
NPV Per Share	9

2031E

Source: Maxim estimates

Exhibit 16. Discounted-EPS Model.

Current Year	2022
Year of EPS	2032
Earnings Multiple	12
Discount Factor	25%
Selected Year EPS	10.59
NPV	14

Source: Maxim estimates

	Discount Rate and Earnings Multiple Varies, Year is Constant						
	13.65	**5%**	**10%**	**15%**	**20%**	**25%**	**30%**
Earnings Multiple	**0**	0	0	0	0	0	0
	5	26.87	16.88	10.82	7.07	4.70	3.18
	10	53.74	33.75	21.64	14.14	9.40	6.35
	15	80.61	50.63	32.46	21.21	14.10	9.53
	20	107.49	67.50	43.28	28.28	18.80	12.70
	25	134.36	84.38	54.10	35.35	23.50	15.88
	30	161.23	101.25	64.92	42.42	28.20	19.05
	35	188.10	118.13	75.74	49.48	32.90	22.23

Exhibit 17. Sum-of-the-Parts Model.

	LT Gr	Discount Rate	Yrs to Mkt	% Success	Peak Sales (MM's)	Term Value
FT-104 in Treatment Resistand Depression (US)	1%	25%	6	50%	$491	$2,045
NPV						$2.2
FT-104 in Treatment Resistand Depression (EU)	1%	25%	7	50%	$278	$1,159
NPV						$1.0
Clinic Revenue	1%	25%	0	40%	$514	$2,141
NPV						$6.9
Net Margin						48%
MM Shrs OS (2031E)						59
Total						$10

Source: Maxim estimates

Field Trip Health, Inc.: Income Statement ($000 CAD)					Mar-21	Mar-22	Mar-23	Mar-24	Mar-25	Mar-26	Mar-27	Mar-28	Mar-29	Mar-30	Mar-31	Mar-32
YE March 31	**1Q21A***	**2Q21A***	**3Q21A**	**4Q21A**	**2021A**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
Revenue:																
FT-104 in Treatment Resistand Depression (US)			-	-	-	-	-	-	-	-	-	80,850	214,355	363,717	433,937	490,870
FT-104 in Treatment Resistand Depression (EU)			-	-	-	-	-	-	-	-	-	-	51,840	137,440	233,209	278,233
Patient services (Clinic revenue)	59	59	316	526	961	8,454	31,819	102,329	170,482	241,726	310,849	369,331	413,637	448,059	479,871	513,942
Net revenue	59	59	316	526	961	8,454	31,819	102,329	170,482	241,726	310,849	450,182	679,832	949,216	1,147,017	1,283,044
Collaborative revenue:																
Revenues																
Other Income	0	0		0	0	-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-	-
Total Collaborative Revenue	**0**	**0**	**-**	**0**	**0**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Total Revenue	**59**	**59**	**316**	**527**	**961**	**8,454**	**31,819**	**102,329**	**170,482**	**241,726**	**310,849**	**450,182**	**679,832**	**949,216**	**1,147,017**	**1,283,044**
Gross Margins:																
Cost of Goods Sold - FT-104												16,170	39,929	75,174	100,072	115,365
%Gross Margin												80%	85%	85%	85%	85%
Cost of Goods Sold - Patient Services	145	145	669	586	1,544	11,262	32,372	85,853	135,446	186,812	234,423	274,655	305,141	330,175	353,618	378,725
%Gross Margin			-111%	-11%	-61%	-33%	-2%	16%	21%	23%	25%	26%	26%	26%	26%	26%
Gross Profit	(85)	(85)	(353)	(60)	(583)	(2,808)	(553)	16,476	35,036	54,913	76,426	159,357	334,761	543,867	693,328	788,955
Operating Expenses:																
General and Administrative	1,768	1,768	2,989	4,637	11,162	12,278	13,506	14,857	16,342	17,976	19,774	21,751	23,927	26,319	28,951	31,846
%SG&A																
Occupancy costs	88	88	288	433	897	2,000	3,600	4,680	5,616	6,739	7,413	8,154	8,970	9,867	10,854	11,939
Sales and Marketing	210	210	535	675	1,630	2,282	3,195	4,473	5,815	6,978	7,676	8,444	9,288	10,217	11,239	12,363
Research and Development	740	740	1,065	872	3,418	6,196	12,392	17,349	26,024	33,831	37,214	37,958	38,717	39,492	40,281	41,087
%R&D		0														
Depreziation and ammortization	240	240	376	539	1,394	1,534	1,687	1,856	2,042	2,246	2,470	2,717	2,989	3,288	3,617	3,978
Total Expenses	3,191	3,191	5,922	7,743	20,046	35,553	66,752	129,068	191,284	254,583	308,970	369,850	428,962	494,532	548,631	595,303
Operating Income (Loss)	(3,132)	(3,132)	(5,606)	(7,216)	(19,085)	(27,098)	(34,933)	(26,739)	(20,802)	(12,857)	1,879	80,332	250,870	454,685	598,386	687,741
					-	-	-	-	-	-	-	-	-	-	-	-
Finance expense	(47)	(47)	(85)	(74)	(252)	-	-	-	-	-	-	-	-	-	-	-
Other expense	(267)	(267)	(454)	(611)	(1,600)	-	-	-	-	-	-	-	-	-	-	-
Listing expense			(2,131)	(49)	(2,180)	-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-	-
Total Other Income	**(314)**	**(314)**	**(2,670)**	**(734)**	**(4,033)**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Pretax Income	(3,446)	(3,446)	(8,276)	(7,950)	(23,118)	(27,098)	(34,933)	(26,739)	(20,802)	(12,857)	1,879	80,332	250,870	454,685	598,386	687,741
Taxes on income			-	-	-	-	-	-	-	-	-	-	-	9,094	29,919	55,019
Tax Rate														2%	5%	8%
GAAP Net Income (Loss)	(3,446)	(3,446)	(8,276)	(7,950)	(23,118)	(27,098)	(34,933)	(26,739)	(20,802)	(12,857)	1,879	80,332	250,870	445,591	568,467	632,722
Foreign currency translation loss	33	33	195	117	377											
Total comprehensive loss	(3,413)	(3,413)	(8,081)	(7,834)	(22,741)	(27,098)	(34,933)	(26,739)	(20,802)	(12,857)	1,879	80,332	250,870	445,591	568,467	632,722
GAAP-EPS	(0.14)	(0.14)	(0.22)	(0.18)	(0.70)	(0.47)	(0.61)	(0.46)	(0.36)	(0.22)	0.03	1.37	4.25	7.52	9.56	10.59
GAAP-EPS (Dil)	(0.14)	(0.14)	(0.22)	(0.18)	(0.70)	(0.47)	(0.61)	(0.46)	(0.36)	(0.22)	0.03	1.37	4.25	7.52	9.56	10.59
Wgtd Avg Shrs (Bas) - '000s	25,015	25,015	37,856	44,385	33,068	57,383	57,613	57,844	58,076	58,308	58,542	58,776	59,012	59,248	59,486	59,724
Wgtd Avg Shrs (Dil) - '000s	25,015	25,015	37,856	44,385	33,068	57,383	57,613	57,844	58,076	58,308	58,542	58,776	59,012	59,248	59,486	59,724

Source: Company reports and Maxim

*financials for 1Q21 and 2Q21 are evenly split from 1H21 financials

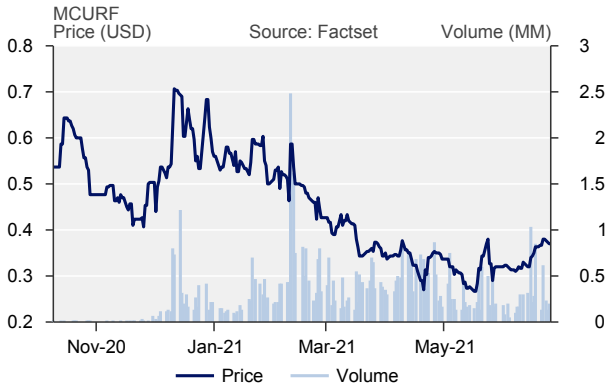
Biotechnology – Psychedelics

MCURF - OTCQB June 27, 2021

Closing Price 6/25/21	**$0.37**
CSE: MCUR	C$0.47
Rating:	Buy
12-Month Target Price:	$1.00
52-Week Range:	$0.25 - $0.86
Market Cap (M):	19.0
Shares O/S (M):	51.4
Float:	95.3%
Avg. Daily Volume (000):	371.4
Debt (M):	$0.0
Dividend:	$0.00
Dividend Yield:	0.0%
Risk Profile:	Speculative
Fiscal Year End:	May

Total Expenses ('000)

	2021E	2022E	2023E
1Q	C$323A	C$3,629	C$4,845
2Q	C$2,314A	C$3,728	C$5,056
3Q	C$3,283A	C$4,092	C$5,477
4Q	C$3,793	C$4,241	C$5,688
FY	C$9,713	C$15,689	C$21,065



Mind Cure Health (MINDCURE) is listed on the Canadian Securities Exchange (CSE) under the symbol "MCUR" and OTCMKTS under the symbol "MCURF". The stock does not trade on a US National Exchange. Financial data is reported in Canadian dollars (C$) and is represented as such in our models. Market data including the stock price and target price are translated into US dollars (USD).

Jason McCarthy, Ph.D.
(212) 895-3556
jmccarthy@maximgrp.com

Michael Okunewitch
(212) 895-3579
mokunewitch@maximgrp.com

Mind Cure Health Inc. Buy

Dual Model in Psychedelics Targeting Synthetic Ibogaine & Digital Therapeutics – Initiating with a Buy Rating & $1 PT

Summary

- **MINDCURE is building out a dual model in psychedelic therapy, targeting clinical development focused on ibogaine and digital therapeutics with its iSTRYM platform.**
- **MINDCURE's clinical development is focused on ibogaine, initially in traumatic brain injury (TBI), though ibogaine has demonstrated potential in other conditions as well, including addiction, neuropathic pain, and migraines.**
- **The company has its own synthetic manufacturing process, which is important as the iboga plant (from which ibogaine is derived), is endangered. This could position MINDCURE as a supplier of ibogaine for research and eventual clinical use.**
- **The iSTRYM digital therapeutics platform is designed to leverage AI to improve psychedelic-assisted psychotherapy outcomes, and extend therapeutic interventions beyond the clinic, and can also act as a distribution network for protocols within psychedelic therapy. A minimum viable product (MVP) limited launch is planned for C3Q21, with a full launch in C1Q22.**
- **Conclusion. MINDCURE's business model provides exposure to psychedelic medicine in both clinical development and digital therapeutics, with potential for near-term revenue. The company is well-financed which should support programs as they get off the ground later this year.**

Details

Synthetic ibogaine. Ibogaine is a naturally derived psychedelic extracted from the iboga plant. The drug has shown promise in several indications including addiction, neuropathic pain, migraines, and TBI. However, research has been limited by the endangered nature of the iboga plant, which has caused export from Gabon (one of the major regions to which iboga is indigenous), to be banned. MINDCURE has a proprietary synthesis process for producing ibogaine, which could position it as one of the first suppliers for research and eventual clinical use of ibogaine, with demand expected to increase as the psychedelic space grows. MINDCURE is also evaluating ibogaine in its own clinical trials, initially targeting traumatic brain injury (TBI). Treatments for TBI are limited and as many as 230K patients are hospitalized with TBI in the US each year. These injuries cost the US ~$38B per year. Though early stage, if the neuroprotective effects of ibogaine for TBI are confirmed in the clinic, ibogaine would be a highly valuable therapeutic.

iSTRYM mental health digital therapeutic platform. Digital therapeutics is a growing market defined by a software platform as a therapeutic to help induce behavioral change. The digital therapeutics market was valued at $2.1B in 2020, and is expected to grow to $6.9B by 2025. iSTRYM leverages AI to improve psychedelic-assisted psychotherapy outcomes, provide and distribute personalized treatment protocols, and extend therapeutic interventions beyond the clinic. The launch initially targets psychedelic centers and is planned to expand to integrated clinics (traditional and psychedelic medicine) and eventually the broader mental health market. Initial MVP launch is planned for C3Q21, with a full launch in C1Q22. Management expects to have 75 clinics in C1H22 and 150 in C2H22, and intends to file for FDA approval under the software as a medical device (SaMD) pathway, streamlining reimbursement and providing validation as a therapeutic intervention.

Valuation. We model commercialization of ibogaine for TBI in FY28 in the US and EU5, and iSTRYM in FY22 with an 80% and 50% risk adjustment, respectively. A 30% discount is then applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $1 USD.

CORPORATE PROFILE

MINDCURE
MIND CURE HEALTH INC.

MINDCURE Health Inc.
170, 422 Richards Street
Vancouver, BC V6B 2X4
www.MINDCURE.com

Investment Risk: MINDCURE's products are not approved and the company currently does not generate revenue.

Regulatory Risk: MINDCURE's products may not be successful in clinical trials and may not meet the requirements for regulatory approval(s).

Commercial Risk: MINDCURE's products are not approved and commercialized, and if/when they become commercially available they may not achieve significant market share. In addition the company lacks commercial infrastructure to support commercialization.

Financial Risk: MINDCURE is not profitable and may need to raise additional capital to support operations.

Dilution Risk: Capital raises to fund operations may dilute investors.

Ownership:
Institutional: 1.6%
Insiders: 4.7%

Balance Sheet Summary (as of 2/28/21):
Cash: C$21.2M
Debt: C$0

Analysts Covering the Stock (other than Maxim): 0

Company Background. MINDCURE (CSE: MCUR, OTC: MCURF) is a diversified psychedelic research and technology company at the forefront of the mental health industry. With research into indications for psychedelic substances, nootropic and adaptogenic products, digital therapeutics technology, and integrative partnerships, MINDCURE is prepared to offer what others in the space cannot. MINDCURE is manufacturing pharmaceutical-grade ibogaine to improve access for researchers and clinicians working to create safe and effective treatment options for patients with key indications.

Senior Management:

Kelsey Ramsden, Chief Executive Officer & President – Kelsey has over 15 years of experience founding, scaling, and operating innovative companies across Canada and the Caribbean. She has built multiple 8-figure businesses from the ground up and has twice been named Canada's Top Female Entrepreneur. Kelsey also serves on the Entrepreneurship Council for the University of Western Ontario, where she is also a faculty member teaching Design Thinking. holds an MBA from the Richard Ivey School of Business at the University of Western Ontario. She is an accomplished keynote speaker and published author.

Dr. Joel Raskin, M.D., Chief Medical Officer – Dr. Raskin was a community psychiatrist and academic with 20 years of international pharmaceutical experience in neuroscience drug development, lifecycle preparation, launch, and commercialization. He earned his medical degree and FRCPC, psychiatry at the University of Toronto. He is currently on the Alzheimer's Drug Development Foundation Scientific Review Committee and the Weston Family Foundation Brain Institute Scientific Advisory Committee. Dr. Raskin is a member of the Canadian Medical Association, Ontario Medical Association, and Royal College of Physicians and Surgeons. As an active member in the academic and life sciences community, Dr. Raskin, until recently, held an adjunct staff appointment with the University of Toronto Department of Psychiatry.

Geoff Belair, **Chief Technology Officer –** Geoff has over 30 years of experience in the fintech industry building innovative and industry-leading technology solutions to drive operations. He is a senior architect and creator of the Integration Services Team at banking solutions company Fincentric Corporation. Mr. Belair's most recent position was as Vice President of Information Technology at Westland Insurance.

Michael Wolfe, Chief Financial Officer – Michael Wolfe has over 30 years' experience in finance, accounting, private equity, and business valuation. He was most recently the CFO of Baylin Technologies Inc., a TSX listed company in the wireless communications industry. Prior to joining Baylin, Mr. Wolfe was the CFO of several mid-market Canadian companies, including Masstech Group Inc., a software company in the broadcast industry. As a General Partner at VenGrowth Capital Partners Inc., Mr. Wolfe had a successful track record in acquisitions, management buyouts, growth financings, and recapitalizations in diverse industries such as cable, broadcast, manufacturing, insurance, oil field services, and global logistics. Mr. Wolfe has also served as a director for several private and public companies, including as a member of audit and other independent committees. He earned a CPA, CA designation, a Chartered Business Valuator designation, an MBA from McMaster University, and a B.A. (business and economics) from the University of Western Ontario.

INVESTMENT SUMMARY

Bull Case. MINDCURE is developing a dual model in the psychedelic medicine space: digital therapeutics with iSTRYM and clinical R&D focused on ibogaine, as well as supportive nootropic supplements. On the clinical development side, the company has a chemical synthesis process for synthetic ibogaine. Ibogaine has shown promise in a number of indications including addiction, neuropathic pain, migraines, and traumatic brain injury (TBI). As the psychedelic medicine space continues to grow, the need for ibogaine is expected to increase as further indications are discovered; however, ibogaine is isolated from an endangered plant species, and therefore, a stable natural supply is a challenge for research into its potential. By providing a sustainable supply, MINDCURE could potentially enable and benefit from further R&D and treatment with ibogaine. MINDCURE is also evaluating ibogaine in its own clinical trials, initially TBI. Treatments for TBI are limited and as many as 230K patients are hospitalized with TBI in the US each year. These injuries cost the US ~$38B per year. Though early stage, if the neuroprotective effects of ibogaine for TBI are confirmed in the clinic, ibogaine would be a highly valuable therapeutic. Digital therapeutics represents a nearer term revenue opportunity in a rapidly growing market expected to grow to $6.9B in 2025, from $2.1B in 2020. The company's iSTRYM mental health digital therapeutics program is designed to leverage AI to improve psychedelic-assisted psychotherapy outcomes, provide personalized treatment protocols, and extend therapeutic interventions beyond the clinic. An initial minimum viable product launch is planned for C3Q21, with a full launch in C1Q22. The company expected to reach 75 clinics using the platform by C1H22 and 150 by C2H22, and also intends to file for FDA approval under the software as a medical device (SaMD) pathway, streamlining the reimbursement process and giving the platform validation as a therapeutic intervention. iSTRYM is also intended to eventually act as a distribution partner for the protocols used in psychedelic therapy, enabling providing another revenue stream as additional therapies get approved and protocols are developed. Though early stage, Bulls find the dual business model of digital therapeutics and clinical development attractive, providing both nearer- and longer-term revenue opportunities. MINDCURE is well-capitalized with C$21M as of F3Q21 (Feb), which should provide runway to launch the digital health platform and get the ibogaine clinical program up and running, and at the current ~$20M market cap, shares should appreciate as these programs progress.

Bear Case. Psychedelics are a high-risk space. Despite data dating back decades, few large, well-designed, randomized controlled trials have read out. While ibogaine has demonstrated some interesting early data, its efficacy is less well-supported compared to other classical psychedelics that engage the 5-HT_{2A} pathway or entactogens like MDMA. Furthermore, ibogaine's clinical profile may be undesirable for many indications due to its duration which can last 12-24 hours, requiring more of a rehabilitation/retreat-like treatment paradigm, compared to a psychotherapy paradigm. Many companies are evaluating non-hallucinogenic analogues of ibogaine such as 18-MC, which could represent significant competition. Ibogaine also does not have as clean a safety profile as psilocybin or LSD, with reports of cardiotoxicity and neurotoxicity (at higher doses), as well as medication interactions.

Our Take. MINDCURE is approaching the psychedelic space through both a traditional biotechnology approach with clinical development and manufacturing of ibogaine, as well as a tech approach with its digital therapeutics program, iSTRYM. Ibogaine has demonstrated interesting properties in a number of debilitating indications such as addiction, migraine, and TBI; however, research has been limited by the endangered nature of the plant from which it is naturally sourced. This is where MINDCURE's sustainable synthesis process comes into play, both providing MINDCURE with a reliable supply for its own research and allowing the company to act as a supplier to the space as the demand for ibogaine grows, which could provide a source of revenue before MINDCURE's own product is approved. While toxicity has been a challenge in the past, this has largely been associated with unregulated use and proper screening protocols and medical supervision could help ameliorate the adverse effects. For example, cardiac events demonstrated in humans were linked to pre-existing conditions and has largely been associated with high doses. Additionally, given the severity and unmet need for indications like addiction and TBI, a manageable toxicity profile is likely acceptable; this is biotech, and drugs generally come with side effects. While duration represents a challenge, it is not as significant as it would be for something like depression or anxiety, considering indications like addiction or TBI are often dealt with in an in-patient setting where round-the-clock patient monitoring is standard. The company is initially targeting TBI, which has a high economic burden, and in moderate-severe cases, often leaves patients with disability. It is also worth noting that MINDCURE's synthetic ibogaine is likely to be available prior to widescale availability of derivatives and analogues, positioning the company as a first mover. The other side of the business, digital therapeutics, partially de-risks the company as it has a nearer, though more incremental, path to market with a pilot launch expected this year. Digital therapeutics is a significant and growing segment within healthcare, which has seen regulatory support with FDA guidance and the SaMD pathway (iSTRYM SaMD filing expected C1H22), as well as activity on the M&A side with the acquisition of Livongo by Teledoc (TDOC - NR) for $18.5B in late 2020. While iSTRYM is initially targeting psychedelic therapy clinics, MINDCURE plans to expand to the broader mental health space, first to integrated clinics, and eventually to general mental healthcare providers. With exposure to clinical development, manufacturing, and digital therapeutics, MINDCURE has multiple opportunities for revenue in both the near- and long-term. The company has C$21M in the bank as of F3Q21 (Feb), which should provide runway to get its programs on the ground, and with a ~$20M market cap, we view shares as undervalued.

Finances. MINDCURE reported F3Q21 (Feb) with a net loss of (C$3.2M) and a cash balance of C$21.2M. The company currently burns ~C$3M a quarter which we expect expenses to increase as the company launches iSTRYM and begins clinical development on ibogaine, though it should have runway into 2022. In Feb 2021, MINDCURE raised C$23M for 38M units at C$0.60 per unit, consisting of one share and 0.5 warrants exercisable at C$0.80 per share. The company is not profitable and will likely need multiple equity financings over time to support operations, which we factor into our model.

Exhibit 1. Upcoming Catalysts (calendar year).

Product	Indication	Event	Timeline	Impact
iSTRYM	Mental health	Update on psychedelic research clinic partnerships	3Q21	+
Synthetic Ibogaine	Multiple	Formulation IP filing	3Q21	++
n/a	n/a	Research Collaboration	3Q21	++
iSTRYM	Mental health	Beta launch	4Q21	++
Synthetic Ibogaine	Multiple	CGMP scale up	4Q21	++
iSTRYM	Mental health	Full commercial launch	1Q22	+++
iSTRYM	Mental health	FDA SaMD approval filing	1H22	++

Stock Significance Scale: + of moderate importance; ++ higher level; +++ very important

Source: Company reports and Maxim Forecasts

Exhibit 2. Pipeline.

Product	Indication	Development	Pre-IND	Phase I	Phase II	Phase III	Marketed
Synthetic Ibogaine	Traumatic Brain Injury						

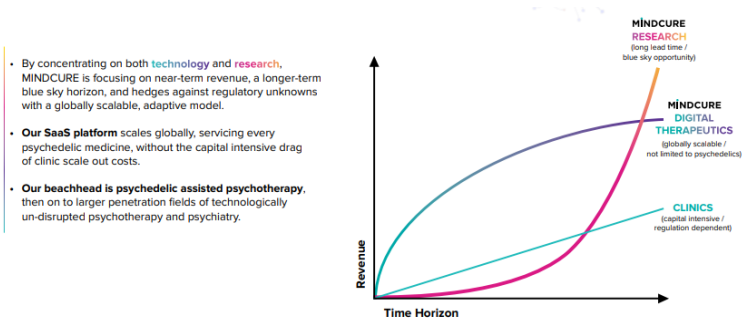
Product	Indication	Development	Minimum Viable Product	Beta launch	Full Launch
iSTRYM	Mental Health				

Source: Company Reports and Maxim

MINDCURE Strategy

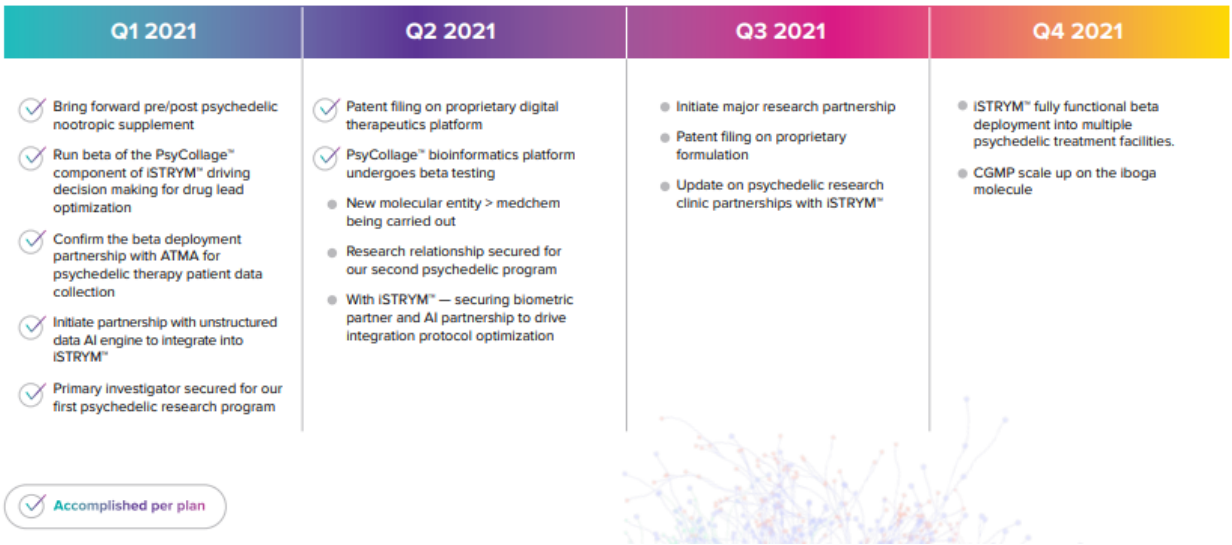
Dual business model. MINDCURE therapeutics is focused on two markets: digital therapeutics and clinical development. Digital therapeutics is a growing market defined by therapeutic intervention driven by software to prevent, manage, or treat medical disorders or disease. MINDCURE's digital therapeutics essentially uses a technology platform to help induce behavioral change in the patient. The digital therapeutics segment was worth $2.1B globally in 2020, and is expected to grow to $6.9B by 2025, and includes companies like Livongo Health (Teledoc subsidiary, TDOC - NR), which uses digital therapeutics for diabetes and was acquired by Teledoc for $18.5B in October 2020. MINDCURE is developing the iSTRYM platform for management of mental health disorders and plans to initially target psychedelic medicine providers/patients and expand to the broader mental health space. The other side of the company is focused on the development and manufacture psychedelics for clinical use. Specifically, the company is targeting ibogaine and has a synthetic manufacturing process. Research into ibogaine has been limited by the relative unavailability of pharmaceutical-grade ibogaine as the compound comes from a plant that is endangered and illegal to export from Gabon (one of the major regions to which it is indigenous). That said, there have been a number of potential applications where it has shown promise in preliminary data including addiction, neuropathic pain, migraines, and traumatic brain injury (TBI). MINDCURE's synthetic process could enable researchers to further develop therapies based on ibogaine more easily, as well as enable its own internal development, which is focused initially on TBI.

Exhibit 3. MINDCURE's dual business model creates revenue opportunities in the near- and long-term. MINDCURE's business model provides opportunities for revenues in the short-term through digital therapeutics, which is more rapidly scalable, as well as exposure to higher-risk/higher-reward clinical development.



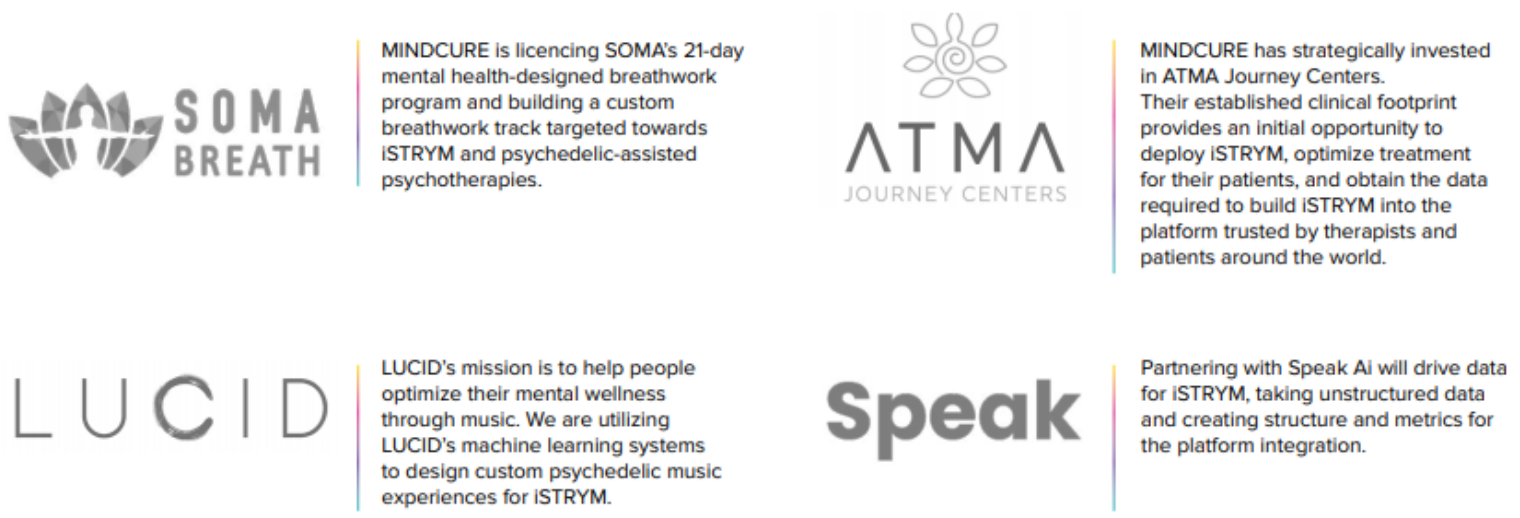
Source: MINDCURE Corporate Presentation

Exhibit 4. Timeline for 2021.



Source: MINDCURE Corporate Presentation

Exhibit 5. MINDCURE partnerships. MINDCURE has multiple partnerships to advance its iSTRYM digital therapeutics platform including ATMA Journey Centers, which will potentially serve as an initial deployment opportunity for iSTRYM and LUCID, a wearables-based machine learning-based platform for using music in psychedelic therapy, enabling the therapist to drive a desired sentiment (for example calm, elated, reflective), and can be adjusted based on a given protocol (i.e., ketamine for depression, etc.).



Source: MINDCURE Corporate Presentation

Clinical development in psychedelic medicine

Ibogaine. Ibogaine is a naturally occurring substance derived from the Tabernanthe iboga plant, a rainforest shrub found in West Africa. It has been used in alternative medicines extensively, in particular, as a treatment for drug addiction due to its anti-addictive properties. The drug induces two phases, the first is a dream-like phase that can last 4-8 hours and patients often report visual experience of past memories, followed by an introspective phase that can last 8-20 hours. While the experience is often unpleasant, patients have reported potent anti-addictive effects, including the erasing of withdrawal symptoms and a reduction in the intensity of cravings. Other effects may prove useful in the treatment of neuropathic pain, migraines, and TBI. One of the key limitations for research and scalability of ibogaine is the endangered status of the iboga plant, which is illegal to export from Gabon, one of the main countries to which the plant is indigenous. MINDCURE has its own synthetic manufacturing process for manufacturing pharmaceutical-grade ibogaine. This provides the company with a sustainable, high-quality, and regulated supply of ibogaine for its clinical trials, as well as for other researchers developing ibogaine, and eventually clinical practitioners using ibogaine for treatment of disease. The latter two could provide a nearer-term revenue stream. The company has already produced ibogaine and is now moving into safety, tox, and stability testing. The company is initially targeting traumatic brain injury and is working with Dr. Dan Engle to act as the principal investigator for MINDCURE's study into psychedelic compounds in TBI and related disorders. MINDCURE has also developed a line of nootropic, adaptogenic, and general wellness products focused around functional mushrooms (non-psychedelic mushrooms containing bioactive compounds) and is conducting preclinical research into other psychedelic molecules for indications involving mood.

Exhibit 6. Potential applications of Ibogaine.

Source: MINDCURE Corporate Presentation

Supplement products and functional mushrooms. In addition to MINDCURE's ibogaine-focused development, the company is marketing a portfolio of supplements/wellness products. Eight are currently available in the US and Canada and include mushroom-based supplements to help boost creative cognitive function, aid the immune system, and relax the mind and body. The company is also developing a proprietary pre- and post-psychedelic supplement line to prepare and replenish the body before and after the psychedelic experience. The functional mushroom market is large and growing, representing $23B in sales in 2019 and is expected to reach $34.5B in 2024. Functional mushrooms are fungi containing bioactive molecules such as polysaccharides, terpenoids, proteins, and polyphenols, and commonly include mushrooms like Reishi, Lion's Mane, and Chaga. Many of these bioactive molecules are thought to play a role in enhancing the immune system, cancer risk, protecting the nervous system from aging, and promoting health of the GI microbiome.[1]

Exhibit 7. Nootropic, adaptogenic, and wellness products.

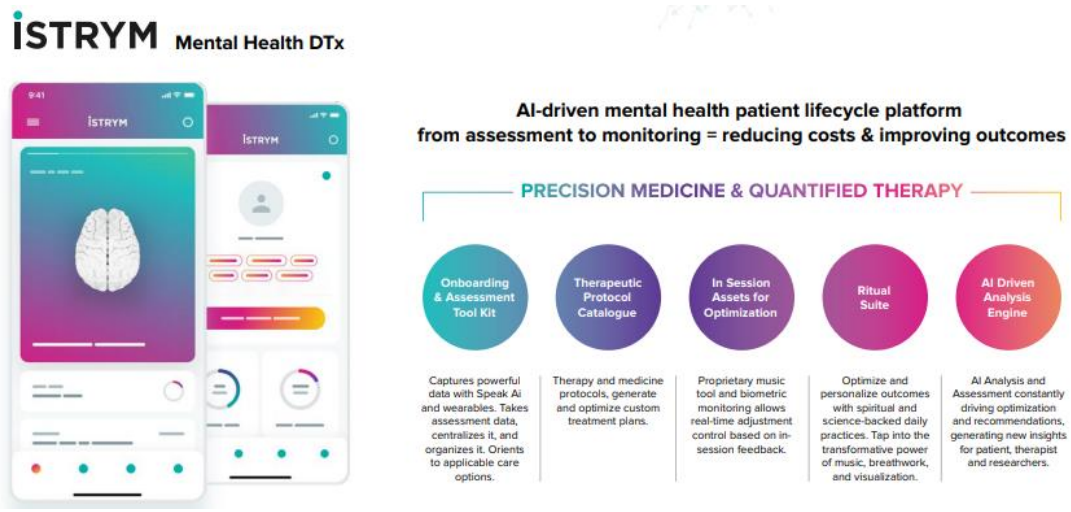
Source: MINDCURE Corporate Presentation (Adapted)

[1] Gaoxing Ma, et al. "A critical review on the health promoting effects of mushrooms nutraceuticals." Food Science and Human Wellness Volume 7, Issue 2, June 2018, Pages 125-133.

iSTRYM – Digital Therapeutics for Mental Health

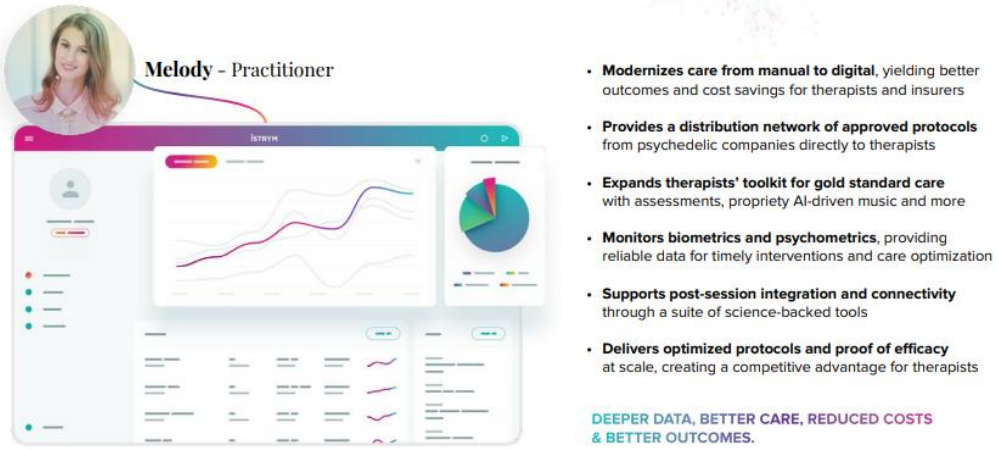
iSTRYM digital therapeutics platform. MINDCURE is developing a digital therapeutics platform for mental health called iSTRYM that is designed to reduce costs and improve outcomes by leveraging AI to improve the patient lifecycle from assessment to monitoring. The program has an onboarding assessment toolkit, which captures and assesses patient data to orient towards applicable care options. It also has a protocol catalogue to generate and optimize custom treatment plans and provides assets for in-session optimization based on live feedback. This is particularly important in psychedelic-assisted psychotherapy as set and setting plays a key role in outcomes and patient comfort. The platform provides post-session integration tools as well, including daily practices for the patient to help integrate beneficial mental health changes. iSTRYM is designed for a software as a service (SaaS) model, meaning it has the potential to provide a stream of durable and recurrent revenues and also lower upfront costs, reducing the barriers to adoption by clinics. MINDCURE is already collaborating with ATMA Journey Centers (private) with a strategic investment to use its treatment centers (one in Calgary and one in Costa Rica) to initially deploy iSTRYM for psychedelic therapy. MINDCURE intends to pursue FDA approval for the platform as software as a medical device (SaMD), a classification referring to software that performs one or more medical functions. As psychedelic medicine advances, iSTRYM also has the potential to act as a distribution network for protocols in psychedelic medicine, providing an additional source of revenue.

Exhibit 8. iSTRYM Platform Overview.



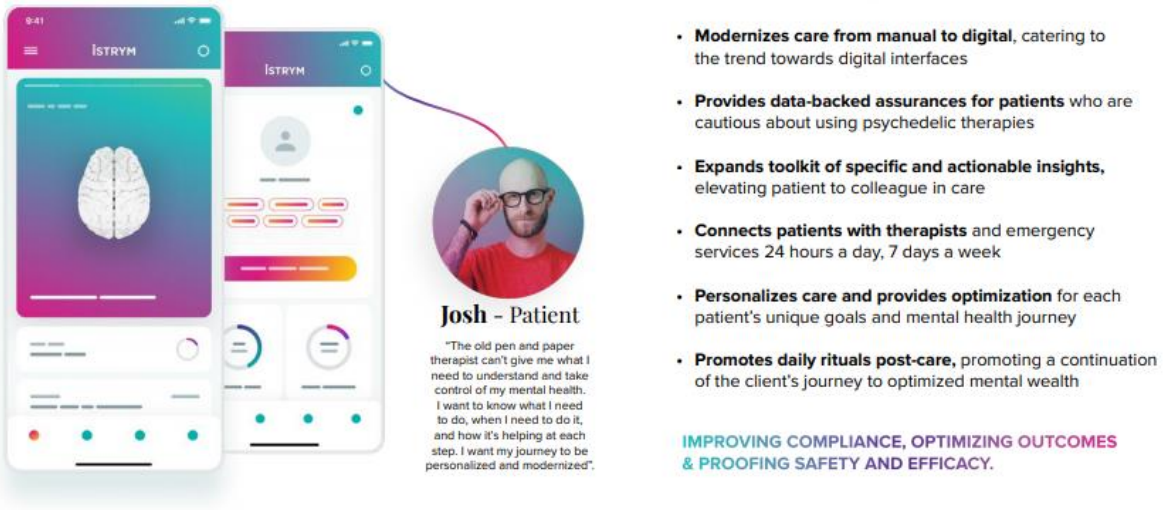
Source: MINDCURE Corporate Presentation

Exhibit 9. iSTRYM for practitioners. On the practitioner side, iSTRYM has the benefit of digitizing care to improve outcomes and reduce costs vs. manual care and provides a distribution network of approved protocols and toolkit for psychedelic medicine treatment. It also monitors biometrics and psychometrics from the patient to improve timeliness of intervention and optimize care. Post-session integration is an important part of psychedelic medicine, and through the digital platform, the overall integration experience can be improved with increased access and connectivity between patient and therapist compared to traditional integration during an isolated therapy session.



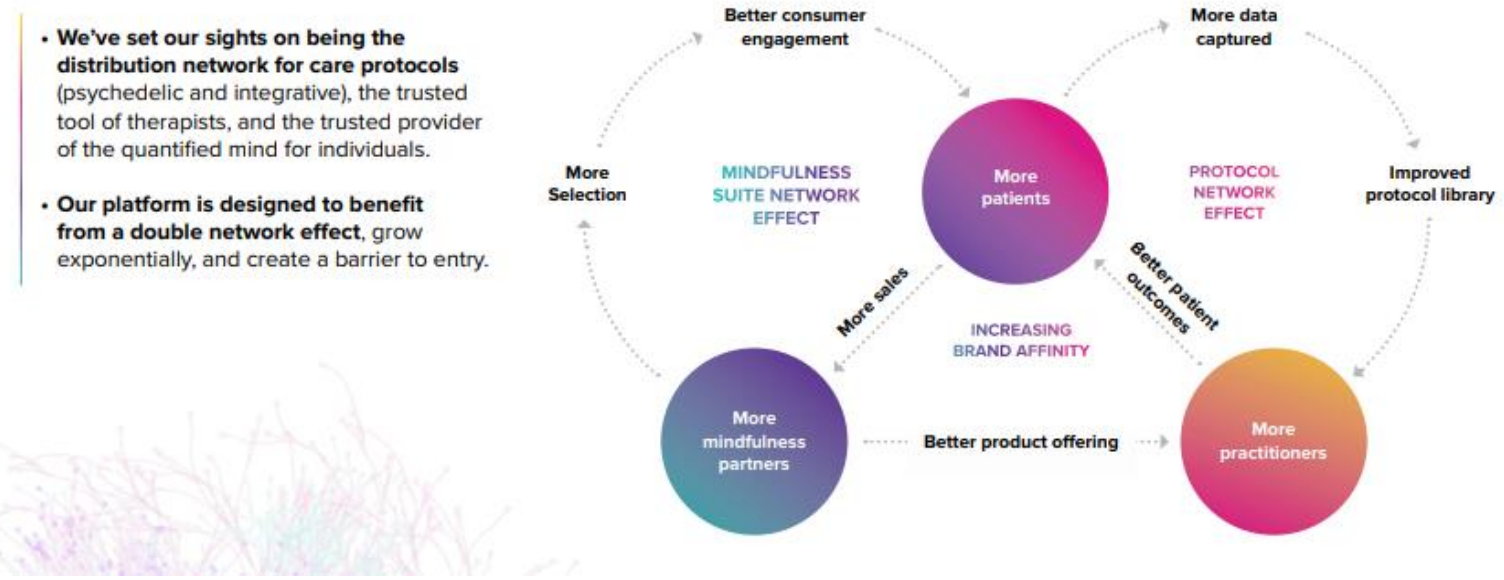
Source: MINDCURE Corporate Presentation

Exhibit 10. iSTRYM for patients. On the patient side, iSTRYM provides a digital interface for the patient's care, which is increasingly becoming standard across many other aspects of peoples lives. It also serves as a digital portal to connect patients to their therapists and personalizes care to be optimized for an individual patient's needs. Every patient is different and will react differently to a given intervention; this has driven a trend towards personalized medicine across healthcare (look at oncology for example). Nowhere is this more important, in our view, than in psychiatry, where diseases have an additional layer of complexity on top of the biology, which is why improving and optimizing a patient's treatment regimen is highly important.



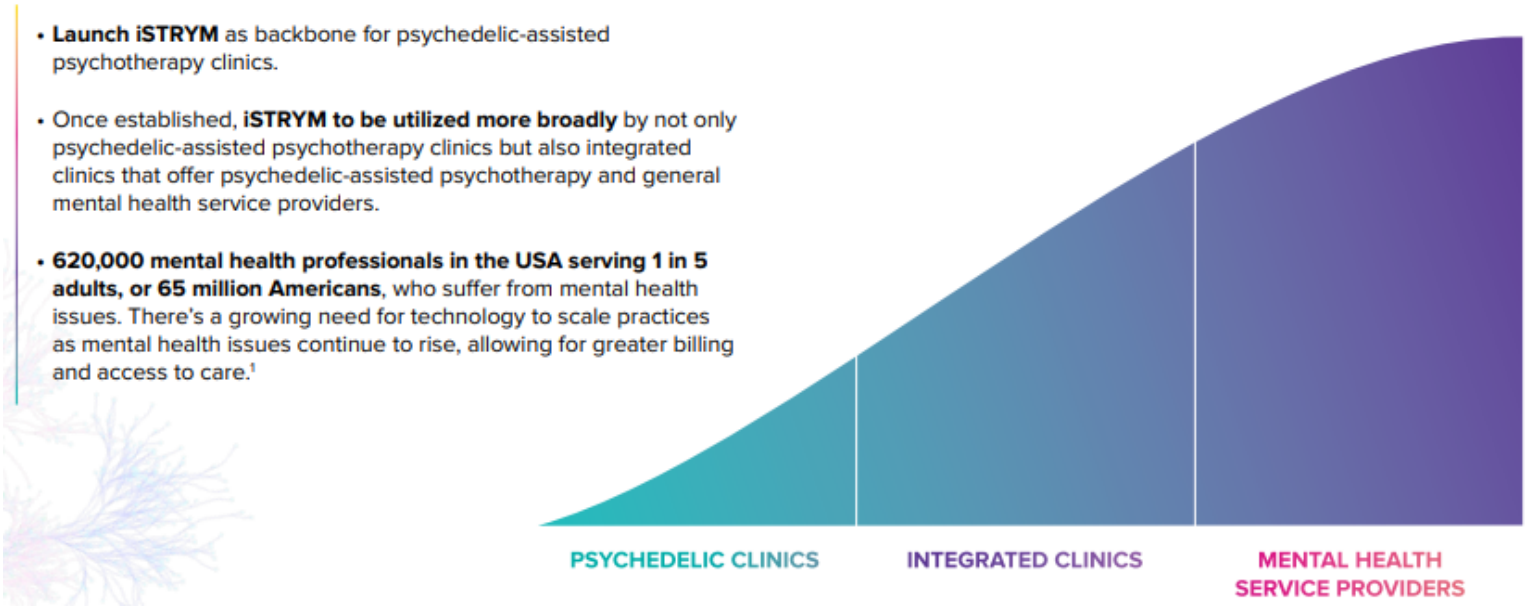
Source: MINDCURE Corporate Presentation

Exhibit 11. Scaling model. MINDCURE's model for scaling adoption of iSTRYM is based on a feedback loop between adding more patients to build out data to improve its protocol library while attracting additional mindfulness partners, driving increased adoption among practitioners, and building out the company's network of providers.



Source: MINDCURE Corporate Presentation

Exhibit 12. Growth strategy for iSTRYM. MINDCURE is initially targeting the psychedelic-assisted psychotherapy market for iSTRYM with clinics that exclusively offer psychedelic therapy. Once the program becomes more established, the company plans to expand iSTRYM to the broader market with integrated clinics that offer both traditional mental health services and psychedelic therapy, and eventually into general mental health providers. The company is planning to launch a minimum viable product in 2021, starting with ATMA journey centers, and expanding to 10 clinics by YE21. In C1H22, the company intends to launch the full commercial version of iSTRYM and target 75 clinics in North America, as well as a SaMD application submission, which would aid in reimbursement. In C2H22, the company expects to have 150 clinics using iSTRYM.



2021				2022	
Q1	Q2	Q3	Q4	Q1 - Q2	Q3 - Q4
Pre-development market analysis and strategic assessment	Development of minimal viable product (MVP) Biometric data integration Artificial Intelligence (AI) development	MVP launch & market testing ATMA Journey Centers Inc. ('ATMA') research launch - experiential learning studies in Canada	MVP expansion into 10 clinics & 100 patients End to end functional development of MVP into first commercial version	Commercial product launch of iSTRYM Target of 75 clinics in Canada and USA SaMD application	Target 150 clinics in Canada, USA, and UK

Source: MINDCURE Corporate Presentation

MODELING ASSUMPTIONS – Synthetic Ibogaine

1. We model commercialization of synthetic ibogaine in traumatic brain injury in FY28 in the US and EU5.
2. We assume an incidence of TBI of 600 per 100K persons, ~20% of which are moderate to severe cases, which we assume to be ibogaine's target market.
3. We assume initial pricing of $40K in the US and $30K in the EU, increasing at a rate of 5% per year.
4. We apply an 80% risk adjustment based on the stage of development, clinical trial risk, and commercial risk, among other factors.

Exhibit 13. Synthetic ibogaine in TBI Market Model (US).

Synthetic Ibogaine in Traumatic Brain Injury (US)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
US population	336,633,000	339,999,330	343,399,323	346,833,317	350,301,650	353,804,666	357,342,713	360,916,140	364,525,301	368,170,554	371,852,260
Incidence of traumatic brain injury (200 per 100k)	673,266	679,999	686,799	693,667	700,603	707,609	714,685	721,832	729,051	736,341	743,705
Moderate to severe (20%)	134,653	136,000	137,360	138,733	140,121	141,522	142,937	144,366	145,810	147,268	148,741
Market Penetration								2.00%	8.00%	15.00%	18.00%
Total Patients Treated								2,887	11,665	22,090	26,773
Cost of Treatment								40,000	42,000	44,100	46,305
Increase in Cost								5%	5%	5%	5%
Total revenue ('000)								$ 115,493	$ 489,922	$ 974,179	$ 1,239,741
Risk adjustment								80%	80%	80%	80%
Total Revenue ('000)								**$ 23,099**	**$ 97,984**	**$ 194,836**	**$ 247,948**

Source: Maxim Estimates

Exhibit 14. Synthetic ibogaine in TBI Market Model (EU5).

Synthetic Ibogaine in Traumatic Brain Injury (EU5)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
EU5 population	324,864,508	325,839,101	326,816,618	327,797,068	328,780,460	329,766,801	330,756,101	331,748,370	332,743,615	333,741,846	334,743,071
Incidence of traumatic brain injury (600 per 100k)	1,949,187	1,955,035	1,960,900	1,966,782	1,972,683	1,978,601	1,984,537	1,990,490	1,996,462	2,002,451	2,008,458
Moderate to severe (20%)	389,837	391,007	392,180	393,356	394,537	395,720	396,907	398,098	399,292	400,490	401,692
Market Penetration								1.00%	3.00%	5.00%	6.00%
Total Patients Treated								3,981	11,979	20,025	24,102
Cost of Treatment								30,000	31,500	33,075	34,729
Increase in Cost								5%	5%	5%	5%
Total revenue ('000)								$ 119,429	$ 377,331	$ 662,311	$ 837,015
Risk adjustment								80%	80%	80%	80%
Total Revenue ('000)								**$ 23,886**	**$ 75,466**	**$ 132,462**	**$ 167,403**

Source: Maxim Estimates

MODELING ASSUMPTIONS – iSTRYM

1. We model commercialization of iSTRYM in FY22.
2. We assume initial pricing of $175 per month per clinic, with an additional fee of $15 per patient per month.
3. We assume clinics serve ~120 patients per month.
4. We apply a 50% risk adjustment based on the stage of development and commercial risk, among other factors.

Exhibit 15. iSTRYM Digital Therapeutics Market Model.

iSTRYM Digital Health Platform Revenue	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Number of Centers Using iSTRYM		50	150	300	600	1,020	1,530	1,989	2,387	2,625	2,888
Percentage Growth			200%	100%	100%	70%	50%	30%	20%	10%	10%
Cost per year (assuming $175 per month)		2,100	2,205	2,315	2,431	2,553	2,680	2,814	2,955	3,103	3,258
Number of patients using iSTRYM (asuming 120 per clinic)		6,000	18,000	36,000	72,000	122,400	183,600	238,680	286,416	315,058	346,563
Cost per patient per year (asuming $15 per month)		180	189	198	208	219	230	241	253	266	279
Increase in Cost		5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Total revenue ('000)		$ 1,185	$ 3,733	$ 7,839	$ 16,461	$ 29,384	$ 46,279	$ 63,171	$ 79,596	$ 91,933	$ 106,183
Risk adjustment		50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Total Revenue ('000)		**$ 593**	**$ 1,866**	**$ 3,919**	**$ 8,231**	**$ 14,692**	**$ 23,140**	**$ 31,586**	**$ 39,798**	**$ 45,967**	**$ 53,091**

Source: Maxim Estimates

VALUATION

We model commercialization of ibogaine for TBI in FY28 in the US and EU5 with an 80% risk adjustment based on stage of development, clinical trial risk, commercial risk, and other factors, and commercialization of iSTRYM in FY22 with a 50% risk adjustment. A 30% discount is then applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $1 USD.

Exhibit 16. Free Cash Flow Model.

Average	1	USD

Price Target	1
Year	2022

DCF Valuation Using FCF (mln):

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
units ('000)	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**
EBIT	(9,649)	(15,097)	(19,199)	(24,442)	(27,632)	(31,378)	(33,247)	12,902	127,579	268,641	350,936
Tax Rate	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	5%
EBIT (1-t)	(9,649)	(15,097)	(19,199)	(24,442)	(27,632)	(31,378)	(33,247)	12,902	127,579	263,268	333,389
CapEx	-	-	-	-	-	-	-	-	-	-	-
Depreciation	-	-	-	-	-	-	-	-	-	-	-
Change in NWC											
FCF	(9,649)	(15,097)	(19,199)	(24,442)	(27,632)	(31,378)	(33,247)	12,902	127,579	263,268	333,389
PV of FCF	(12,544)	(15,097)	(14,768)	(14,463)	(12,577)	(10,986)	(8,954)	2,673	20,332	32,274	31,438
Discount Rate	30%										
Long Term Growth Rate	1%										
Terminal Cash Flow	1,161,114										
Terminal Value YE2030	109,493										
NPV	119,363										
NPV-Debt											
Shares out ('000)	147,709	2030E									
NPV Per Share	1										

Source: Maxim estimates

Exhibit 17. Discounted-EPS Model.

Current Year	2022
Year of EPS	2031
Earnings Multiple	10
Discount Factor	30%
Selected Year EPS	2.26
NPV	2

Source: Maxim estimates

	Discount Rate and Earnings Multiple Varies, Year is Constant						
	2.13	**5%**	**10%**	**15%**	**20%**	**25%**	**30%**
Earnings Multiple	**0**	0	0	0	0	0	0
	5	7.27	4.79	3.21	2.19	1.51	1.06
	10	14.55	9.57	6.42	4.37	3.03	2.13
	15	21.82	14.36	9.62	6.56	4.54	3.19
	20	29.10	19.14	12.83	8.75	6.06	4.26
	25	36.37	23.93	16.04	10.94	7.57	5.32
	30	43.65	28.72	19.25	13.12	9.09	6.39
	35	50.92	33.50	22.46	15.31	10.60	7.45

Exhibit 18. Sum-of-the-Parts Model.

	LT Gr	Discount Rate	Yrs to Mkt	% Success	Peak Sales (MM's)	Term Value
Synthetic Ibogaine in Traumatic Brain Injury (US)	1%	30%	6	50%	$248	$855
NPV						$0.43
Synthetic Ibogaine in Traumatic Brain Injury (EU5)	1%	30%	6	50%	$167	$577
NPV						$0.29
iSTRYM Digital Health Platform Revenue	1%	30%	1	50%	$53	$183
NPV						$0.34
Net Margin						71%
MM Shrs OS (2030E)						148
Total						$1

Source: Maxim estimates

.: Income Statement ($000 CAD)	Aug-20	Nov-20	Feb-21	May-21	May-21	May-22	May-23	May-24	May-25	May-26	May-27	May-28	May-29	May-30	May-31
YE May 31	**1Q21A**	**2Q21A**	**3Q21A**	**4Q21E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**
Revenue:															
Synthetic Ibogaine in Traumatic Brain Injury (US)	-	-	-	-	-	-	-	-	-	-	-	34,648	110,232	194,836	247,948
Synthetic Ibogaine in Traumatic Brain Injury (EU5)	-	-	-	-	-	-	-	-	-	-	-	23,886	75,466	132,462	167,403
iSTRYM Digital Health Platform Revenue	-	-	-	-	-	593	1,866	3,919	8,231	14,692	23,140	31,586	39,798	45,967	53,091
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Net revenue	-	-	-	-	-	593	1,866	3,919	8,231	14,692	23,140	90,119	225,497	373,264	468,442
Collaborative revenue:															
Revenues															
Other Income					-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-
Total Collaborative Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	-	-	-	-	-	593	1,866	3,919	8,231	14,692	23,140	90,119	225,497	373,264	468,442
Gross Margins:															
Cost of Goods Sold	-	-	-	-	-	474	1,306	1,176	1,646	2,938	4,628	18,024	33,824	37,326	46,844
%Gross Margin						20%	30%	70%	80%	80%	80%	80%	85%	90%	90%
Gross Profit	-	-	-	-	-	119	560	2,744	6,585	11,753	18,512	72,096	191,672	335,938	421,598
Operating Expenses:															
Research and Development	0			500	500	5,000	7,500	11,250	13,500	16,200	19,440	20,412	21,433	22,504	23,629
%R&D															
Selling, General and Administrative	72	1,400	2,406	2,454	6,332	10,215	12,259	15,936	20,717	26,932	32,318	38,782	42,660	44,793	47,033
%SG&A															
Insurance		16	40		56										
Filing fees	15	75	15		104										
Share based payments	237	823	823	839	2,721										
Total Expenses	323	2,314	3,283	3,793	9,713	15,689	21,065	28,362	35,863	46,070	56,386	77,218	97,917	104,624	117,507
Operating Income (Loss)	(323)	(2,314)	(3,283)	(3,793)	(9,713)	(15,097)	(19,199)	(24,442)	(27,632)	(31,378)	(33,247)	12,902	127,579	268,641	350,936
					-	-	-	-	-	-	-	-	-	-	-
Interest and other income			6		6	-	-	-	-	-	-	-	-	-	-
Forex gain		13	45		58										
					-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-
Total Other Income	-	**13**	**51**	-	**64**	-	-	-	-	-	-	-	-	-	-
Pretax Income	(323)	(2,300)	(3,232)	(3,793)	(9,649)	(15,097)	(19,199)	(24,442)	(27,632)	(31,378)	(33,247)	12,902	127,579	268,641	350,936
Taxes on income	-	-	-	-	-	-	-	-	-	-	-	-	-	5,373	17,547
Tax Rate														2%	5%
GAAP Net Income (Loss)	(323)	(2,300)	(3,232)	(3,793)	(9,649)	(15,097)	(19,199)	(24,442)	(27,632)	(31,378)	(33,247)	12,902	127,579	263,268	333,389
Foreign currency translation loss	(0)				(0)										
Total comprehensive loss	(324)	(2,300)	(3,232)	(3,793)	(9,649)	(15,097)	(19,199)	(24,442)	(27,632)	(31,378)	(33,247)	12,902	127,579	263,268	333,389
GAAP-EPS	(0.01)	(0.07)	(0.05)	(0.04)	(0.18)	(0.16)	(0.17)	(0.21)	(0.19)	(0.22)	(0.23)	0.09	0.87	1.79	2.26
GAAP-EPS (Dil)	(0.01)	(0.07)	(0.05)	(0.04)	(0.18)	(0.16)	(0.17)	(0.21)	(0.19)	(0.22)	(0.23)	0.09	0.87	1.79	2.26
Wgtd Avg Shrs (Bas) - '000s	30,270	31,203	61,543	92,600	53,904	92,832	113,234	118,690	144,208	144,785	145,365	145,948	146,532	147,119	147,709
Wgtd Avg Shrs (Dil) - '000s	30,270	31,203	61,543	92,600	53,904	92,832	113,234	118,690	144,208	144,785	145,365	145,948	146,532	147,119	147,709

Source: Company reports and Maxim

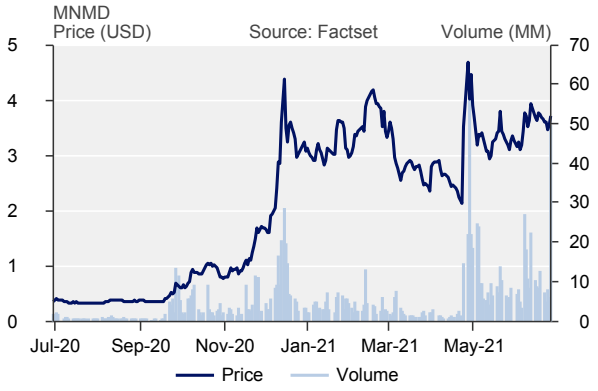
Biotechnology – Psychedelics

MNMD - NASDAQ June 27, 2021

Closing Price 6/25/21	**$3.72**
Rating:	Buy
12-Month Target Price:	$6.00
52-Week Range:	$0.30 - $5.77
Market Cap (M):	1,267.3
Shares O/S (M):	340.7
Float:	94.1%
Avg. Daily Volume (000):	9,960.3
Debt (M):	$0.0
Dividend:	$0.00
Dividend Yield:	0.0%
Risk Profile:	Speculative
Fiscal Year End:	December

Total Expenses ('000)

	2021E	2022E	2023E
1Q	14,939A	14,870	19,109
2Q	15,238	15,516	19,939
3Q	15,543	16,809	21,601
4Q	15,853	17,456	22,432
CY	61,573	64,651	83,081



Jason McCarthy, Ph.D.
(212) 895-3556
jmccarthy@maximgrp.com

Michael Okunewitch
(212) 895-3579
mokunewitch@maximgrp.com

Mind Medicine (MindMed) Inc. — Buy

Late-Stage Psychedelic Pipeline in Mental Health and More – Initiating Coverage with a Buy Rating and $6 PT

Summary

- **MindMed is developing a pipeline of psychedelic-based medicines across psychiatric disease (LSD), pain (LSD), and addiction (18-MC ibogaine derivative).**
- **Project Lucy is the lead program and involves high-dose (experiential) LSD in generalized anxiety disorder (GAD). P2a data is expected in early 2022 and a P2b is planned for 4Q21. The company is also developing an LSD neutralizer with data in 2022, which could help terminate the effects for shorter treatment duration or adverse events.**
- **Other programs moving into the clinic include Project Flow (low-dose, sub-perceptual LSD in ADHD, P2a in late 2021), Project Angie (LSD for pain, pre-IND meeting in 2H21), and Project Layla (18-MC for opioid use disorder, OUD, P2a in late 2021/early 2022).**
- **Conclusion. MindMed has one of the most diverse pipelines in psychedelics and a partnership with a leading research institution to provide exclusive license to data to support continued expansion. The company is well-funded with ~$160M in cash, as programs enter the clinic and data reads out over 2021/2022.**

Details

Leading collaborations. MindMed has an exclusive license for the data and programs from University Hospital Basel's (UHB) Liechti Lab, one of the leading research institutions in psychedelics. This gives MindMed access to a large body of data (and IP generated from that data) across psilocybin, MDMA, LSD, and DMT, as well as combinations and novel compounds. The company is also collaborating with Maastricht University for low-dose LSD and with NYU Langone to support training of therapists and investigators for psychedelic-assisted psychotherapy.

MindMed high-dose programs. MindMed's high-dose programs (full hallucinogenic dose) include Project Lucy (LSD in GAD) and Project Angie (LSD in Pain). For Project Lucy, a P2a is ongoing for generalized anxiety disorder (GAD) with data in 2022, and a P2b is planned for 4Q21 (data late 2023). On the pain side, a pre-IND meeting for a severe pain disorder is planned for late 2022. A Phase 2 study in cluster headaches is also ongoing through UHB with data in 2023. MindMed is also evaluating an LSD neutralizing agent, ketanserin, with P1 data expected in 2022. This has the potential to give the therapist more control in the event of a 'bad trip' and, more importantly, in our view, has the potential to reduce the duration of the LSD perceptual effects, which could improve scalability of therapy since LSD lasts 8+ hours.

MindMed non-experiential programs. MindMed's non-experiential programs include Project Flow (low-dose LSD in ADHD) and Project Layla (18-MC in opioid use disorder). For Project Flow, a P2a for low-dose LSD is expected to start in late 2021 in ADHD (data mid-2023). Project Layla is focused on 18-MC, a non-hallucinogenic ibogaine derivative, in opioid use disorder (OUD). A Phase 2 study is planned late 2021 or early 2022 (data early 2023). We anticipate Project Layla could be a significant value driver given the ongoing opioid crisis, which has been compounded by the COVID-19 pandemic and the only options for OUD are opioid replacement therapy.

Valuation. We model commercialization of MM-120 (LSD) for GAD in the US and EU5 in 2026 with a 60% risk adjustment, MM-290 (LSD low dose) for ADHD in the US and EU5 in 2027 with an 80% risk adjustment, and MM-110 (18-MC) for opioid use disorder in the US and EU5 in 2025 with a 70% risk adjustment. A 20% discount is applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $6.00.

CORPORATE PROFILE

Mind Medicine, Inc.
One World Trade Center, Suite 8500
New York, NY 10007
mindmed.co

Investment Risk: MindMed's products are not approved and the company currently does not generate revenue.

Regulatory Risk: MindMed's products may not be successful in clinical trials and may not meet the requirements for regulatory approval(s).

Commercial Risk: MindMed's products are not approved and commercialized, and if/when they become commercially available they may not achieve significant market share. In addition the company lacks commercial infrastructure to support commercialization.

Financial Risk: MindMed is not profitable and may need to raise additional capital to support operations.

Dilution Risk: Capital raises to fund operations may dilute investors.

Ownership:
Institutional: 0.7%
Insiders: 5.9%

Balance Sheet Summary (as of 3/31/21):
Cash: $159.9M
Debt: $0

Analysts Covering the Stock (other than Maxim): 1 (Buy)

Company Background. MindMed (NASDAQ: MNMD) is a clinical-stage neuro-pharmaceutical drug development company developing product candidates based on psychedelic substances through rigorous science and clinical trials. MindMed's mission is to discover, develop, and deploy psychedelic inspired medicines and therapies intended to treat diseases in the areas of psychiatry, neurology, addiction, pain and, potentially, others such as anxiety disorders, substance use disorders and withdrawal, and adult attention deficit disorder. The company's "psychedelic inspired medicines" program includes medicines that provide the therapeutic benefits of psychedelics without the hallucinogenic effects. MindMed's therapies program includes other substances with hallucinogenic properties administered in combination with therapy that may be performed in-clinic under the supervision of medical professionals or in a similar therapeutic setting. Through MindMed's drug development platform, the company seeks to demonstrate the safety and efficacy of psychedelic-based medicines for a continuum of mental illnesses and unmet medical needs.

MindMed US is the company's main operating subsidiary through which its three drug development programs are overseen: the Addiction Treatment Program, the microdose lysergic acid diethylamide (LSD) program, and its LSD therapy program for anxiety disorders, known as Project Lucy. MindMed's collaboration with the University Hospital Basel's Liechti Lab (the "UHB Liechti Lab") and the company's other research and development efforts related to psychedelics are now supported through its Swiss subsidiary, MindMed Discover GmbH. Additionally, MindMed Pty Ltd. is conducting a Phase 1 study on normal healthy volunteers to determine the safety and tolerability of single ascending doses (SADs) and multiple ascending doses (MADs) of 18-MC for its Addiction Treatment Program.

Senior Management:

Robert Barrow, Chief Executive Officer – Mr. Barrow is an accomplished pharmaceutical executive and clinical pharmacologist with over a decade of experience leading drug development programs in a variety of disease areas. Mr. Barrow previously served as Director of Drug Development & Discovery at Usona Institute where he oversaw preclinical, clinical and regulatory development efforts for all of Usona's development programs. Prior to joining Usona, Mr. Barrow served as Chief Operating Officer of Olatec Therapeutics where he oversaw the execution of numerous early and late-stage clinical trials in the fields of analgesics, rheumatology, immunology, and cardiovascular disease. In addition, he has been responsible for the design and execution of preclinical research programs for new molecular entity drugs in CNS conditions such as multiple sclerosis, Alzheimer's disease and Parkinson's disease. Mr. Barrow holds a master's degree in pharmacology from The Ohio State University and a Bachelor of Science degree from Wake Forest University, where he graduated summa cum laude.

Dan Karlin, M.D. M.A., **Chief Medical Officer –** Mr. Karlin previously co-founded HealthMode in 2018 and served as its CEO. Before that, he built and led clinical, informatics, and regulatory strategy for Pfizer's Digital Medicine and Innovation Research Lab. He also served as Global Clinical Lead for psychiatry clinical compounds at Pfizer. Before that, he was the founder and Chief Medical Officer at Column Health in 2013, a leading technology-enabled psychiatry and addiction practice. He's a strategic Advisor, Otsuka Pharmaceuticals, Click Therapeutics, Syntegra, Recovery Delivered, NightWare. He is also a founding Advisor of the Digital Biomarkers Journal, founder and Board Member, Digital Medicine Society (DiMe), and is on committee Leadership Digital Drug Development Tools at Critical Path Alzheimer's Disease, MJFF, and Mental Health IT at the APA. Mr. Karlin is board Certified in Psychiatry, Addiction Medicine, and Clinical Informatics. He is also an assistant Prof. of Psychiatry at Tufts University School of Medicine. He graduated with degrees in neuroscience and behavior (B.A.), and clinical informatics (M.A.), Columbia University; medicine (M.D.), University of Colorado School of Medicine.

INVESTMENT SUMMARY

Bull Case. MindMed is one of the largest psychedelic medicine companies and is differentiated by its late-stage, LSD-focused pipeline. MindMed is focused on four main target areas: anxiety and depressive disorders (Project Lucy), ADHD (Project Flow), pain (Project Angie), and addiction (Project Layla). The company's lead asset, MM-120, is a high-dose (perceptual) formulation of LSD being developed for anxiety disorders. The compound is currently in Phase 2a with data expected in 2022 and is expected to enter a Phase 2b later this year. Anxiety disorders are one of the core areas of research for psychedelics dating back to the initial research in the 1950s and 1960s, so it can be viewed as a lower-risk indication, on par with something like depression. Anxiety is also a large indication, impacting more patients than depression, representing ~2% of all healthcare expenses in the US. With mean response rates of ~55%, and even fewer patients achieving remission, there is a significant need for longer-term treatments, and LSD-based therapy may provide that. A second program for low-dose (sub-perceptual, commonly known as "microdose") LSD is planned to enter the clinic in late 2021 for ADHD. Importantly, since it is a sub-perceptual dose, patients do not experience hallucinogenic effects, and therefore, it is more likely to be treated as a normal therapeutic. The company also recently announced it would be submitting an IND for pain later this year under its third LSD development program, Project Angie. MindMed's development pipeline extends beyond LSD with 18-MC, a non-hallucinogenic ibogaine-derivative being developed for opioid use disorder (OUD). Current treatments for OUD are largely replacement therapies, which are not highly effective, and cost CMS $3B per year. Phase 1 is expected to complete in the near future and a P2a is planned for late 2021 to early 2022. The company has an exclusive partnership with University Hospital Basel's Liechti Lab, one of the leading institutions driving psychedelic research covering multiple psychedelic compounds and a body of data from a 10-year period as well as future data and IP generated from clinical studies. This gives MindMed access to a diverse pipeline of psychedelics and novel combinations, which are expected to report data over 2021/2022 and provide opportunity for expansion beyond LSD and 18-MC (including mescaline and DMT, which are expected to enter the clinic in 2021 as MindMed development candidates). One collaboration program of particular interest is ketanserin, a 5-HT_{2A} antagonist with the potential to neutralize LSD. Data from a combination study is expected later this year and the compound could potentially terminate hallucinogenic effects in as little as 30-40 minutes, providing therapists the ability to stop "bad trips," but also, and perhaps more importantly, would allow the effects of LSD to be reduced in duration, making a potential therapy more scalable compared to a full 8-hour session and reducing the logistical burden on treatment centers. MindMed is also well-financed with $160M in cash. Bottom-line, Bulls view MindMed as one of the leading companies in psychedelics, with a diverse pipeline. As programs advance, and the broader psychedelics space continues to gain traction, Bulls expect MNMD shares to appreciate.

Bear Case. The psychedelic space is high risk, relying largely on anecdotal evidence and smaller scale clinical studies. More rigorous studies are ongoing, but Bears prefer a wait and see approach to the space as we wait for those results to provide a more definitive proof of concept. MindMed is a leader in the space, however the company faces many of the same IP concerns observed in the cannabinoid space, and by other players developing traditional psychedelics, since LSD and 18-MC are public domain, and do not qualify for composition of matter patents (though they do have potential for formulation and method of use). When it comes to high-dose LSD, one major hurdle is the scalability of therapy. LSD can last 8-12 hours, which is a significant time commitment for patients and therapists and increases costs. This represents a significant commercial risk for high-dose LSD. While low-dose does not have this same commercial risk, there is a higher development risk and the data supporting efficacy of sub-perceptual is less significant than for larger, experiential doses. Bears' concern for 18-MC lies around the existence of other ibogaine derivatives such as ME-18-MC, 18-MAC, and Tabernanthalog, which have demonstrated potentially improved efficacy and potency profiles that could impact the competitive position of MindMed if it reaches approval. Overall, though MindMed is likely to be among the first to reach approval within psychedelic medicine, Bears see risks associated with the current pipeline as limiting the long-term upside.

Our Take. MindMed is among the most advanced players in the psychedelic space and is developing a diverse pipeline focused on LSD in anxiety (Project Lucy), pain (Project Angie), and ADHD (Project Flow), and a second asset, 18-MC, focused on addiction (Project Layla). The two programs focused on hallucinogenic doses of LSD are anxiety and pain. The anxiety program is the most advanced, expecting to read out P2 data in 1H22 and moving into P2b later this year. The pain program is approaching an IND, though we note the Liechti Lab has an ongoing P2 cluster headache study, which MindMed may be able to use to support further development. While high-dose LSD does have scalability challenges due to its long duration, the company is investing heavily into the actual commercial infrastructure through a partnership with NYU Langone to train psychiatrists and through its digital medicine division (Albert), which is focused on building out digital infrastructure to support psychedelic therapy and drug development. The company is also developing an "LSD neutralizer" (ketanserin, patent filed), which has the potential to stop the effects within 30-40 minutes (P1 data with LSD expected 2022). This would not only help address adverse reactions, but could also potentially modulate the duration of effects, which would make the combination much more scalable. MindMed is also developing non-hallucinogenic therapies, 18-MC and low-dose LSD. Anecdotal reports suggest that low-dose LSD can increase focus in patients with ADHD without the unpleasant side effects associated with amphetamines and other stimulants such as irritability and sexual dysfunction, rather, patients actually report improved mood. While the data on low-dose is not as robust as full doses, MindMed is partnered with Maastricht University, one of the leading institutions researching microdosing/low-dose LSD. 18-MC, on the other hand, is being developed for opioid use disorder, a dramatically underserved market, as all of the current drugs are opioid replacement therapies. Both of these programs are moving into the clinic in late 2021 or early 2022 and represent high-value opportunities with reduced commercial risk vs. hallucinogenic drugs. While the main pipeline is attractive on its own, it only scratches the surface of MindMed's longer-term opportunities stemming partially from an exclusive data and IP collaboration with one of the leading psychedelic research institutions, the University Hospital Basel (UHB). In our view, MindMed is a leader in the space with collaborations with leading institutions and researchers, a strong balance sheet, and a diverse pipeline differentiated from other advanced players in the space, who are largely focused on psilocybin, as well as one of the few NASDAQ-listed stocks in the space. As programs move forward in 2H21 and the overall psychedelic space continues to gain exposure, we see upside to MNMD shares.

Finances. MindMed reported 1Q21 with a net loss of ($14.8M) and a cash balance of $159.9M. We expect expenses to rise over time as more trials are initiated, that said, at the current burn rate of ~$15M per quarter, we expect the company has runway into 2023. MindMed uplisted to the NASDAQ on 4/27/21, trading under the ticker MNMD. The company continues to trade on the Neo Exchange under the symbol MMED, and OTC under MMEDF. In March, the company raised C$19.5M ($15.4M USD) in a financing for 6M units at a price of C$3.25; units consisted of one subordinate voting share and 0.5 subordinate voting share warrants exercisable at C$4.40. Warrants contain a provision starting 4 months and one day from the closing of the offering (closed Mar 9) in which if daily VWAP of shares on the NEO Exchange exceeds C$6.90 for 5 consecutive trading days, the company can accelerate the expiry of warrants to 30 days following written notice. This came following an upsized January 2021 financing for C$92.1M ($72.7 USD) for 20.9M units at a price of C$4.40 consisting of one subordinate voting share and 0.5 subordinate voting share warrants exercisable at C$5.75. The warrants come with a provision that if shares on the Neo Exchange are trading at a daily VWAP exceeding C$9 for 5 consecutive trading days, the company can accelerate expiry of warrants to 30 days following written notice. The company does not generate revenue and will likely need equity financings (potentially multiple) over time to support operations, which we factor into our model.

Exhibit 1. Upcoming Catalysts.

Product	Indication	Event	Timeline	Impact
LSD + Psilocybin	n/a	Phase 1 readout	Mid-2021	+
MM-120 (Project Lucy)	Anxiety	IND Submission	3Q21	+
LSD + Psilocybin + Mescaline	n/a	Phase 1 readout	2H21	+
MM-290 (Project Flow)	Adult ADHD	P2a initiation	2H21	+
Project Angie	Pain	Pre-IND meetin	2H21	+
MM-120 (Project Lucy)	Anxiety	Phase 2b initiation	4Q21	+
LSD + Ketanserin (LSD Terminator)	n/a	Phase 1 readout	Late-2021/early-2022	++
18-MC (Project Layla)	Opioid use disorder	P2 initiation	Late-2021/early-2022	+
MM-120 (Project Lucy)	Anxiety	Phase 2a readout	1H22	+++

Stock Significance Scale: + of moderate importance; ++ higher level; +++ very important

Source: Company reports and Maxim Forecasts

Exhibit 2. Pipeline.

Product	Indication	Development	Pre-IND	Phase I	Phase II	Phase III	Marketed
MM-120 (LSD)	Anxiety Disorders						
MM-120 (LSD)	Pain Syndrome						
MM-290 (LSD low-dose)	Adult ADHD						
MM-290 (LSD low-dose)	Neurological disorders						
MM-110 (18-MC)	Opioid Use Disorder						
LSD Combinations	Multiple						
LSD + Ketanserin (terminator)	Multiple						

Source: Company Reports and Maxim

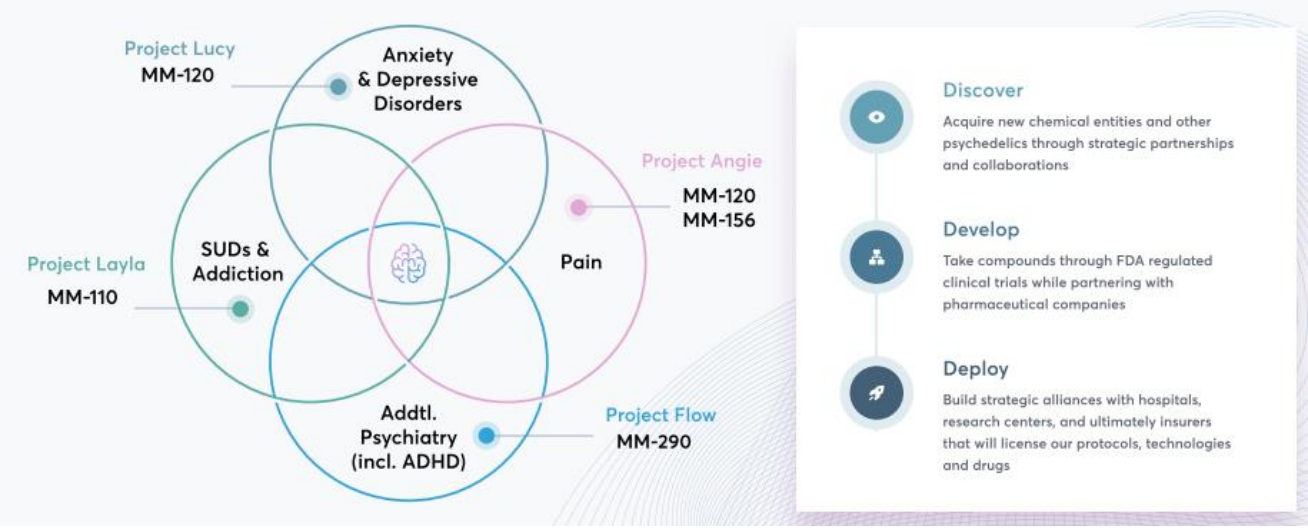
Corporate overview

MindMed is developing a pipeline focused around a number of mental health and neurological disorders. The company's lead program is an LSD high dose (perceptual) program (Project Lucy) for generalized anxiety disorder and is expected to enter P2b later this year. The company has the most advanced LSD program in psychedelics and a diversified pipeline of hallucinogenic (18-MC ibogaine derivative, LSD combinations, mescaline, and MDMA-analogues) and non-hallucinogenic (low dose/microdosing and non-hallucinogenic drugs) pipeline programs. MindMed has an exclusive license agreement with University Hospital Basel (UHB), one of the leading institutions conducting psychedelic research, for LSD, MDMA, DMT, and psilocybin, and is actively filing patents against this data and is working on development of next-gen therapies, compounds, and dosing technologies. Currently the company has several ongoing studies and has completed a total of 13+ under the University Hospital Basel collaboration.

Business segments. MindMed psychedelic medicine can be broken up into three segments: Discover, Develop, and Deploy.

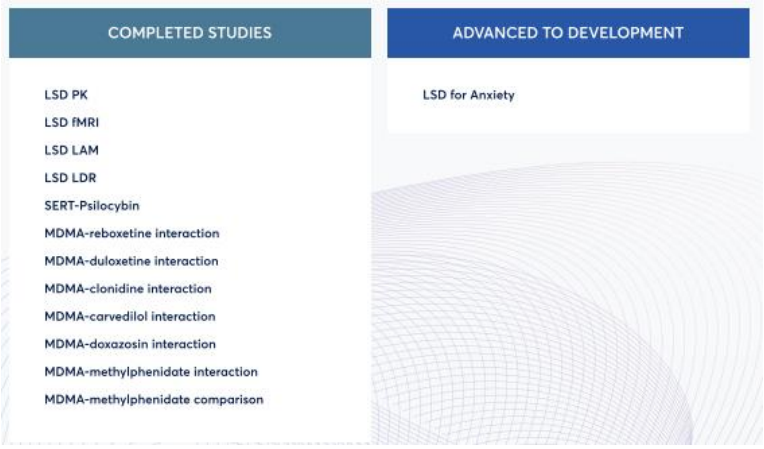
- **MindMed Discover –** Discover is MindMed's segment focused on the acquisition of new chemical entities and psychedelics. This includes the R&D collaboration with UHB Liechti Lab, which started with LSD, but was expanded to cover MDMA, dimethyltryptamine (DMT), MDMA-LSD, and psilocybin. This includes novel patents and combinations of drugs, as well as the company's LSD neutralizer program which has the potential to abort the hallucinogenic effects. The LSD neutralizer program is particularly interesting as it has the potential to stop the hallucinogenic effects within 20-30 minutes, which potentially allows for shorter dosing without the need to modify LSD itself. A patent has been filed for this program in collaboration with UHB. Discover also includes a partnership with MindShift (Private), a Swiss startup developing and patenting next-gen psychedelics
- **MindMed Develop –** MindMed Develop is the business segment focused on the company's clinical studies relating to 18-MC and LSD including Project Lucy for LSD in anxiety and depressive disorders, Project Angie for LSD in pain disorders, Project Flow for low-dose (sub-perceptual) LSD in ADHD, and Project Layla for 18-MC in opioid use disorder.
- **MindMed Deploy –** Deploy is the company's business segment focused on the administration and deployment of psychedelic medicines. This includes the company's collaboration with NYU Langone Medical Center to build out infrastructure for psychedelic medicine and train psychiatrists and clinical investigators. MindMed has committed $5M over a 5-year period, initially focused on substance use disorders and alcoholism. The company also has a digital medicine division know as Albert, with the goal of developing an integrated technical platform and toolset for delivering psychedelic medicines and therapies combined with digital therapeutics pair digital tools, which may include wearables and the latest in machine learning, with psychedelic assisted therapies in order to give healthcare providers the ability to optimize and better understand the patient journey and therapeutic outcomes.

Exhibit 3. Overview of MindMed Programs. MindMed is developing a diverse psychedelic pipeline across a number of disease areas. In anxiety and depressive disorders (Project Lucy), the company is developing MM-120 (high-dose LSD) initially targeting anxiety disorders with an ongoing P2a and a P2b planned for 4Q21. Project Angie is the company's pain-focused development program and currently consists of two LSD-based drug candidates, MM-120 and MM-156. A pre-IND briefing package for a severe pain indication is being prepared for submission in 2H21; this is expected to support a P2a study. MindMed is also evaluating a second indication in a common chronic pain syndrome. One phase 2 study in cluster headaches is currently ongoing, with data expected in 2023. Project Flow is a low-dose LSD program for other psychiatric disorders, initially targeting adult ADHD. This program is expected to enter the clinic in late 2021 and would enable more traditional treatments since it is a sub-hallucinogenic dose. The company's fourth development program is Project Layla, which is focused on substance use disorders. The initial target of this program is using MM-110 (18-MC), which is a non-hallucinogenic ibogaine derivative, and a P2 study is planned for late 2021 or early 2022. MindMed plans to continue to develop its pipeline through partnership and collaboration through MindMed Discover, acquiring new chemical entities and other psychedelics through strategic partnership and collaboration.



Source: MindMed Corporate Presentation

Exhibit 4. MindMed completed studies.



Source: MindMed Corporate Presentation

Exhibit 5. MindMed Discover Pipeline and data timelines.

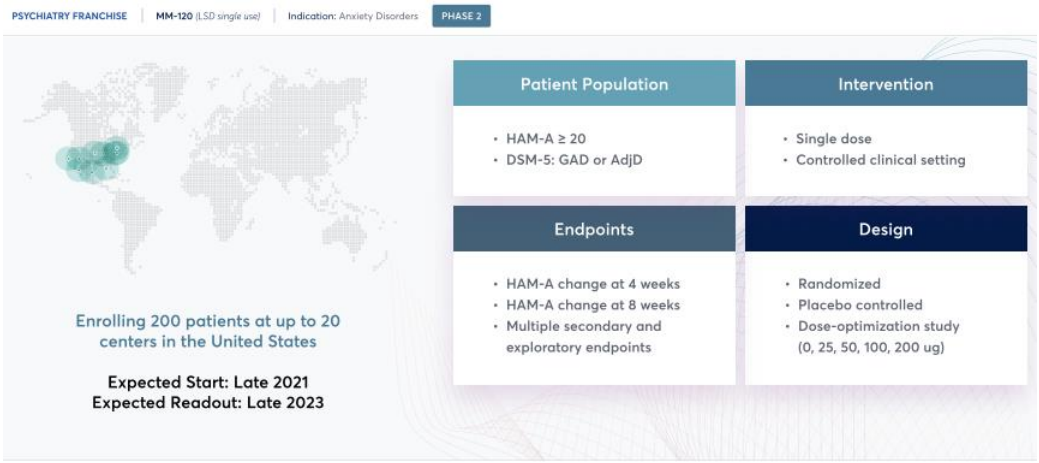
Source: MindMed Corporate Presentation

LSD for Psychiatry – Project Lucy and Project Flow

Project Lucy. MindMed's lead program is Project Lucy, a high-dose LSD program being developed for generalized anxiety disorder. The program is a combination of a hallucinogenic LSD dose with talk therapy. The company acquired an ongoing P2a anxiety study from the University Hospital Basel that is being run by Dr. Peter Gasser and Dr. Mathias Liechti and plans to use this study to jumpstart a P2b in 4Q21, with IND filing in 3Q21. Data from the P2a is expected to read out in early 2022. Globally, anxiety presents a significant disease burden with an estimated $1T in lost productivity annually across 284M sufferers. Anxiety drugs generate revenues of $4.7B globally.[1] With LSD, the main advantage is that it could be a one-time (or infrequent) therapy and is a potentially safer alternative to benzodiazepines (which are estimated to be twice as harmful overall as LSD).[2]

[1] IQVIA. (2021, February). IQVIA Global Annual Sales Report
[2] Nutt, David & King, Leslie & Phillips, Lawrence. (2010). Drug harms in the UK: A multi-criterion decision analysis. Lancet. 376

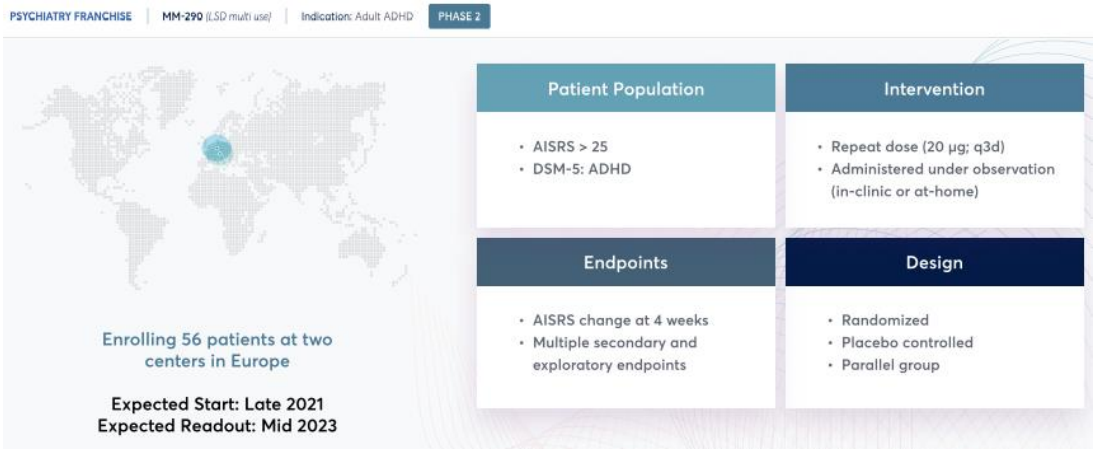
Exhibit 6. Phase 2b Study for MM-120 in anxiety. The Phase 2b study for MM-120 in anxiety disorders is planned for initiation in late 2021 and is expected to take ~2 years to complete. The study is expected to enroll N=200 patients with a DSM-V diagnosis of generalized anxiety disorder (GAD) or adjustment disorder, with a measure of ≥20 on the Hamilton Anxiety (HAM-A) rating scale. The study will be placebo-controlled and also serve as a dose optimization study with doses ranging from 25µg (barely above threshold for perceptual effects) to 200µg (strong hallucinogenic dose). Patients will be evaluated via change in HAM-A at 4 weeks and 8 weeks, as well as additional endpoints.



Source: MindMed Corporate Presentation

Project Flow. MindMed's second psychiatric program for LSD is called Project Flow and is focused on MM-290 (low-dose, or sub-perceptual, LSD) for ADHD. Unlike MM-120, MM-290 is not combined with psychotherapy and can be viewed more like a traditional pharmaceutical where patients can pick it up and take it at home. The program is being run in collaboration with Dr. Kim Kuypers (a leading expert in microdosing) at Maastricht University and Dr. Liechti at UHB. Though the data for low-dose LSD is not as extensive as high-dose, anecdotal evidence suggests it could increase focus and creativity, decrease anxiety, and improve mood. Low-dose LSD represents an attractive market since it likely does not have the same logistical hurdles as full psychedelic doses, and the 8+ hour duration of LSD actually becomes a benefit. ADHD impacts a large number of adults within the US with estimates ranging from 6M-10M patients, and prevalence has been increasing with a 123% rise between 2007 and 2016. The economic burden of adult ADHD in the US is estimated at $194B and global sales of ADHD drugs generate $9.5B in revenue. [3,4]

Exhibit 7. Phase 2a Study for MM-120 in anxiety. The Phase 2a for MM-290 in adult ADHD is expected to start in Europe in late 2021 with data expected in mid-2023. The study is planned to enroll N=56 patients diagnosed with ADHD with an Adult ADHD Investigator Rating Scale (AISRS) score of >25. Patients will be administered 20µg of LSD every three days for six weeks under observation (in clinic or at home) or placebo. The primary endpoint will be change in AISRS score at 4 weeks. This study, compared to high dose studies, is likely to have fewer issues with placebo control since patients are less likely to feel effects from the active drug.



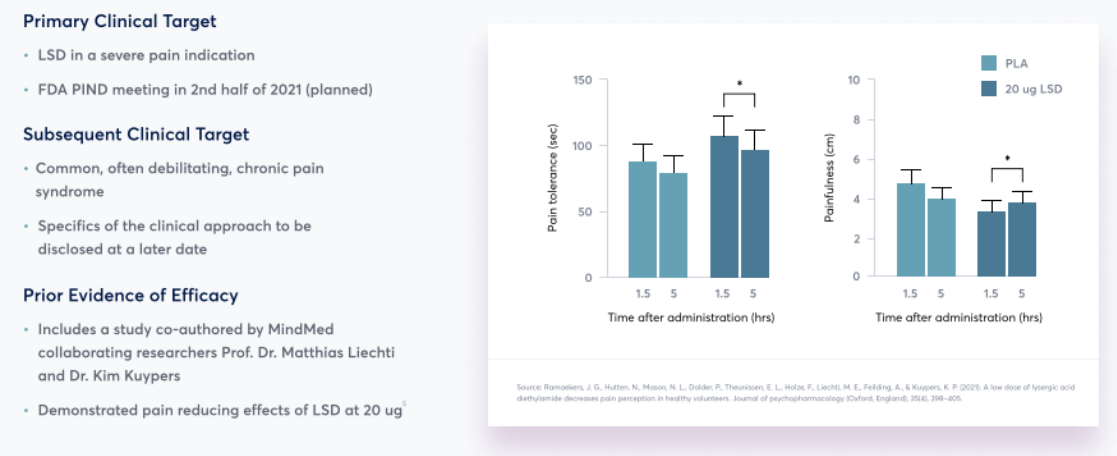
Source: MindMed Corporate Presentation

[3] Patel, V. P. (2016). The Lancet Commission on global mental health and sustainable development. The Lancet Commission, VOLUME 392(ISSUE 10157), 1553–1598.
[4] IQVIA. (2021, February). IQVIA Global Annual Sales Report

LSD for Pain – Project Angie

Project Angie. Project Angie is MindMed's pain-focused development program. The program includes multiple LSD programs with a pre-IND meeting planned for 2H21 for a severe pain indication to support a Phase 2a study. A second indication for chronic debilitating pain syndrome is also planned. MindMed has an ongoing Phase 2 for cluster headaches through its UHB collaboration with data expected in 2023. Pain syndromes impact a large segment of the population and the global analgesic market is expected to grow to over $31B by 2030. Opioids represent one of the most effective forms of pain relievers, but their overuse has driven an ongoing opioid crisis, which continues to represent a public health emergency. LSD represents a novel non-opioid pain reliever, which is thought to act on the descending pain modulation pathway through 5-HT_{2A} receptor binding (dysfunction in these pathways is often implicated in pain disorders).[5]

Exhibit 8. Clinical development plans for Project Angie.



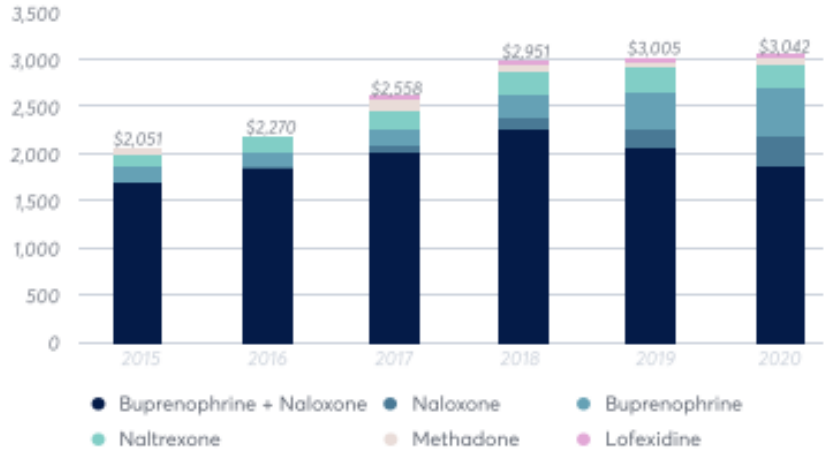
Source: MindMed Corporate Presentation

Project Layla

Project Layla. Project Layla is MindMed's program for addiction disorders and is focused on 18-MC, an ibogaine analogue, in opioid use disorder. 18-MC is a non-hallucinogenic antagonist of the $\alpha_3\beta_4$ nicotinic receptors. But unlike ibogaine, 18-MC has no affinity for the $\alpha_4\beta_2$ subtype, NMDA-channels, or the serotonin transporter. It also has significantly reduced affinity for sodium channels and the σ receptor, but retains modest agonism for μ-opioid receptors and κ-opioid receptors. Ibogaine has a long history in treatment of substance use disorders, including opioids, and 18-MC has demonstrated reduced self-administration of morphine, cocaine, methamphetamine, nicotine, and sucrose in animal studies.[6,7] MindMed intends to enter a Phase 2 study for opioid use disorder in late 2021 or early 2022, with a readout in early 2023.

Exhibit 9. CMS Spend on opioid use disorder and withdrawal drugs. Opioid use disorder is a major public health challenge in the US impacting as many as 2M Americans and with the COVID-19 pandemic, over 2020 there were a record 80k+ overdose deaths recorded. Overall, CMS (Centers for Medicare and Medicaid Services) spends more than $3B per year on opioid treatment drugs.

[5] Ossipov, M. H., Morimura, K., & Porreca, F. (2014). Descending pain modulation and chronification of pain. Current opinion in supportive and palliative care, 8(2), 143–151.
[6] Glick SD, et al. (May 1996). "18-Methoxycoronaridine, a non-toxic iboga alkaloid congener: effects on morphine and cocaine self-administration and on mesolimbic dopamine release in rats". Brain Research. 719 (1–2): 29–35.
[7] Glick SD, et al. (December 2008). "Brain regions mediating alpha3beta4 nicotinic antagonist effects of 18-MC on methamphetamine and sucrose self-administration". European Journal of Pharmacology. 599 (1–3): 91–5.



Source: MindMed Corporate Presentation

Exhibit 10. Phase 2 Study for MM-110 in opioid use disorder. MindMed plans to initiate a Phase 2 study for 18-MC in late 2021 or early 2022 with a potential readout in early 2023. The study will enroll patients with opioid use disorder stabilized on morphine prior to withdrawal. Patients will be dosed twice daily for 1 week under observation. The primary endpoint will be the Short Opiate Withdrawal Scale (SOWS)-Gossop for days 1-5 after cessation of morphine.

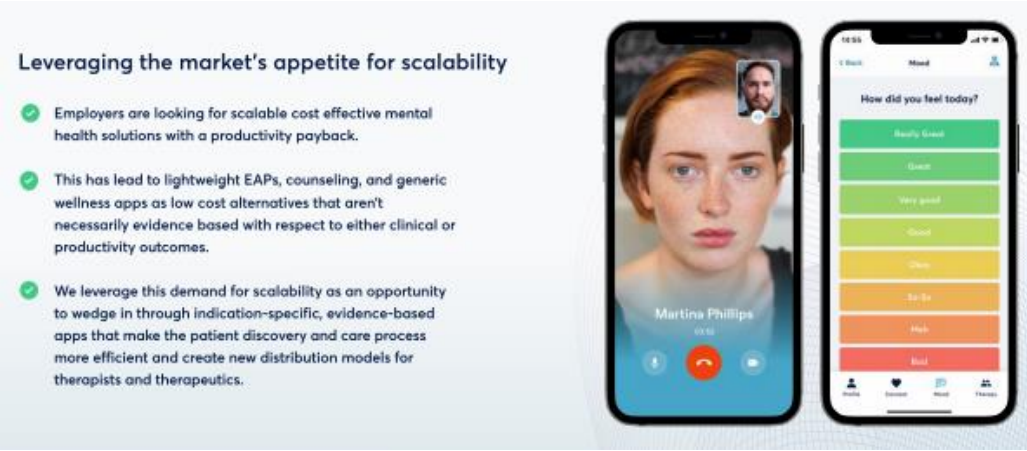
Source: MindMed Corporate Presentation

Albert – Digital Medicine Platform

Albert Digital Medicine Platform. Albert is MindMed's platform for rapid development and deployment of psychedelic therapies using real-world data. There are two primary goals for the Albert division: 1) to create consumer applications for patients and a software as a service platform for providers to provide new distribution and care models for comprehensive treatment plans from therapy to therapeutics, and 2) to leverage machine learning and real-world data collection for personalized medicine by creating new measurement, diagnostic, and therapeutic models. In the near term, the program has the potential to impact clinical trials, diagnosis, remote patient monitoring, treatment matching and selection, relapse prevention, and adherence monitoring. The program is also designed to better enable remote medicine, which is important as 60% of US counties do not have access to a psychiatrist.

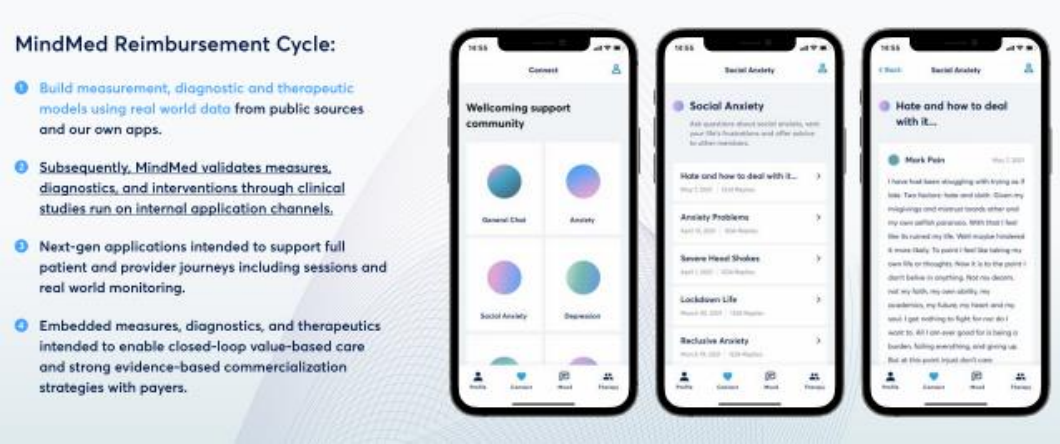
Albert leverages machine learning to expand models for personalized medicine beyond the small scale of clinical trials that enroll patients in the tens-to-hundreds range. It does this by acquiring real-world data, evidence-based product iteration, and clinical studies to validate digital measures, diagnostics, and therapeutics. The FDA has become increasingly open to newer approaches leveraging real-world data and evidence. The program could also be used for machine learning-driven discovery of next-gen psychedelic medicines, either as novel candidates for MindMed's clinical development or for out-license to provide a revenue stream.

Exhibit 11. Albert indication-specific patient apps provide a scalable distribution channel.



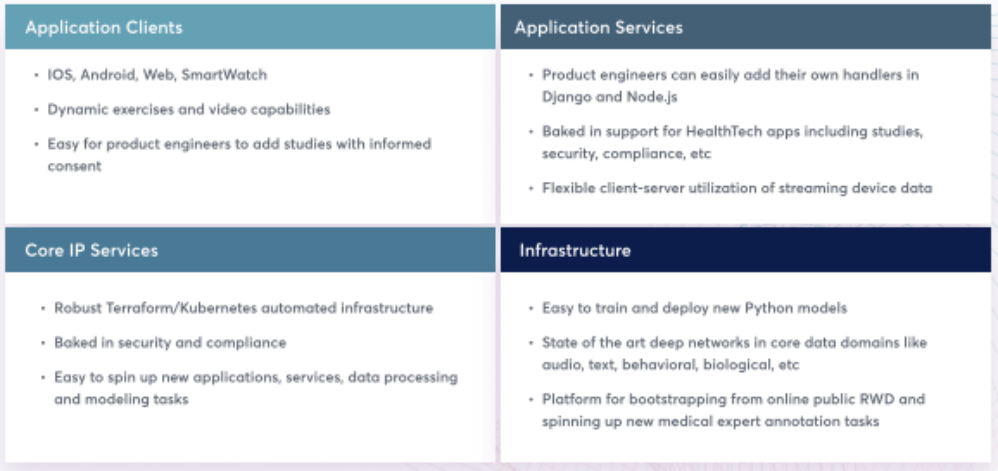
Source: MindMed Corporate Presentation

Exhibit 12. Combining digital measures, diagnostics, and therapeutics to enable care and reimbursement.



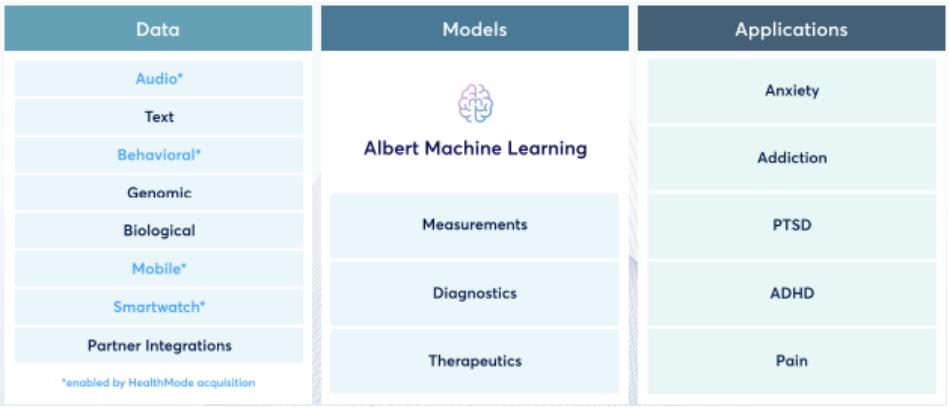
Source: MindMed Corporate Presentation

Exhibit 13. Albert application platform enables rapid multi-app development. The platform leverages HealthMode's architecture for client , server, machine learning services, and infrastructure automation.



Source: MindMed Corporate Presentation

Exhibit 14. Albert models relevant data for measurement, diagnostics, and therapeutics across indications.



Source: MindMed Corporate Presentation

MODELING ASSUMPTIONS – MM-120 in Anxiety

1. We model commercialization of MM-120 (high-dose LSD) in generalized anxiety disorder (GAD) in 2026 in the US and EU5.
2. We assume a GAD prevalence of 2.7% of adults in the US and that ~37% of patients receive treatment. In the EU5, we assume a prevalence of 1.8% of adults and that ~50% of patients receive treatment.
3. We assume pricing of $25K per year in the US, based on the pricing of Spravato in depression, since GAD is likely to be a similar treatment paradigm. In the EU, we assume initial pricing of $20K. We assume price increases at 5% per year.
4. We apply a 60% risk adjustment based on the stage of development.

Exhibit 15. MM-120 in Generalized Anxiety Disorder Market Model (US).

MM-120 (LSD) in Generalized Anxiety Disorder (US)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
US population	336,633,000	339,999,330	343,399,323	346,833,317	350,301,650	353,804,666	357,342,713	360,916,140	364,525,301	368,170,554	371,852,260
US Adult population 18+ (74.3%)	250,118,319	252,619,502	255,145,697	257,697,154	260,274,126	262,876,867	265,505,636	268,160,692	270,842,299	273,550,722	276,286,229
Prevalence of Generalized Anxiety Disorder (2.7%)	6,753,195	6,820,727	6,888,934	6,957,823	7,027,401	7,097,675	7,168,652	7,240,339	7,312,742	7,385,869	7,459,728
Patients receiving treatment (37%)	2,498,682	2,523,669	2,548,906	2,574,395	2,600,139	2,626,140	2,652,401	2,678,925	2,705,715	2,732,772	2,760,099
Market Penetration						0.20%	0.75%	1.50%	2.50%	3.50%	4.00%
Total Patients Treated						5,252	19,893	40,184	67,643	95,647	110,404
Cost of Treatment						25,000	26,250	27,563	28,941	30,388	31,907
Increase in Cost						5%	5%	5%	5%	5%	5%
Total revenue ('000)						$ 131,307	$ 522,192	$ 1,107,568	$ 1,957,627	$ 2,906,488	$ 3,522,664
Risk adjustment						60%	60%	60%	60%	60%	60%
Total Revenue ('000)						**$ 52,523**	**$ 208,877**	**$ 443,027**	**$ 783,051**	**$ 1,162,595**	**$ 1,409,066**

Exhibit 16. MM-120 in Generalized Anxiety Disorder Market Model (EU5).

MM-120 (LSD) in Generalized Anxiety Disorder (EU5)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
EU5 population	251,239,823	253,752,221	256,289,743	258,852,641	261,441,167	264,055,579	266,696,135	269,363,096	272,056,727	274,777,294	277,525,067
EU5 Adult population 18+ (79%)	198,479,460	200,464,255	202,468,897	204,493,586	206,538,522	208,603,907	210,689,946	212,796,846	214,924,814	217,074,063	219,244,803
Prevalence of Generalized Anxiety Disorder (1.8%)	3,572,630	3,608,357	3,644,440	3,680,885	3,717,693	3,754,870	3,792,419	3,830,343	3,868,647	3,907,333	3,946,406
Patients receiving treatment (50%)	1,786,315	1,804,178	1,822,220	1,840,442	1,858,847	1,877,435	1,896,210	1,915,172	1,934,323	1,953,667	1,973,203
Market Penetration						0.20%	0.75%	1.50%	2.00%	2.25%	2.50%
Total Patients Treated						3,755	14,222	28,728	38,686	43,957	49,330
Cost of Treatment						20,000	21,000	22,050	23,153	24,310	25,526
Increase in Cost						5%	5%	5%	5%	5%	5%
Total revenue ('000)						$ 75,097	$ 298,653	$ 633,443	$ 895,688	$ 1,068,612	$ 1,259,181
Risk adjustment						60%	60%	60%	60%	60%	60%
Total Revenue ('000)						**$ 30,039**	**$ 119,461**	**$ 253,377**	**$ 358,275**	**$ 427,445**	**$ 503,673**

Source: Maxim Estimates

MODELING ASSUMPTIONS – MM-290 in ADHD

1. We model commercialization of MM-290 (LSD low-dose) in adult ADHD in 2027 in the US and EU5.
2. We assume ADHD affects 4.4% of US adults and 3.5% of EU adults.
3. We assume initial pricing in the US of $6K, a premium to brand Vyvanse, and $4K in the EU, increasing at 5% per year.
4. We apply an 80% risk adjustment based on the stage of development.

Exhibit 17. MM-290 in ADHD Market Model (US).

MM-290 (LSD microdose) in Adult ADHD (US)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
US population	336,633,000	339,999,330	343,399,323	346,833,317	350,301,650	353,804,666	357,342,713	360,916,140	364,525,301	368,170,554	371,852,260
US Adult population 18+ (74.3%)	250,118,319	252,619,502	255,145,697	257,697,154	260,274,126	262,876,867	265,505,636	268,160,692	270,842,299	273,550,722	276,286,229
US Adult ADHD Prevalence (4.4%)	11,005,206	11,115,258	11,226,411	11,338,675	11,452,062	11,566,582	11,682,248	11,799,070	11,917,061	12,036,232	12,156,594
Market Penetration							0.20%	0.75%	1.25%	1.50%	1.60%
Total Patients Treated							23,364	88,493	148,963	180,543	194,506
Cost of Treatment							6,000	6,300	6,615	6,946	7,293
Increase in Cost							5%	5%	5%	5%	5%
Total revenue ('000)							$ 140,187	$ 557,506	$ 985,392	$ 1,254,010	$ 1,418,536
Risk adjustment							80%	80%	80%	80%	80%
Total Revenue ('000)							**$ 28,037**	**$ 111,501**	**$ 197,078**	**$ 250,802**	**$ 283,707**

Source: Maxim Estimates

Exhibit 18. MM-290 in ADHD Market Model (EU5).

MM-290 (LSD microdose) in Adult ADHD (EU5)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
EU5 population	251,239,823	253,752,221	256,289,743	258,852,641	261,441,167	264,055,579	266,696,135	269,363,096	272,056,727	274,777,294	277,525,067
EU5 Adult population 18+ (79%)	198,479,460	200,464,255	202,468,897	204,493,586	206,538,522	208,603,907	210,689,946	212,796,846	214,924,814	217,074,063	219,244,803
EU5 Adult ADHD Prevalence (3.5%)	6,946,781	7,016,249	7,086,411	7,157,276	7,228,848	7,301,137	7,374,148	7,447,890	7,522,369	7,597,592	7,673,568
Market Penetration							0.20%	0.75%	1.25%	1.50%	1.60%
Total Patients Treated							14,748	55,859	94,030	113,964	122,777
Cost of Treatment							4,000	4,200	4,410	4,631	4,862
Increase in Cost							5%	5%	5%	5%	5%
Total revenue ('000)							$ 58,993	$ 234,609	$ 414,671	$ 527,710	$ 596,945
Risk adjustment							80%	80%	80%	80%	80%
Total Revenue ('000)							**$ 11,799**	**$ 46,922**	**$ 82,934**	**$ 105,542**	**$ 119,389**

Source: Maxim Estimates

MODELING ASSUMPTIONS – MM-110 (18-MC) in Opioid Use Disorder

1. We model commercialization of MM-110 (18-MC) in opioid use disorder (OUD) in 2025 in the US and the EU5.
2. We assume that there are ~2M patients in the US and ~1M patients in the EU5 with OUD, and that this will decrease at 2% per year as governments continue to restrict opioid prescriptions and take measures to address the opioid crisis.
3. We assume initial pricing in the US of $12K and $9K in the EU, increasing at 5% per year.
4. We apply a 70% risk adjustment based on the stage of development.

Exhibit 19. MM-110 in Opioid Use Disorder Market Model (US).

18-MC in Opioid Use Disorder (US)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Opioid dependence in the US	2,016,840	1,976,503	1,936,973	1,898,234	1,860,269	1,823,064	1,786,602	1,750,870	1,715,853	1,681,536	1,647,905
Growth rate	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%
Market Penetration					0.3%	0.8%	1.5%	2.5%	3.0%	3.3%	3.5%
Treatable Patients					5,581	14,585	26,799	43,772	51,476	54,650	57,677
Average Cost of Therapy					$12,000	$12,600	$13,230	$13,892	$14,586	$15,315	$16,081
Price Growth					5%	5%	5%	5%	5%	5%	5%
Total revenue ('000)					$ 66,970	$ 183,765	$ 354,551	$ 608,055	$ 750,827	$ 836,984	$ 927,507
Risk adjustment					70%	70%	70%	70%	70%	70%	70%
Total Revenue ('000)					**$ 20,091**	**$ 55,129**	**$ 106,365**	**$ 182,417**	**$ 225,248**	**$ 251,095**	**$ 278,252**

Source: Maxim Estimates

Exhibit 20. MM-110 in Opioid Use Disorder Market Model (EU5).

18-MC in Opioid Use Disorder (EU5)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Opioid dependence in the EU5	980,980	961,360	942,133	923,291	904,825	886,728	868,994	851,614	834,582	817,890	801,532
Growth rate	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%
Market Penetration					0.3%	0.8%	1.5%	2.5%	3.0%	3.3%	3.5%
Treatable Patients					2,714	7,094	13,035	21,290	25,037	26,581	28,054
Average Cost of Therapy					$9,000	$9,450	$9,923	$10,419	$10,940	$11,487	$12,061
Price Growth					5%	5%	5%	5%	5%	5%	5%
Total revenue ('000)					$ 24,430	$ 67,037	$ 129,339	$ 221,816	$ 273,899	$ 305,328	$ 338,351
Risk adjustment					70%	70%	70%	70%	70%	70%	70%
Total Revenue ('000)					**$ 7,329**	**$ 20,111**	**$ 38,802**	**$ 66,545**	**$ 82,170**	**$ 91,599**	**$ 101,505**

Source: Maxim Estimates

VALUATION

We model commercialization of MM-120 (LSD) for GAD in the US and EU5 in 2026 with a 60% risk adjustment, MM-290 (low-dose LSD) for ADHD in the US and EU5 in 2027 with an 80% risk adjustment, and MM-110 (18-MC) for opioid use disorder in the US and EU5 in 2026 with a 70% risk adjustment. A 20% discount is applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $6.00**.**

Exhibit 21. Free Cash Flow Model.

Average	6

Price Target	6
Year	2021

DCF Valuation Using FCF (mln):

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
units ('000)	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**
EBIT	(35,339)	(61,573)	(64,651)	(83,081)	(130,713)	(115,866)	(20,368)	260,650	751,579	1,295,026	1,807,779	2,261,403
Tax Rate	0%	0%	0%	0%	0%	0%	0%	0%	5%	10%	15%	18%
EBIT (1-t)	(35,339)	(61,573)	(64,651)	(83,081)	(130,713)	(115,866)	(20,368)	260,650	714,000	1,165,524	1,536,612	1,854,351
CapEx	-	-	-	-	-	-	-	-	-	-	-	-
Depreciation	8,810	1,868	-	-	-	-	-	-	-	-	-	-
Change in NWC												
FCF	(26,529)	(59,705)	(64,651)	(83,081)	(130,713)	(115,866)	(20,368)	260,650	714,000	1,165,524	1,536,612	1,854,351
PV of FCF	(31,835)	(59,705)	(53,876)	(57,695)	(75,644)	(55,877)	(8,185)	87,291	199,264	271,064	297,806	299,488

Discount Rate	20%
Long Term Growth Rate	1%
Terminal Cash Flow	9,857,339
Terminal Value YE2030	1,592,015
NPV	2,435,946
NPV-Debt	
Shares out ('000)	424,136
NPV Per Share	6

2031E

Source: Maxim estimates

Exhibit 22. Discounted-EPS Model.

Current Year	2021
Year of EPS	2031
Earnings Multiple	10
Discount Factor	20%
Selected Year EPS	4.37
NPV	7

Source: Maxim estimates

	Discount Rate and Earnings Multiple Varies, Year is Constant						
	7.06	**5%**	**10%**	**15%**	**20%**	**25%**	**30%**
Earnings Multiple	**0**	0	0	0	0	0	0
	5	13.42	8.43	5.40	3.53	2.35	1.59
	10	26.84	16.86	10.81	7.06	4.69	3.17
	15	40.26	25.28	16.21	10.59	7.04	4.76
	20	53.68	33.71	21.61	14.12	9.39	6.34
	25	67.10	42.14	27.02	17.65	11.74	7.93
	30	80.52	50.57	32.42	21.18	14.08	9.51
	35	93.94	59.00	37.82	24.71	16.43	11.10

Exhibit 23. Sum-of-the-Parts Model.

Psybio Therapeutics	LT Gr	Discount Rate	Yrs to Mkt	% Success	Peak Sales (MM's)	Term Value
MM-120 (LSD) in Generalized Anxiety Disorder	1%	20%	5	50%	$1,913	$10,067
NPV						$3.3
MM-290 (LSD Low-Dose) in Adult ADHD	1%	20%	6	50%	$403	$2,122
NPV						$0.6
MC-18 in Opioid Use Disorder	1%	20%	4	50%	$380	$1,999
NPV						$0.8
Pipeline	1%	30%	7	30%	$2,000	$6,897
NPV						$0.53
Net Margin						69%
MM Shrs OS (2031E)						424
Total						$5

Source: Maxim estimates

MindMed, MNMD.: Income Statement ($000)																
YE December 31	2020A	1Q21A	2Q21E	3Q21E	4Q21E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Revenue:																
MM-120 (LSD) in Generalized Anxiety Disorder (US)										-	52,523	208,877	443,027	783,051	1,162,595	1,409,066
MM-120 (LSD) in Generalized Anxiety Disorder (EU5)										-	30,039	119,461	253,377	358,275	427,445	503,673
MM-290 (LSD microdose) in Adult ADHD (US)										-	-	28,037	111,501	197,078	250,802	283,707
MM-290 (LSD microdose) in Adult ADHD (EU5)										-	-	11,799	46,922	82,934	105,542	119,389
18-MC in Opioid Use Disorder (US)										20,091	55,129	106,365	182,417	225,248	251,095	278,252
18-MC in Opioid Use Disorder (EU5)										7,329	20,111	38,802	66,545	82,170	91,599	101,505
Net revenue	-	-	-	-	-	-	-	-	-	27,420	157,802	513,341	1,103,789	1,728,756	2,289,078	2,695,592
Collaborative revenue:																
Revenues																
Other Income										-	-	-	-	-	-	-
										-	-	-	-	-	-	-
Total Collaborative Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	-	-	-	-	-	-	-	-	-	27,420	157,802	513,341	1,103,789	1,728,756	2,289,078	2,695,592
Gross Margins:																
Cost of Goods Sold											31,560	102,668	198,682	276,601	320,471	269,559
%Gross Margin											80%	80%	82%	84%	86%	90%
Gross Profit	-	-	-	-	-	-	-	-	-	27,420	126,242	410,673	905,107	1,452,155	1,968,607	2,426,033
Operating Expenses:																
Research and Development	15,387	5,759	5,874	5,992	6,111	23,736	24,923	37,385	74,769	76,265	77,790	79,346	80,933	82,552	84,203	85,887
%R&D																
Selling, General and Administrative	7,690	6,133	6,256	6,381	6,508	25,278	26,542	31,850	41,405	51,756	52,791	53,847	54,924	56,023	57,143	58,286
%SG&A																
Share-based payments	8,810	1,868	1,905	1,943	1,982	7,699	8,084	8,488	8,913	9,358	9,826	10,318	10,833	11,375	11,944	12,541
Amortization	550	1,179	1,203	1,227	1,251	4,859	5,102	5,357	5,625	5,907	6,202	6,512	6,838	7,180	7,538	7,915
Total Expenses	32,437	14,939	15,238	15,543	15,853	61,573	64,651	83,081	130,713	143,286	178,170	252,691	352,210	433,730	481,299	434,188
Operating Income (Loss)	(32,437)	(14,939)	(15,238)	(15,543)	(15,853)	(61,573)	(64,651)	(83,081)	(130,713)	(115,866)	(20,368)	260,650	751,579	1,295,026	1,807,779	2,261,403
						-	-	-	-	-	-	-	-	-	-	-
Interest and other income	13	22				22										
Listing expense	(2,172)	72				72										
Foreign exchange gain	130															
Loss on revaluation of derivative liability	(873)															
Total Other Income	**(2,902)**	**94**	-	-	-	**94**	-	-	-	-	-	-	-	-	-	-
Pretax Income	(35,339)	(14,845)	(15,238)	(15,543)	(15,853)	(61,479)	(64,651)	(83,081)	(130,713)	(115,866)	(20,368)	260,650	751,579	1,295,026	1,807,779	2,261,403
Income tax expense	-		-	-	-	-	-	-	-	-	-	-	37,579	129,503	271,167	407,053
Tax Rate													5%	10%	15%	18%
GAAP Net Income (Loss)	(35,339)	(14,845)	(15,238)	(15,543)	(15,853)	(61,479)	(64,651)	(83,081)	(130,713)	(115,866)	(20,368)	260,650	714,000	1,165,524	1,536,612	1,854,351
Foreign currency translation adjustment	284	157	-	-	-	157										
Total comprehensive loss	(35,055)	(14,688)	(15,238)	(15,543)	(15,853)	(61,479)	(64,651)	(83,081)	(130,713)	(115,866)	(20,368)	260,650	714,000	1,165,524	1,536,612	1,854,351
GAAP-EPS	(0.10)	(0.04)	(0.04)	(0.04)	(0.04)	(0.16)	(0.17)	(0.21)	(0.32)	(0.28)	(0.05)	0.62	1.70	2.77	3.64	4.37
GAAP-EPS (Dil)	(0.10)	(0.04)	(0.04)	(0.04)	(0.04)	(0.16)	(0.17)	(0.21)	(0.32)	(0.28)	(0.05)	0.62	1.70	2.77	3.64	4.37
Wgtd Avg Shrs (Bas) - '000s	361,135	389,081	389,470	389,860	390,250	389,665	389,763	395,838	407,439	414,083	415,742	417,408	419,080	420,759	422,444	424,136
Wgtd Avg Shrs (Dil) - '000s	361,135	389,081	389,081	389,081	389,081	389,665	389,763	395,838	407,439	414,083	415,742	417,408	419,080	420,759	422,444	424,136

Source: Company reports and Maxim

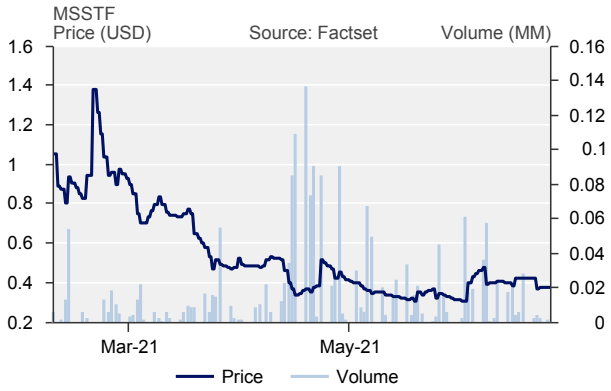
Biotechnology – Psychedelics

MSSTF - OTCQB June 27, 2021

Closing Price 6/25/21	**$0.37**
CSE: MSET	C$0.47
Rating:	Buy
12-Month Target Price:	$1.00
52-Week Range:	$0.30 - $2.00
Market Cap (M):	31.4
Shares O/S (M):	83.8
Float:	91.8%
Avg. Daily Volume (000):	24.6
Debt (M):	$0.6
Dividend:	$0.00
Dividend Yield:	0.0%
Risk Profile:	Speculative
Fiscal Year End:	June

Total Expenses ('000)

	2021E	2022E	2023E
1Q	C$3,354A	C$2,510	C$3,422
2Q	C$1,538A	C$2,619	C$3,570
3Q	C$1,763A	C$2,838	C$3,868
4Q	C$1,945	C$2,947	C$4,017
FY	C$8,600	C$10,914	C$14,876



Mindset Pharma is listed on the Canadian Securities Exchange (CSE) under the symbol "MSET" and OTCMKTS under the symbol "MSSTF". The stock does not trade on a US National Exchange. Financial data is reported in Canadian dollars (C$) and is represented as such in our models. Market data including the stock price and target price are translated into US dollars (USD).

Jason McCarthy, Ph.D.
(212) 895-3556
jmccarthy@maximgrp.com

Michael Okunewitch
(212) 895-3579
mokunewitch@maximgrp.com

Mindset Pharma Inc. Buy

Building a Pipeline of Next-Gen Psychedelics with IP Protection – Initiating with a Buy Rating and $1 PT

Summary

- **Mindset Pharma is building out next generation psychedelics with four families of compounds including psilocybin and DMT/5-MeO-DMT analogues, and a platform technology for improving psychedelic drugs (a "fifth family").**
- **Family 1 compounds are the closest to psilocybin, and therefore likely have the shortest path to market. The first drug candidate, MSP-1014, has been identified and is moving into IND enabling studies.**
- **Families 2-4 are more purpose-designed. Family 2 and Family 4 compounds are likely considerably shorter acting compared to psilocybin, making them more scalable for a macrodose setting. Family 3 is the opposite, longer acting for microdosing, which is more analogous to traditional pharmaceuticals.**
- **Mindset also has its own proprietary chemical synthesis method for psilocybin and its own compounds, and has a contract development and manufacturing organization (CDMO) to produce 1kg of psilocybin by YE21.**
- **Conclusion. Mindset is differentiated in psychedelics with a fully novel compound strategy, addressing the IP concerns central to the space. MSP-1014 likely has a relatively short path through development, and next-gen purpose designed compounds have the potential to be best-in-class in the longer term.**

Details

MSP-1014, the first of many next-gen psychedelic compounds. MSP-1014 is the first compound from Mindset to be selected for IND-enabling studies. The compound comes from Family 1, meaning it is similar to psilocybin in terms of effects and duration, and potentially could use aspects of a 505(b)2 pathway to shorten development. Where MSP-1014 is differentiated is in its potency and manufacturing. The compound is a psilocybin analogue that contains a conjugated amplification moiety (CAM) to enhance 5-HT2A specific effects while reducing non-specific effects. With stronger activation, a lower dose could be required to achieve comparable effects, potentially improving safety and reducing side effects such as elevated blood pressure and increased heart rate. MSP-1014 is also easier and cheaper to manufacture vs. psilocybin by avoiding the need for phosphorylation, the most difficult chemical synthesis step.

Four families of next-gen psychedelics. Mindset is developing four patent-pending families of compounds: Family 1 (psilocybin analogues), Family 2 (shorter acting psilocybin analogues), Family 3 (longer acting psilocybin analogues), and Family 4 (DMT and 5-MeO-DMT analogues). Families 2 and 4 are designed to be shorter acting vs. psilocybin (which lasts 6+ hours). Shorter duration is among the most important qualities for next-gen psychedelics for macrodosing, since 1-2 therapists and a room in a treatment center is required for the full duration. By reducing duration, psychedelic assisted psychotherapy becomes more easily scalable. This profile is ideal for psychiatric indications like depression, anxiety, or substance abuse. Family 3, on the other hand, is designed for reduced potency and longer duration. This profile is ideal for microdosing, where the dose is sub-perceptual (more like a traditional therapeutic) and longer activity becomes a benefit. These drugs are likely to target chronic dosing for indications like ADHD or Alzheimer's disease.

Valuation. We model commercialization of MSP-1014 in FY28 in the US and EU5 for treatment-resistant depression (TRD) with a 90% risk adjustment. A platform value is assigned to the pipeline. A 30% discount is then applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $1 USD.

CORPORATE PROFILE

Mindset Pharma Inc
217 Queen Street West Suite 401
Toronto, Canada
www.mindsetpharma.com

Investment Risk: Mindset's products are not approved, and the company currently does not generate revenue.

Regulatory Risk: Mindset's products may not be successful in clinical trials and may not meet the requirements for regulatory approval(s).

Commercial Risk: Mindset's products are not approved and commercialized, and if/when they become commercially available, they may not achieve significant market share. In addition, the company lacks commercial infrastructure to support commercialization.

Financial Risk: Mindset is not profitable and may need to raise additional capital to support operations.

Dilution Risk: Capital raises to fund operations may dilute investors.

Ownership:
Institutional: 2.0%
Insiders: 8.2%

Balance Sheet Summary (as of 3/31/21):
Cash: C$3.2M
Debt: C$0.6M

Analysts Covering the Stock (other than Maxim): 0

Company Background. Mindset Pharma Inc. (OTC: MSSTF, CSE: MSET) is a drug discovery and development company focused on creating optimized and patentable next-generation psychedelic medicines to treat neurological and psychiatric disorders with unmet needs. Mindset was established in order to develop next generation pharmaceutical assets that leverage the breakthrough therapeutic potential of psychedelic drugs. Mindset is developing several novel families of next generation psychedelic compounds, as well as an innovative process to chemically synthesize psilocybin and its own proprietary compounds. Mindset's new drugs are broadly grouped into four "families".

The first family can further be divided into prodrugs and deuterated analogs of psilocybin with a profile that positions this first family of compounds as superior patentable psilocybin-like molecules with superior activity compared to psilocybin, which suggests compounds in this family may demonstrate dose-related safety and pharmacodynamic advantages compared to psilocybin.

The second family consists of restricted side-chain analogs of psilocybin. Certain compounds also show oral bioavailability and are brain penetrant with in-vivo pharmacokinetic evidence of shorter duration than psilocybin in rodents. This profile positions this second family of compounds for next generation in clinic candidates to support psychedelic-assisted psychotherapy applications and protocols.

The third family continues to demonstrate unique and promising in-vitro profiles. In particular, certain compounds from the third family show a similar binding profile to the human 5HT-2A receptor comparable to that of psilocin's, but with smaller effect size and a much longer duration of action based on human liver microsome stability data. This profile uniquely positions the third family of compounds for potential microdosing applications, including specialized populations and indications such as pediatric attention deficit hyperactivity disorder and Alzheimer's disease.

The fourth and final family includes analogs of DMT and 5-MeO-DMT. These compounds demonstrate similar binding profile to the human 5HT-2A receptor comparable to that of the reference compounds, but with larger effect size and a shorter duration of action compared to psilocin. Moreover, these compounds show activity at both 5HT-1A and 5HT-2C receptors, which have been implicated both in anti-depressant and substance abuse. This profile uniquely positions the fourth family of compounds for potential macro-dosing applications that are differentiated from compounds in Family 2 based on receptor activity signatures.

Senior Management:

James Lanthier, Chief Executive Officer – Mr. Lanthier is a seasoned technology executive with strong expertise in corporate finance, public markets, and M&A. Most recently, Mr. Lanthier was a co-founder and CEO of Future Fertility, an innovative early-stage developer of AI applications for human infertility. As a C-Suite executive, Mr. Lanthier has assisted in the growth and successful exit of numerous technology-enabled businesses through the public markets, including Mood Media, the world's largest in-store media provider, and Fun Technologies, a pioneer in online casual games.

Alvin Ramos, Chief Financial Officer – Mr. Ramos holds a degree in commerce and a member of the Chartered Professional Accountants of Ontario. Mr. Ramos has over 15 years of business experience, having supported a broad range of industries, including mining, technology, and banking. Mr. Ramos serves as CFO of several junior mining companies.

Joseph Araujo, **Chief Scientific Officer –** Mr. Araujo is a behavioral pharmacologist with extensive experience in facilitating the discovery and development of novel CNS drugs. He has co-founded, held executive level positions. and consulted for Life Science companies including CanCog Technologies, Vivocore, Karyopharm Therapeutics, NPM Pharma, Ketogen, and Epione Animal Health. He did his graduate training in pharmacology at the University of Toronto and has done extensive research examining psychoactive drugs.

Jason Atkinson, **Corporate Development –** Mr. Atkinson is a finance professional with experience in private equity, venture capital, investment banking, and corporate finance. He has played a key role in raising capital and providing advisory services to private and publicly listed entities across multiple industries. He holds an MBA from the Degroote School of Business and is a CFA Charterholder.

INVESTMENT SUMMARY

Bull Case. The psychedelic medicine space has rapidly gained traction in recent years as a resurgence of clinical research has emerged across neuropsychiatric disease. While compounds like psilocybin, DMT, and LSD may have a long history in the clinic, it should not be taken for granted that these classical compounds would be the best when applied in practice. Mindset is developing a pipeline of next generation compounds with different clinical profiles to better meet the needs of specific indications, rather than a one-size-fits-all approach. The company has developed more than 70 compounds with a ~75% hit rate for 5-HT_{2A} activity, validating the company's screening platform. Mindset has four families: Family 1 (psilocybin analogues), Family 2 (shorter acting psilocybin analogues), Family 3 (longer acting psilocybin analogues for microdosing), and Family 4 (DMT/5-MEO-DMT analogues), as well as a broad platform that can be applied to improve additional psychedelic compounds. The company has selected its first clinical candidate from Family 1, MSP-1014, which is moving into IND enabling studies and GMP manufacturing. MSP-1014 has demonstrated increased potency compared to psilocybin, and could result in a lower dose, improving safety, particularly in certain high-risk individuals (psilocybin has demonstrated blood pressure, and heart rate), and also may have improved consistency of metabolism. Additional compounds from other families are expected to move into IND enabling studies in the near future. The compound also is easier to synthesize, avoiding the most challenging chemical synthesis step for psilocybin. Mindset plans to announce additional clinical candidates in the near future. In particular, Families 2-4 represent particularly attractive opportunities for next gen psychedelics. Duration of therapy represents a key challenge to the scalability of psychedelics and Mindset has a number of novel compounds (Family 2 and 4) with potentially superior activity to psilocybin, but with shorter durations, and Family 3 includes novel compounds purpose built for microdosing. Importantly, Mindset's novel compound strategy avoids the IP concerns surrounding traditional psychedelics. Bulls view Mindset as pioneering the next generation of psychedelics. As additional compounds approach the clinic and the broader psychedelic space continues to gain traction, Bulls see upside to the current ~$30M market cap.

Bear Case. The psychedelic space is already high risk. Despite a significant body of data, many of the larger, well designed studies are still ongoing and Bears view the space with greater caution, awaiting more definitive proof of concept. For a company like Mindset, there is added risk, as their novel compounds remain untested in humans and have a longer path to market. Their lead asset, MSP-1014, is thought to be potentially superior in terms of activity but has a similar PK profile to psilocybin. While this reduces the development risk, it also reduces the potential upside since the improvements are largely incremental (ease of manufacturing and improved safety, which is likely to be an incremental benefit except in certain patients with issues like high blood pressure or heart disease). This means the company is likely to face greater competition from other psilocybin-based compounds or next generation psychedelics with shorter durations that are preferable for treatment centers. While the company does have its own next gen pipeline, assets are even earlier stage and lead compounds have not yet been selected.

Our Take. The psychedelic space has demonstrated compelling data across mental health disorders in a growing body of clinical studies and anecdotal reports from drugs like LSD, DMT, MDMA, and Psilocybin. While these drugs have proven efficacious, their PK profiles leave a lot to be desired. Psilocybin, for example can last 6+ hours, which presents challenges for patients (who have to spend a whole day on treatment), therapists (essentially can only treat one patient per shift), and treatment centers, creating a bottleneck to treating patients at scale. There are also IP issues, since all of these drugs are public domain, composition of matter patents don't apply, forcing companies to rely on method of use or formulation. Mindset has the potential to address both of these challenges with their four families of novel compounds. The first one is the simplest, essentially incrementally improving psilocybin on potency, safety, consistency, and ease of manufacturing. A compound from this family, MSP-1014, has been selected and is moving into GMP batches and IND-enabling studies. Since it's a psilocybin analogue with similar properties, the path to approval is likely shorter and is a nearer term opportunity for Mindset. However, over the longer term, Families 2-4 have the potential to be best-in-class next generation psychedelics with improved PK properties. Essentially designing a drug to fit the application, rather than figuring out how to fit in with an existing drug. For Families 2 and 4, this means shorter acting drugs, either higher potency reduced duration psilocybin analogues, or DMT/5-MeO-DMT analogues. Short acting is one of the most desirable properties for psychedelic-assisted psychotherapy and represents a target for many in the space. As for Family 3, the goal is actually longer acting and lower potency for microdosing, since it's a chronic therapy designed for at home use, longer acting is likely preferable. In our view, Mindset has a validated development program which has achieved a 75% hit rate for 5-HT_{2A} activity and has produced 70+ compounds. Furthermore, with a large number of compounds discovered, Mindset also has an opportunity to generate non-dilutive funding by out-licensing some of the compounds they choose not to bring to the clinic to other players in the space who do not have their own next-gen psychedelics. The company's NCE strategy has the potential to address two of the most significant hurdles in the space, IP and duration of therapy. The company has approximately a years' worth of capital and as additional lead compounds are identified and approach the clinic, we anticipate an increase in valuation from the current ~$30M market cap.

Finances. Mindset reported F3Q21 (Mar) with a net loss of (C$1.7M) and a cash balance of C$3.2M. The company subsequently raised C$8.6M in April in a financing for 11.4M units (including over-allotment) at C$0.75 consisting of one share of common stock and one warrant exercisable at C$1.10. Factoring the financing, we estimate the company has ~C$9M-C$10M in cash. We estimate burn rate to be ~C$1.5M-C$2M, though this may increase as programs advance towards the clinic, we expected the which company has runway into mid-2022. The company does not generate revenue and will likely need multiple equity financings over time to support operations, which we factor into our model.

Exhibit 1. Upcoming Catalysts (calendar year).

Product	Indication	Event	Timeline	Impact
MSP-1014	TBD	Report IND-enabling study results	2H21	++
n/a	n/a	Select additional compounds to advance to clinic	2H21	+
Corporate	n/a	Update on patent applications	2H21	++
TBD	TBD	Announce second clinical candidate	2H21	++
Psilocybin	n/a	Complete 1kg GMP manufacturing batch through CMO	2H21	++
MSP-1014	TBD	Initiate Phase 1	2022	++

Stock Significance Scale: + of moderate importance; ++ higher level; +++ very important

Source: Company reports and Maxim Forecasts

Exhibit 2. Pipeline.

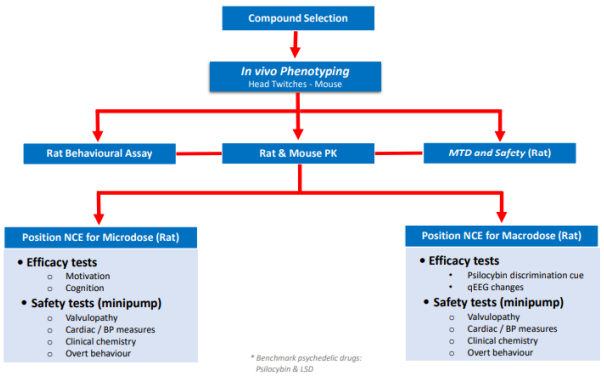
Product	Indication	Development	Pre-IND	Phase I	Phase II	Phase III	Marketed
MSP-1014	TBD						
Family 1 (Psilocybin-analogues)	Multiple - Macrodose						
Family 2 (Short acting Psilocybin-analogues)	Multiple - Macrodose						
Family 3 (Long acting Psilocybin-analogues)	Multiple - Microdose						
Family 4 (DMT-analogues)	Multiple - Macrodose						

Source: Company Reports and Maxim

NCE Strategy for Next Gen Psychedelics

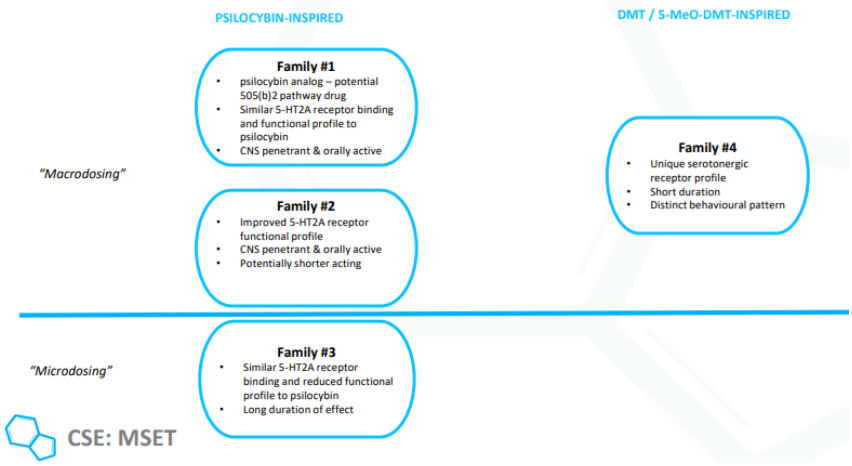
Novel chemical entities. Mindset's strategy is differentiated in the psychedelic space. Rather than developing existing psychedelics, the company is developing novel compounds that have similar receptor binding activity (and likely similar biological activity) but differing absorption and PK properties. While the research on traditional psychedelics dates back to the 50s and 60s, these are just the first compounds we have identified, not necessarily the best ones possible. Through a complex process of discovery, screening, and categorization, Mindset has built out a library of patentable analogues that have the potential to be superior to the original template and can be selected for application specific properties, as opposed to a one-size-fits-all solution. Mindset has produced 70+ compounds with a ~75% success rate for 5-HT_{2A} activity.

Exhibit 3. Compound selection process. Mindset's process for compound development and selection first starts with the designing of patentable psilocybin/psilocin-based (or DMT-based) compounds based on scientific literature surrounding serotonin and psychedelic therapeutics. The company then files patent applications for the process chemistry and chemical scaffolds and moves into 5-HT_{2A} agonism screening. After that the process moves into in-vivo phenotyping (head twitch, wet dog shakes, muscle contractions, etc.) and in vitro testing/binding assays including selectivity assays, in vitro ADME (absorption, distribution, metabolism, and excretion) and safety. The company also runs in vivo PK studies, behavioral analyses, and safety analyses. After these are complete, the company can move into IND-enabling studies under one of their four families of compounds.



Source: Mindset Corporate Presentation

Exhibit 4. Families of compounds. Mindset has developed four families of compounds, three surrounding psilocybin, and one surrounding DMT/5-MeO-DMT. Family 1 includes compounds that have a similar profile to psilocybin, while Family 2 includes shorter acting psilocybin analogues and Family 3 contains longer acting psilocybin-like drugs. Family 4 includes DMT/5-MeO-DMT-like drugs. Due to their PK profiles, Families 1, 2, and 4 are positioned for macrodosing. Macrodose treatments typically involve single or few high dose sessions with a psychedelic mystical experience that is linked to the success. These have found success in treating depression, anxiety, substance abuse disorders, etc. and require in clinic supervision, often combined with psychotherapy. Optimal drug profiles for this setting have high potency and are shorter acting. Family 3 is designed for microdosing, which involves a sub-perceptual dose that could be taken daily or multiple times weekly. Generally, microdosing has been reported to enhance mental clarity, creativity, and energy and has potential for indications such as anxiety and ADHD. Clinical evidence is more limited, but since it is a chronic dosing regimen, safety and longer acting are more optimal for microdosing drugs. The company also has its underlying platform technology to improve a wide range of psychedelic compounds, which can be thought of as a ""5th family."

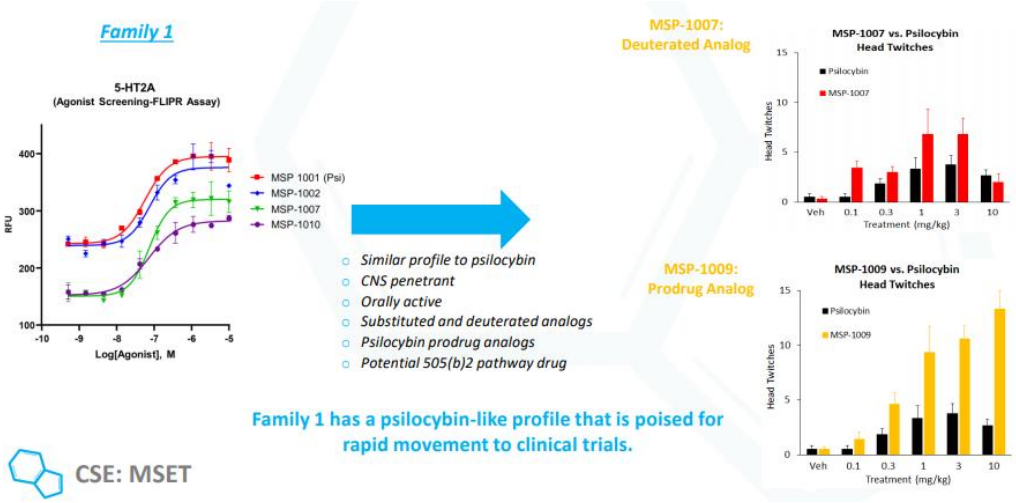


Source: Mindset Corporate Presentation

Family 1 – Improved psilocybin analogues. The first family of compounds being developed by Mindset consists of psilocybin analogues that have a similar profile to psilocybin but have improved properties. This includes safety, as presence of metabolites in psilocybin can result in safety concerns in certain individuals (increased blood pressure and heart rate), consistency, there are likely fast and slow metabolizers of psilocybin that can make dosing a greater challenge, and drug-drug interactions, since polypharmacy is common in neuropsychiatry. This family of compounds can be further divided into prodrugs and deuterated analogues. Current drug candidates are positioned as superior patentable psilocybin-like compounds that may demonstrate dose-related safety and pharmacodynamic advantages compared to psilocybin.

MSP-1014. Mindset has elected its first compound to move into the clinic, MSP-1014, which is a psilocybin analogue that contains a conjugated amplification moiety (CAM). This CAM enhances the 5-HT_{2A} specific effects while reducing non-specific effects. This has resulted in superior in vivo activity and safety profiles in mice compared to psilocybin at a range of doses, and 5-HT2A subtype activation in rats. With stronger activation, a lower dose could be required to achieve comparable effects, potentially improving safety and reducing side effects. Also, this compound is easier to manufacture vs psilocybin by avoiding the need for phosphorylation, the most difficult chemical synthesis step. The next step is to move forward into current good manufacturing practice (cGMP) compliant manufacturing, and investigational new drug (IND)-enabling studies.

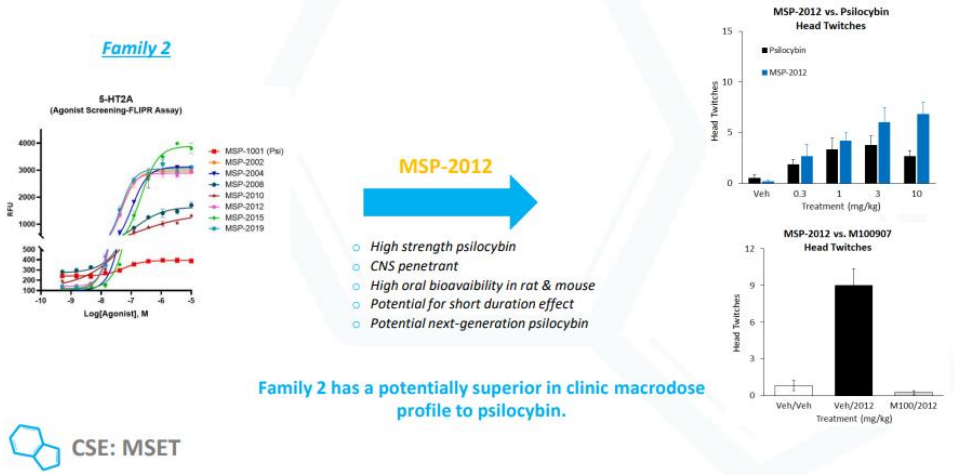
Exhibit 5. Family 1 Profile. The first family can be divided into prodrugs and deuterated analogs of psilocybin. Prodrugs evaluated have demonstrate rapid metabolism into active metabolites with verified efficacy both in vitro and in vivo, but also with superior effects on behaviors associated with 5-HT2A agonism compared to psilocybin in vivo. For the deuterated analogs, in vivo data indicate similar or greater efficacy to psilocybin with oral bioavailability and central nervous system penetration. These Family 1 drugs may be able to take advantage of aspects of the 505(b)2 pathway given their similarities to psilocybin.



Source: Mindset Corporate Presentation

Family 2 – Shorter acting psilocybin analogues. The second family of compounds consists of psilocybin analogues which have a restricted side chain and are designed for greater potency compared to psilocybin and psilocin. Initial PK data has demonstrated that some of these compounds have a shorter duration than traditional psilocybin. This is one of the ideal target characteristics for next gen psychedelics, considering psilocybin has a duration of 6+ hours. Shorter acting compounds have greater scalability, requiring a smaller time commitment from the patient and therapist (reduced therapy costs) and allow treatment centers to have a greater throughput.

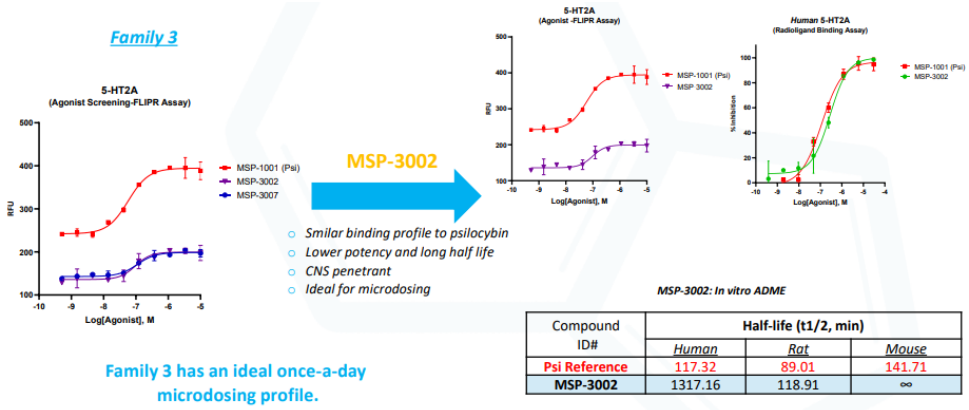
Exhibit 6. Family 2 Profile. Family 2 consists of restricted side-chain analogs of psilocybin. These compounds have demonstrated increased potency compared to psilocin and psilocybin in both in vitro and in vivo studies and certain compounds also show oral bioavailability and CNS penetration. Importantly in vivo PK data demonstrates evidence of shorter duration than psilocybin in rodents. This profile is ideal for next generation candidates for psychedelic-assisted psychotherapy applications.



Source: Mindset Corporate Presentation

Family 3 – Longer acting psilocybin analogues. The third family of compounds is essentially the opposite of Family 2. These compounds have longer durations and a smaller effect size compared to psilocybin. These compounds are better positioned for microdosing applications, which are not likely to require therapist oversite and the patient to remain in a treatment center, since the doses are sub-perceptual. Additionally, many of the microdosing applications are targeting chronic administration, similar to more traditional pharmaceuticals for indications like ADHD, where a patient will take daily stimulants. In these settings, a longer duration can allow for less frequent dosing and an overall improved product profile.

Exhibit 7. Family 3 Profile. Family 3 compounds are designed to have similar receptor binding profiles compared to psilocybin but have a smaller effect size and longer duration. This has been demonstrated in preclinical human liver microsome stability studies. This family of compounds is well positioned for microdose applications and indications such as ADHD and Alzheimer's disease.

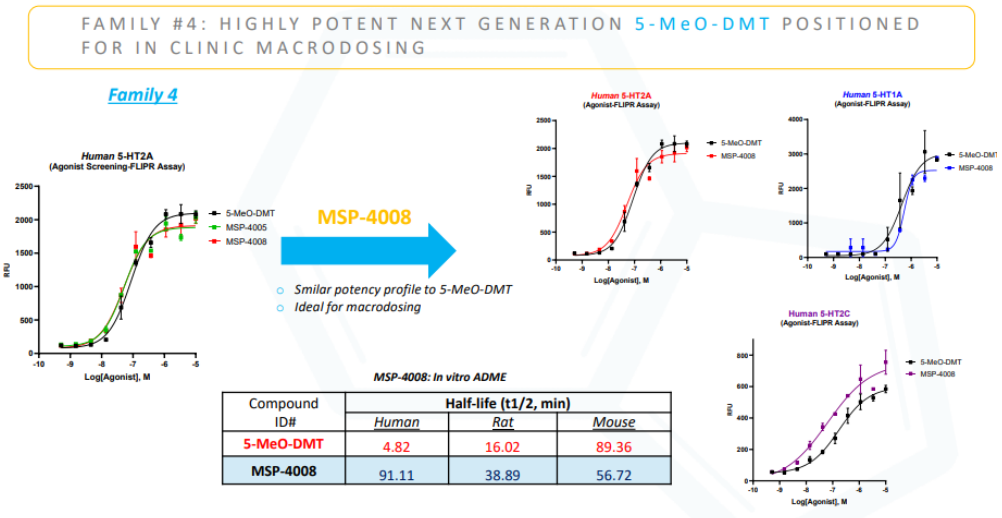


Compound ID#	Half-life (t1/2, min)		
	Human	Rat	Mouse
Psi Reference	117.32	89.01	141.71
MSP-3002	1317.16	118.91	∞

Source: Mindset Corporate Presentation

Family 4 – DMT and 5-MeO-DMT Analogues. The fourth family of compounds includes analogues of DMT and 5-MeO-DMT. DMT has a shorter duration of action but targets a similar receptor pathway to psilocybin and LSD and has demonstrated positive results in early clinical studies in neuropsychiatric indications. The company has synthesized a number of compounds and has conducted ADME studies on several, with compounds demonstrating relatively short durations of action compared to other classical psychedelics. Mindset is optimizing Family 4 compounds for reduced toxicity and improved pharmacokinetic and pharmacodynamic characteristics. Given the shorter duration of action, these drugs could be well positioned for use in-clinic for psychedelic-assisted psychotherapy.

Exhibit 8. Family 4 profile. Family 4 compounds are analogues of DMT & 5-MeO-DMT, which are shorter acting, 5-HT_{2A} targeting compounds. The compounds being developed by Mindset demonstrate a binding profile to the human 5HT-2A receptor comparable to that of the reference compounds, but with larger effect size and a shorter duration of action compared to psilocybin (as would be expected from a DMT-based compound). These compounds also show activity at both 5HT-1A and 5HT-2C receptors, which have been implicated both in anti-depressant and substance abuse. This profile uniquely positions the fourth family of compounds for potential macrodosing applications that are differentiated from compounds in Family 2 based on receptor activity signatures.



Compound ID#	Half-life (t1/2, min)		
	Human	Rat	Mouse
5-MeO-DMT	4.82	16.02	89.36
MSP-4008	91.11	38.89	56.72

Source: Mindset Corporate Presentation

Manufacturing. In addition to its pipeline compounds, Mindset also has a patent-pending chemical synthesis process for Psilocybin which can produce GMP-grade Psilocybin, but at a significant discount to market price. Mindset's synthesis process has several improvements including milder reaction conditions, fewer synthesis steps, and more easily obtained commercially available reagents and raw materials, which contribute to lower costs. The process is also suitable for multi-kg production scale and has a lower environmental impact vs. other processes. Mindset has engaged a leading CDMO to synthesize 1 KG of GMP Psilocybin using their process by YE21.

MODELING ASSUMPTIONS

1. We model commercialization of MSP-1014 in treatment resistant depression in the US and EU5 in FY28.
2. We assume the prevalence of major depressive disorder is 6.7% in the US and EU and that 60% of people with MDD seek treatment and of these 30% (~3M) have TRD.
3. We assume pricing of $25K in the US and $20K in the EU. This is a discount to nasal ketamine therapy (Spravato) which has pricing of $4700 - $6800 in the first month and then $2500 - $3500 for maintenance. All in, Spravato can cost $33K - $49K per year. We assume pricing increases at 5% per year.
4. The program at Mindset is very early stage as the company is still working through pre-clinical studies. Initial clinical development is not expected until sometime in 2022. In addition, while other groups are more advanced from a clinical perspective, the landscape in psychedelic-based drug development could evolve and change prior to Mindset's candidate(s) moving into human development. As such, we apply a 90% risk adjustment to our therapeutic model.
5. Through the company is likely to explore additional indications for MSP-1014 and/or other drug candidate from its other families of compounds, we do not factor in additional indications at this time.

Exhibit 9. MSP-1014 in treatment resistant depression market model (US).

MSP-1014, Treatment-resistant depression (US)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
US population	336,633,000	339,999,330	343,399,323	346,833,317	350,301,650	353,804,666	357,342,713	360,916,140	364,525,301	368,170,554	371,852,260	375,570,783
US Adult population 18+ (74.3%)	250,118,319	252,619,502	255,145,697	257,697,154	260,274,126	262,876,867	265,505,636	268,160,692	270,842,299	273,550,722	276,286,229	279,049,091
Major Depressive Disorder (MDD) (Adult. 6.7%)	16,757,927	16,925,507	17,094,762	17,265,709	17,438,366	17,612,750	17,788,878	17,966,766	18,146,434	18,327,898	18,511,177	18,696,289
MDD diagnosed, seeking treatment (60%)	10,054,756	10,155,304	10,256,857	10,359,426	10,463,020	10,567,650	10,673,327	10,780,060	10,887,860	10,996,739	11,106,706	11,217,773
Treatment-reistant depression (2+ failed therapies) (30%)	3,016,427	3,046,591	3,077,057	3,107,828	3,138,906	3,170,295	3,201,998	3,234,018	3,266,358	3,299,022	3,332,012	3,365,332
Market Penetration								0.20%	0.50%	1.00%	1.50%	1.75%
Total Patients Treated								6,468	16,332	32,990	49,980	58,893
Cost of Treatment								25,000	26,250	27,563	28,941	30,388
Increase in Cost								5%	5%	5%	5%	5%
Total revenue ('000)								$ 161,701	$ 428,710	$ 909,293	$ 1,446,458	$ 1,789,630
Risk adjustment								90%	90%	90%	90%	90%
Total Revenue ('000)								**$ 16,170**	**$ 42,871**	**$ 90,929**	**$ 144,646**	**$ 178,963**

Source: Maxim Estimates

Exhibit 10. MSP-1014 in treatment resistant depression market model (EU5).

MSP-1014, Treatment-resistant depression (EU5)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
EU5 population	335,970,189	342,689,593	349,543,385	356,534,252	363,664,937	370,938,236	378,357,001	385,924,141	393,642,624	401,515,476	409,545,786	417,736,701
EU Adult population 18+ (74.3%)	249,625,850	254,618,367	259,710,735	264,904,949	270,203,048	275,607,109	281,119,252	286,741,637	292,476,469	298,325,999	304,292,519	310,378,369
Major Depressive Disorder (MDD) (Adult. 6.7%)	16,724,932	17,059,431	17,400,619	17,748,632	18,103,604	18,465,676	18,834,990	19,211,690	19,595,923	19,987,842	20,387,599	20,795,351
MDD diagnosed, seeking treatment (60%)	10,034,959	10,235,658	10,440,372	10,649,179	10,862,163	11,079,406	11,300,994	11,527,014	11,757,554	11,992,705	12,232,559	12,477,210
Treatment-reistant depression (2+ failed therapies) (30%)	3,010,488	3,070,698	3,132,111	3,194,754	3,258,649	3,323,822	3,390,298	3,458,104	3,527,266	3,597,812	3,669,768	3,743,163
Market Penetration								0.15%	0.40%	0.80%	1.25%	1.50%
Total Patients Treated								5,187	14,109	28,782	45,872	56,147
Cost of Treatment								20,000	21,000	22,050	23,153	24,310
Increase in Cost								5%	5%	5%	5%	5%
Total revenue ('000)								$ 103,743	$ 296,290	$ 634,654	$ 1,062,054	$ 1,364,951
Risk adjustment								90%	90%	90%	90%	90%
Total Revenue ('000)								**$ 10,374**	**$ 29,629**	**$ 63,465**	**$ 106,205**	**$ 136,495**

Source: Maxim Estimates

VALUATION

We model commercialization of MSP-1014 in FY28 in the US and EU5 for treatment-resistant depression (TRD) with a 90% risk adjustment based on the stage of development. A platform value is assigned to the pipeline. A 30% discount is applied to the Free Cash Flow, Discounted EPS, and Sum-of-the-Parts Models, which are equally weighted to derive a 12-month price target of $1.00 USD.

Exhibit 11. Free Cash Flow Model.

Average	1.0	USD

Price Target	1
Year	2022

DCF Valuation Using FCF (mln):

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
units ('000)	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**
EBIT	(8,785)	(10,914)	(14,876)	(20,521)	(25,960)	(36,356)	(42,594)	(10,330)	41,988	135,675	236,566	308,490
Tax Rate	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	5%
EBIT (1-t)	(8,785)	(10,914)	(14,876)	(20,521)	(25,960)	(36,356)	(42,594)	(10,330)	41,988	135,675	231,835	293,065
CapEx	-	-	-	-	-	-	-	-	-	-	-	-
Depreciation	11	-	-	-	-	-	-	-	-	-	-	-
Change in NWC												
FCF	(8,774)	(10,914)	(14,876)	(20,521)	(25,960)	(36,356)	(42,594)	(10,330)	41,988	135,675	231,835	293,065
PV of FCF	(11,407)	(10,914)	(11,443)	(12,143)	(11,816)	(12,729)	(11,472)	(2,140)	6,691	16,632	21,862	21,258

Discount Rate	30%	
Long Term Growth Rate	1%	
Terminal Cash Flow	1,020,676	
Terminal Value YE2031	74,038	
NPV	67,825	
NPV-Debt		
Shares out ('000)	121,447	2031E
NPV Per Share	1	

Source: Maxim estimates

Exhibit 12. Discounted-EPS Model.

Current Year	2022
Year of EPS	2032
Earnings Multiple	10
Discount Factor	30%
Selected Year EPS	2.41
NPV	2

Source: Maxim estimates

	Discount Rate and Earnings Multiple Varies, Year is Constant						
	1.75	5%	10%	15%	20%	25%	30%
Earnings Multiple	**0**	0	0	0	0	0	0
	5	7.41	4.65	2.98	1.95	1.30	0.88
	10	14.81	9.30	5.96	3.90	2.59	1.75
	15	22.22	13.96	8.95	5.85	3.89	2.63
	20	29.63	18.61	11.93	7.79	5.18	3.50
	25	37.04	23.26	14.91	9.74	6.48	4.38
	30	44.44	27.91	17.89	11.69	7.77	5.25
	35	51.85	32.56	20.88	13.64	9.07	6.13

Exhibit 13. Sum-of-the-Parts Model.

	LT Gr	Discount Rate	Yrs to Mkt	% Success	Peak Sales (MM's)	Term Value
MSP-1014, Treatment-resistant depres	1%	30%	6	50%	$179	$617
NPV						$0.4
MSP-1014, Treatment-resistant depres	1%	30%	6	50%	$136	$471
NPV						$0.3
Next-Gen Psychedelic Pipeline	1%	30%	7	50%	$500	$1,724
NPV						$0.8
Net Margin						70%
MM Shrs OS (2031E)						121
Total						$1

Source: Maxim estimates

Mindset Pharma inc.: Income Statement ($000)					Jun-21	Jun-22	Jun-23	Jun-24	Jun-25	Jun-26	Jun-27	Jun-28	Jun-29	Jun-30	Jun-31	Jun-32
YE June 31	1Q21A	2Q21A	3Q21A	4Q21E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	2032E
Revenue:																
MSP-1014, Treatment-resistant depression (US)	-	-	-	-	-	-	-	-	-	-	-	16,170	42,871	90,929	144,646	178,963
MSP-1014, Treatment-resistant depression (EU5)	-	-	-	-	-	-	-	-	-	-	-	10,374	29,629	63,465	106,205	136,495
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Next-gen psychedelic compounds (platform value)												20,000	40,000	60,000	80,000	100,000
Net revenue	-	-	-	-	-	-	-	-	-	-	-	46,544	112,500	214,395	330,851	415,458
Collaborative revenue:																
Revenues																
Other Income					-	-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-	-
Total Collaborative Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	-	-	-	-	-	-	-	-	-	-	-	46,544	112,500	214,395	330,851	415,458
Gross Margins:																
Cost of Goods Sold	-	-	-	-	-	-	-	-	-			9,309	16,875	21,439	33,085	41,546
%Gross Margin												80%	85%	90%	90%	90%
Gross Profit	-	-	-	-	-	-	-	-	-	-	-	37,236	95,625	192,955	297,766	373,912
Operating Expenses:																
Research and Development		311	618	741	1,671	5,931	8,897	13,345	17,349	26,024	31,228	32,790	34,429	36,151	37,958	39,856
%R&D																
Selling, General and Administrative	201	454	989	1,186	2,830	4,983	5,980	7,175	8,610	10,333	11,366	14,776	19,208	21,129	23,242	25,566
Consulting Fees	151	441	860													
Professional Fees	45	13	94													
G&A	5	0	35													
%SG&A																
Stock based compensation	10	361	14	17	401											
Listing expense		412	143		554											
Reverse takeover transaction costs	3,144				3,144											
Total Expenses	3,354	1,538	1,763	1,945	8,600	10,914	14,876	20,521	25,960	36,356	42,594	56,874	70,512	78,719	94,285	106,968
Operating Income (Loss)	(3,354)	(1,538)	(1,763)	(1,945)	(8,600)	(10,914)	(14,876)	(20,521)	(25,960)	(36,356)	(42,594)	(10,330)	41,988	135,675	236,566	308,490
					-	-	-	-	-	-	-	-	-	-	-	-
Interest and other income					-	-	-	-	-	-	-	-	-	-	-	-
Change in fair value of convertibles		(280)	95		(185)	-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-	-
Total Other Income	-	**(280)**	**95**	-	**(185)**	-	-	-	-	-	-	-	-	-	-	-
Pretax Income	(3,354)	(1,818)	(1,668)	(1,945)	(8,785)	(10,914)	(14,876)	(20,521)	(25,960)	(36,356)	(42,594)	(10,330)	41,988	135,675	236,566	308,490
Taxes on income	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,731	15,424
Tax Rate															2%	5%
GAAP Net Income (Loss)	(3,354)	(1,818)	(1,668)	(1,945)	(8,785)	(10,914)	(14,876)	(20,521)	(25,960)	(36,356)	(42,594)	(10,330)	41,988	135,675	231,835	293,065
Foreign currency translation loss																
Total comprehensive loss	(3,354)	(1,818)	(1,668)	(1,945)	(8,785)	(10,914)	(14,876)	(20,521)	(25,960)	(36,356)	(42,594)	(10,330)	41,988	135,675	231,835	293,065
GAAP-EPS	(0.12)	(0.03)	(0.02)	(0.02)	(0.15)	(0.13)	(0.16)	(0.21)	(0.24)	(0.32)	(0.36)	(0.09)	0.35	1.13	1.92	2.41
GAAP-EPS (Dil)	(0.12)	(0.03)	(0.02)	(0.02)	(0.15)	(0.13)	(0.16)	(0.21)	(0.24)	(0.32)	(0.36)	(0.09)	0.35	1.13	1.92	2.41
Wgtd Avg Shrs (Bas) - '000s	27,400	54,165	67,322	78,793	56,920	84,994	91,349	99,727	107,634	114,575	119,044	119,521	119,999	120,480	120,963	121,447
Wgtd Avg Shrs (Dil) - '000s	27,400	54,165	67,322	78,793	56,920	84,994	91,349	99,727	107,634	114,575	119,044	119,521	119,999	120,480	120,963	121,447

Source: Company reports and Maxim

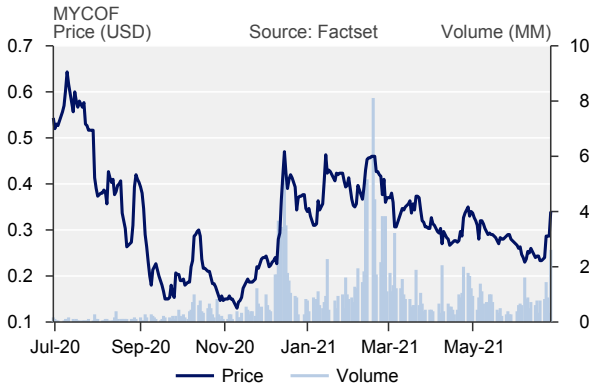
Biotechnology – Psychedelics

MYCOF - OTC June 27, 2021

Closing Price 6/25/21	**$0.34**
NEO: MYCO	C$0.42
Rating:	Buy
12-Month Target Price:	$1.00
52-Week Range:	$0.13 - $0.66
Market Cap (M):	78.9
Shares O/S (M):	233.6
Float:	80.1%
Avg. Daily Volume (000):	723.5
Debt (M):	$0.0
Dividend:	$0.00
Dividend Yield:	0.0%
Risk Profile:	Speculative
Fiscal Year End:	December

Total Expenses ('000)

	2020A	2021E	2022E
1Q	C$243	C$5,176A	C$4,439
2Q	C$3,104	C$2,553	C$5,217
3Q	C$5,372	C$3,729	C$5,711
4Q	C$2,929	C$4,114	C$6,189
CY	C$11,649	C$15,572	C$21,556



Mydecine Innovations is listed on the NEO Exchange in Canada under the symbol "MYCO" and OTCMKTS under the symbol "MYCOF". The stock does not trade on a US National Exchange. Financial data is reported in Canadian dollars (C$) and is represented as such in our models. Market data including the stock price and target price are translated into US dollars (USD).

Jason McCarthy, Ph.D.
(212) 895-3556
jmccarthy@maximgrp.com

Michael Okunewitch
(212) 895-3579
mokunewitch@maximgrp.com

Mydecine Innovations Group Inc. Buy

An Under-the-Radar Late-Stage Player in Psychedelics — Initiating Coverage with a Buy Rating and $1 PT

Summary

- **Mydecine is developing naturally extracted psilocybin under the name MYCO-001 targeting post-traumatic stress disorder (PTSD) in veterans and nicotine addiction, with improved next gen follow-up candidates.**
- **In nicotine addiction, MYCO-001 is expected to enter a late stage study in 2022 (pending FDA go-ahead), positioning Mydecine among the advanced players in psychedelics. MYCO-004 is the follow-up candidate, which is solubilized for transdermal delivery, and allows for shorter (targeting 2 hour) duration.**
- **In PTSD in veterans, several psilocybin studies are ongoing and a P2a study with MYCO-001 is ex pected to start in 3Q21. MYCO-003 combines psilocybin-like and MDMA-like effects, which may be complementary in PTSD.**
- **The company has its own cultivation/extraction, as well as a schedule 1 dealer's license enabling import/export of active drug and avoiding IP conflict with synthetic approaches. On the digital side, the Mindleap app provides post-psychedelic therapy integration and mental health tracking, Mindleap 2.0 is launching in the near future, and could provide a near term revenue stream.**
- **Conclusion. Mydecine is likely to be among the first to reach approval in psychedelic medicine. However, at an ~$80M USD market cap, there is a significant valuation gap with other players in the space with similar timelines. In our view, as Mydecine provides more finalized timelines and development pathways; we expect the gap to narrow.**

Details

MYCO-001 and MYCO-004 in nicotine addiction. MYCO-001 is a naturally extracted, pure psilocybin targeting nicotine addiction as its most advanced indication. Chantix, the main competitor in nicotine addiction, generates $900M in the US with only ~30% efficacy, while psilocybin has demonstrated efficacy up to 80%. A late stage study (potentially P3) is planned for 2022, pending FDA green-light. A P3 study in nicotine addiction could progress relatively quickly, positioning the company to be among the first to reach approval. Mydecine is not focused on securing IP for generic psilocybin, rather, management intends to use the 3-5 year exclusivity (depending on whether they are first to approval) to complete development of their follow-up candidate, MYCO-004, a novel solubilized analogue of psilocin for transdermal delivery. This not only addresses IP concerns (novel formulation, novel delivery), but also has the potential for improved scalability with a 2-hour (or less) expected duration (compared to 6+ for psilocybin).

MYCO-001 and MYCO-003 in PTSD in veterans. While much of the focus for development in PTSD has been on MAPS (a private research organization) with MDMA, psilocybin also has potential, and many early trials in anxiety/depressive disorders included patients who today would be considered to have PTSD (diagnostics in the 50s/60s did not separate PTSD). The company is initially developing MYCO-001 with a P2a planned for 3Q21, with MYCO-003 as a follow-up. MYCO-003 combines the activities of an entactogen (like MDMA) and a classical hallucinogenic (like psilocybin), which may have complementary effects, as well as preventing anxiety responses associated with psilocybin. Development of MYCO-003 is expected to be run in parallel to MYCO-001.

Valuation. We factor commercialization of MYCO-001/MYCO-004 in nicotine addiction in 2025 in the US and 2026 in the EU5 and MYCO-001/MYCO-003 in the US and EU in 2027 with a 70% and 80% risk adjustment, respectively. We also factor revenues from Mindleap 2.0 in 2H21. A 30% discount is applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $1 USD.

CORPORATE PROFILE

Mydecine Innovations Group Inc.
Suite 810 - 789 West Pender Street
Vancouver, BC V6C 1H2
www.mydecine.com

Investment Risk: Mydecine's products are not approved, and the company currently does not generate revenue.

Regulatory Risk: Mydecine's products may not be successful in clinical trials and may not meet the requirements for regulatory approval(s).

Commercial Risk: Mydecine's products are not approved and commercialized, and if/when they become commercially available, they may not achieve significant market share. In addition, the company lacks commercial infrastructure to support commercialization.

Financial Risk: Mydecine is not profitable and may need to raise additional capital to support operations.

Dilution Risk: Capital raises to fund operations may dilute investors.

Ownership:
Institutional: 2.2%
Insiders: 19.9%

Balance Sheet Summary (as of 3/31/21):
Cash: C$11.3M
Debt: C$0

Analysts Covering the Stock (other than Maxim): 1 (Buy)

Company Background. Mydecine Innovations Group (NEO: MYCO, OTC: MYCOF, FSE:0NFA) is an emerging biotech and life sciences company dedicated to developing and commercializing innovative solutions for treating mental health problems and enhancing vitality. The company's world-renowned medical and scientific advisory board is building out a robust R&D pipeline of nature-sourced psychedelic-assisted therapeutics, novel compounds, therapy protocols, and unique delivery systems. Mydecine has exclusive access to a full cGMP certified pharmaceutical manufacturing facility with the ability to import/export, cultivate, extract/isolate, and analyze active mushroom compounds with full government approval through Health Canada. Mydecine also operates out of a state-of-the-art mycology lab in Denver, CO to focus on genetic research for scaling commercial cultivation of rare (non-psychedelic) medicinal mushrooms.

At the heart of Mydecine's core philosophy is that psychedelic-assisted psychotherapy will continue to gain acceptance in the medical community with many of the world's best accredited research organizations demonstrating its remarkable clinical effectiveness. Mydecine recognizes the responsibility associated with psychedelic-assisted therapy and will continue to position itself as a long-term leader across the spectrum of clinical trials, research, technology, and global supply.

Senior Management:

Joshua Bartch - Director, CEO and Co-Founder – David Joshua Bartch is Director, President, and CEO of Mydecine Innovations Group. Mr. Bartch's entrepreneurial career took off in 2009 when he co-founded AudioTranscriptionist.com and founded the Denver based dispensary, Doctors Orders. Following these ventures, Mr. Bartch founded a boutique investment firm that operated throughout the U.S. and Canadian markets. In 2014, Bartch co-founded Cannabase.io, the USA's most significant legal and sophisticated cannabis wholesale platform. In 2015, Cannabase.io was acquired by Helix TCS.

Damon Michaels, Director, COO & Co-Founder – Damon Michaels is the Chief Operations Officer of Mydecine Innovations Group. Prior to joining MIG, Mr. Michaels was consulting for various hemp businesses through his company, Emerald Baron. Before that, he served as GM for the leading multi-platform cannabinoid research and technology firm based in Colorado called ebbu. In November of 2018, ebbu was acquired for C$429M by Canopy Growth for being the cutting-edge leader in cannabinoid science. Over the last decade, Mr. Michaels has been in leading roles with multiple large brands throughout the cannabis vertical in Colorado and California. Outside of the cannabis industry, he developed a national snowboard brand with his team, was one of four entrepreneurs who created Colorado's first-ever glass recycling company and was on the business development team for a Google Ventures Company.

Robert Roscow, MA, CSO & Co-Founder – Robert Roscow is the Chief Scientific Officer of Mydecine Innovations Group. As a highly educated geneticist, he has spent his academic and professional careers looking for valuable and unique medicinal molecules found in nature. The last two companies that Robert applied his innovations to were Canopy Growth and ebbu, where he ran their genetics divisions. Mr. Roscow has already leveraged an expertise in genomics, evolution and molecular biology to maximize the industrial production of cannabinoids and their use in a pharmacological context. This work has resulted in multiple patent filings and accolades in publications ranging from Nature to Rolling Stone. Now, Mr. Roscow has set his focus on the vast healing potential of fungi.

Dr. Rakesh Jetly, OMM, CD, MD, FRCPC – Dr. Jetly is currently the Head of the Centre of Excellence on Mental Health in Ottawa, Ontario, and an associate professor of psychiatry at Dalhousie University (Halifax), and the University of Ottawa. He has published numerous articles in professional journals and presents nationally and internationally on such topics as post-traumatic stress disorder and operational psychiatry. Dr. Jetly has previously held various professional positions as a psychiatrist, including: Director of the "Operational Trauma and Stress Support Centre," Atlantic Region (2000-2008); Chief Resident in Psychiatry, St. Michael's Hospital (1999-2000); and Senior Medical Officer for the "Canadian Contingent United Nations Middle East" in Israel (1993-1994).

INVESTMENT SUMMARY

Bull Case. Mydecine is a late-stage player in the emerging psychedelic medicine space. The company is focused on psilocybin (and next-gen psilocybin-based compounds) in the treatment of PTSD and addiction. Multiple early studies are ongoing in PTSD in veterans and the company has plans for MYCO-001 (its naturally extracted pure psilocybin drug candidate) to initiate a P2a for PTSD in veterans in 3Q21 and a late-stage study (potentially a P3) for nicotine addiction in 2022 (pending FDA go-ahead). This could position the company among the first players to reach approval for psilocybin. Nicotine addiction is an attractive market, as Chantix, the largest competitor, generates nearly $1B in the US, despite poor efficacy rates (~30%) and substantial side effects, while historical data on psilocybin has achieved quit rates as high at 80%. The company has its own cultivation and natural extraction facilities, which should protect it from IP surrounding synthesis methods and with a schedule 1 dealers license the company is able to import/export active drug. Pure psilocybin is only the first phase of the company's development program with several next-gen novel compounds and formulations further down the pipeline. MYCO-004 is the follow-up compound for MYCO-001 and is a lipid solubilized formulation of a psilocin analogue, which can be delivered by transdermal patch and has been modified to potentially reduce the duration of therapy as low as 2 hours or even less. This addresses two of the main challenges for psychedelics, which are long durations (6+ hours for psilocybin, negatively impacts scalability) and IP protection. Mydecine's plan is take advantage of the 3-year exclusivity for a new indication for an approved drug (or 5 years for a new chemical entity if reach approval before COMPASS and Cybin) with MYCO-001 and follow-up with the novel, next-gen MYCO-004. MYCO-004 is also shelf stabilized to solve storage issues associated with psilocin. The company also has a novel compound in development for PTSD, MYCO-003, which is a combination of a psilocybin-like compound and an MDMA-like entactogen, which could provide benefits over each type of drug individually. The company is developing digital infrastructure with its Mindleap subsidiary, which offers virtual telehealth and mental health tracking for after-care remote therapy. Mindleap 2.0 is launching in coming weeks and could provide a near term revenue stream with a monthly subscription model. Mydecine also trades at a discount relative to some of the better known, larger players such as COMPASS Pathways (CMPS - Buy), MindMed (MNMD - Buy), and Cybin (NEO: CYBN - Buy), which have market caps in the hundreds of millions to billions. Bulls see Mydecine as an undervalued emerging late-stage player in the psychedelic space with their own novel pipeline and internal production capabilities. As drug candidates move into late-stage trials, timelines become clearer, and the company moves towards a NASDAQ listing (expected in 2021), bulls expect the valuation gap to narrow, driving upside for MYCO shares.

Bear Case. The psychedelic space is high risk. Though there is data to support a number of indications, the larger scale, more robust clinical studies are ongoing, meaning there is a wait for more definitive proof of concept. Mydecine is a smaller player in the space and does not have as well-defined of a clinical development path as other larger companies. The company's first clinical candidate, MYCO-001, is not expected to enter the clinic until later this year, and their pipeline compounds remain unproven in humans. Though the company could move directly into a late-stage study for nicotine addiction, this depends on an FDA decision, and earlier stage trials could be required, which would delay timelines. Mydecine is also not as well funded as comparable psychedelic companies with C$11M in cash as of 1Q21, meaning it will likely require additional capital raises, potentially prior to data from clinical programs. Bears view Mydecine as a higher risk player in an already high-risk space.

Our Take. As the psychedelic space continues to gain traction, a number of late-stage players have garnered significant investor attention such as COMPASS Pathways, MindMed, and Cybin. Mydecine, however, has passed under the radar, and represents an opportunity for investors in our view, as its internal products approach the clinic later this year. The company has in-house production as well as the ability to import and export psilocybin, and with a naturally extracted lead product, it is unlikely to interfere with IP surrounding chemical or biosynthetic approaches. MYCO-001, the company's lead psilocybin-based product, is expected to enter P2a in 3Q21 for PTSD in veterans and enter into a late-stage study in 2022 for nicotine addiction, which would place it among the earlier companies to reach potential approval. MYCO-004, the follow-up to MYCO-001, represents an attractive option for the psychedelic market. Shorter acting drugs and IP protection are two of the most important considerations for next-gen psychedelics. MYCO-004 is a transdermally delivered, stability-enhanced psilocin analogue and is expected to achieve a duration of 2 hours or even less. This would place it in line with existing therapies like ketamine and Spravato and would make the compound scalable within the existing mental health paradigm, which relies on shorter 1–2-hour sessions. It also addresses IP concerns given that it is a novel formulation and delivery mechanism. The company is also targeting PTSD in veterans, EMS, and frontline workers, where rates are as much as 3x the general population. Multiple studies are ongoing across North America and Europe with psilocybin (P2a for MYCO-001 expected 3Q21) and the company has a next-gen candidate as well, MYCO-003, which combines the activity of classical psychedelics like psilocybin (much of the historical data in depressive syndromes comes from before PTSD was diagnosed, and likely included many PTSD patients) and entactogens like MDMA (most advanced psychedelic medicine and has demonstrated positive data in a P3 Study in PTSD), which may have complimentary activity. In our view, Mydecine is undervalued at the ~$80M market cap, given it likely has similar timelines to many of the larger players trading in the hundreds of millions to billions, and has next-generation candidates with patentable features and scalable treatment durations. As those timelines become more well defined and drugs advance into the clinic, we expect MYCO shares to increase in value.

Finances. Mydecine reported 1Q21 with a net loss of (C$5.2M) and ended the period with C$11.3M in cash, which should provide runway into late 2021 at the current C$5M. We expect the company may need to secure additional financing. This may come in the form of a US IPO as the company has submitted a formal application to uplist to NASDAQ. On Feb 12, the company completed a C$17.25M public offering for 34.5M units at C$0.50 consisting of 1 share and one warrant exercisable at C$0.70. Following the offering, on March 23, the company migrated to the NEO exchange from the Canadian Securities Exchange, which lists many of the largest Canadian-listed psychedelic companies including MindMed and Cybin.

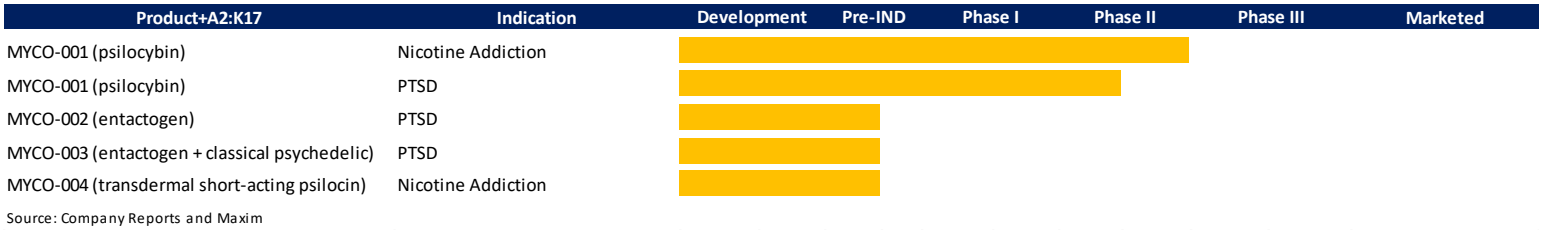
Exhibit 1. Upcoming Catalysts.

Product	Indication	Event	Timeline	Impact
MYCO-001	PTSD in veterans	Initiate P2a Study	3Q21	+
Mindleap 2.0	Mental Health	Launch Mindleap 2.0	3Q21	++
n/a	n/a	NASDAQ Listing	2021	++
MYCO-001	Nicotine addiction	IND approval (decision on moving straight to P3 or earlier stage study)	Late 2021/Early 2022	+++
MYCO-001	Nicotine addiction	Initiate Late Stage Study	2022	+
MYCO-004	Nicotine addiction	IND approval	2022	++

Stock Significance Scale: + of moderate importance; ++ higher level; +++ very important

Source: Company reports and Maxim Forecasts

Exhibit 2. Pipeline.



Source: Company Reports and Maxim

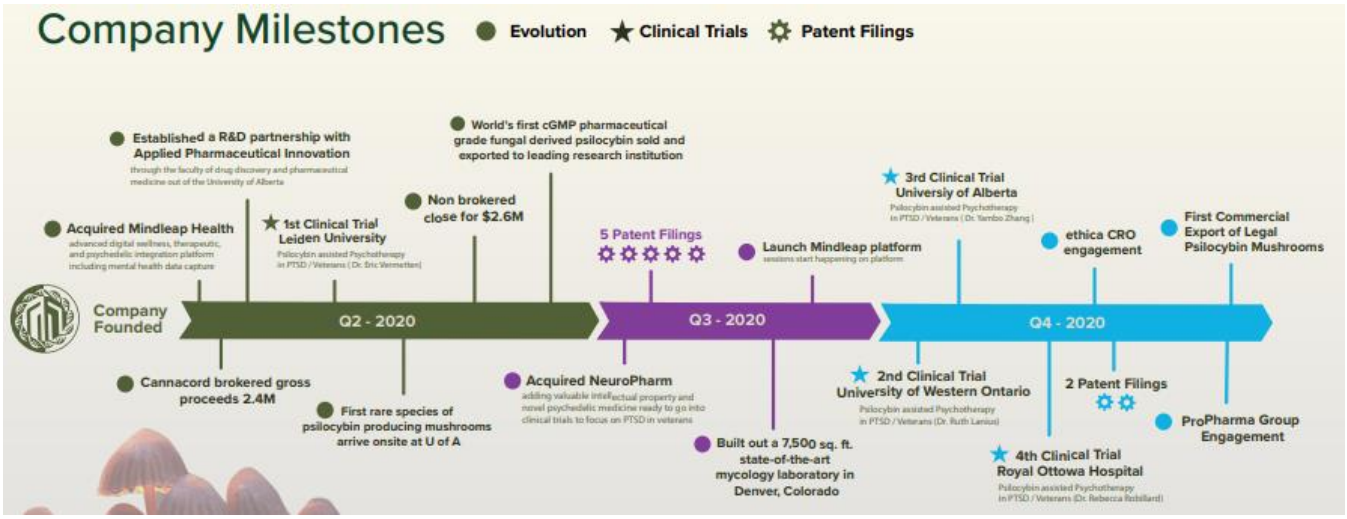
Clinical Development in Psychedelics

Psilocybin in PTSD. Myedecine has launched multiple studies for psilocybin in PTSD in veterans, EMS, and frontline workers at multiple universities. These studies are based on IP acquired through the company's acquisition of NeuroPharm surrounding the use of psychedelics in the treatment of PTSD in veterans. While PTSD in the general population is a large problem, with 1 in 11 people globally experiencing the condition at one point in their lives, in veterans and frontline workers, the problem is significantly greater, with up to 30% of veterans developing PTSD and frontline workers experiencing PTSD at 4x the rate of the global average. Veterans also represent an attractive market as they have a very low dropout rate in clinical trials and are more likely to be treatment resistant.

Drug Candidates. While studies on psilocybin in PTSD are ongoing, the company's pipeline includes several clinical candidates which it intends to take into the clinic under INDs with the FDA and Health Canada.

- **MYCO-001**. MYCO-001 is Mydecine's most advanced clinic candidate and is a naturally extracted formulation of pure psilocybin, which means it is unlikely to interfere with existing chemical synthesis IP (though we note the company also has a synthetic formulation). The company intends to progress this drug candidate into a late-stage study (potentially a P3, depending on how much outside efficacy data for psilocybin is allowed to be used to support MYCO-001) for nicotine addiction in 2022, pending FDA discussions. In nicotine cessation, there has bee encouraging initial data from a study conducted by Johnson et Al, demonstrating an 80% cessation rate in N=15 patients, and data from an additional N=80 patients is expected in the near future. A P2a for PTSD in veterans is expected in 3Q21. While pure psilocybin cannot be patented, the company would likely receive either 3- or 5-years exclusivity, under FDA new indication or new chemical entity exclusivity, respectively (depending on if they reach approval prior to COMPASS Pathways and Cybin). With the 3-5 years of exclusivity, Mydecine has the ability to build out the market and commercial infrastructure while development continues on their follow-up candidate for addiction, MYCO-004.
- **MYCO-002**. MYCO-002 is an entactogenic compound designed to be a reduced harm version of MDMA with an improved safety profile, and as such, is likely a candidate for indications like PTSD.
- **MYCO-003**. MYCO-003 is a psilocybin-based combination with an entactogenic compound, which could provide a dual benefit in indications like PTSD and reduces the anxiety potential of psilocybin, potentially reducing "bad trips" even in severely ill patients. This program could be run for PTSD concurrently with MYCO-001
- **MYCO-004 for nicotine addiction**. MYCO-004 is a follow-up compound for Mydecine's psilocybin-based MYCO-001. The drug is a lipid solubilized, stability-enhanced psilocin analogue which enables transdermal patch delivery. The compound is designed to provide a much shorter duration (2 hours and potentially even less) while providing long term stability (psilocin naturally degrades very quickly) and precision dosing. The compound has multiple patentable features and could provide long term IP protection, as well as be highly attractive for the nicotine cessation market.

Exhibit 3. Myedcine Company Timeline.

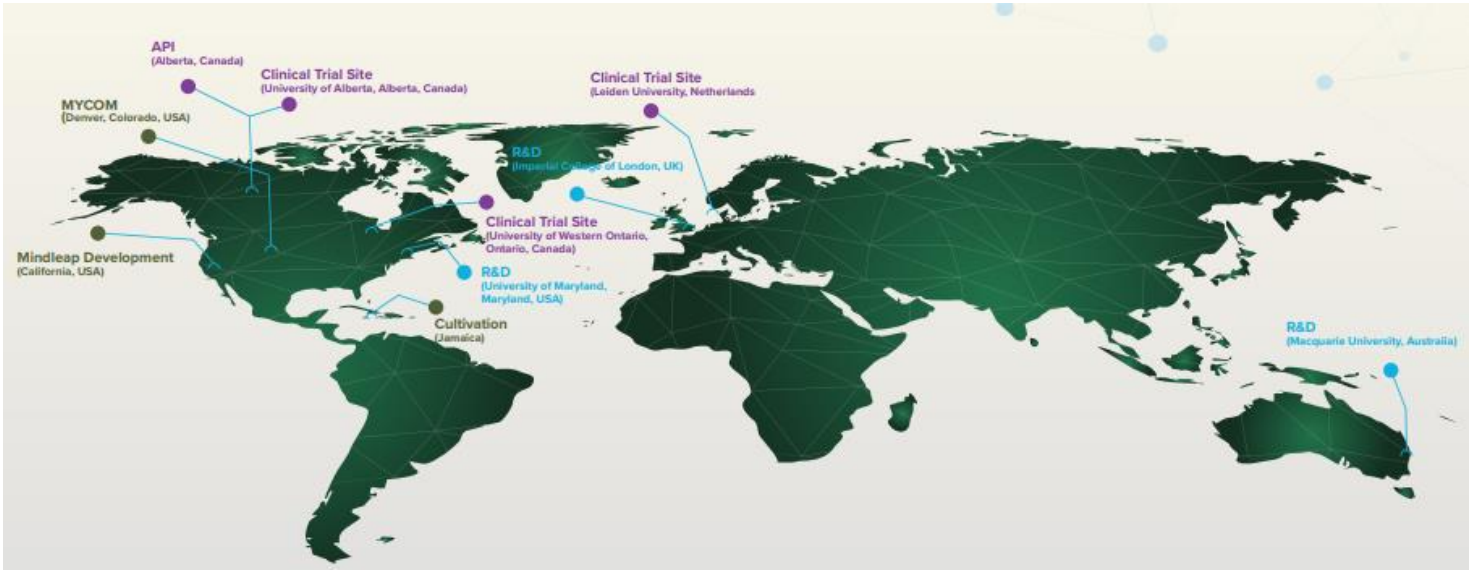


Source: Mydecine Corporate Presentation

Natural extraction capabilities. Mydecine has a 30k square foot pharmaceutical grade extraction lab and a 7.5k square foot mycology lab, which has full cultivation capabilities, enabling production of psilocybin as well as additional fungal medicinal compounds. The company also has a schedule 1 dealers license under Health Canada, which allows the cultivation and import/export of mushroom compounds.

AI-guided drug design. Mydecine has launched its "in silico" (computer simulated) drug discovery program in collaboration with researchers at the University of Alberta (UofA). The program is focused on utilizing artificial intelligence/machine learning (AI/ML) to support drug screenings, including both the ability to build drugs from the receptor up and assess drugs around the target receptor. This will allow the company to rapidly screen hundreds of thousands of new molecules without the need to actually produce them and more efficiently screen its own proprietary library of novel compounds.

Exhibit 4. Mydecine Global Footprint. Mydecine has a global network of clinical trial sites, R&D locations and manufacturing sites for naturally extracted psychedelics. This includes a collaboration with Applied Pharmaceutical Innovations at University of Alberta, which is using machine learning and AI for the development of new novel psychedelic compounds. University of Alberta is among the top 15 universities in the world for drug discovery and top 3 in AI. The company also has full cGMP manufacturing capabilities and is partnered with leading CROs, which frequently work with the militaries of the US and Canada and should help with the PTSD program.



Source: Mydecine Corporate Presentation

Mindleap Digital Health Platform

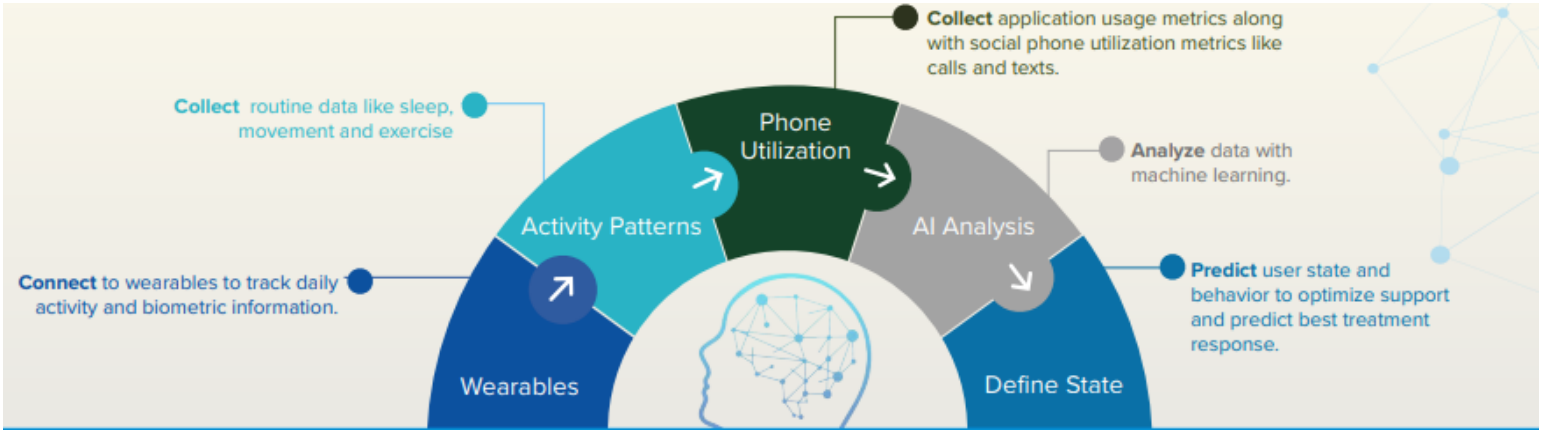
Mindleap digital telehealth platform. In addition to their clinical development programs, Mydecine is also developing a digital mental health platform through their subsidiary Mindleap. The Mindleap Health platform uses a smartphone app that connects patients to mental health specialists for professional mental health coaching. The app also uses mental health analytics (and plan to use AI in the near future) to maximize treatment outcomes. Over the next 12 months, the company plans to offer 10 in-app purchase mental health and wellbeing programs, expand its specialist network to 1000 from 60, expand its partner network to 100 from 3, and grow organic social media impressions to 250k per month from 45k per month. The company also plans to combine wearable data and launch AI capabilities to predict mental health states and provide behavioral based mental health interventions. One of the key advantages to the daily tracking is that changes to mental health can be difficult to quantify objectively and by having daily tracking, patients can better visualize the improvements to mental health. The company already has several thousand organic subscribers and is launching a more robust version of the app dubbed Mindleap 2.0, which includes community-based education, cooking, meditation, and yoga classes, for a low monthly subscription.

Integration with psychedelic therapy. One of the key synergies between the mind-leap platform and Mydecine's psychedelic therapy platform is that many of the specialists are trained integration specialists (the follow-up component of psychedelic-assisted psychotherapy). The purpose of the integration session is to help patients reflect on their altered state and use it to better understand themselves and use the psychedelic experience to make positive changes to their daily life. This could potentially increase Mydecine's share of the psychedelic therapy market, capturing a portion of the associated therapy/coaching market as well, and augmenting the effectiveness of the psychedelic medicines.

Exhibit 5. Mindleap Health App. The Mindleap health app has a number of features to support patients' mental health. The app provides tools to monitor mental health each day and track progress. Additionally, the app enables patients to connect with world-class integration specialists to help process past mind-altering experiences to create meaningful changes. All specialists are trained with a minimum of 2+ years experience and users can browse through specialists and review their qualification to determine which is best suited to their needs. The app also includes a health journal that patients can temporarily share with specialists so these professionals can better understand patient needs and see a more complete picture than what they see during a session. The company is currently preparing to launch Mindleap 2.0, which includes an inner wellness media library offering audio content from guided meditations to educational content and interviews, with a focus on inner wellness and psychedelic integration. The app currently has 5k+ installs on google play and a 4.8/5 rating on both google play and the apple app store.

Source: Mydecine Corporate Presentation

Exhibit 6. Using intelligent technologies to expand Mindleap's capabilities. Mydecine plans to integrate the Mindleap Health app with several technologies including AI, wearables, and data analysis of mental health metrics to create a powerful digital health platform. This includes the potential for digital phenotyping by monitoring users' smartphone activity and using machine learning to make accurate predictions about mental health. Digital phenotyping has been generating increases attention over past decades to provide insight into optimal methodologies, research goals, and patient outcomes. Mindleap plans to begin collecting its initial dataset at launch and will subsequently launch passive data tracking features afterwards.



Source: Mydecine Corporate Presentation

MODELING ASSUMPTIONS

1. We model commercialization of MYCO-001 in 2025 in the US and 2026 in the EU5 and MYCO-004 in 2028 in the US and 2029 in the EU for nicotine addiction.
2. We estimate that smokers make up 14% the US adult population and that 40% of US smokers are seeking to quit. We assume that smokers make up 26% of the EU5 population and that 35% of EU5 smokers are seeking to quit.
3. We assume initial pricing of $10k in the US, which represents a significant premium to Chantix which costs ~$500 a month and requires 6 months for a successful course of treatment based on the potential comparative efficacy (Chantix is ~30%, while psilocybin has achieved rates up to 80% in early-stage studies), with an increase of 5% per year. We estimate pricing of $8k in the EU, with an increase of 5% per year.
4. We apply a risk adjustment of 70% based on stage of development.

Exhibit 7. MYCO-001 & MYCO-004 in Nicotine Addiction Market Model (US).

MYCO-001 & MYCO-004 in Nicotine Addiction (US)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
US population	336,633,000	339,999,330	343,399,323	346,833,317	350,301,650	353,804,666	357,342,713	360,916,140	364,525,301	368,170,554	371,852,260
US Adult population 18+ (74.3%)	250,118,319	252,619,502	255,145,697	257,697,154	260,274,126	262,876,867	265,505,636	268,160,692	270,842,299	273,550,722	276,286,229
Smoking rate (14%)	35,016,565	35,366,730	35,720,398	36,077,602	36,438,378	36,802,761	37,170,789	37,542,497	37,917,922	38,297,101	38,680,072
Patients seeking to quit (40%)	14,006,626	14,146,692	14,288,159	14,431,041	14,575,351	14,721,105	14,868,316	15,016,999	15,167,169	15,318,840	15,472,029
Market Penetration					0.05%	0.08%	0.15%	0.30%	0.50%	0.65%	0.75%
Total Patients Treated					7,288	11,777	22,302	45,051	75,836	99,572	116,040
Cost of Treatment					10,000	10,500	11,025	11,576	12,155	12,763	13,401
Increase in Cost					5%	5%	5%	5%	5%	5%	5%
Total revenue ('000)					$ 72,877	$ 123,657	$ 245,885	$ 521,522	$ 921,789	$ 1,270,825	$ 1,555,050
Risk adjustment					70%	70%	70%	70%	70%	70%	70%
Total Revenue ('000)					**$ 21,863**	**$ 37,097**	**$ 73,765**	**$ 156,456**	**$ 276,537**	**$ 381,247**	**$ 466,515**

Source: Maxim Estimates

Exhibit 8. MYCO-001 & MYCO-004 in Nicotine Addiction Market Model (EU5).

MYCO-001 & MYCO-004 in Nicotine Addiction (EU5)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
EU5 population	251,239,823	253,752,221	256,289,743	258,852,641	261,441,167	264,055,579	266,696,135	269,363,096	272,056,727	274,777,294	277,525,067
EU5 Adult population 18+ (79%)	198,479,460	200,464,255	202,468,897	204,493,586	206,538,522	208,603,907	210,689,946	212,796,846	214,924,814	217,074,063	219,244,803
Smoking rate (26%)	51,604,660	52,120,706	52,641,913	53,168,332	53,700,016	54,237,016	54,779,386	55,327,180	55,880,452	56,439,256	57,003,649
Desire to quit (35%)	18,061,631	18,242,247	18,424,670	18,608,916	18,795,006	18,982,956	19,172,785	19,364,513	19,558,158	19,753,740	19,951,277
Market Penetration						0.02%	0.07%	0.15%	0.30%	0.50%	0.60%
Total Patients Treated						3,797	13,421	29,047	58,674	98,769	119,708
Cost of Treatment						8,000	8,400	8,820	9,261	9,724	10,210
Increase in Cost						5%	5%	5%	5%	5%	5%
Total revenue ('000)						$ 30,373	$ 112,736	$ 256,193	$ 543,384	$ 960,432	$ 1,222,245
Risk adjustment						70%	70%	70%	70%	70%	70%
Total Revenue ('000)						**$ 9,112**	**$ 33,821**	**$ 76,858**	**$ 163,015**	**$ 288,130**	**$ 366,674**

Source: Maxim Estimates

MODELING ASSUMPTIONS - PTSD

1. We model commercialization of MYCO-001 in 2027 in the US and EU5 and MYCO-003 in 2029 in the US and EU for PTSD.
2. We estimate prevalence of PTSD of 3.5% in the US and 2% in the EU.
3. We assume initial pricing of $25k in the US and $20k in the EU, based on pricing of Spravato, increasing at an annual rate of 5%. Though Spravato is approved for depression and not PTSD, as both are mental health disorders and require a combination of drug and therapy, we assume pricing will be comparable.
4. We apply a risk adjustment of 80% based on stage of development.

Exhibit 9. MYCO-001 & MYCO-003 in PTSD Market Model (US).

MYCO-001 & MYCO-003 in PTSD (US)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
US population	336,633,000	339,999,330	343,399,323	346,833,317	350,301,650	353,804,666	357,342,713	360,916,140	364,525,301	368,170,554	371,852,260
US Adult population 18+ (74.3%)	250,118,319	252,619,502	255,145,697	257,697,154	260,274,126	262,876,867	265,505,636	268,160,692	270,842,299	273,550,722	276,286,229
Prevalence of PTSD (3.5%)	8,754,141	8,841,683	8,930,099	9,019,400	9,109,594	9,200,690	9,292,697	9,385,624	9,479,480	9,574,275	9,670,018
Market Penetration							0.05%	0.10%	0.25%	0.30%	0.35%
Total Patients Treated							4,646	9,386	23,699	28,723	33,845
Cost of Treatment							25,000	26,250	27,563	28,941	30,388
Increase in Cost							5%	5%	5%	5%	5%
Total revenue ('000)							$ 116,159	$ 246,373	$ 653,195	$ 831,257	$ 1,028,472
Risk adjustment							80%	80%	80%	80%	80%
Total Revenue ('000)							**$ 23,232**	**$ 49,275**	**$ 130,639**	**$ 166,251**	**$ 205,694**

Source: Maxim Estimates

Exhibit 10. MYCO-001 & MYCO-003 in PTSD Market Model (EU5).

MYCO-001 & MYCO-003 in PTSD (EU5)	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
EU5 population	251,239,823	253,752,221	256,289,743	258,852,641	261,441,167	264,055,579	266,696,135	269,363,096	272,056,727	274,777,294	277,525,067
EU5 Adult population 18+ (79%)	198,479,460	200,464,255	202,468,897	204,493,586	206,538,522	208,603,907	210,689,946	212,796,846	214,924,814	217,074,063	219,244,803
Prevalence of PTSD (2%)	3,969,589	4,009,285	4,049,378	4,089,872	4,130,770	4,172,078	4,213,799	4,255,937	4,298,496	4,341,481	4,384,896
Market Penetration							0.05%	0.10%	0.25%	0.30%	0.35%
Total Patients Treated							2,107	4,256	10,746	13,024	15,347
Cost of Treatment							20,000	21,000	22,050	23,153	24,310
Increase in Cost							5%	5%	5%	5%	5%
Total revenue ('000)							$ 42,138	$ 89,375	$ 236,955	$ 301,548	$ 373,091
Risk adjustment							80%	80%	80%	80%	80%
Total Revenue ('000)							**$ 8,428**	**$ 17,875**	**$ 47,391**	**$ 60,310**	**$ 74,618**

Source: Maxim Estimates

VALUATION

We factor commercialization of MYCO-001/MYCO-004 in nicotine addiction starting in 2025 in the US and 2026 in the EU5 with a 70% risk adjustment and MYCO-001/MYCO-003 in the US and EU5 in 2027 with an 80% risk adjustment. A 30% discount is applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $1.00 USD.

Exhibit 11. Free Cash Flow Model.

Average	1	USD

Price Target	1
Year	2021

DCF Valuation Using FCF (mln):

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
units ('000)	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
EBIT	(26,949)	(15,113)	(19,216)	(19,987)	(24,179)	(12,433)	3,153	43,433	122,725	400,487	699,072	977,154
Tax Rate	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
EBIT (1-t)	(26,949)	(15,113)	(19,216)	(19,987)	(24,179)	(12,433)	3,153	43,433	122,725	400,487	699,072	977,154
CapEx	(293)	(133)	-	-	-	-	-	-	-	-	-	-
Depreciation	-	-	-	-	-	-	-	-	-	-	-	-
Change in NWC												
FCF	(27,242)	(15,245)	(19,216)	(19,987)	(24,179)	(12,433)	3,153	43,433	122,725	400,487	699,072	977,154
PV of FCF	(35,414)	(15,245)	(14,781)	(11,826)	(11,005)	(4,353)	849	8,998	19,558	49,096	65,922	70,881

Discount Rate	30%	
Long Term Growth Rate	1%	
Terminal Cash Flow	3,403,192	
Terminal Value YE2030	246,861	
NPV	404,954	
NPV-Debt		
Shares out ('000)	308,236	2031E
NPV Per Share	1	

Source: Maxim estimates

Exhibit 12. Discounted-EPS Model.

Current Year	2021
Year of EPS	2031
Earnings Multiple	10
Discount Factor	30%
Selected Year EPS	3.17
NPV	2

Source: Maxim estimates

	Discount Rate and Earnings Multiple Varies, Year is Constant						
	2.30	5%	10%	15%	20%	25%	30%
Earnings Multiple	0	0	0	0	0	0	0
	5	9.73	6.11	3.92	2.56	1.70	1.15
	10	19.46	12.22	7.84	5.12	3.40	2.30
	15	29.19	18.33	11.75	7.68	5.11	3.45
	20	38.92	24.44	15.67	10.24	6.81	4.60
	25	48.65	30.56	19.59	12.80	8.51	5.75
	30	58.39	36.67	23.51	15.36	10.21	6.90
	35	68.12	42.78	27.43	17.92	11.91	8.05

Exhibit 13. Sum-of-the-Parts Model.

	LT Gr	Discount Rate	Yrs to Mkt	% Success	Peak Sales (MM's)	Term Value
MYCO-001 & MYCO-004 in Nicotine Addiction (US)	1%	30%	4	40%	$467	$1,609
NPV						$0.6
MYCO-001 & MYCO-004 in Nicotine Addiction (EU5)	1%	30%	5	40%	$367	$1,264
NPV						$0.4
MYCO-001 & MYCO-003 in PTSD (US)	1%	30%	5	40%	$206	$709
NPV						$0.2
MYCO-001 & MYCO-003 in PTSD (EU5)	1%	30%	6	40%	$75	$257
NPV						$0.1
Mindleap app revenues	1%	30%	0	50%	$34	$117
NPV						$0.2
Net Margin						85%
MM Shrs OS (2031E)						308
Total						$1

Source: Maxim estimates

Mydecine Innovations Group inc.: Income Statement (C$000)																
YE December 31	**2020A**	**1Q21A**	**2Q21E**	**3Q21E**	**4Q21E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**
Revenue:																
Sales	58	16				16										
MYCO-001 & MYCO-004 in Nicotine Addiction (US)	-	-	-	-	-	-	-	-	-	21,863	37,097	39,342	78,228	221,229	351,921	466,515
MYCO-001 & MYCO-004 in Nicotine Addiction (EU5)	-	-	-	-	-	-	-	-	-	-	9,112	24,158	40,991	81,508	230,504	366,674
MYCO-001 & MYCO-003 in PTSD (US)	-	-	-	-	-	-	-	-	-	-	-	23,232	49,275	130,639	166,251	205,694
MYCO-001 & MYCO-003 in PTSD (EU5)	-	-	-	-	-	-	-	-	-	-	-	8,428	17,875	47,391	60,310	74,618
Mindleap app revenues				200	240	440	2,340	5,850	8,775	11,408	13,689	16,427	19,712	23,655	28,386	34,063
Net revenue	58	16	-	200	240	456	2,340	5,850	8,775	33,271	59,898	111,585	206,081	504,422	837,371	1,147,564
Collaborative revenue:																
Revenues																
	-					-	-	-	-	-	-	-	-	-	-	-
Total Collaborative Revenue	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Total Revenue	**58**	**16**	**-**	**200**	**240**	**456**	**2,340**	**5,850**	**8,775**	**33,271**	**59,898**	**111,585**	**206,081**	**504,422**	**837,371**	**1,147,564**
Gross Margins:																
Cost of Goods Sold	37	10	-	120	144	274	1,008	1,755	1,755	6,654	11,980	16,738	30,912	50,442	83,737	114,756
%Gross Margin				40%	40%	40%	57%	70%	80%	80%	80%	85%	85%	90%	90%	90%
Gross Profit	21	6	-	80	96	182	1,332	4,095	7,020	26,616	47,918	94,848	175,169	453,980	753,634	1,032,807
Operating Expenses:						-										
Research and Development	1,291	230	276	1,105	1,216	2,827	8,218	11,505	16,107	20,939	23,033	25,336	25,843	26,360	26,887	27,425
%R&D						-										
Selling, General and Administrative	8,059	4,553	2,277	2,504	2,755	12,088	12,330	12,577	15,092	18,110	21,732	26,079	26,600	27,132	27,675	28,229
%SG&A						-										
Foreign exchange	108	222				222										
Share of loss in JV	93	3				3										
Share of loss in associate	(427)	157				157										
Total Expenses	11,649	5,176	2,553	3,729	4,114	15,572	21,556	25,837	32,954	45,703	56,745	68,153	83,355	103,934	138,299	170,410
Operating Income (Loss)	(11,590)	(5,160)	(2,553)	(3,529)	(3,874)	(15,116)	(19,216)	(19,987)	(24,179)	(12,433)	3,153	43,433	122,725	400,487	699,072	977,154
Derivative liabilities	545	(28)				(28)										
Rentals Income	116	33				33	-	-	-	-	-	-	-	-	-	-
Loss on debt settlement	33	(2)				(2)	-	-	-	-	-	-	-	-	-	-
Total Other Income	**(15,359)**	**3**	**-**	**-**	**-**	**3**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Pretax Income	(26,949)	(5,157)	(2,553)	(3,529)	(3,874)	(15,113)	(19,216)	(19,987)	(24,179)	(12,433)	3,153	43,433	122,725	400,487	699,072	977,154
Taxes on income	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tax Rate																
GAAP Net Income (Loss)	(26,949)	(5,157)	(2,553)	(3,529)	(3,874)	(15,113)	(19,216)	(19,987)	(24,179)	(12,433)	3,153	43,433	122,725	400,487	699,072	977,154
Foreign currency translation loss	(0)	(24)				(24)										
Total comprehensive loss	(26,949)	(5,180)	(2,553)	(3,529)	(3,874)	(15,136)	(19,216)	(19,987)	(24,179)	(12,433)	3,153	43,433	122,725	400,487	699,072	977,154
GAAP-EPS	(0.24)	(0.02)	(0.01)	(0.02)	(0.02)	(0.07)	(0.07)	(0.07)	(0.08)	(0.04)	0.01	0.14	0.40	1.31	2.28	3.17
GAAP-EPS (Dil)	(0.24)	(0.02)	(0.01)	(0.02)	(0.02)	(0.07)	(0.07)	(0.07)	(0.08)	(0.04)	0.01	0.14	0.40	1.31	2.28	3.17
Wgtd Avg Shrs (Bas) - '000s	113,714	206,368	206,575	206,781	206,988	206,678	257,581	273,628	289,744	300,930	302,135	303,346	304,561	305,781	307,006	308,236
Wgtd Avg Shrs (Dil) - '000s	113,714	206,368	206,575	206,781	206,988	206,678	257,581	273,628	289,744	300,930	302,135	303,346	304,561	305,781	307,006	308,236

Source: Company reports and Maxim

Biotechnology – Psychedelics

PHRRF - OTCQB June 27, 2021

Closing Price 6/25/21	**$0.72**
CSE: PHRM	C$0.89
Rating:	Buy
12-Month Target Price:	$1.50
52-Week Range:	$0.10 - $1.39
Market Cap (M):	50.3
Shares O/S (M):	69.7
Float:	76.6%
Avg. Daily Volume (000):	829.4
Debt (M):	$0.0
Dividend:	$0.00
Dividend Yield:	0.0%
Risk Profile:	Speculative
Fiscal Year End:	May

Total Expenses ('000)

	2021E	2022E	2023E
1Q	C$809A	C$3,680	C$5,704
2Q	C$1,166A	C$3,840	C$5,952
3Q	C$430A	C$4,160	C$6,448
4Q	C$435	C$4,320	C$6,696
FY	C$2,840	C$16,000	C$24,800

PharmaTher Holdings is listed on the Canadian Securities Exchange (CSE) under the symbol "PHRM" and OTCMKTS under the symbol "PHRRF. The stock does not trade on a US National Exchange. Financial data is reported in Canadian dollars (C$) and is represented as such in our models. Market data including the stock price and target price are translated into US dollars (USD).

Jason McCarthy, Ph.D.
(212) 895-3556
jmccarthy@maximgrp.com

Michael Okunewitch
(212) 895-3579
mokunewitch@maximgrp.com

PharmaTher Holdings Ltd.

Buy

A Multi-Pronged Approach to Targeting the Psychedelics Space – Initiating Coverage with a Buy Rating & $1.50 PT

Summary

- **PharmaTher is developing a pipeline of ketamine-based medicines to treat mental health and neurodegenerative disorders, as well as its patented microneedle (MN) patch technology to enable intradermal delivery of psychedelic compounds.**
- **Ketamine has the potential to be repurposed for Parkinson's disease. In preclinical and human case studies, ketamine played a dual therapeutic role by treating depression, which occurs in 50% of patients, as well as levodopa-induced dyskinesia (LID).**
- **The company is also combining ketamine with betaine (KETABET) as a treatment for major depressive disorder (MDD). The rationale for adding betaine is to eliminate the psychomimetic effects of ketamine, while enhancing its antidepressant effects as demonstrated in preclinical models.**
- **On the technology side, PharmaTher's MN patch technology will be used to develop a pipeline of psychedelic-based medicines that have an intradermal delivery method. KETABET will be the first candidate to be developed using this platform.**
- **Conclusion. PharmaTher is targeting the psychedelic space from multiple angles, resulting in a de-risked pipeline. Catalysts lay ahead as both ketamine and KETABET are entering P2 studies in C2H21 for PD and MDD, respectively. Further studies will be conducted with the MN technology platform as well, which could enable the company to expand into additional psychedelics.**

Details

Ketamine in Parkinson's disease (PD). While the gold-standard treatment for PD is levodopa, within a few years of treatment, patients may develop levodopa-induced dyskinesia (LID), or "off-period" dyskinesia, involving a variety of involuntary movements that further decreases quality of life. While ketamine is known for its antidepressant effects, in preclinical and human case studies for PD, in addition to reducing depressive symptoms (of note, ~50% PD patients develop depression), ketamine also demonstrated efficacy against LID. These results led to PharmaTher's rationale of repurposing ketamine for PD, which will be further evaluated in a P2 study (N=35) conducted with the University of Arizona.

KETABET in major depression. Despite ketamine's rapid-acting antidepressant effects, its clinical use has been limited by its psychotomimetic effects. PharmaTher's proprietary KETABET microneedle patch blocks the undesirable effects of ketamine by combining it with betaine, both of which are FDA-approved drugs. Moreover, the combination has been shown to improve efficacy as well, as the antidepressant-like response of KETABET was stronger vs. when each drug was administered alone in mice models. KETABET is designed for intradermal delivery of the combination treatment via the company's microneedle patch technology platform. This differentiation enables patients to administer their treatment at home vs. at the clinic, which could increase patient compliance.

Valuation. We model commercialization of ketamine for PD in FY26 and FY27 for the US and EU5, respectively, and KETABET for MDD in FY27 and FY28 for the US and in EU5, respectively. A platform value is assigned to the microneedle patch technology platform for development of psychedelic compounds. An 80% risk adjustment is factored in based on stage of development, clinical trial risk, commercial risk, and other factors. A 30% discount is then applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $1.50 USD.

CORPORATE PROFILE

PharmaTher Holdings Ltd
82 Richmond Street East
Toronto, Ontario Canada
M5C 1P1
www.pharmather.com

Investment Risk: PharmaTher's products are not approved and the company currently does not generate revenue.

Regulatory Risk: PharmaTher's products may not be successful in clinical trials and may not meet the requirements for regulatory approval(s).

Commercial Risk: PharmaTher's products are not approved and commercialized, and if/when they become commercially available, they may not achieve significant market share. In addition the company lacks commercial infrastructure to support commercialization.

Financial Risk: PharmaTher is not profitable and may need to raise additional capital to support operations.

Dilution Risk: Capital raises to fund operations may dilute investors.

Ownership:
Institutional: 1.2%
Insiders: 23.4%

Balance Sheet Summary (as of 2/28/21):
Cash: C$7M
Debt: C$0

Analysts Covering the Stock (other than Maxim): 0

Company Background. PharmaTher (CSE: PHRM, OTC: PHRRF) is a specialty psychedelic pharmaceutical company focused on the research, development, and commercialization of ketamine and novel microneedle patches for delivering psychedelics to treat neuropsychiatric, neurodegenerative, and pain disorders. PharmaTher also seeks to discover novel uses of psychedelic-derived drugs through its drug repurposing artificial intelligence platform, PanaceAI™. PharmaTher's patent portfolio includes granted and provisional patents on method of uses and formulations of ketamine and microneedle drug delivery systems for psychedelic pharmaceuticals. Currently, PharmaTher's product pipeline targets the use of ketamine to treat Parkinson's disease, depression, Amyotrophic lateral sclerosis (often referred to as Lou Gehrig's disease) and chronic pain. PharmaTher aims to leverage the attractive U.S. Food and Drug Administration ("FDA") regulatory incentives for expedited approvals, such as the FDA 505(b)(2) regulatory pathway orphan drug, fast track and breakthrough designations. In addition, the Company actively seeks licensing, acquisition or partnership opportunities from industry and academia.

Senior Management:

Fabio Chianelli, Chief Executive Officer – Mr. Chianelli has 20 years of experience with specialty life sciences companies. He was the founder and President of Revive Therapeutics Ltd. (CSE: RVV). From January 2000 to January 2012, Mr. Chianelli held senior roles in investor relations, business development, and marketing and sales with Generex Biotechnology Corporation. He also served as a business development consultant to Titan Medical Inc., an issuer listed on the Toronto Stock Exchange ("TSX"), from July 2008 to February 2013. Mr. Chianelli received his Bachelor of Commerce from Ryerson University.

Carmelo Marrelli, Chief Financial Officer – Mr. Marrelli is the principal of The Marrelli Group of Companies. He is a Chartered Professional Accountant (CPA, CA, CGA) and a member of the Institute of Chartered Secretaries and Administrators, a professional body that certifies corporate secretaries. He has a Bachelor of Commerce degree from the University of Toronto. Mr. Marrelli acts as the chief financial officer to a number of issuers on the TSX, TSX Venture Exchange and CSE, as well as non-listed companies, and as a director of select issuers.

Dr. Joga Gobburu, PhD, MBA, Clinical and Regulatory Advisor – Dr. Gobburu is a world-renowned scientific leader in the area of quantitative disease models and their applications to decisions. He is best known for transforming the field of pharmacometrics into a decision-supporting science. His experience as a senior biomedical research scientist and Director of Pharmacometrics at the Food and Drug Administration (FDA) gives him unique insight into the technical, regulatory, and decision-making aspects in all phases of drug development. He obtained his BPharm and MSc in chemistry from the Birla Institute of Technology and Science, his PhD in pharmaceutical sciences from North Dakota State University, and his MBA from Johns Hopkins University.

INVESTMENT SUMMARY

Bull Case. The psychedelic-based therapeutics space continues to see activity from a number of players in the space, as multiple pipeline programs proceed to advance through clinical trials. While the majority of companies are focusing on using psychedelic therapies for mental health disorders, PharmaTher's pipeline also targets neurodegenerative diseases such as Parkinson's disease (PD) and amyotrophic lateral sclerosis (ALS). In PD, levodopa remains the gold-standard treatment, but following several years of use, patients face diminishing efficacy as well as severe side effects, including dyskinesia (abnormal, involuntary movement), which is one of the most well-known. Following the activity surrounding Spravato in depression and suicidal ideation, ketamine was evaluated as a treatment for depression in PD patients (which occurs in ~50% of patients). During this case study, it was serendipitously discovered that patients receiving ketamine, experienced dramatically reduced levodopa-induced dyskinesia (LID). Thus, ketamine could have a dual therapeutic benefit in patients with PD by treating commonly comorbid depression as well as dyskinesia. This is PharmaTher's lead indication for which an IND was approved by the FDA for a Phase 2 study in PD, expected to initiate in C3Q21. PharmaTher is also targeting major depressive disorder (MDD) with its proprietary combination therapy of ketamine and betaine, KETABET. Both ketamine and betaine are FDA-approved drugs (for treatment of depression and homocystinuria, respectively), which may provide a de-risked safety profile for KETABET. The addition of betaine serves to attenuate the psychomimetic effects of ketamine, including hallucinations, memory defects, addiction, cognitive function, etc., while enhancing its antidepressant effect, essentially providing a non-dissociative ketamine. Further, KETABET will be provided as a microneedle patch that enables transdermal delivery (vs. intranasal with Spravato or intramuscular for off-label ketamine) of the combination treatment, providing patients with a much more convenient way of administering treatment in the comfort of their homes rather than at the clinic by a healthcare provider (via the REMS program). This also makes the drug potentially more scalable as a therapist's time and treatment center are not required for the duration of treatment. A Phase 2 study of KETABET in MDD is expected to initiate in C2H21. From an IP perspective, which is particularly critical for psychedelic companies, PharmaTher has the potential to expand its patent portfolio via its microneedle drug delivery system, which can be applied to other psychedelic compounds as well (e.g., psilocybin, MDMA, DMT, etc.), as well as around method of use for ketamine in PD. With a differentiated and broadly applicable technology platform for convenient treatment delivery and two Phase 2 studies with approved drugs to start by YE21, Bulls see PharmaTher as a lower-risk, but high-reward player in the psychedelic medicine space.

Bear case. While ketamine has been extensively studied as a treatment option for depressive disorders, there is a lack of clinical data supporting its therapeutic use in Parkinson's disease (PD), particularly for levodopa-induced dyskinesia (LID). Despite data from preclinical and some human case studies pointing to signals of efficacy when treating LID-PD with ketamine, Bears prefer a wait and see approach until the readout for the first 'real' set of data in C2H21 from PharmaTher's P2 study. As for KETABET in major depression, the desired effects and safety of this combination approach have not been demonstrated in humans, nor has it been definitively demonstrated that the dissociative effects of ketamine are unnecessary for the anti-depressant effects, so there's still risk. The microneedle patch technology does represent some potential for broader applicability, but it has yet to be demonstrated with other compounds besides esketamine. Additionally, at a $50M market cap, PharmaTher is one of the smaller and less well-financed players in the space, which may make it more difficult to fund clinical studies and compete in the depression market.

Our Take. PharmaTher is differentiated in the psychedelic medicine space, developing compounds for both mental health and neurodegenerative disorders, starting with Parkinson's and with plans to expand into ALS and pain. Since its approval in 1970, levodopa has remained the gold-standard treatment for patients with PD. However, approximately 30%-40% of patients develop dyskinesia within the first five years of treatment and nearly 60% by 10 years. Further, as the disease progresses, dopamine levels in the brain gradually decline making it increasingly difficult for levodopa to prevent symptoms from reemerging ("off" time occurs). Ketamine has seen wide usage in patients with depression since the approval of Spravato for TRD and MDD in 2019 and 2020, respectively. Depression represents one of the most common comorbidities impacting ~50% of PD patients. Combined with the improvements to dyskinetic side effects associated with levodopa-use, ketamine could represent an ideal supportive care therapy for PD. PharmaTher is entering P2 later this year, and with the potential to use a 505(b)2 pathway, development could be relatively short. On the mental health side, PharmaTher is also developing its combination therapy for major depression, KETABET, by combining ketamine and betaine, which are two already FDA-approved drugs. The rationale for this combination approach is to avoid the psychomimetic effects of ketamine with the addition of betaine, thus improving the drug's safety profile and avoiding the need for supervision by a therapist, which is a key challenge for scalability of psychedelic medicines. Additionally, though betaine blocks the dissociative effects, it may actually enhance the antidepressant effects, thereby potentially increasing the efficacy of ketamine as shown in prior preclinical studies. KETABET will be developed using PharmaTher's microneedle (MN) patch technology, which allows transdermal treatment delivery. The company plans to expand its pipeline of psychedelic compounds via its MN technology, including the development of psilocybin, MDMA, DMT, and others to improve drug delivery and duration of treatments, which is highly valuable in the psychedelic space as treatment durations are a significant hurdle to adoption and scalability (duration for LSD and Psilocybin is too long at 6-8+ hours and duration for DMT is too short; better delivery could make the drug fit the right PK profile). Though KETABET represents the first product candidate to advance within this program, the technology is de-risked by a prior study demonstrating the successful development of an esketamine-containing patch. Moreover, the platform is proprietary, and could bring a number of potential partnerships with companies in the space facing issues around IP or scalability for their treatments, two of the largest challenges in the space. As such, PharmaTher could take advantage of tangential growth in the psychedelic medicine space. Overall, at the current ~$50M valuation, we see upside for PharmaTher as the company moves two lower-risk programs into P2 this year and potentially announces additional pipeline compounds in psychedelics with their proprietary delivery method.

Finances. PharmaTher reported F3Q21 (Feb) on 4/29/21 with net income of ~C$4.6M and ended the period with C$7M in cash and marketable securities. PharmaTher went public on the Canadian Securities Exchange under the ticker PHRM on 10/9/20 through a reverse takeover transaction with Newscope Capital Corporation and began trading on the OTCQB Venture Market under the ticker PHRRF on 3/01/21. The

company does not generate revenue and will likely need multiple equity financings over time to support operations, which we factor into our model. PharmaTher currently burns less than C$0.5M per quarter, however as program begin to advance in C2H21, we anticipate that expenses will increase, and the company may need to secure additional capital to fund development.

Exhibit 1. PharmaTher's Upcoming Catalysts (calendar year).

Upcoming Catalysts

Product	Indication	Event	Timeline	Impact
Ketamine	Parkinson's Disease	Initiate Phase 2 study	3Q21	+
Ketamine	Parkinson's Disease	Phase 2 topline data readout	4Q21	+++
KETABET	Depression	Initiate Phase 2 study	4Q21	+
KETABET	Depression	Phase 2 interim data readout	4Q21	++
KETABET	Depression	Phase 2 topline data readout	1Q22	+++

Stock Significance Scale: + of moderate importance; ++ higher level; +++ very important

Source: Company reports and Maxim Forecasts

Exhibit 2. PharmaTher's Pipeline.

Product	Indication	Development	Preclinical	Phase I	Phase II	Phase III	Marketed
Ketamine	Parkinson's Disease						
KETABET	Depression						
Ketamine	ALS - Lou Gehrig's Disease						
Microneedle Patch	Multiple Indications						

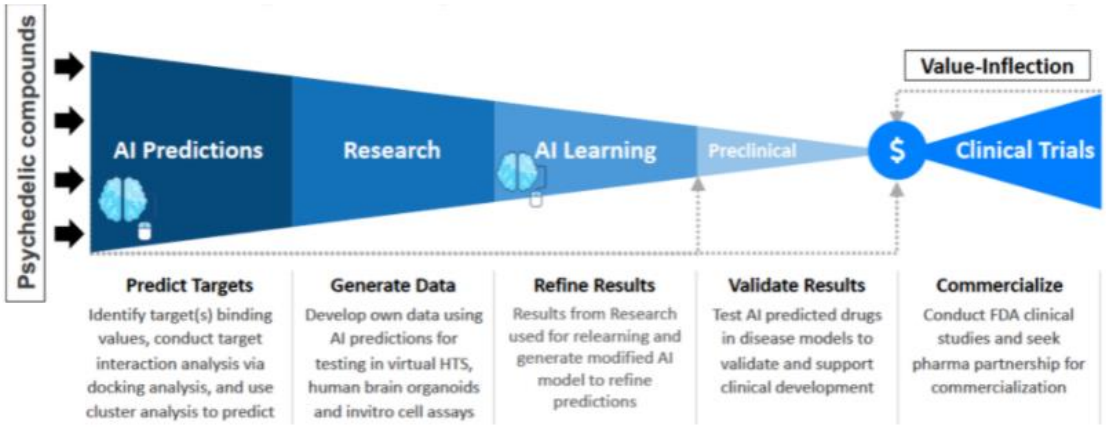
Source: Company Reports and Maxim

Ketamine-Based Therapies – Reformulation and Combination Therapies

Exhibit 3. PharmaTher's development strategy. PharmaTher is utilizing the following strategies to develop next generation psychedelic compounds for treatment of various areas of disease: 1) the discovery and identification of new medical indications for psychedelics using the company's drug repurposing artificial intelligence (AI) platform, PanaceAI™; 2) the development of formulations of novel combinations/derivatives of psychedelic compounds; and 3) the utilization of the company's microneedle delivery technology system to enable intradermal delivery of psychedelic treatments. These strategies enable the company to diversify and expand its existing patent portfolio.

Source: PharmaTher Presentation

Exhibit 4. PanaceAI™: drug repurposing AI platform. PharmaTher has entered into a sponsored research partnership with University Health Network for the development of panaceAI™, which enables the discovery of drug-repurposed candidates.

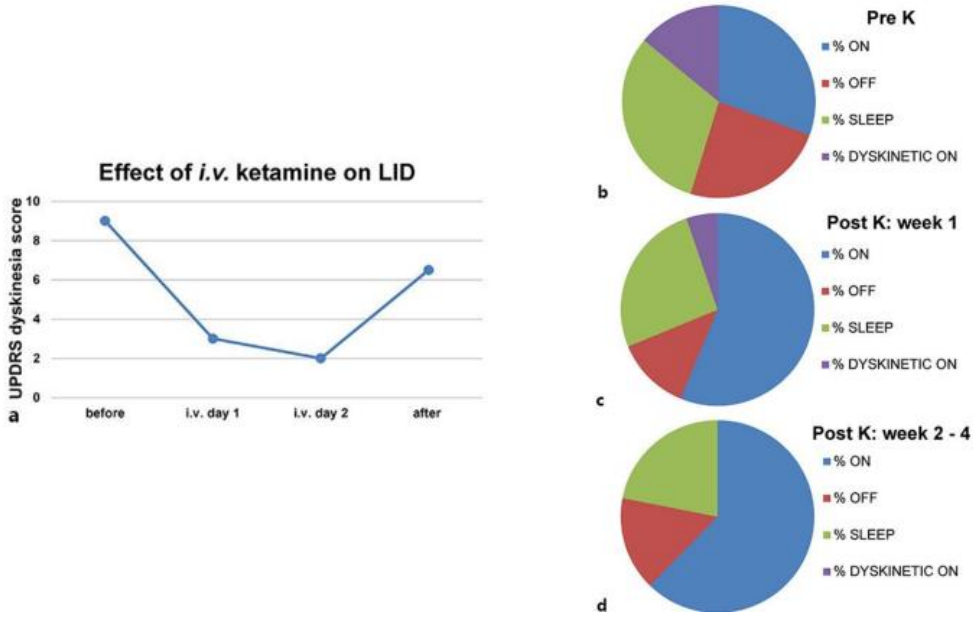


Source: PharmaTher Website

Repurposing ketamine for Parkinson's disease. While levodopa represents the gold-standard treatment for Parkinson's disease (PD), it has a major side effect of inducing dyskinesia (abnormal, involuntary movement). Levodopa-induced dyskinesia (LID) occurs in approximately ~30%-40% of patients within the first five years of treatment and nearly 60%+ by 10 years.[1] In addition to interfering with motor function, LID may cause or exacerbate pain, which can significantly worsen patient quality of life. Ketamine is an N-methyl-D-aspartate receptor-modulating drug, that has recently demonstrated anti-dyskinetic effects in preclinical and case studies in PD patients. Ketamine was approved by the FDA in 1970 as an anesthetic, and more recently, a nasal ketamine-based drug (Spravato) was approved for depressive disorders. Currently, PharmaTher is evaluating low-dose sub-anesthetic ketamine infusion as a once-monthly treatment for LID-PD. An additional therapeutic benefit includes ketamine's ability to address depressive symptoms, which are experienced in an estimated 50% of PD patients, and which levodopa does not address. As such, aside from treating motor-related symptoms, the antidepressant effects of ketamine are an additional positive when treating patients with PD. In collaboration with the University of Arizona, the company intends to conduct a Phase 2a, randomized, double-blind, active placebo-controlled study in C3Q21, to evaluate low-dose ketamine infusion as a potential treatment for LID-PD (N=36). The change in the Unified Dyskinesia Rating Scale (UDysRS) total score from baseline to week 8 will serve as the study's primary endpoint, whereas secondary endpoints will include the change in Total Objective Scores of the UDysRS, total daily OFF times as assessed by subject-completed 24-hour diaries, and change in the Unified Parkinson's Disease Rating Scale total and sum scores of motor and dyskinesia from baseline to week 8.

Exhibit 5. Case report shows long-term effect of ketamine in reducing LID. Administration of low-dose ketamine infusion to a patient with LID-PD led to a marked improvement in the patient's dyskinesia during and after treatment. This outcome occurred despite no adjustments being made to the dosages of L-DOPA or other medications. (A) The graph shows UPDRS dyskinesia score before, during, and after treatment. (B-D) The charts show the % of time the patient spent on, off, dyskinetic on time, or asleep during 24 hours, based on the patient diary. As shown in the last chart, which depicts the average of weeks 2-4 post-treatment, the patient's LID had completely resolved during this time.

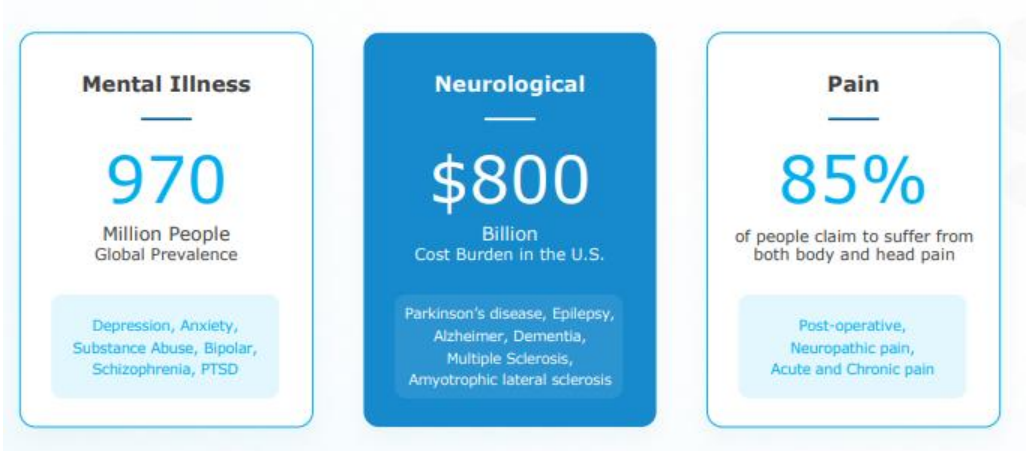
[1] Turcano P, et al. Levodopa-induced dyskinesia in Parkinson disease: A population-based cohort study. Neurology. 2018 Dec 11;91(24):e2238-e2243. doi: 10.1212/WNL.0000000000006643. Epub 2018 Nov 7.



Source: Sherman SJ, et al (2016).[2]

In addition to ketamine for PD treatment, PharmaTher is also developing a combination formulation of ketamine (KETABET) to address other therapeutic areas as well, including major depressive disorder (MDD). Further, the company plans to develop additional next-generation psychedelic treatments, including KETABET, in a microdose delivery patch formulation by utilizing its microneedle delivery technology platforms: 1) a hydrogel-forming microneedle delivery system for ketamine, and 2) a gelatin methacryloyl microneedle (GELMA-MN) delivery system for various psychedelic compounds (e.g., psilocybin, DMT, LSD, and MDMA). These technology platforms are discussed in the next section.

Exhibit 6. PharmaTher is targeting multiple therapeutic areas including mental illness, neurological, and pain disorders.



Source: PharmaTher Presentation

KETABET for major depressive disorder. While ketamine has emerged as a novel treatment against depression, its clinical use can be limited by several serious side effects, including hallucination, confusion, memory loss, and abuse liability. These psychomimetic effects compromise the compliance and potential therapeutic value of ketamine. As such, PharmaTher is developing a novel combination formulation with ketamine and betaine (KETABET), which has shown in preclinical models to enhance the antidepressant effect of ketamine, while attenuating the side

[2] Sherman SJ, et al. "Case Reports Showing a Long-Term Effect of Subanesthetic Ketamine Infusion in Reducing L-DOPA-Induced Dyskinesia." Case Rep Neurol 2016;8:53–58

effects. Betaine anhydrous (Cystadane) was approved by the FDA in 1996 for the treatment of homocystinuria (a rare metabolic condition) but has been more recently studied for its antidepressant-like effect. KETABET could offer a potentially safer and effective treatment option for depressive disorders, such as major depressive disorder (MDD). Further, KETABET will offer a differentiated delivery method, as it is being developed with the company's microneedle patch delivery system. As an intradermal patch, KETABET has the potential to allow for more convenient, at-home use vs. requiring patients to enter a clinic to receive treatment under the Risk Evaluation and Mitigation Strategies (REMS) program (i.e., with Spravato). In collaboration with the National Health Research Institute, PharmaTher plans to file an IND soon for a Phase 2 study of KETABET in MDD. Thereafter, the company plans to target other depressive disorders as well, including treatment-resistant depression.

Exhibit 7. KETABET microneedle patch. The microneedle patch formulation of KETABET offers patients a more convenient delivery method, such that treatment can be administered at home independently, instead of by a healthcare provider at a certified medical office. Moreover, KETABET's patented combination formulation of FDA-approved ketamine and betaine, combined with its delivery format, results in anti-tampering and anti-abuse features. In terms of efficacy, preclinical studies have demonstrated more robust antidepressant-like responses occurred with the combination formulation vs. either compound alone.[3]

Source: PharmaTher Presentation

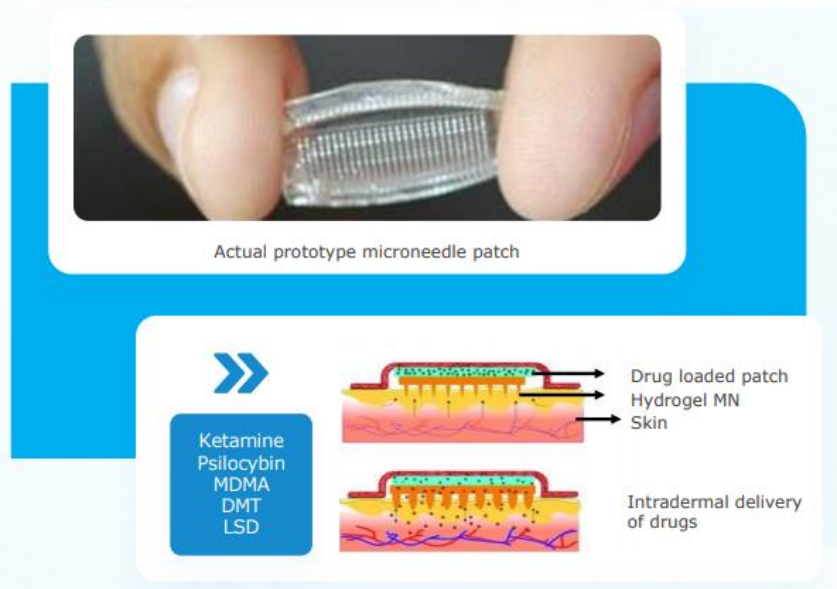
Microneedle Delivery System

Hydrogel-forming microneedle delivery system for ketamine. On February 01, 2021, PharmaTher and researchers at The Queen's University of Belfast (QUB) announced a collaboration to develop ketamine-based therapies by leveraging a patented hydrogel-forming microneedle patch delivery platform technology that was developed by Professor Ryan Donnelly. The technology produces a microneedle patch that consists of hydrogel-forming microneedle (MN) arrays and an accompanying reservoir. Drug absence in the arrays prevent limitations by the quantity of drug that can be loaded into the needles or onto the needle surfaces. Instead, the drug(s) is loaded into the accompanying reservoir, which greatly increases the amount of drug that can permeate through the MN array and into the skin. Initial work on the technology from Professor Donnelly's group was published in 2020 in the Journal of Controlled Release; "*Hydrogen-forming microneedle arrays as a therapeutic option for transdermal esketamine delivery*," which validated the delivery of esketamine in a novel MN patch. The company will focus initially on developing its combination therapy, KETABET, in an MN patch formulation to enable transdermal treatment delivery.

Exhibit 8. Microneedle patch (intradermal delivery). This approach has the potential for several benefits, which include the following:

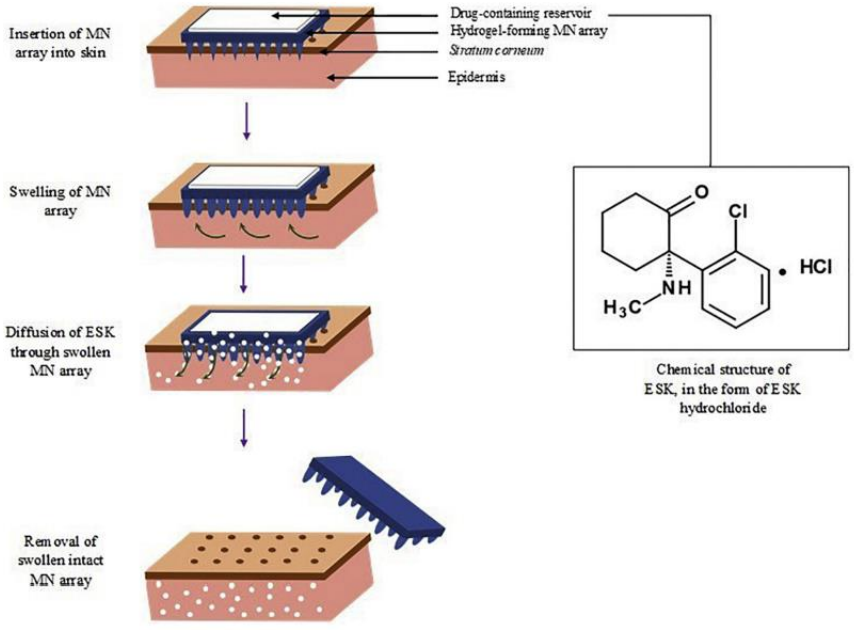
- Patient freedom – pain-free, home use, convenient, and improved compliance
- Flexible dosing – drug combinations, continuous delivery, and desired release rates
- Improve efficacy – maintains constant plasma levels for 24+ hours
- Next generation delivery – improvement over intravenous, oral, injection, sub-Q, pumps, topical, intranasal, etc.

[3] Lin JC, et al. "Betaine enhances antidepressant-like, but blocks psychotomimetic effects of ketamine in mice." Psychopharmacology DOI 10.1007/s00213-016-4359-x



Source: PharmaTher Presentation

Exhibit 9. Esketamine-containing microneedle patch MOA. The schematic representation below shows a patch consisting of hydrogel-forming microneedle (MN) arrays and an esketamine-containing reservoir. The hydrogen-forming MN arrays take up skin interstitial fluid, inducing a molecular diffusion of esketamine from the reservoir through the swollen micro-projections. While traditional soluble MN arrays are only able to deliver relatively low doses of high potency compounds, the use of hydrogel-forming MN arrays bypasses this limitation by not containing the drug in the arrays (i.e., needles/needle surfaces), but instead loading it into the accompanying reservoir. This greatly increases the amount of drug that can permeate through the MN array and into the skin.



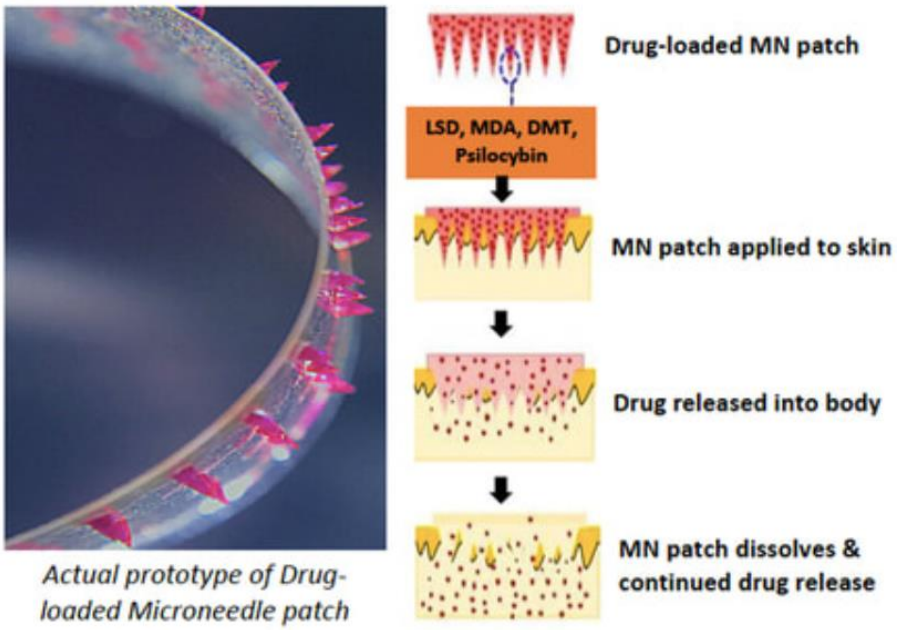
Source: Courtenay AJ, et al (2020).[4]

GelMA microneedle delivery system for psychedelics. PharmaTher is also developing its gelatin methacryloyl (GelMA) microneedle delivery technology in collaboration with BioRAE (private) to enable a transdermal delivery of psychedelic compounds beyond ketamine. These include

[4] Courtenay AJ, et al. "Hydrogel-forming microneedle arrays as a therapeutic option for transdermal esketamine delivery." Journal of Controlled Release 322 (2020) 177-186.

psilocybin, ibogaine, LSD, MDMA, DMT, and cannabinoids. The GelMA-MN technology was developed by the members of the Khademhosseini Lab at the University of California, Los Angeles, where studies were conducted demonstrating the technology was able to deliver both water soluble and insoluble drugs with desirable release profiles. Further, the GelMA-MNs were able to efficiently penetrate the stratum corneum layer (out layer of the skin), to deliver a controlled-release delivery of the loaded drug.

Exhibit 10. GELMA-MN delivery technology allows transdermal drug delivery. GelMA is derived from biocompatible and biodegradable, natural polymer gelatin with cross-linkable methacrylate group. The microneedle safely penetrates skin without pain and permits psychedelic drug microdosing for improved patient compliance and outcomes.



Source: PharmaTher Website

MODELING ASSUMPTIONS

1. We model commercialization of ketamine in FY26 (May YE) in the US and in FY27 in the EU5 for Parkinson's disease (PD).
2. We assume that 0.3% of the population has PD, and that 30% of those patients develop levodopa-induced dyskinesia.
3. We assume initial pricing of $25K in the US and $20K in the EU5, increasing at 5% per year.
4. We model commercialization of KETABET combination (ketamine + betaine) therapy in FY27 in the US and in FY28 in the EU5.
5. We apply an 80% risk adjustment for both programs based on the stage of development, clinical trial risk, commercial risk, and other factors.

Exhibit 11. Ketamine Market Model (US).

Ketamine, Parkinson's Disease (US)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
US population	328,200,000	331,482,000	334,796,820	338,144,788	341,526,236	344,941,498	348,390,913	351,874,823	355,393,571	358,947,506	362,536,982	366,162,351	369,823,975
Parkinson's Disease (PD) (0.3%)	987,882	997,761	1,007,738	1,017,816	1,027,994	1,038,274	1,048,657	1,059,143	1,069,735	1,080,432	1,091,236	1,102,149	1,113,170
Patients developing Levodopa-induced dyskenesia (30%)	296,365	299,328	302,322	305,345	308,398	311,482	314,597	317,743	320,920	324,130	327,371	330,645	333,951
Market Penetration								0.50%	0.90%	1.75%	3.00%	5.50%	7.00%
Total Patients Treated								1,589	2,888	5,672	9,821	18,185	23,377
Cost of Treatment								$ 25,000	$ 26,250	$ 27,563	$ 28,941	$ 30,388	$ 31,907
Increase in Cost								5%	5%	5%	5%	5%	5%
Total revenue ('000)								$ 39,718	$ 75,817	$ 156,342	$ 284,230	$ 552,613	$ 745,877
Risk adjustment								80%	80%	80%	80%	80%	80%
Total Revenue ('000)								**$ 7,944**	**$ 15,163**	**$ 31,268**	**$ 56,846**	**$ 110,523**	**$ 149,175**

Source: Maxim Estimates

Exhibit 12. Ketamine Market Model (EU5).

Ketamine, Parkinson's Disease (EU)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
EU5 population	322,924,057	329,382,538	335,970,189	342,689,593	349,543,385	356,534,252	363,664,937	370,938,236	378,357,001	385,924,141	393,642,624	401,515,476	409,545,786
Parkinson's Disease (PD) (0.3%)	972,001	991,441	1,011,270	1,031,496	1,052,126	1,073,168	1,094,631	1,116,524	1,138,855	1,161,632	1,184,864	1,208,562	1,232,733
Patients developing Levodopa-induced dyskenesia (30%)	291,600	297,432	303,381	309,449	315,638	321,950	328,389	334,957	341,656	348,489	355,459	362,568	369,820
Market Penetration									0.50%	0.90%	1.75%	3.00%	5.50%
Total Patients Treated									1,708	3,136	6,221	10,877	20,340
Cost of Treatment									$ 20,000	$ 21,000	$ 22,050	$ 23,153	$ 24,310
Increase in Cost									5%	5%	5%	5%	5%
Total revenue ('000)									$ 34,166	$ 65,865	$ 137,163	$ 251,831	$ 494,470
Risk adjustment									80%	80%	80%	80%	80%
Total Revenue ('000)									**$ 6,833**	**$ 13,173**	**$ 27,433**	**$ 50,366**	**$ 98,894**

Source: Maxim Estimates

Exhibit 13. KETABET Market Model (US).

KETABET, Major Depressive Disorder (US)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
US Population	328,200,000	331,482,000	334,796,820	338,144,788	341,526,236	344,941,498	348,390,913	351,874,823	355,393,571	358,947,506	362,536,982	366,162,351	369,823,975
US Adult population 18+ (74.3%)	243,852,600	246,291,126	248,754,037	251,241,578	253,753,993	256,291,533	258,854,449	261,442,993	264,057,423	266,697,997	269,364,977	272,058,627	274,779,213
Major Depressive Disorder (MDD) (Adult 6.7%)	16,338,124	16,501,505	16,666,520	16,833,186	17,001,518	17,171,533	17,343,248	17,516,681	17,691,847	17,868,766	18,047,453	18,227,928	18,410,207
MDD diagnosed, seeking treatment (60%)	9,802,875	9,900,903	9,999,912	10,099,911	10,200,911	10,302,920	10,405,949	10,510,008	10,615,108	10,721,259	10,828,472	10,936,757	11,046,124
Market Penetration									0.07%	0.15%	0.25%	0.30%	0.50%
Total Patients Treated									7,431	16,082	27,071	32,810	55,231
Cost of Treatment									$ 25,000	$ 26,250	$ 27,563	$ 28,941	$ 30,388
Increase in Cost									5%	5%	5%	5%	5%
Total revenue ('000)									$ 185,764	$ 422,150	$ 746,149	$ 949,550	$ 1,678,329
Risk adjustment									80%	80%	80%	80%	80%
Total Revenue ('000)									**$ 37,153**	**$ 84,430**	**$ 149,230**	**$ 189,910**	**$ 335,666**

Source: Maxim Estimates

Exhibit 14. KETABET Market Model (EU5).

KETABET, Major Depressive Disorder (EU)	2019E	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
EU5 Population	322,924,057	329,382,538	335,970,189	342,689,593	349,543,385	356,534,252	363,664,937	370,938,236	378,357,001	385,924,141	393,642,624	401,515,476	409,545,786
Adult population 18+ (74.3%)	239,932,574	244,731,226	249,625,850	254,618,367	259,710,735	264,904,949	270,203,048	275,607,109	281,119,252	286,741,637	292,476,469	298,325,999	304,292,519
Major Depressive Disorder (MDD) (Adult 6.7%)	16,075,482	16,396,992	16,724,932	17,059,431	17,400,619	17,748,632	18,103,604	18,465,676	18,834,990	19,211,690	19,595,923	19,987,842	20,387,599
MDD diagnosed, seeking treatment (60%)	9,645,289	9,838,195	10,034,959	10,235,658	10,440,372	10,649,179	10,862,163	11,079,406	11,300,994	11,527,014	11,757,554	11,992,705	12,232,559
Market Penetration										0.07%	0.15%	0.25%	0.30%
Total Patients Treated										$ 8,069	$ 17,636	$ 29,982	$ 36,698
Cost of Treatment										$ 20,000	$ 21,000	$ 22,050	$ 23,153
Increase in Cost										5%	5%	5%	5%
Total revenue ('000)										$ 161,378	$ 370,363	$ 661,098	$ 849,643
Risk adjustment										80%	80%	80%	80%
Total Revenue ('000)										**$ 32,276**	**$ 74,073**	**$ 132,220**	**$ 169,929**

Source: Maxim Estimates

VALUATION

We model commercialization of ketamine in FY26 in the US and in FY27 in the EU5 for Parkinson's disease (PD), and commercialization of KETABET in FY27 in the US and in FY28 in the EU5 for major depressive disorder (MDD). A platform value is assigned to the microneedle patch technology for development of psychedelic compounds. An 80% risk adjustment is factored in based on stage of development, clinical trial risk, commercial risk, and other factors. A 30% discount is then applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $1.50 USD.

Exhibit 15. Free Cash Flow Model.

Average	1.5

DCF Valuation Using FCF (mln):

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
units ('000)	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**
EBIT	3,498	(16,000)	(24,800)	(29,200)	(33,900)	(31,684)	(3,627)	57,449	153,495	280,660	478,353
Tax Rate	0%	0%	0%	0%	0%	0%	0%	0%	2%	5%	8%
EBIT (1-t)	3,498	(16,000)	(24,800)	(29,200)	(33,900)	(31,684)	(3,627)	57,449	150,425	266,627	440,085
CapEx	(4)	(40)	(40)	(41)	(41)	(42)	(42)	(42)	(43)	(43)	(44)
Depreciation	0	-	-	-	-	-	-	-	-	-	-
Change in NWC											
FCF	3,494	(16,040)	(24,840)	(29,241)	(33,941)	(31,725)	(3,669)	57,406	150,382	266,583	440,041
PV of FCF	4,542	(16,040)	(19,108)	(17,302)	(15,449)	(11,108)	(988)	11,893	23,966	32,680	41,496
Discount Rate	30%										
Long Term Growth Rate	1%										
Terminal Cash Flow	1,532,557										
Terminal Value YE2030	144,520										
NPV	174,559										
NPV-Debt											
Shares out ('000)	175,599	2031E									
NPV Per Share	1										

Source: Maxim estimates

Exhibit 16. Discounted-EPS Model.

Current Year	2022
Year of EPS	2031
Earnings Multiple	10
Discount Factor	30%
Selected Year EPS	2.51
NPV	2

Source: Maxim estimates

	Discount Rate and Earnings Multiple Varies, Year is Constant						
	2.36	**5%**	**10%**	**15%**	**20%**	**25%**	**30%**
Earnings Multiple	**0**	0	0	0	0	0	0
	5	8.08	5.31	3.56	2.43	1.68	1.18
	10	16.16	10.63	7.12	4.86	3.36	2.36
	15	24.23	15.94	10.69	7.29	5.05	3.54
	20	32.31	21.26	14.25	9.71	6.73	4.73
	25	40.39	26.57	17.81	12.14	8.41	5.91
	30	48.47	31.89	21.37	14.57	10.09	7.09
	35	56.54	37.20	24.93	17.00	11.77	8.27

Exhibit 17. Sum-of-the-Parts Model.

PharmaTher Holdings, Ltd.	LT Gr	Discount Rate	Yrs to Mkt	% Success	Peak Sales (MM's)	Term Value
Ketamine PD (US/EU)	1%	30%	4	40%	$248	$855
NPV						$0.4
KETABET MDD (US/EU)	1%	30%	5	40%	$506	$1,743
NPV						$0.6
Platform	1%	30%	4	30%	$250	$862
NPV						$0
Net Margin						58%
MM Shrs OS (2031E)						176
Total						$1

Source: Maxim estimates

PharmaTher Holdings.: Income Statement ($000 CAD)	Jun-Aug20	Sept-Nov20	Dec-Feb21	Mar-May21	Mar-May21	Mar-May22	Mar-May23	Mar-May24	Mar-May25	Mar-May26	Mar-May27	Mar-May28	Mar-May29	Mar-May30	Mar-May31
YE December 31	**1Q21A**	**2Q21A**	**3Q21A**	**4Q21E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**
Revenue:															
Ketamine for Parkinson's disease (US, EU)										7,944	21,997	44,441	84,278	160,889	248,069
KETABET for Major Depressive Disorder (US, EU)											37,153	116,706	223,302	322,130	505,594
Net revenue	-	-	-	-	-	-	-	-	-	7,944	59,149	161,147	307,581	483,018	753,664
Collaborative revenue:															
Revenues															
Other Income					-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-
Total Collaborative Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	-	-	-	-	-	-	-	-	-	7,944	59,149	161,147	307,581	483,018	753,664
Gross Margins:															
Cost of Goods Sold	-	-	-	-	-	-	-	-	-	3,336	23,660	61,236	107,653	154,566	226,099
%Gross Margin									#DIV/0!	58%	60%	62%	65%	68%	70%
Gross Profit	-	-	-	-	-	-	-	-	-	4,607	35,490	99,911	199,928	328,452	527,565
Operating Expenses:															
Research and Development	192	13	145	146	495	12,000	20,000	22,000	23,100	23,331	23,564	23,800	24,038	24,278	24,521
%R&D															
Selling, General and Administrative	617	1,154	285	288	2,345	4,000	4,800	7,200	10,800	12,960	15,552	18,662	22,395	23,515	24,690
%SG&A															
Total Expenses	809	1,166	430	435	2,840	16,000	24,800	29,200	33,900	39,627	62,776	103,698	154,086	202,359	275,311
Operating Income (Loss)	(809)	(1,166)	(430)	(435)	(2,840)	(16,000)	(24,800)	(29,200)	(33,900)	(31,684)	(3,627)	57,449	153,495	280,660	478,353
					-	-	-	-	-	-	-	-	-	-	-
Interest and other income			0		0	-	-	-	-	-	-	-	-	-	-
Income from sale of IP			7,000		7,000	-	-	-	-	-	-	-	-	-	-
Loss on settlement of debt			(62)		(62)	-	-	-	-	-	-	-	-	-	-
Unrealized loss on investment			(600)		(600)	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-	-	-	-
Total Other Income	-	-	**6,338**	-	**6,338**	-	-	-	-	-	-	-	-	-	-
Pretax Income	(809)	(1,166)	5,908	(435)	3,498	(16,000)	(24,800)	(29,200)	(33,900)	(31,684)	(3,627)	57,449	153,495	280,660	478,353
Taxes on income	-	-	1,331	-	1,331	-	-	-	-	-	-	-	3,070	14,033	38,268
Tax Rate													2%	5%	8%
GAAP Net Income (Loss)	(809)	(1,166)	4,577	(435)	2,167	(16,000)	(24,800)	(29,200)	(33,900)	(31,684)	(3,627)	57,449	150,425	266,627	440,085
Foreign currency translation loss															
Total comprehensive loss	(809)	(1,166)	4,577	(435)	2,167	(16,000)	(24,800)	(29,200)	(33,900)	(31,684)	(3,627)	57,449	150,425	266,627	440,085
GAAP-EPS	(0.01)	(0.02)	0.07	(0.01)	0.03	(0.15)	(0.18)	(0.19)	(0.20)	(0.18)	(0.02)	0.33	0.86	1.52	2.51
GAAP-EPS (Dil)	(0.01)	(0.02)	0.06	(0.01)	0.03	(0.15)	(0.18)	(0.19)	(0.20)	(0.18)	(0.02)	0.33	0.86	1.52	2.51
Wgtd Avg Shrs (Bas) - '000s	58,313	65,992	69,477	69,547	65,832	109,781	135,251	150,823	166,442	172,124	172,813	173,505	174,200	174,898	175,599
Wgtd Avg Shrs (Dil) - '000s	58,313	65,992	74,402	69,547	65,832	109,781	135,251	150,823	166,442	172,124	172,813	173,505	174,200	174,898	175,599

Source: Company reports and Maxim

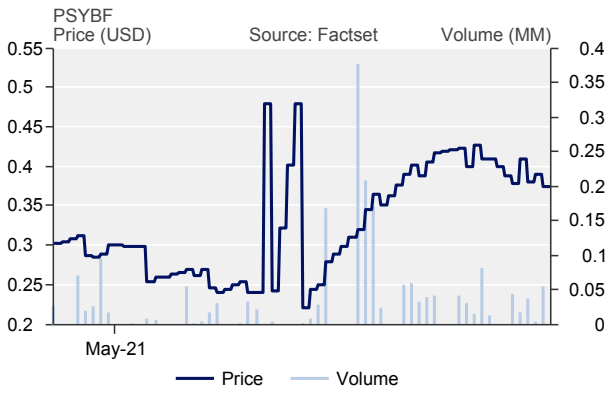
Biotechnology – Psychedelics

PSYBF - OTC June 27, 2021

Closing Price 6/25/21	**$0.38**
TSXV: PSYB	C$0.46
Rating:	Buy
12-Month Target Price:	$1.25
52-Week Range:	$0.22 - $0.79
Market Cap (M):	22.4
Shares O/S (M):	59.7
Float:	58.0%
Avg. Daily Volume (000):	43.9
Debt (M):	$0.0
Dividend:	$0.00
Dividend Yield:	0.0%
Risk Profile:	Speculative
Fiscal Year End:	December

Total Expenses ('000)

	2021E	2022E	2023E
1Q	C$3,312A	C$2,105	C$2,905
2Q	C$2,200	C$2,197	C$3,031
3Q	C$2,300	C$2,380	C$3,284
4Q	C$2,450	C$2,471	C$3,410
CY	C$10,262	C$9,153	C$12,630



PsyBio Therapeutics is listed on the TSX Venture Exchange (TSXV) under the symbol "PSYB" and OTCMKTS under the symbol "PSYBF". The stock does not trade on a US National Exchange. Financial data is reported in Canadian dollars (C$) and is represented as such in our models. Market data including the stock price and target price are translated into US dollars (USD).

Jason McCarthy, Ph.D.
(212) 895-3556
jmccarthy@maximgrp.com

Michael Okunewitch
(212) 895-3579
mokunewitch@maximgrp.com

PsyBio Therapeutics Corp. — Buy

Bringing Bacterial Biosynthesis to the Psychedelics Table – Initiating Coverage with a Buy Rating and $1.25 PT

Summary

- **In the rapidly emerging psychedelic-based therapeutics space, PsyBio has a differentiated platform for producing psychoactive molecules leveraging bacterial synthesis as opposed to synthetic, yeast, and natural extraction approaches. The approach with bacteria is more rapid and cost-effective, as well as scalable, producing over 1g per liter at room temperature. The company may also have an advantage around intellectual property.**
- **This may give the company an opportunity to explore combination approaches with psilocybin and other tryptamine and non-tryptamine molecules in depression and other indications; synergies. The company will focus on psilocybin monotherapy first and then layer in combinations.**
- **Conclusion. Pre-IND updates and IND filing are the plan in 2022. Combined with activity in the space, particularly with more psychedelic companies moving to US National Exchanges and more advanced trials reporting data, PsyBio – with a sub-$25M USD market capitalization – is well-positioned with a cash runway into 1H22.**

Details

Bacterial biosynthesis platform. The natural production of mushrooms can take months and in addition to potential impurities and batch-to-batch variability, may have issues in terms of scalability, time, and cost, particularly considering the size of the depression market. Synthetic approaches are more widely used but involve reaction catalysts, solvents, and reagents, as well as intermediates and longer synthesis times of 5-15 days. Many of the emerging psilocybin-focused programs are leveraging synthetic production. However, what differentiates PsyBio is its utility of a bacterial synthesis platform, which produces GMP-grade, highly stable products at room temperature, takes only 2-4 days, and is highly scalable with production at over 1 gram per liter. The platform can produce not only psilocybin, but also other tryptamine and non-tryptamine molecules (norbaeocystin, baeocystin, aeruginascin, DMT, and other psycho-active molecules). Importantly, PsyBio is developing an intellectual property portfolio around the platform.

While initial focus is on psilocybin monotherapy, further differentiating the company is the ability to produce various psychoactive molecules alone or in combinations. This approach may allow for enhanced physiologic effects while mitigating side effects, lowering dosing, and altering delivery, which in the longer term, may be more beneficial from both clinical and commercial perspectives. Synergy potential was demonstrated in a head-twitch model in mice when combining psilocybin and norbaeocystin. It is still early days and the next steps for PsyBio include completing PK/PD, tox, and efficacy studies in animals as part of the pre-IND process, positioning a potential IND and initial clinical development in 2022. There is significant risk given the early stage of PsyBio, but we see this as a potential 'get in on the ground level' story as the company and the psychedelics space evolve.

Valuation. We model commercialization of psilocybin in 2026 in the US and EU5 for treatment-resistant depression (TRD). A platform value is assigned to the bacterial synthesis platform for production of psychoactive molecules. An 85% risk adjustment is factored in primarily based on stage of development, clinical trial risk and commercial risk. A 30% discount is then applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $1.25 USD.

CORPORATE PROFILE

PsyBio Therapeutics
4400 West Sample Rd
Coconut Creek, FL 33073
www.psybiolife.com

Investment Risk: Psybio Therapeutics' products are not approved, and the company currently does not generate revenue.

Regulatory Risk: Psybio Therapeutics' products may not be successful in clinical trials and may not meet the requirements for regulatory approval(s).

Commercial Risk: Psybio Therapeutics' products are not approved and commercialized, and if/when they become commercially available, they may not achieve significant market share. In addition, the company lacks commercial infrastructure to support commercialization.

Financial Risk: Psybio Therapeutics is not profitable and may need to raise additional capital to support operations.

Dilution Risk: Capital raises to fund operations may dilute investors.

Ownership:
Institutional: 1%
Insiders:42%

Balance Sheet Summary (as of 3/31/21):
Cash: C$13M
Debt: C$0

Analysts Covering the Stock (other than Maxim): 0

Company Background. PsyBio Therapeutics (OTC: PSYBF, TSXV: PSYB) is developing biosynthetic psychoactive compounds that offer a new paradigm of treatment to reverse the course of mental health issues. Psychoactive medications treat the illness by rewiring the brain through contemplation and a change of perception in combination with psychotherapy vs. standard of care (SSRI's, SNRI's, MAOI's, NDRI's), which just chemically treat symptoms. Working in partnership with Miami University, PsyBio utilizes a proprietary platform technology to biologically synthesize psilocybin and other targeted next-generation active compounds in Psilocybe cubensis and other fungi and plants.

Senior Management:

Evan Levine, Co-Founder, Chief Executive Officer, Director – Mr. Levine is currently Chairman and Chief Executive Officer of PsyBio Therapeutics, an intellectual property driven biotechnology company developing novel formulations of psychoactive medications produced by genetically modified bacteria for the treatment of mental health challenges and other human disorders. He was responsible for co-founding the company, acquiring the key platform technology, funding an institutional round led by US venerated health care funds and taking the company public on the Toronto Venture Exchange. Prior to Mr. Levine's activities at PsyBio Therapeutics, he served as Chief Executive Officer of ADVENTRX Pharmaceuticals Inc., a publicly traded biotechnology company focused on the development of oncology and antiviral drug candidates. At ADVENTRX, Mr. Levine led a restructuring financing transaction and purchased controlling interest in the Company for a pre-market valuation of approximately $700,000 and under his leadership, the Company was uplisted to the American Stock Exchange, raised over $80 million dollars including a $20 million round led by Carl Icahn, conducted clinical trials on three different continents including a pivotal phase 3 in the US, and had multiple institutional research analysts covering the company which resulted in the stock trading at a valuation of over $500 million. Prior to launching ADVENTRX, Mr. Levine spent the first half of his career in the investment management and banking business. He served as Managing Partner and Portfolio Manager of Brown Simpson Asset Management LLC, a $500 million hedge fund that invested in private structured investments in public healthcare and technology companies. Mr. Levine also served as Senior Vice President of Convertible Sales and Trading at Dillon Read and Vice President of Convertible Bond Trading at Hambrecht & Quist where, in both roles, he augmented convertible investment banking by managing an active hedged portfolio in multiple securities.

Dr. Michael Sprigarelli, Chief Medical Officer – Board Certified in internal medicine and clinical pharmacology, Ph.D. medicinal chemistry, MBA, and Chief Medical Officer of Lumen Bio. Over his career in drug, diagnostics, and medical device development, Dr. Michael Sprigarelli has contributed to over 350 FDA Approvals and 600 CE Mark Registrations and lead 3 Clinical Trials Offices, responsible for up to 575 concurrent trials and has served as a lead, principal or co-Investigator on >2500 trials.

Noah Davis, Chief Financial Officer – Noah has significant experience in corporate turnarounds in various industries including education, healthcare, transportation, and real estate. He has served as CFO in various organizations including leading equity and debt raises of over $50 million. His entrepreneurial background coupled with his knowledge of accounting, finance and capital markets has enabled him to contribute operational expertise and creative marketing approaches. He has also been instrumental in leading a number of e-commerce companies through his knowledge of lead generation.

INVESTMENT SUMMARY

Bull Case. The psychedelic-based therapeutics space continues to rapidly evolve around leveraging this class of medicines for mental health disorders. While there are a number of players in the space, PsyBio is differentiated given its bacterial biosynthesis platform for producing GMP-grade psilocybin and other psychoactive compounds. This approach has advantages over synthetic chemistry, yeast production, and natural extraction, as well as potential advantages around intellectual property. PsyBio also further differentiates itself via its potential approach to explore psilocybin in combination with other tryptamine derivatives like norbaeocystin and baeocystin for example, as well as non-mushroom-derived molecules. Early preclinical data in a head-twitch mouse model suggested a synergistic effect of psilocybin + norbaeocystin vs. each compound alone. Given the potential of the bacterial synthesis platform and its scalability, the company is also positioned to be able to support preclinical and clinical development of its programs without the need for sourcing psilocybin or other compounds thereby reducing costs. The next steps are working toward an IND with PK/PD studies and tox work in animals in 2021 with IND submission targeted in early 2022, likely for treatment-resistant depression and focusing initially on psilocybin monotherapy. The company may also be able to leverage existing tox and PK/PD data from prior psilocybin work given the abundance of published literature and familiarity with the molecule from regulators. Combination approaches will continue to evolve at the preclinical level and updates could provide additional catalysts for PSYBF shares. While it's early stage, the company has an intriguing platform and a sub-$30M market capitalization in a rapidly evolving psychedelics space. Bulls see upside in the PsyBio story as psychedelics emerge in the mainstream markets and PsyBio advances its own program toward the clinic.

Bear Case. The evidence base of the emerging psychedelic-based therapeutics space remains suggestive of a therapeutic impact, but much more data from larger controlled trials is likely needed to generate definitive proof-of-concept. Bears remain concerned by potential IP-related issues and the commercial potential of this drug class given the need for multiple hours of treatment using the drugs in carefully controlled settings, which then requires weeks of psychotherapy. PsyBio's differentiator is its bacterial biosynthesis platform for producing psilocybin and other molecules, though it's too early stage for Bears, with any potential clinical work not likely until at least some time in 2022. In addition, the approach of combining psilocybin with other compounds in the mushroom is unproven in terms of any evidence of an entourage effect and the space likely needs to see the first successes with pure psilocybin alone. There is also the question of timing and competition from other novel psychedelic compounds that may have a shorter duration than the psilocybin-based combinations, which could be more attractive to therapists and treatment centers, potentially limiting upside.

Our Take. The emergence of psychedelic-based therapeutics for treating mental health disorders continues and multiple players, both private and public, are building interest in the space in the investment community. The potential of psilocybin, particularly around treatment-resistant depression (TRD) and major depressive disorder (MDD), has become a focal point of multiple groups in the space, including the likes of groups like COMPASS Pathways, which is the most clinically advanced and a leader in the space. As such, differentiation is going to be a key factor in the TRD/MDD psilocybin races. PsyBio separates itself from the pack with its bacterial biosynthesis platform vs. chemical, yeast, or natural sources. The company is also planning on initially focusing on psilocybin monotherapy and in parallel evaluating potential combination approaches with psilocybin and other potentially synergistic molecules, all of which can be produced using its bacterial system. The combination of psilocybin and other tryptamines could potentially lead to synergies that result in mitigating or reducing side effects of pure psilocybin, lower dosing, changed administration, and duration times, while achieving comparable or superior therapeutic outcomes in depression, albeit we note this is still very early stage. Synergies were demonstrated in a mouse head-twitch model combining psilocybin and norbaeocystin, with a stronger effect compared to either compound alone, potentially enabling a lower-required dose for comparable activity. PsyBio is also building its IP portfolio around its biosynthesis system and production of tryptamine-based molecules and may extend into other psychoactive molecules like DMT or non-tryptamine-based compounds. PsyBio is early stage with pre-IND work around PK/PD and toxicology being conducted over 2021 with clinical development not expected until 2022; psilocybin monotherapy first. The company is also in a position behind other groups in psilocybin development that have more advanced trials. This is actually an advantage, in our view, and should help shape the space and provide more clarity from a clinical development perspective while PsyBio progresses towards the clinic.

That said, the company has capital with ~C$13M on the balance sheet to work through to the IND and potentially into the clinic with updates along the way that should support a higher valuation from the current sub-$30M market capitalization currently. Is it early for PsyBio? Yes, it is, and the stock currently only trades on the TSX and OTC markets, so there is much risk. However, we like the differentiated platform for biosynthesis, which could lead to a differentiated pipeline from other players and an IP advantage. We also see psychedelic-based therapeutics as a burgeoning space in healthcare with multiple companies listing on, or moving towards listing on, NASDAQ, which combined with emerging data from players across the space, is likely to drive valuations across the space higher, potentially for PsyBio as well.

Finances. On 12/2/20, PsyBio agreed to complete a transaction that resulted in the reverse take-over of Leo Acquisitions by the shareholders of Psybio; reverse merger. Concurrent with the transaction was a private placement of subscription receipts that raised C$14,493,394 at a price of C$0.35 per subscription receipt. On 2/25/21, PsyBio listed on the Toronto Venture Exchange (TSXV) with the symbol "PSYB". On 4/12/21 the company applied to list on the US OTCQX market under the symbol "PSYBF".

As of March 31, 2021, the company had a cash balance of C$12.97M, 113M shares outstanding, and 11M in warrants/options outstanding. The company also notes that 42% of its ownership is by insiders. Given the quarterly opex of ~$3M, the company should be funded into mid-2022. We expect that PsyBio, which currently trades on the TSX and OTCQX, to uplist to a US National Exchange (NYSE or NASDAQ), though the timing of such has not been disclosed. The company does not generate revenue and will likely need multiple equity financings over time to support operations, which we factor into our model.

Exhibit 1. Upcoming Catalysts for PsyBio Therapeutics.

Product	Indication	Event	Timeline	Impact
Synthetic tryptamines (psilocybin)	TBD	IND development, Pre-IND meeting	2021	+
Synthetic tryptamines (psilocybin, norbaeocystin)	TBD	PK/PD, toxicology, updates	2021/22	+
Synthetic tryptamines (psilocybin)	Depression	IND submission, initial clinical development	1H22	+
n/a	n/a	Uplist to NASDAQ	2022	++
Synthetic tryptamines (psilocybin, norbaeocystin)	TBD	Portfolio and platform updates, partnering, collaborations, other	2021/22	+

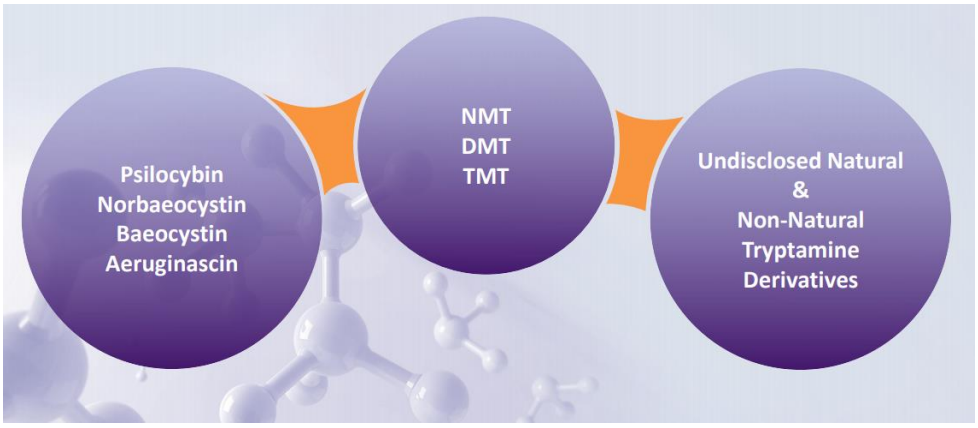
Stock Significance Scale: + of moderate importance; ++ higher level; +++ very important

Source: Company reports and Maxim Forecasts

Biosynthetic production of psilocybin and psychoactive compounds in bacteria. On May 22, 2020, PsyBio and researchers at the Miami University (Ohio) announced a collaboration to develop molecules to treat mental health disorders leveraging platform technology at Miami University that enables the biosynthesis of psilocybin and other psychoactive molecules, which occur naturally in certain plants and fungi; tryptamine-based compounds. The technology was developed by researchers in the laboratory of Dr. Andrew Jones, who also serves as Chairman of the Scientific Advisory Board at PsyBio. The platform is a novel application of pathway optimization and metabolic engineering to sustainably produce drug candidates via genetically engineered bacteria. Initial work on the production of psilocybin from Dr. Jones' group was published in 2019 in the journal Metabolic Engineering; "In Vivo Production of Psilocybin in E. coli". On April 26, 2021, the collaboration agreement was amended to include the research work and efforts of Dr. Matthew Murray of the Department of Psychology at Miami University. The amendment included an agreement for PsyBio to provide an additional $1.5M (USD) in funding until May 2023.

The initial collaboration has yielded the discovery and scaled production of two tryptamine molecules: psilocybin and norbaeocystin. This has since been moved out of the lab and into commercial development facilities where production will be conducted to support preclinical and clinical development. The company is leveraging the bacterial synthesis platform to develop a portfolio of molecules and combinations. The bacterial synthesis approach has advantages over other methods for producing psychoactive compounds including chemical synthesis, yeast synthesis, and natural production. Importantly, this approach may give PsyBio an advantage around intellectual property.

Exhibit 2. Psybio is building a portfolio of psychoactive compounds with a bacterial synthesis system.



Source: PsyBio presentation

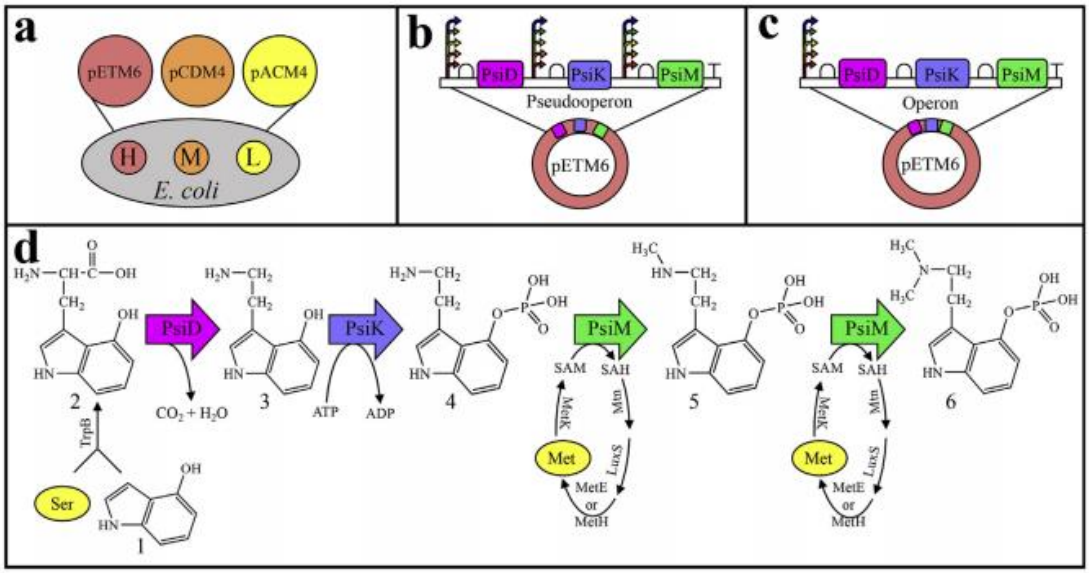
Exhibit 3. Advantages of bacterial synthesis vs. both chemical and yeast-based approaches, and natural production.

	PsyBio Bacterial Synthesis	Chemical Synthesis	Yeast Synthesis	Natural Production
Space Requirements	GMP Facility	GMP Facility	GMP Facility	Farming
Environmental Considerations	Friendly	Toxic Catalysts, Solvents, and Reagents	Friendly	Friendly
Product Consistency	Pharmaceutical Grade	Pharmaceutical Grade	Pharmaceutical Grade	10-Fold Batch-to-Batch Variation
Product Stability	High Product Stability at Room Temperature	Multiple Unstable Reaction Intermediates	High Rate of Degradation during Fermentation	Prone to Degradation 'bluing reaction'
Speed & Simplicity of Production	2 - 4 days 1 Pot Autocatalytic Process	5 – 15 days Long Reaction Scheme	4 – 10 days 1 Pot Autocatalytic Process	Weeks to Months Sensitive to Environmental Conditions

Source: PsyBio presentation

Bacterial synthesis of psychoactive compounds. Initial work around biosynthesis machinery for producing psilocybin was conducted by Dirk Hoffmeister's group at the University of Beutenberg and characterized four enzymes involved in psilocybin biosynthesis from the bacterium Psilocybe cubensis. The group also used this approach to make psilocybin in the mold Aspergillus nidulans[1]. The enzymatic machinery characterization included L-tryptophan decarboxylase (PsiD), a kinase (PsiK) and an S-adenosyl-L-methionine (SAM)-dependent N-methyltransferase (PsiM). With the gene sequences of these enzymes available, Andrew Jones' group at Miami University used them in combination with the E. coli tryptophan synthase (TrpAB) enzyme to create an E. coli strain capable of biosynthesizing psilocybin from 4-hydroxyindole. The method was further optimized to develop an E. coli strain (pPsilo16) capable of producing ~136-142mg/L of psilocybin in a fermentation reaction. This was taken a step further for scale up to ~1,160mg/L[2].

Exhibit 4. Biosynthesis of psilocybin in an E. coli system. Shown in panels A-C are the library of three plasmids containing biosynthesis genes PsiD, PsiK, PsiM) and promoter/terminator positions. In panel D, is the biosynthesis pathway consisting of the three enzymes and media supplements (yellow) used in the reaction.



Source: Adams et al 2019.

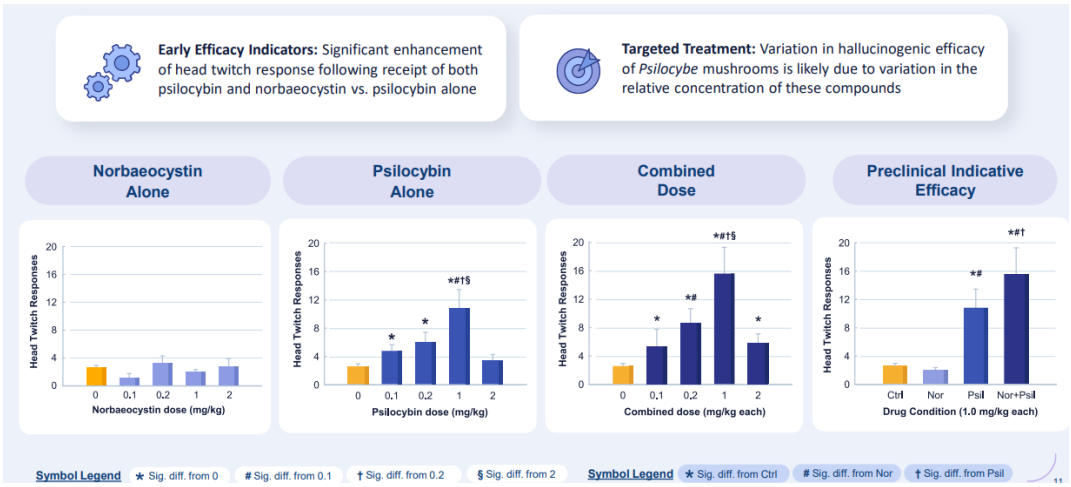
[1] Fricke, Blei and Hoffmeister. 'Enzymatic Synthesis of Psilocybin'. Angewandte Chemie International Edition August 2017. Vol 56(40). Pp 12352-12355
[2] Adams et al. 'In vivo Production of Psilocybin in E. Coli'. Metabolic Engineering. 2019. Pp 111-119.

Exhibit 5. Intellectual Property, IP. The process of using bacterial biosynthesis to produce psychoactive compounds has advantages over other approaches as noted above, including both cost-effectiveness and higher-yield batch production with higher purity. This is important not just for psilocybin production, but also other tryptamine-derived molecules found in lesser quantities in the natural mushroom. In the emerging psychedelic-based therapeutics landscape, IP is going to be critical. As such, alongside its psychoactive compound portfolio, PsyBio is also developing its IP estate.

Source: PsyBio presentation

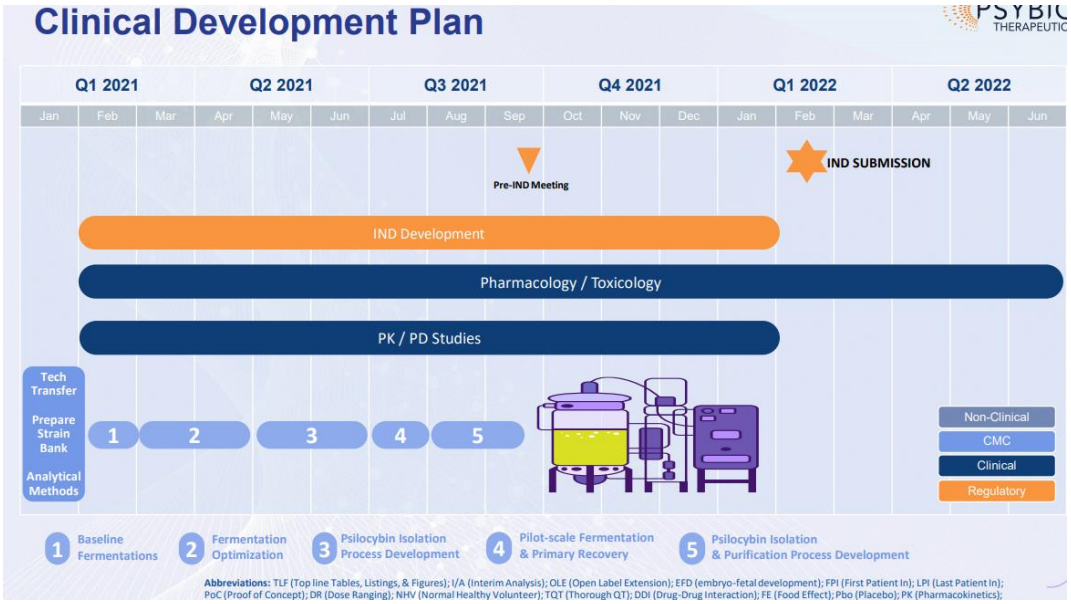
The synergies of psychoactive molecules include more than just psilocybin. While essentially all other groups exploring drug development around psilocybin (PsyBio too initially, or at least first planned clinical program in 2022) for mental health disorders are focused on the psilocybin molecule alone, there is likely much more happening inside the natural "magic mushroom" that may contribute to various aspects of the effects when the mushroom is ingested; synergistic effects or interaction of two or more molecules when those molecules are administered together whether in an engineered formulation or in a natural product. This may extend beyond just molecules in the mushroom and applied to other molecules. This topic was, and continues to be, of interest in the cannabinoids space with the rationale that there are hundreds of cannabinoids beyond just THC and CBD that may have properties that impact endocannabinoid receptors and other receptors differently, mediate the effects of THC and/or CBD, or have other functions that are synergistic. Is the same true of mushrooms? There are molecules other than psilocybin, which could potentially interact with or mediate physiological effects. This hypothesis has received mixed feedback; some say yes, others not so much. However, there is little research on how psilocybin and any derivatives, or any non-mushroom psychoactive molecules may interact with each other and impact physiological response. This lack of research may be more of a function of the early stage of this new, large-scale movement into the psilocybin space in general. The question around potential synergistic effects is not unique to psilocybin, but also DMT in its purified form, and toad secretions, or from ayahuasca for example. In the mushroom, the two other major tryptamines are baeocystin and norbaeocystin, both of which PsyBio is exploring at the bacterial synthesis level to possibly utilize in combination with psilocybin. Is there a synergistic effect? It's hard to say at the moment and needs to be explored further. While there is more work to be done, having a bacterial synthesis platform may ideally position PsyBio to explore combinations of other tryptamines with psilocybin. Early preclinical data from PsyBio's work has shown that the combination of norbaeocystin and psilocybin may have a synergistic effect as measured via head-twitch responses in mice.

Exhibit 6. Synergistic effects? Psilocybin + norbaeocystin. Early data in a mouse head-twitch response model demonstrated potential synergistic effects with the combination of psilocybin and norbaeocystin.



Source: PsyBio presentation

Exhibit 7. PsyBio clinical development plan.



Source: PsyBio presentation

MODELING ASSUMPTIONS

1. We assume psilocybin is approved and commercialized in 2026 for treatment-resistant depression. A platform value is assigned to the bacterial psycho-active drug discovery platform as this could potentially yield revenue in the future from manufacturing, partnering, or collaborations. We do not factor in combination therapies as this is still early stage and its TBD which combination could advance.
2. The US adult population (over age 18) is ~245M and in this population, the prevalence of major depressive disorder is 6.7%, or ~16.5M. We assume only 60% of people with MDD seek treatment, and of these, 30% (~3M) have TRD. TRD is defined as someone with MDD failing 2+ therapeutic options. The TRD population in the US is 3M, with a similar number in the EU; this is what we use to estimate potential market penetration.
3. We assume pricing of $25K in the US and $20K in the EU. This is a discount to nasal ketamine therapy (Spravato) which has pricing of $4,700-$6,800 in the first month and $2,500-$3,500 for maintenance. All in, Spravato can cost $33K-$49K per year. Given that psilocybin therapy is likely to be used once, or possibly a handful of times, we believe pricing may be at a discount to what Spravato costs. Our model also assumes that Psybio will only have psilocybin drug and not participate in the revenue streams that could be generated from the psychotherapy, patient care and facility/delivery aspects of psychedelic therapy.
4. Given the cost, the type of therapy and experience that psychedelics may bring, and commercial risks, we assume only a modest market share in TRD of up to 2% in out years in the US and 1.5% in the EU. The program at PsyBio is very early stage as the company is still working through pre-clinical discovery, PK/PD, and toxicology work in animals. Initial clinical development is not expected until sometime in 2022. In addition, while other groups are more advanced from a clinical perspective, the landscape in psychedelic-based drug development could evolve and change prior to PsyBio candidate(s) moving into human development. As such, we apply an 85% risk adjustment to our therapeutic model and a 30% discount to our valuation metrics.
5. We do not factor in additional indications at this time.

Exhibit 8. Treatment-resistant depression (TRD) Market Model, US.

Psilocibin , Treatment-resistant depression (US)	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
US population	333,300,000	336,633,000	339,999,330	343,399,323	346,833,317	350,301,650	353,804,666	357,342,713	360,916,140	364,525,301	368,170,554	371,852,260
US Adult population 18+ (74.3%)	247,641,900	250,118,319	252,619,502	255,145,697	257,697,154	260,274,126	262,876,867	265,505,636	268,160,692	270,842,299	273,550,722	276,286,229
Major Depressive Disorder (MDD) (Adult. 6.7%)	16,592,007	16,757,927	16,925,507	17,094,762	17,265,709	17,438,366	17,612,750	17,788,878	17,966,766	18,146,434	18,327,898	18,511,177
MDD diagnosed, seeking treatment (60%)	9,955,204	10,054,756	10,155,304	10,256,857	10,359,426	10,463,020	10,567,650	10,673,327	10,780,060	10,887,860	10,996,739	11,106,706
Treatment-reistant depression (2+ failed therapies) (30%)	2,986,561	3,016,427	3,046,591	3,077,057	3,107,828	3,138,906	3,170,295	3,201,998	3,234,018	3,266,358	3,299,022	3,332,012
Market Penetration							0.15%	0.25%	0.50%	1.00%	1.50%	1.75%
Total Patients Treated							4,755	8,005	16,170	32,664	49,485	58,310
Cost of Treatment							25,000	26,250	27,563	28,941	30,388	31,907
Increase in Cost							5%	5%	5%	5%	5%	5%
Total revenue ('000)							$ 118,886	$ 210,131	$ 445,688	$ 945,304	$ 1,503,743	$ 1,860,506
Risk adjustment							85%	85%	85%	85%	85%	85%
Total Revenue ('000)							**$ 17,833**	**$ 31,520**	**$ 66,853**	**$ 141,796**	**$ 225,561**	**$ 279,076**

Source: Maxim Estimates

Exhibit 9. Treatment-resistant depression (TRD) Market Model, EU5.

Psilocibin , Treatment-resistant depression (EU5)	2020E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
EU5 population	329,382,538	335,970,189	342,689,593	349,543,385	356,534,252	363,664,937	370,938,236	378,357,001	385,924,141	393,642,624	401,515,476	409,545,786
EU Adult population 18+ (74.3%)	244,731,226	249,625,850	254,618,367	259,710,735	264,904,949	270,203,048	275,607,109	281,119,252	286,741,637	292,476,469	298,325,999	304,292,519
Major Depressive Disorder (MDD) (Adult. 6.7%)	16,396,992	16,724,932	17,059,431	17,400,619	17,748,632	18,103,604	18,465,676	18,834,990	19,211,690	19,595,923	19,987,842	20,387,599
MDD diagnosed, seeking treatment (60%)	9,838,195	10,034,959	10,235,658	10,440,372	10,649,179	10,862,163	11,079,406	11,300,994	11,527,014	11,757,554	11,992,705	12,232,559
Treatment-reistant depression (2+ failed therapies) (30%)	2,951,459	3,010,488	3,070,698	3,132,111	3,194,754	3,258,649	3,323,822	3,390,298	3,458,104	3,527,266	3,597,812	3,669,768
Market Penetration							0.10%	0.30%	0.50%	0.60%	1.00%	1.20%
Total Patients Treated							3,324	10,171	17,291	21,164	35,978	44,037
Cost of Treatment							20,000	21,000	22,050	23,153	24,310	25,526
Increase in Cost							5%	5%	5%	5%	5%	5%
Total revenue ('000)							$ 66,476	$ 213,589	$ 381,256	$ 489,990	$ 874,632	$ 1,124,078
Risk adjustment							85%	85%	85%	85%	85%	85%
Total Revenue ('000)							**$ 9,971**	**$ 32,038**	**$ 57,188**	**$ 73,499**	**$ 131,195**	**$ 168,612**

Source: Maxim Estimates

VALUATION

We model commercialization of psilocybin in 2026 in the US and EU5 for treatment-resistant depression (TRD). A platform value is assigned to the bacterial synthesis platform for production of psycho-active molecules. An 85% risk adjustment is factored in based on stage of development, clinical trial risk, commercial risk and other factors. A 30% discount is then applied to the free cash flow, discounted EPS, and sum-of-the-parts models, which are equally weighted to derive a 12-month price target of $1.25 USD.

Exhibit 10. Free Cash Flow Model.

Average	1.25

DCF Valuation Using FCF (mln):

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
units ('000)	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**
EBIT	(22)	(10,214)	(9,153)	(12,630)	(22,179)	(15,938)	7,427	45,141	105,831	207,856	345,397	464,413
Tax Rate	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%	4%	6%
EBIT (1-t)	(22)	(10,214)	(9,153)	(12,630)	(22,179)	(15,938)	7,427	45,141	105,831	203,699	331,581	436,548
CapEx	-	-	-	-	-	-	-	-	-	-	-	-
Depreciation	-	-	-	-	-	-	-	-	-	-	-	-
Change in NWC												
FCF	(22)	(10,214)	(9,153)	(12,630)	(22,179)	(15,938)	7,427	45,141	105,831	203,699	331,581	436,548
PV of FCF	(29)	(10,214)	(7,041)	(7,473)	(10,095)	(5,580)	2,000	9,352	16,866	24,971	31,268	31,666

Discount Rate	30%
Long Term Growth Rate	1%
Terminal Cash Flow	1,520,391
Terminal Value YE2030	110,286
NPV	186,007
NPV-Debt	
Shares out ('000)	141,736
NPV Per Share	1

2031E

Source: Maxim estimates

Exhibit 11. Discounted-EPS Model.

Current Year	2021
Year of EPS	2031
Earnings Multiple	8
Discount Factor	30%
Selected Year EPS	3.08
NPV	2

Source: Maxim estimates

	Discount Rate and Earnings Multiple Varies, Year is Constant						
	1.79	**5%**	**10%**	**15%**	**20%**	**25%**	**30%**
Earnings Multiple	**0**	0	0	0	0	0	0
	5	9.45	5.94	3.81	2.49	1.65	1.12
	10	18.91	11.87	7.61	4.97	3.31	2.23
	15	28.36	17.81	11.42	7.46	4.96	3.35
	20	37.82	23.75	15.23	9.95	6.61	4.47
	25	47.27	29.69	19.03	12.44	8.27	5.59
	30	56.73	35.62	22.84	14.92	9.92	6.70
	35	66.18	41.56	26.65	17.41	11.58	7.82

Exhibit 12. Sum-of-the-Parts Model.

Psybio Therapeutics	LT Gr	Discount Rate	Yrs to Mkt	% Success	Peak Sales (MM's)	Term Value
Psilocybin - TRD	1%	30%	5	30%	$448	$1,544
NPV						$0.7
Bacterial Synthesis Platform	1%	30%	5	30%	$100	$345
NPV						$0.1
Net Margin						75%
MM Shrs OS (2031E)						142
Total						$1

Source: Maxim estimates

Psybio Therapeutics, PSYBF.: Income Statement ($000 CAD)																
YE December 31	2020A*	1Q21A	2Q21E	3Q21E	4Q21E	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E
Revenue:																
Psilocybin (Treatment-resistant depression, US/EU)										-	27,804	63,558	124,042	215,294	356,756	447,688
Bacterial tryptamine synthesis platform (manufacturing, partnering, other)										10,000	12,000	24,000	36,000	63,000	75,600	98,280
Psilocybin combination therapies										-	-	-	-	-	-	-
										-	-	-	-	-	-	-
Net revenue	-	-	-	-	-	-	-	-	-	10,000	39,804	87,558	160,042	278,294	432,356	545,968
Collaborative revenue:																
Revenues																
Other Income										-	-	-	-	-	-	-
										-	-	-	-	-	-	-
Total Collaborative Revenue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total Revenue	-	-	-	-	-	-	-	-	-	10,000	39,804	87,558	160,042	278,294	432,356	545,968
Gross Margins:																
Cost of Goods Sold										2,000	7,961	17,512	28,807	44,527	60,530	54,597
%Gross Margin										80%	80%	80%	82%	84%	86%	90%
Gross Profit	-	-	-	-	-	-	-	-	-	8,000	31,843	70,046	131,234	233,767	371,826	491,371
Operating Expenses:																
Research and Development	-	1,725	1,100	1,150	1,250	5,225	5,486	8,229	16,458	16,788	17,123	17,466	17,815	18,171	18,535	18,905
%R&D																
Selling, General and Administrative	53	42	1,100	1,150	1,200	3,492	3,667	4,400	5,721	7,151	7,294	7,440	7,588	7,740	7,895	8,053
%SG&A																
Listing expense		1,545				1,545										
Total Expenses	53	3,312	2,200	2,300	2,450	10,262	9,153	12,630	22,179	25,938	32,378	42,417	54,211	70,438	86,960	81,555
Operating Income (Loss)	(53)	(3,312)	(2,200)	(2,300)	(2,450)	(10,262)	(9,153)	(12,630)	(22,179)	(15,938)	7,427	45,141	105,831	207,856	345,397	464,413
						-	-	-	-	-	-	-	-	-	-	-
Reversal of harmonized sales tax accrued	31															
Other income		1				1										
Foreign exchange gain		47				47										
Total Other Income	**31**	**48**	**-**	**-**	**-**	**48**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
Pretax Income	(22)	(3,264)	(2,200)	(2,300)	(2,450)	(10,214)	(9,153)	(12,630)	(22,179)	(15,938)	7,427	45,141	105,831	207,856	345,397	464,413
Income tax expense	-		-	-	-	-	-	-	-	-	-	-	-	4,157	13,816	27,865
Tax Rate														2%	4%	6%
GAAP Net Income (Loss)	(22)	(3,264)	(2,200)	(2,300)	(2,450)	(10,214)	(9,153)	(12,630)	(22,179)	(15,938)	7,427	45,141	105,831	203,699	331,581	436,548
Foreign currency translation adjustment		(36)	-	-	-	(36)										
Total comprehensive loss	(22)	(3,300)	(2,200)	(2,300)	(2,450)	(10,214)	(9,153)	(12,630)	(22,179)	(15,938)	7,427	45,141	105,831	203,699	331,581	436,548
GAAP-EPS	(0.01)	(0.04)	(0.02)	(0.02)	(0.02)	(0.10)	(0.08)	(0.10)	(0.16)	(0.12)	0.05	0.32	0.76	1.45	2.35	3.08
GAAP-EPS (Dil)	(0.01)	(0.03)	(0.02)	(0.02)	(0.02)	(0.10)	(0.08)	(0.10)	(0.16)	(0.12)	0.05	0.32	0.76	1.45	2.35	3.08
Wgtd Avg Shrs (Bas) - '000s	3,926	87,730	113,000	113,113	113,226	106,767	121,343	129,793	137,824	138,376	138,930	139,487	140,046	140,607	141,170	141,736
Wgtd Avg Shrs (Dil) - '000s	3,926	98,730	113,000	113,113	113,226	106,767	121,343	129,793	137,824	138,376	138,930	139,487	140,046	140,607	141,170	141,736

Source: Company reports and Maxim

PART III: COMPANY PROFILES

AIkido Pharma (AIKI – NR)

Algernon Pharmaceuticals (OTC: AGNPF, CSE: AGN – NR)

atai Life Sciences (ATAI – NR)

Awakn Life Sciences (NEO: AWKN – NR)

Diamond Therapeutics (private)

Eleusis (private)

Entheon Medical (OTC: ENTBF, CSE: ENBI – NR)

GH Research (GHRS – NR)

IntelGenx (OTC: IGXT, CVE: IGX – NR)

Lobe Sciences (OTC: GTSIF, CNSX: LOBE – NR)

Multidisciplinary Association for Psychedelic Studies ("MAPS", non-profit research group)

Novamind (OTC: NVMDF, CSE: NM – NR)

Numinus Wellness (OTC: LKYSF, CVE: NUMI – NR)

Seelos Therapeutics (SEEL – NR)

Small Pharma (OTC: DMTTF, TSXV: DMT – NR)

Usona Institute (non-profit research group)

Maxim Research is providing the following company profiles for the purpose of investor information, and is not providing a recommendation, rating, or price target with respect to the securities and subject companies/organizations discussed in the following profiles.

AIkido Pharma (NASDAQ: AIKI)

www.AIkidopharma.com.
One Rockerfeller Plaza, 11th Flr
New York, NY 10020

Price:	**$1.01**
52 week range:	**$0.47-$2.55**
Shares Outstanding:	**90M**
Market Cap:	**$90.9M**
Listing Date	**Dec 2010**

Company Description

AIkido Pharma Inc. is a biotechnology development company working to develop a diverse portfolio of early and mid-stage small-molecule anti-cancer therapeutics. The AIkido Pharma Inc. platform includes patented technology from leading universities and researchers and seeks to develop innovative drugs through strong partnership with world renowned institutions, such as The University of Texas and Wake Forest University. Their diverse pipeline of therapeutics includes therapies for prostate, pancreatic cancer, acute myeloid leukemia (AML), and acute lymphoblastic leukemia (ALL). Their prostate and pancreatic treatment has shown positive preclinical results. For more information on the company's clinical programs in oncology please see the company presentation located on their website; presentation LINK.

While the company has a strong focus in oncology and virology, their inclusion in this industry note is based on their work to expand drug development efforts into the psychedelic space. On April 7, 2021, AIkido announced that it had been granted an exclusive sublicense to technology related to the use of novel and proprietary central nervous system (CNS) homing peptides for the therapeutic treatment of neuroinflammatory disease in cancer patients. The homing peptides covered by the sublicense can be used to facilitate the delivery of therapeutic agents to inflamed CNS tissue. Psychedelics such as psilocybin have been shown to have anti-inflammatory activity in addition to their potential efficacy for treatment of neurological disorders such as anxiety, depression and post-traumatic stress disorder (PTSD). Studies indicate that neuroinflammation of the brain and other CNS tissues in cancer patients contributes to, among other symptoms, the onset of cancer cachexia, which is characterized by loss of appetite, extreme weight loss, and muscle wasting.

This sublicense is the culmination of a Letter of Intent with Silo Pharma Inc (OTC: SILO) on February 16, 2021, and a licensing agreement on January 6, 2021. In addition, on March 29, 2021, AIkido announced that it is sponsoring psychedelic research at the Mount Sinai Center for Psychedelic Psychotherapy and Trauma Research. The Center examines the therapeutic potential of psychedelic compounds for post-traumatic stress disorder (PTSD) and other trauma-related symptoms. The Center works to provide novel clinical therapies utilizing MDMA, psilocybin, and other psychedelics through FDA-approved research protocols. More specific to AIkido's support, the Center will be embarking on clinical trials with MDMA and psilocybin. As part of these studies the Center will be collecting blood samples and performing neuroimaging before and after therapy to identify biomarkers that predict and correlate with positive treatment outcome. Note that the company reported $102M in cash on its balance sheet at the end of 1Q21.

Therapeutics Pipeline, Programs

Oncology: AIkido's drug portfolio focuses on the treatment of four cancers: prostate cancer, pancreatic cancer, acute myeloid leukemia (AML), and acute lymphoblastic leukemia (ALL). Information on each of the cancer programs and the antiviral programs can found here; LINK.

Psychedelics: AIkido's efforts around psychedelics are continuing to emerge and are outlined in the company description above.

Virology: On April 13, 2021, AIkido executed a Master License Agreement (the "License Agreement") with the University of Maryland, Baltimore ("UMB"). The License Agreement covers specific antiviral compounds discovered by UMB. The compounds seek to inhibit replication of multiple viruses, including Influenza virus, SARS-CoV, MERS-CoV, Ebolavirus, and Marburg virus.

**Financial metrics are as of market close 06/25/2021.*

Product	Indication, Program, Event	Disc/preclin	Phase I	Phase II	Phase III	Marketed
DHA-dFdC (docosahexaenoic acid, gemcitabine*	Pancreatic cancer, other cancers					
CONV 01-α (anti-PSMA receptor, 225Ac conjugate)**	Pancreatic Cancer					
Antiviral molecules, potential SKI complex***	Candidate, indication tbd					
Psilocybin, MDMA****	Mental health, including cancer patients					
UK G4-1*****	Solid tumors					
KPC34******	AML, ALL					

* Collaborating with Parimer Scientific in South Caroline on manufacturing.
** Convergent Therapeutics Inc program, a pharma startup which Aikido is an early investor in.
*** Licensed from University of Maryland Baltimore, collaborating with UMB
**** Licensed psilocybin IP from Silo Pharma for psilocybin in neuroinflamed tissue
*****Right to license from University of Kentucky
****** Licensed for Wake Forest for AML and ALL
Source:Company reports, Maxim Research

Senior Management

Anthony C. Hayes, Esq., Chief Executive Officer. Hayes began his tenure by overseeing AIkido's transformation from a biotechnology company into a diversified corporate entity committed to advancing innovation by participating in the development of new technologies across several sectors. As CEO, Hayes developed and implemented a strategic plan to advance AIkido's mission and objectives and to significantly promote company growth. He identified and brought about multimillion-dollar M&A acquisitions that resulted in some of the largest transactions in technology patents. Hayes is also involved in all aspects of investor relations, representing AIkido in shareholder meetings, at domestic and international conferences, and in television and print media (such as Bloomberg Television and Forbes). An attorney and former partner of an Am Law 100 firm, Hayes previously co-founded and was managing member of JaNSOME IP Management LLC, an intellectual property monetization firm. JaNSOME provided consulting and advisory services to individuals and companies on best practices for monetization of the asset class. President George W. Bush gave Hayes special recognition for creating the Wills for Heroes program, a national 501(c)(3), in response to the September 11 attacks (willsforheroes.com). Other honors include IAM IP Personality of 2013, American Board of Trial Advocates Young Lawyer of the Year, and "20 Under 40" in Columbia, South Carolina.

Robert J. Vander Zanden, Ph.D., Chairman of the Board. Dr. Robert J. Vander Zanden, Board Member since 2004, was elected Chairman of the Board in early 2009. Having served as a Vice President of R&D with Kraft Foods International, he brings a long career in applied technology, product commercialization, and business knowledge of the food science industry to Aikido. In his 30-year career, he has been with ITT Continental Baking Company as a Product Development Scientist; with Ralston Purina's Protein Technology Division as Manager Dietary Foods R&D; with Keebler as Group Director, Product and Process Development; with Grupo Gamesa, a Frito-Lay Company, as Vice President, Technology; and with Nabisco as Vice President of R&D for their International Division. With the acquisition of Nabisco by Kraft Foods, he became the Vice President of R&D for Kraft's Latin American Division. Dr. Vander Zanden retired from Kraft Foods in 2004. He currently holds the title of Adjunct Professor and Lecturer in the Department of Food, Nutrition, and Packaging Sciences at Clemson University, where he also is a member of their Industry Advisory Board. His focus on achieving product and process innovation through training, team building and creating positive working environments has earned him multiple awards for product and packaging innovation. Dr. Vander Zanden holds a Ph.D. in Food Science and an M.S. in Inorganic Chemistry from Kansas State University, and a B.S. in Chemistry from the University of Wisconsin – Platteville, where he was named a Distinguished Alumnus in 2002.

Tim Ledwick, Board Member. Mr. Ledwick is currently the Chief Financial Officer of Management Health Solutions, a private equity-backed company that provides software solutions and services to hospitals focused on reducing costs through superior inventory management practices. In addition, since 2012 he has served on the board and as Chair of the Audit Committee of Telkonet, Inc. (TKOI), a smart energy management technology company. From 2007 to 2011, Mr. Ledwick provided CFO consulting services to a $150 million services firm and, in addition, from 2007-2008 also acted as special advisor to The Dellacorte Group, a middle market financial advisory firm focused on transactions between $100 million and $1 billion. From 2002 through 2006, Tim was a member of the Board of Directors and Executive Vice President-CFO of Dictaphone Corporation, playing a lead role in developing a business plan that revitalized the company, resulting in the successful sale of the firm and delivering a seven times return to shareholders. From 2001-2002, Ledwick was brought on as CFO to lead the restructuring efforts of Lernout & Hauspie Speech Products, a Belgium-based NASDAQ listed speech technology company, whose market cap had at one point reached a high of $9 billion. From 1999 through 2001, he was CFO of Cross Media Marketing Corp, an $80 million public company headquartered in New York City, playing a lead role in the firm's acquisition activity, tax analysis, and capital raising. Mr. Ledwick is a member of the Connecticut Society of Certified Public Accountants, received his BBA in Accounting from The George Washington University, and his MS in Finance from Fairfield University.

Additional members of the AIkido team, including the Board of Directors, and their bios can be found here: LINK.

**Financial metrics are as of market close 06/25/2021.*

Algernon Pharmaceuticals (OTC: AGNPF, CSE: AGN)

www.algernonpharmaceuticals.com
700 West Pender Street, Suite 700
Vancouver, BC, Canada V6C 1G8

Price:	**$0.11**
52 week range:	**$0.10-$0.44**
Shares Outstanding:	**156M**
Market Cap:	**$17M**
Listing Date	**Feb 2016**

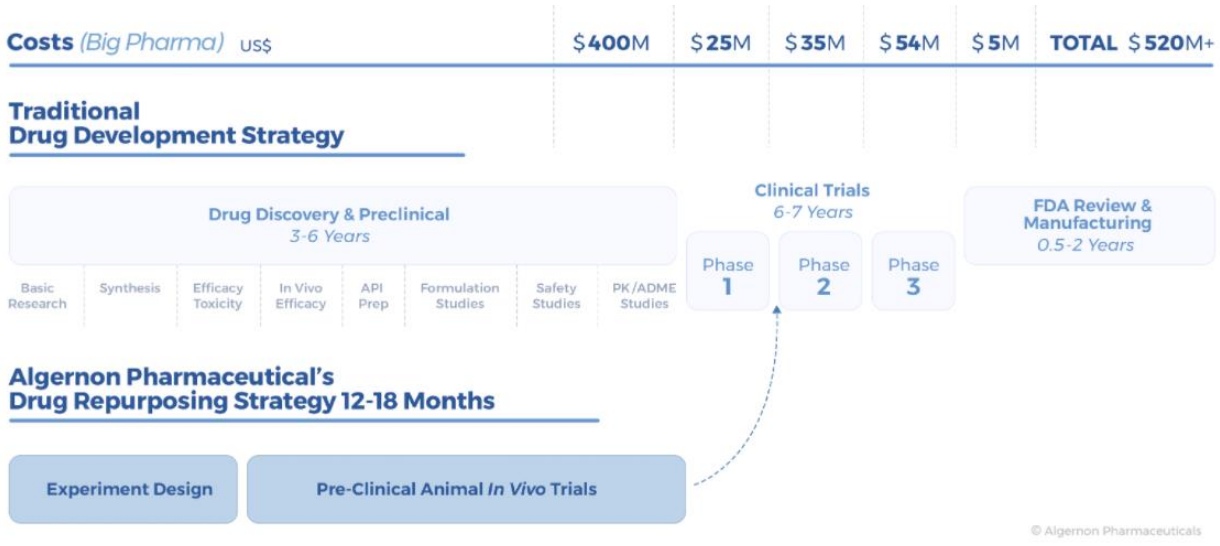
Company Description

Algernon Pharmaceuticals is a clinical-stage drug development company focused on the disease areas of stroke, idiopathic pulmonary fibrosis (IPF) & chronic cough, and COVID-19. The company's business model is highly capital efficient and strives to deliver maximum shareholder value. Algernon's unique approach to drug discovery is based on the concept of drug repurposing. Drug repurposing is the process of discovering new therapeutic uses for existing drugs. Repurposing offers several potential benefits over traditional drug development including a reduction in investment and risk, shorter research periods, and a longer active patent life. The Algernon business model takes safe, already approved drugs, including naturally occurring compounds, screens them in globally accepted animal models for new diseases, files new intellectual property rights, and then efficiently moves them into clinical trials. The company is developing two compounds; NP-120 (Ifenprodil) and AP-188 (DMT; N,N-Dimethyltryptamine). The psychedelic pipeline product is AP-188, which is the focus of this profile.

AP-188 (DMT). Algernon has started a clinical research program for stroke focused on AP-188 (DMT), a known psychedelic compound that is part of the tryptamine family (other drugs in the tryptamine family include psilocybin and psilocin). Algernon plans to be the first company globally to pursue DMT for stroke in humans and is planning to begin a clinical trial as soon as possible in 2021. The company announced in early January 2021 that it would be establishing a new clinical research program in Q1 2021 to add to its current pipeline. Repurposing DMT from its psychedelic effects to a new potential treatment for stroke could have a positive impact on the millions of people who suffer the debilitating consequences of a stroke each year. The company's decision to investigate DMT and move it into human trials for stroke is based on multiple independent, positive preclinical studies demonstrating that DMT helps promote neurogenesis as well as structural and functional neural plasticity. These are key factors involved in the brain's ability to form and reorganize synaptic connections, which are needed for healing following a brain injury.

NP-120 (Ifenprodil). This is the company's lead compound, which is being developed for IPF and a phase 2 is in planning. Additional information on this drug and the Algernon clinical program can be found here: LINK.

Algernon Drug Repurposing Strategy



Source: Algernon pharmaceuticals.

Therapeutics Pipeline, Programs

**Financial metrics are as of market close 06/25/2021.*

Product	Indication, Program, Event	Discover/Preclincal	Phase I	Phase II	Phase III	Marketed
NP-120 (Ifenprodil)	Idiopathic pulmonary fibrosis		phase 2 in planning			
NP-120 (Ifenprodil)	COVID-19					
AP-188 (DMT; N,N-Dimethyltryptamine)	Stroke					

Source:Company reports, Maxim Research

Senior Management

Christopher J. Moreau, Chief Executive Officer. Mr. Moreau is a seasoned business professional in the life sciences sector with a strong background in biotechnology research and business development, as well as deep expertise in the capital markets. Mr. Moreau was previously President & CEO and Director of a publicly traded company focused on the research & development of screening tests for prostate cancer, skin cholesterol, and type 2 diabetes. He has raised in excess of $30 million from the capital markets and has over 30 years of senior management experience in private & publicly traded company environments.

Michael Sadhra, Chief Financial Officer. Mr. Sadhra was a Former Senior Tax Manager at KPMG and is currently a Tax Partner at Sadhra Chow LLP. He has Served as CFO and as Director of Numerous Public Companies.

Ahmad Khalil, M.D., Ph.D., Chief Medical Officer. Dr. Khalil has extensive biopharmaceutical experience bringing drugs into clinical trials over the past 20 years, acting in the capacities of Medical Director, Medical Monitor, and Clinical Consultant for a variety of companies. He is a member of the Harvard Medical School Postgraduate Association, the Canadian Medical Association, the University of Montreal General Professor Syndicate, and the American Heart Association Professional Membership & Cardiovascular Sciences Councils.

Christopher Bryan Ph.D., Vice President Research & Operations. Dr. Christopher Bryan graduated from the University of Toronto with a PhD in organic chemistry and brings significant skills and experience to Algernon. His background as a scientist and senior manager includes the synthesis of hundreds of novel small molecules as potential therapeutic agents, the coordination of regional commercial teams and internal departments (i.e., marketing, R&D, manufacturing, sales and regulatory affairs), and the management of multiple strategic relationships including those involving key opinion leaders. He also has extensive experience in scientific writing, data analysis, and literature review.

**Financial metrics are as of market close 06/25/2021.*

atai Life Sciences (ATAI)

atai LIFE SCIENCES

www.atai.life
Krausenstraβe 9-10
10117 Berlin, Germany

Price:	**$18.00**
52 week range:	**$16.50-$22.91**
Shares Outstanding:	**153M**
Market Cap:	**$2.6B**
Listing Date	**June 2021**

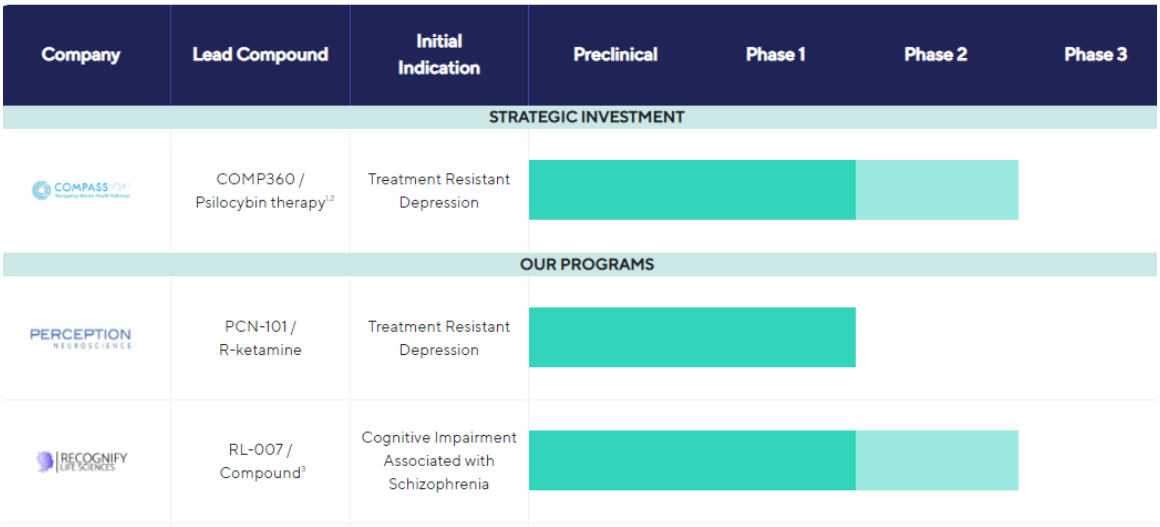
Company Description

atai Life Sciences is a clinical-stage biopharmaceutical company aiming to transform the treatment of mental health disorders. atai was founded in 2018 as a response to the significant unmet need and lack of innovation in the mental health treatment landscape, as well as the emergence of therapies that previously may have been overlooked or underused, including psychedelic compounds and digital therapeutics. The company has built a pipeline of 10 development programs and six enabling technologies, each led by focused teams with deep expertise in their respective fields and supported by their internal development and operational infrastructure. The company believes that several of their therapeutic programs' target indications have potential market opportunities of at least $1 billion in annual sales, if approved. One of atai's companies, Recognify Life Sciences, has initiated a Phase 2a trial in the United States. The company expects to initiate a Phase 2 trial for another program in 2021 and an additional three Phase 2 trials for other programs in 2022. atai also expects to initiate Phase 1 trials for three programs in 2021 and an additional four in 2022.

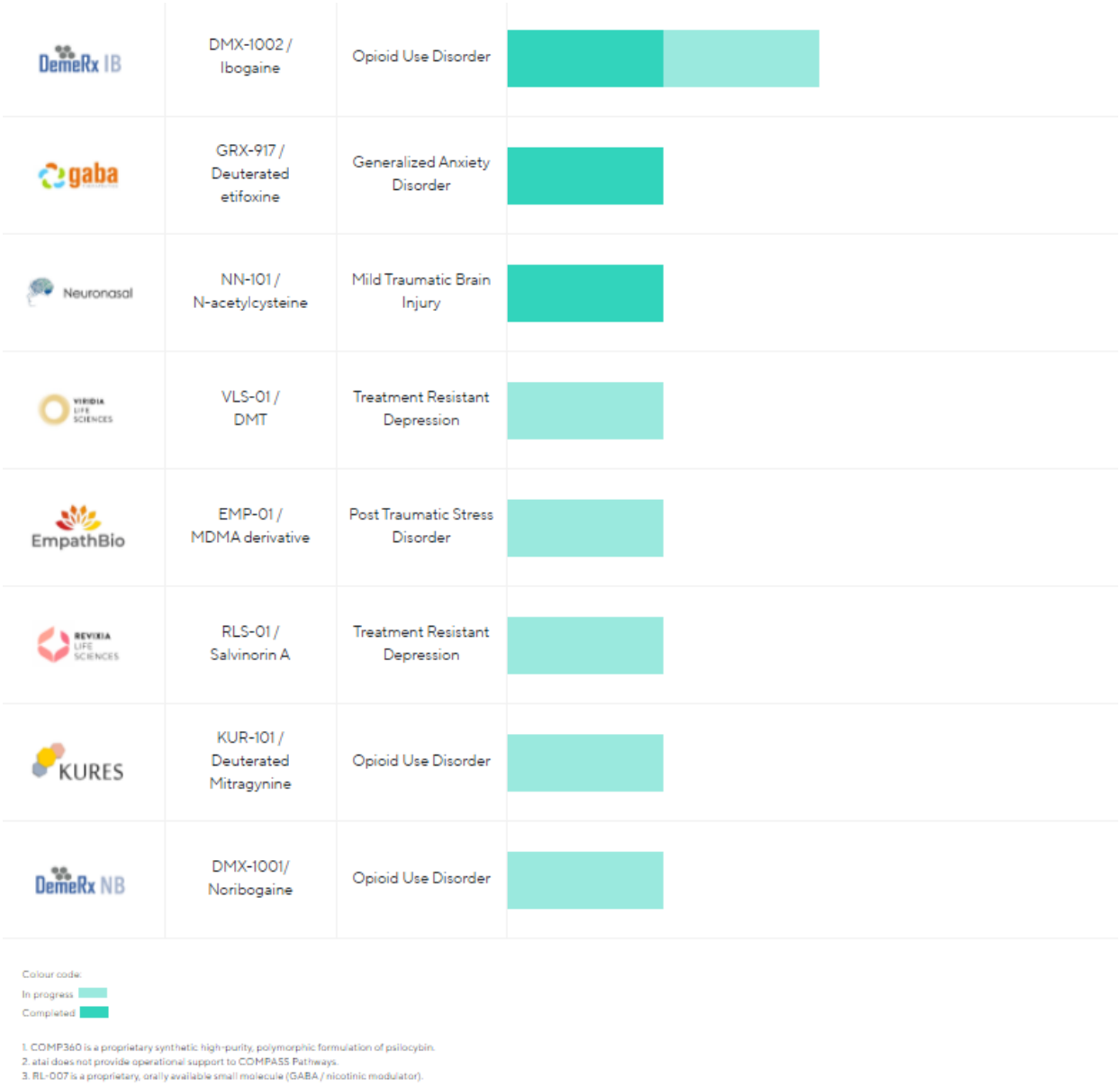
atai operates a decentralized model to enable scalable drug or technological development at atai's companies. atai is a strategic investor in Compass Pathways (NASDAQ: CMPS), which was the first psychedelic-focused biotech to list on NASDAQ (2020). atai's companies drive development of their mental health and CNS-based programs and enabling technologies that atai either acquired a controlling or significant interest in, or created de novo. These atai companies include Perception Neuroscience, Recognify Life Sciences, DemeRx IB, gaba Therapeutics, Neuronasal, Viridia Life Sciences, Empath Bio and Kures. atai also acquired a majority stake in Psyber Inc, a mental health-focused company that aims to improve mental health disorders and induce behavioral changes through brain computer interface (BCI)-enabled digital therapeutics (DTx). atai also partnered with, and holds a ~25% stake in, IntelGenx to develop products with IntelGenx's film delivery technology. atai plans to continue to grow their business and aid in the development of its various programs through continuation to incubate, acquire, and invest in companies that share atai's goal of advancing transformative treatments for patients who suffer from mental health disorders.

atai Life Sciences announced pricing of its IPO on 6/17/21; 15,000,000 shares of common stock at $15 per share. atai has granted the underwriters a 30-day option to purchase up to an additional 2,250,000 common shares at the initial public offering price, less underwriting discounts and commissions. Gross proceeds of $225M were raised, excluding the 30-day underwriter option. atai listed on NASDAQ under the symbol, "ATAI".

Therapeutic Pipeline, Programs



**Financial metrics are as of market close 06/25/2021.*



Source: atai Life Sciences

atai clinical and preclinical programs: Drug/product description, prior evidence in humans. Information is derived from atai S-1 filing on 4/20/21

- **Perception Neuroscience:**
  - **Indication:** Treatment resistant depression (TRD)
  - **Product:** PCN-101, a subcutaneous formulation of R-ketamine, the latter a glutamatergic modulator that is a component of ketamine, being developed as a rapid-acting antidepressant with the potential to be an at-home nondissociative alternative to S-ketamine (marketed as SPRAVATO).
  - **Prior evidence in humans:** In a third-party clinical trial, another formulation of R-ketamine was observed to produce a rapid and durable response with limited dissociative side effects in patients with TRD. In September 2020, Perception Neuroscience completed a Phase 1 trial of PCN-101 supporting the advancement of PCN-101 into a Phase 2 trial.
- **Recognify Life Sciences:**

**Financial metrics are as of market close 06/25/2021.*

- **Indication:** Cognitive impairment associated with schizophrenia (CIAS)
- **Product:** RL-007, a GABA/nicotinic modulator, is an orally available compound that is thought to alter the excitatory/inhibitory balance in the brain to produce pro-cognitive effects in clinical conditions, including schizophrenia.
- **Prior evidence in humans:** In third-party studies, other formulations of this compound have been shown to effect a significant improvement in aspects of cognitive function in both experimental paradigms involving healthy subjects as well as in a Phase 2 trial in patients suffering from diabetic peripheral neuropathic pain.

- **DemRx IB:**
  - **Indication:** Opioid use disorder (OUD)
  - **Product:** DMX-1002 is an oral formulation of ibogaine, a naturally occurring psychedelic product isolated from a West African shrub, that we are developing for the treatment of opioid use disorder, or OUD.
  - **Prior evidence in humans:** In third-party studies evaluating other formulations of ibogaine, significant reductions in opioid cravings were observed, both at discharge and at one month post treatment, and were associated with improved mood in patients with OUD.
  - **Indication:** Opioid use disorder (OUD)
  - **Products:** DMX-1001 is an oral formulation of noribogaine being developed for the treatment of OUD. Noribogaine is an active metabolite of ibogaine designed to have a longer plasma half-life and potentially reduced hallucinogenic effects compared with ibogaine.
  - **Prior evidence in humans:** Three third-party clinical trials have been conducted, testing various doses of another formulation of noribogaine in both healthy subjects and opioid dependent subjects undergoing detoxification. atai believes the results from these trials support further development.
- **GABA:**
  - **Indication:** Generalized anxiety disorder (GAD)
  - **Product:** GRX-917 is an oral formulation of a deuterated version of etifoxine, a compound that has a long history of prescription use in France for treating anxiety disorders. GRX-917 is designed to provide rapid anxiolytic activity with improved tolerability to current treatments for anxiety in the United States.
  - **Prior evidence in humans:** Etifoxine has been observed to have the rapid onset of anxiolytic activity of benzodiazepines without their sedating or addicting properties. Furthermore, etifoxine is not associated with abuse, dependence, or respiratory depression and has been observed to have no significant impact on motor skills or cognition.
- **Neuronasal:**
  - **Indication:** mild traumatic brain injury (mTBI)
  - **Product:** NN-101 is a novel intranasal formulation of N-acetylcysteine, or NAC. NAC is believed to stimulate the synthesis of glutathione, or GSH, an endogenous antioxidant that plays a protective role in the pathogenesis of mild traumatic brain injury, or mTBI.
  - **Prior evidence in humans:** An orally administered formulation of NAC was shown to increase the probability of mTBI symptom resolution at seven days in a third-party study conducted by the U.S. Army. Neuronasal has also completed a pilot study of NN-101 in ten healthy volunteers. In this pilot study, NN-101 was observed to be approximately 20 times and 100 times more brain-penetrant compared to intravenous, or IV, and oral NAC, respectively, and was well tolerated.
- **Viridia Life Sciences:**
  - **Indication:** Treatment-resistant depression (TRD)
  - **Product:** VLS-01 is a formulation of DMT, the active moiety of the traditional, hallucinogenic drink ayahuasca. DMT is characterized by an intrinsically short duration of psychedelic effect with a serum half-life estimated at less than 10 minutes. VLS-01 is formulated to provide a psychedelic experience lasting 30 to 45 minutes, thus potentially allowing for a shorter clinic visit compared to many other psychedelic compounds that may require a patient to be monitored for four or more hours.
  - **Prior evidence in humans:** Ayahuasca has shown significant antidepressant effects compared with placebo at one, two, and seven days after dosing in a double-blind, randomized, placebo-controlled third-party clinical trial in patients with TRD.
- **EmpathBio:**
  - **Indication:** Post-traumatic stress disorder (PTSD)
  - **Product:** EMP-01 is an oral formulation of an MDMA derivative being developed for the treatment of post-traumatic stress disorder, or PTSD. The company is developing EMP-01 for the potential to have an improved therapeutic index compared to MDMA.

**Financial metrics are as of market close 06/25/2021.*

  - **Prior evidence in humans:** In a meta-analysis of 21 third-party trials of other formulations of MDMA combined with psychotherapy for the treatment of PTSD, the benefits of such treatment were statistically significant versus placebo or active placebo-assisted therapy alone.
- **Revixia Life Sciences:**
  - **Indication:** Treatment-resistant depression (TRD)
  - **Product:** RLS-01 is a formulation of Salvinorin A, or SalA, a naturally occurring psychedelic compound with pharmacology differentiated from that of psilocybin or DMT, being developed for the treatment of TRD and other indications.
  - **Prior evidence in humans:** In a third-party study of another formulation of SalA, the effects of the compound were observed to be similar to those of psilocybin based upon functional brain imaging. atai believes these data combined with anecdotal usage reports suggest that SalA may possess rapid-acting antidepressant properties.
- **Kures:**
  - **Indication:** Opioid use disorder (OUD)
  - **Product:** KUR-101 is an oral formulation of deuterated mitragynine being developed for the treatment of OUD. Mitragynine is a component of the leaves of kratom (Mitragnyna speciosa).
  - **Prior evidence in humans:** Kratom has a long history of use in traditional medicine as an analgesic in parts of Southeast Asia, and its use in the United States has increased in recent years, particularly among individuals seeking to reduce prescription opioid consumption or manage opioid withdrawal symptoms. Published third-party human data involving isolated mitragynine are limited, but recent mechanistic insights suggest that this compound may be well-suited for the medically assisted therapy of OUD.

Senior Management

Christian Angermayer, Founder, Bio Link; **Lars Wilde, Co-Founder,** Bio Link;

Florian Brand; Co-Founder, Chief Executive Officer. Florian Brand is the co-founder and Chief Executive Officer of atai Life Sciences, a global biotech company builder with the vision of ultimately ending mental health disorders. Prior to joining atai, Florian was the Managing Director of Springlane, Germany's leading online kitchen appliance retailer.

Greg Weaver; Chief Financial Officer. Greg Weaver joined atai as consulting CFO in July 2020 and assumed the position permanently in September 2020. Greg has over 25 years of Chief Financial Officer and board director experience in the biotech industry. Greg's career has focused on start-up through clinical development and commercial stages. He has guided over $1.1 billion in financing transactions during his career, participated in several public and private financings, providing financial guidance, strategic leadership, and shareholder value. Prior to joining atai, Mr. Weaver was CFO at several successful companies, including SIRNA Therapeutics, ILEX Oncology, Oryzon, Prometic, and Eloxx Pharmaceuticals. Mr. Weaver holds an undergraduate degree in accounting from Trinity University (San Antonio, TX), and an MBA from Boston College.

Srinivas Rao, M.D., Ph.D., Co-Founder, Chief Scientific Officer. Srinivas Rao is the Chief Scientific Officer at atai Life Sciences AG. Dr. Rao has over 19 years of professional experience in the pharmaceutical and biotechnology industries. Prior to atai, Dr. Rao held the titles of Chief Scientific, Medical, or Executive Officer at companies ranging from venture backed startups to vertically-integrated, publicly traded pharmaceutical companies. Dr. Rao completed an internship in Internal Medicine at Yale-New Haven Hospital. He received his Ph.D. in neurobiology from Yale Graduate School and his M.D. from Yale School of Medicine. He holds both a Bachelor of Science and Master of Science degree in Electrical Engineering from Yale College and Yale Graduate School, respectively.

Rolando Gutierrez-Esteinou, M.D., Chief Medical Officer. Rolando Gutierrez-Esteinou is the Chief Medical Officer at atai Life Sciences AG since 1 January 2021. Dr. Gutierrez-Esteinou has over 25 years of professional experience in the pharmaceutical and biotechnology industries. Prior to atai, Dr. Gutierrez-Esteinou has held various titles of Chief Medical Officer, SVP or VP in Clinical Development, Project Management, Medical Affairs and Pharmacovigilance at Novartis, J&J and BMS, and small biotech companies, as well as serving as therapeutic area head in Neuroscience at Covance, a large clinical research organization. Dr. Gutierrez-Esteinou is a graduate of the National Autonomous University of Mexico School of Medicine in Mexico City, and completed a medicine internship and residency in Adult Psychiatry at Harvard Medical School. He was the recipient of a Fogerty International Fellowship at the National Institute of Mental Health in the Experimental Therapeutics Branch.

**Financial metrics are as of market close 06/25/2021.*

Awakn Life Sciences (NEO: AWKN)

www.awaknlifesciences.com
Suite 200, 366 Bay St.
Toronto, Ontario, M5H 4B2, Canada

Price:	**C$2.20**
52 week range:	**C$2.01-C$2.50**
Shares Outstanding:	**C25M (est.)**
Market Cap:	**C$54M**
Listing Date	**June 2021**

Company Description

Awakn is a biotechnology company with clinical operations, researching, developing, and delivering psychedelic medicine to treat addiction and other mental health conditions. Awakn's vision is to create a paradigm shift in mental health treatment, Awakn's mission is to integrate psychedelics into mainstream mental healthcare with a core focus on addiction, and Awakn's purpose is to deliver better mental health for more people. Awakn has three strategic objectives: to be a global leader in the research of psychedelic therapies and NCE (new chemical entity) drugs to treat addiction; to build the UK and EU's leading chain of medical psychedelic clinics; and to scale its reach through its Partnership Ecosystem outside its core territories of the United Kingdom and the European Union. Awakn is executing this strategy across two core workstreams of R&D and Delivery. Awakn's R&D activity is focused on Research, Digital, and Intellectual Property ("IP"), while Awakn's Delivery activity is focused on Clinics and a Partnerships Ecosystem.

Public Listing: Awakn Life Sciences commenced trading on the Toronto-based NEO stock exchange on 6/23/21 under the symbol, “AWKN” upon completing a reverse takeover transaction. The company also raised gross proceeds of $8,300,550 from its previously announced brokered private placement of 3,320,220 subscription receipts.

Research and Development Workstream Research: Awakn's research activity is focused on developing proprietary MDMA and ketamine-like NCE drugs, clinical trials to secure marketing authorization for MDMA as a treatment for AUD in the United Kingdom and the European Union, and managing Awakn's IP assets consisting of proprietary therapies, proprietary protocols, and proprietary research data.

Digital: Awakn's digital activity is focused on developing advanced analytics to improve the efficiency of Psychedelic Assisted Psychotherapy for treating addiction utilizing data from Awakn's research and clinical activities.

Intellectual Property: Awakn IP activity is focused on managing Awakn's IP assets, including significant research data acquired from Professor David Nutt's Equasy Enterprises, the Ketamine for Reduction of Alcoholic Relapse ("KARE") therapy licensed from University of Exeter, and Awakn's proprietary ketamine and MDMA-assisted psychotherapy protocols and therapies for the treatment of addiction and other mental health conditions. Commercial access to IP and protocols is a key focus of the company as part of its go-forward business model.

Delivery Workstream Clinics: The Bristol Clinic provides treatment that combines the proven therapeutic potential of ketamine with psychotherapy to treat addiction and other mental health disorders. The company plans to launch additional clinics in coming years.

Partnerships Ecosystem: Awakn's partnerships ecosystem is focused on scaling its reach outside its core territories of the United Kingdom and the European Union through licensing to enable addiction treatment practitioners to deliver the Awakn methodology.

Therapeutic Pipeline, Upcoming Events

Awakn Research and Development:

Product	Indication, Program, Event	Discover/Preclincal	Phase I	Phase II	Phase III	Marketed
MDMA	Alcohol use disorder					
MDMA-like NCE	Substance abuse disorders					
Ketamine-like NCE	Substance abuse disorders					

Source:Company reports, Maxim Research

Awakn Digital - 2021/2022: Awakn will be working through predictive analytics to improve the efficiency of psychedelic-assisted psychotherapy including the use of data capture, identity transformation, natural language processing, and predictive/supportive analytics.

**Financial metrics are as of market close 06/25/2021.*

Awakn Clinics: Clinics are and/or will be owned by Awakn, some of which will also be sites for Awakn clinical research programs. In 2021, three clinics are planned in the UK, in 2022 two additional clinics in UK and one in EU, 2023+ six clinics in the EU. Target is 20 clinics by the end of 2024 with each clinic expected to generate between GBP £1.75M – £3.5M ($2.48M - $4.98M USD). These numbers are derived from the April 2021 Awakn Life Sciences corporate presentation.

Strategic Partnerships & Collaborations

On April 9, 2021, Awakn signed a non-binding Collaborative Working Agreement with the University of Exeter to set the framework for shared activity on a number of mental health care advanced predictive analytics projects. Awakn is negotiating a contract with the University of Exeter to use a pattern classifier to detect identity shifts following Ketamine treatments through developing digital signatures of identity shifts in recovery for people with problematic substance use. This contract is in draft form and has not yet been signed by the parties.

On April 27, 2021, Awakn announced the selection of Evotec as the company's NCE research partner and the selection of Prof. David Nutt, a world leading expert on addiction, as the program's lead. This comes following the March 9, 2021 announcement that Awakn acquired proprietary research data on next generation MDMA and ketamine molecules from Prof. Nutt's Equasy Enterprises.

Senior Management

Anthony Tennyson, Chief Executive Officer. Anthony is an experienced financial services industry executive with 10 years in international strategy and commercial leadership roles with Aon plc, and 5 years with Meryll Lynch and Bank of Ireland. Anthony holds an MBA in Strategy and Finance and an MSc in Technology both from UCD, Ireland's top ranked business school.

Ben Sessa, MD. Chief Medical Officer. Ben has specialist training as a child and adolescent psychiatrist and is interested in the developmental trajectory from child maltreatment to adult mental health disorders, including adult addictions. Dr Sessa's joint interests in psychotherapy, pharmacology, and trauma have led him towards researching the subject of drug-assisted psychotherapy using psychedelic adjuncts. In the last 15 years he has been part of scientific and clinical studies administering LSD, psilocybin, ketamine, MDMA, and DMT to patients and volunteers. He is the author of psychedelic medical exploration books; The Psychedelic Renaissance (2012 and 2017) and To Fathom Hell or Soar Angelic (2015). He has recently completed research with Imperial College London exploring the world's first MDMA-assisted therapy trial for the treatment of Alcohol Dependence Syndrome. Alongside Prof. David Nutt, Ben has also been a long-term advocate of drug policy reform in the UK; believing that current laws hamper research and increase, rather than reduce, the burden of problematic drug use on individuals and society.

Jonathan Held, Chief Financial Officer. Jonathan is a chartered professional accountant with CFO level experience for private and public companies. Jonathan has worked in a number of sectors including technology, biotech, and natural resources, both domestic and international, and has been involved in numerous successful public market transactions including Initial Public Offerings, Reverse Takeovers and financings.

James Collins, Chief Operating Officer. James is a senior business leader and mental health champion with 17 years of experience with Accenture Strategy, 7 years as MD, designing and delivering corporate, digital and operating model strategies. James holds a BSc and MPhil in Psychology from University College London (UCL).

George Scorsis, Chairman. George has 15 year experience leading companies in highly regulated industries to rapid growth, including alcohol, energy drinks and, most recently, medical cannabis. Formerly President of Red Bull Canada, he was instrumental in restructuring the organization and growing the business to $150 MM in revenue.

**Financial metrics are as of market close 06/25/2021.*

Diamond Therapeutics (private)

www.diamondthera.com
100 King Street West, Suite 6200
Toronto, Ontario. M5X 1B8

Company Description

Diamond Therapeutics is a psychedelic drug development company based in Toronto. The company's mission is to develop new and better therapies for mental health conditions by unlocking the promise of psychedelic compounds. Diamond is focused on sub-perceptual, non-hallucinogenic treatments that hold potential for use across a broad patient cohort — maximizing the positive impact better drugs can have on the global mental health crisis. Diamond's world-leading team of scientists and clinicians are experts in the development of treatments for disorders of the central nervous system (CNS). Diamond's approach holds the promise of surpassing current first line treatments- which have seen no significant breakthrough for the last 30 years- in efficacy, speed of onset, safety, and tolerability. The company's first clinical program is focused on accessible psilocybin-based drugs that deliver rapid therapeutic outcomes without perceptual side effects. By eliminating the side effects, this intervention can be administered to a broad cohort of patients. Diamond is also advancing a diverse pipeline of tryptamine analogues and small organic molecules that act by modulating selective serotonin receptors and neurotrophic receptor signaling.

Therapeutics Pipeline, Programs

Product	Indication, Program, Event	Discover/Preclincal	Phase I	Phase II	Phase III	Marketed
Low-dose psilocybin	TBD- mental health					
Lysergic acid diethylamide (LSD)	TBD- mental health					

Source:Company reports, Maxim Research

At the NIH (National Institute of Health) Psilocybin Research Speaker Series being held from April 22 to June 10, 2021, Dr. Edward Sellars, Head of the Diamond Scientific Advisory Board) gave a talk on Psilocybin using low dosing, or sub-perceptual dosing. His talk was titled "Low Doses of Psilocybin Enhance Motivation and Attention in Poor Performing Rats: Evidence for Antidepressant Properties," and is based on results published in the journal Frontiers in Pharmacology earlier this year. Dr Sellers is Professor Emeritus, Pharmacology and Toxicology, Medicine and Psychiatry at the University of Toronto, More information can be found here; LINK.

Strategic Partnerships & Collaborations

McGill University. On February 4, 2021, Diamond Therapeutics entered into an agreement with McGill University for the exclusive use of Dr. Gabriella Gobbi's groundbreaking studies with lysergic acid diethylamide (LSD), its mechanism of action on the brain, and its potential for use at low doses in the treatment of mental health disorders. The agreement provides Diamond with access to the technology, data, and intellectual property developed by Dr. Gobbi and postdoctoral fellow Danilo De Gregorio, PharmD, Ph.D. and published in the Proceedings of the National Academy of Sciences of the United States of America. The work investigates for the first time the mechanism of action behind LSD's effect on social interactions. The findings suggest that psychedelics could play a role in treating diseases characterized by social impairment, such as autism spectrum disorder and social anxiety disorder. Diamond will also be working on a series of research studies in collaboration with Dr. Gobbi's laboratory. Dr. Gobbi will act as a consultant to Diamond and is expected to provide input into the company's preclinical and clinical programs.

***Proposed Reverse merger.** On February 4, 2021, GHP Noetic Science-Psychedelic Pharma Inc. (TSXV: PSYF.P - NR) ("GHP"), a capital pool company, and Diamond Therapeutics Inc. ("Diamond"), a psychedelic drug development company focused on low-dose therapies for mental health, are pleased to announce the signing of a letter of intent dated effective February 2, 2021 (the "LOI"). The LOI sets out the general terms and conditions pursuant to which GHP has agreed to acquire all of the issued and outstanding securities of Diamond in exchange for securities of GHP (the "Transaction"). The Transaction will result in a reverse take-over of GHP by Diamond and will constitute GHP's "Qualifying Transaction" as defined in the policies of the TSX Venture Exchange (the "Exchange"). GHP and Diamond are at arm's length and the Transaction will not be a non-arm's length transaction under the policies of the Exchange. On closing of the Transaction (the "Closing"), it is expected that the Resulting Issuer (as defined below), will be listed as a Tier 2 Industrial Issuer on the Exchange, and its business will be that of Diamond.

**Financial metrics are as of market close 06/25/2021.*

* This information is available as per the Diamond Therapeutics' website news section and as of the printing of this Industry note and profile on Diamond, to our knowledge this transaction has not been closed and/or there is no more available information. To our knowledge, Diamond Therapeutics remains a private company.

Senior Management

Judy Blumstock, Founder, Chief Executive Officer. Ms. Blumstock has over 25 years of venture capital and private equity experience spanning early to late-stage investments in life sciences and biotechnology. She has spent more than ten years as the executive director of corporate development at Toronto Innovation Acceleration Partners (TIAP), formerly know and MaRS Innovation. TIAP specialized in venture building for early-stage health sciences technologies and takes leading-edge research from discovery market. Before this, Ms. Blumstock was a principal with Genesys Capital, one of the largest Canadian-based venture capital firms focused exclusively on the life sciences industry. She was a partner with RBC Capital Partners Life Sciences Fund. Ms. Blumstock was also the director of biological and pharmaceutical research at Drug Royalty Corporation (now DRI Capital Inc.), which provides financial solutions in exchange for royalties to health-related organizations worldwide. She is an advisor to the preclinical biotechnology company Bright Angel Therapeutics, and to Bitnobi, a privacy protected data sharing platform. Ms. Blumstock has an MBA in finance from Columbia Business School in New York. Her BSc in biology is form the University of Toronto.

Jeffrey Sprouse, Ph.D., Pipeline Development. Dr. Sprouse has spent nearly 20+ years leading successful preclinical drug development efforts for top-tier pharmaceutical organizations. In his 15 years with Pfizer's neuroscience department, Dr Sprouse led several drug discovery efforts, which culminated in the nomination of two clinical candidates in the mood disorders space. At Lundbeck Research USA, he led a psychiatry-based disease focus team responsible for replenishing Lundbeck's exploratory portfolio of discovery projects. Separately, he joined the efforts of their business development teams in evaluating licensing opportunities. Dr Sprouse earned his doctorate in pharmacology at the Joan & Sanford I. Weill Medical College of Cornell University, where his research focused on drug-induced changes in the excitability of spinal motor neurons. Just prior to entering industry, he completes a post-doctoral fellowship in neuropharmacology at the Yale University School of Medicine under the mentorship of George Aghajanian. There he undertook the functional study of serotonergic neurons of the dorsal raphe on receptor mechanisms. Dr Sprouse is the author of more than 50 publications. He is listed as an inventor on five US-issued patents.

Rhea Mehta, Ph.D., Digital Health and Partnership Programs. A healthcare innovator, integrative health coach and global community builder, Dr Mehta spearheads Diamond's digital health and partnership programs. She brings over ten years of experience in research commercialization, health data privacy, and scientific wellness to her role. Dr. Mehta holds a PhD in molecular toxicology from the University of Toronto and a BS in biomedical sciences form the University of Waterloo. She has authored over 15 scientific publications. Dr Mehta is an industry advisory board member for McGill University's Masters in Management Analytics program. She also serves as an ambassador to Sandbox, a global community of passionate trailblazers and pioneers who seek to impact the world positively and inspire others to do the same. Dr Mehta practices and teaches ancient breathwork and kriya-kundalini yoga from the Himalayan Vedantic tradition.

Addition member of the team, as well as the Scientific Advisory Board and Board of Directors can be found here; LINK.

**Financial metrics are as of market close 06/25/2021.*

Eleusis ltd (private)

www.eleusisltd.com
99 Wall Street, #2205
New York, NY. 10005

Company Description

Founded in 2013, Eleusis is the first clinical-stage life science company dedicated to unlocking the full therapeutic potential of psychedelics through conventional clinical development and regulatory approval. In 2015 and 2016, Eleusis conducted two clinical trials of lysergic acid diethylamide (LSD). These trials focused on establishing a basic framework for the future clinical development of psychedelics in the context of Alzheimer's disease and depression. The two Phase 1 trials evaluated a low-dose LSD and a moderate dose LSD. The low-dose trial evaluated the safety, tolerability, pharmacokinetics, and pharmacodynamics of orally repeated administration of LSD (5ug, 10ug, 20ug) in healthy older adults. The trial results support safety and tolerability, and further clinical evaluation in patients with mild cognitive impairment associated with Alzheimer's disease. The second phase study evaluated the safety and tolerability of LSD in healthy adults and also explored novel approached to the safety monitoring of multiple concurrent treatment sessions. Trial results are expected to be published in 2021.

Over the period of 2017-2020, Eleusis identified translational challenges to the clinical development of psychedelics in the context of psychiatry and as anti-inflammatory medicines. In psychiatric application, these challenges included the incidence of adverse effects (i.e. anxiety, nausea), prolonged treatment duration, and the intrapatient variability of dose response. Beyond Psychiatry, the primary challenge identified was to minimize the perceptual effects of psychedelics while maximizing the immunomodulatory and neuroprotective activity. From 2020 and for several years going forward, the company will be moving to a full clinical development program of psychedelic drug therapies, as adjunctive treatments for major depressive disorder, and as disease modifying therapeutics in ophthalmology and Alzheimer's disease. In parallel, Eleusis is continuing its drug discovery and development program in an effort to fully separate the perceptual and anti-inflammatory effects of psychedelics.

Psychopharmacology and depression: Eleusis' research is focused on addressing core translational challenges of ketamine and psilocybin drug therapy.

Molecular pharmacology and new drug development: Eleusis is studying the molecular characteristics of existing and newly synthesized psychedelic drugs, and their effects on cellular processes mediated by the serotonin 5-HT2A receptor. Elucidating the structure-activity relationships of psychedelic drugs and identifying the basis for effective separation of their perceptual and immunomodulatory effects, will enable a vast new range of therapeutics applications.

Inflammation: Elueusis is working to further clarify 5-HT_{2A} receptor role in immune modulation and how psychedelic drugs can potentially modify inflammatory disease. Eleusis has discovered that psychedelics suppress inflammation in animal models of human chronic inflammatory disease at sub-perceptual dose levels. This is advancing to clinical development.

Neurodegeneration and neurorehabilitation: Eleusis is exploring the potential of psychedelics in neurodegenerative disease and as an adjunct to foster rehabilitation from neurological injury. Preclinical research has identified the therapeutic potential of modulating 5-HT_{2A} and other serotonin and dopamine receptors implicated in Alzheimer's disease pathobiology.

Care delivery: Elusis is developing a novel care delivery platform to enhance safety, enable personalization, and ensure accessibility.

Source: www.eleusis ltd.com/care-delivery/

**Financial metrics are as of market close 06/25/2021.*

Therapeutic Pipeline, Programs

Psychiatry pipeline:

Program	Indication	Phase I	Phase II	Milestone
ELE-Ket+	Adjunctive Treatment of Major Depressive Disorder			Phase I/II Initiation Q4 2021
ELE-Psilo+	Adjunctive Treatment of Major Depressive Disorder			Phase I/II Initiation Q1 2022

Inflammation, neurodegenerative diseases pipeline

Program	Indication	Phase I	Phase II	Next Milestone
ELE-02	Ocular Inflammation			Phase I Initiation Q1 2023
ELE-LSD	Alzheimer's Disease			Phase Ib Exploratory Study Q4 2021
ELE-XX	Peripheral Inflammatory Disease	Discovery		Lead Candidate Identification Q4 2021

Source: www.eleusisltd.com/pipeline/

Senior Management

Shlomi Raz, Founder, Chief Executive Officer. Shlomi is the founder and chief executive officer of Eleusis. Since founding Eleusis in 2013, Shlomi has overseen the company's corporate and clinical development efforts. Prior to founding Eleusis, Shlomi was a Managing Director at Goldman Sachs, and held a similar role at JPMorgan, where he began his corporate career. Shlomi holds an MA in psychology from New York University and a BS in finance from Georgetown University.

Gene Ramirez, Chief Financial Officer. Gene is the Chief Financial Officer of Eleusis. Prior to Eleusis, Gene was a Founder of Technology and Digital Health Investment Banking Groups over the past 20+ years for a number of global financial services firms in which he has built industry-recognized businesses with sustainable and growing franchises domestically and internationally. Gene has been a trusted advisor to CEOs and Boards of Directors across venture and private equity backed companies, and advised a broad spectrum of growth companies on more than 90 initial public offerings, private financings, and mergers and acquisitions representing over $25 billion in transaction value. In addition, Gene has founded two healthcare software companies, one of which was sold to Oracle in 2002, and started his career at Robertson Stephens as an Equity Research Analyst. Gene received an M.B.A. with a concentration in Entrepreneurship from the Franklin W. Olin Graduate School of Business at Babson College, and a B.A. in Economics with a specialization in Finance from the University of Texas at Austin.

Additional Eleusis team members and associated bios can be found here; LINK.

**Financial metrics are as of market close 06/25/2021.*

Entheon Medical (OTC: ENTBF, CSE: ENBI)

www.entheonmedical.com
211. 3030 Lincoln Ave.
BC, V3B 6B4
Canada

Price:	**$0.32**
52 week range:	**$0.28-$1.50**
Shares Outstanding:	**54M**
Market Cap:	**$17M**
Listing Date	**May 2021**

Company Description

Entheon is a biotechnology research and development company committed to developing and commercializing a portfolio of safe and effective Dimethyltryptamine based psychedelic therapeutic products ("**DMT Products**") for the purposes of treating addiction and substance use disorders. Subject to obtaining all requisite regulatory approvals and permits, Entheon intends to generate revenue through the sale of its DMT Products to physicians, clinics and licensed psychiatrists in the United States, certain countries in the European Union and throughout Canada.

The company's wholly owned subsidiary is HaluGen Life Sciences. HaluGen has developed a DNA testing and personalized psychedelic pre-screening platform that provides genetic, personal and familial insights to better inform the psychedelic experience, with the goal of improving patient care and reducing side effects and risk. HaluGen's genetic-based psychedelic pre-screening platform helps evaluate an individual's overall sensitivity and risk profile when using hallucinogenic drugs. This platform is the first of its kind with test results within days. On June 10, 2021, Entheon announced the Psychedelics Genetic Test Kit is now available for sale in the US. The kit launched in Canada on April 5, 2021. The Psychedelics Genetic Test Kit provides users with personalized reports and actionable insights, delivered directly to one's smartphone or desktop through the HaluGen website customer platform, providing a convenient and safe means to better understand one's sensitivity to psychedelics and ketamine. The test also provides insights into the short and long-term potential of psychedelic-induced risks, such as psychosis.

With a core-concentration on advancing DMT's therapeutic potential, Entheon is developing a combination of genetic and predictive data analysis to ensure the safest psychedelic treatment possible. Entheon's genetic testing subsidiary, HaluGen Life Sciences, conducts diligent genetic testing to determine the risk probability of different psychedelic molecules for a given patient before the treatment takes place. Using patient and clinical trial data, Entheon is developing a predictive biomarker response platform in partnership with Divergence Neuro Tech. Using Divergence's proprietary neuro platform in tandem with electroencephalographic monitoring (EEG), Entheon's biomarker platform, powered by AI and machine learning, will better prescribe suitable psychedelic treatments, provide real-time feedback during a psychedelic event, and inform the development of a post-therapy system of patient-specific support.

Next steps are conducting in vivo preclinical safety and toxicology studies in 2Q/3Q21 with the objective of determining acute toxicity of IV doses of DMT. This is a 14-day in vivo study. The study is being conducted at Science in Action, Israel. Following this work a P1/2a equivalent study is planned to take place in the Netherlands at the Centre for Human Drug Research. The objective of this work will be to assess pharmacokinetic and pharmacodynamic aspects of DMT fumarate (GMP formulation) in otherwise healthy adult nicotine users. The goal is to establish an optimal dose range and duration for therapeutic efficacy, including minimally and maximally tolerated doses.

Therapeutic Pipeline, Programs

Product	Indication, Program, Event	Disc/preclin	Phase I	Phase II	Phase III
N, N-dimethyltryptamine (DMT, intravenous)	Mental health (in vivo tox/safety stage)				

Source:Company reports, Maxim Research

Senior Management

Timothy Ko, Chief Executive Officer. Timothy Ko has a broad background of leading private ventures in the Service Sector, Investor Relations, Retail, and Technology. Timothy's passion for the psychedelic space is shaped by firsthand knowledge of the shortcomings of the current mental health system, and through his exposure to psychedelics, which he credits with saving his life.

Brandon Schwabe, Chief Financial Officer. Brandon is a Chartered Professional Accountant (CPA, CGA) who holds a Bachelor of Technology in Accounting degree with distinction from BCIT, and has completed the Canadian Securities Course (CSC) from the Canadian Securities Institute. Drawing on more than a decade of progressive experience guiding financial decisions and delivering solutions for companies, Brandon has extensive experience with private enterprises engaged in large capital projects, understanding the unique challenges they face.

**Financial metrics are as of market close 06/25/2021.*

Andrew Hegle, Ph.D., Director of Operations, Chief Science Officer. Dr. Andrew Hegle has been an adjunct professor of Pharmacology at the University of British Columbia since 2015. He has a background in molecular biology and biochemistry and has published research investigating the role of membrane receptor proteins in physiology, behavior, and disease. Andrew's main professional focus has been in the creation and management of laboratory operations, has held executive and operational management positions at several biotechnology companies and was a cofounder of both Cannevert Therapeutics and Canalytic Laboratories in Vancouver.

Dr. Brian Jahns, Chief Business Officer. Dr. Jahns brings more than 20 years of business leadership and biopharmaceutical expertise to his role in overseeing the overall business development of Entheon, including the development and maintenance of strategic relationships with third parties, including regulatory authorities. Importantly, Dr. Jahns will also work to develop a commercialization and post-market strategy for Entheon's therapeutic protocols while developing and advancing other related products, services, and initiatives of the company.

Additional Etheon team members and their bios can be found here; LINK.

**Financial metrics are as of market close 06/25/2021.*

GH Research PLC (GHRS)

www.ghres.com
28 Baggot Street Lower
Dublin 2
D02 NX43
Ireland

Price:	**$19.25**
52 week range:	**$19.21-$24.19**
Shares Outstanding:	**49M (est.)**
Market Cap:	**$973M**
Listing Date	**June 2021**

Company Description

GH Research is a clinical-stage biopharmaceutical company dedicated to transforming the treatment of psychiatric and neurological disorders. GH's initial focus is on developing novel and proprietary 5-Methoxy-N,N-Dimethyltryptamine, or 5-MeO-DMT, therapies for the treatment of patients with Treatment-Resistant Depression, or TRD. Their portfolio currently includes GH001, a proprietary inhalable 5-MeO-DMT product candidate, which is delivered via a vaporization device produced by a third party, and GH002, a proprietary injectable 5-MeO-DMT product candidate. GH has completed a Phase 1 healthy volunteer clinical trial, in which administration of GH001 via inhalation was observed to be well tolerated at the investigated single dose levels and in an individualized dosing regimen with intra-subject dose escalation within a single day. GH001 is currently being investigated in the Phase 2 part of an ongoing Phase 1/2 clinical trial in patients with TRD. Based on observed clinical activity, GH believes that administration of a single dose of GH001 has the potential to induce ultra-rapid remissions as measured by the Montgomery–Åsberg Depression Rating Scale, or MADRS, in certain patients. The goal of the ongoing Phase 2 part of the trial is to assess whether an individualized dosing regimen with intra-subject dose escalation within a single day can further increase the MADRS remission rate as compared to a single GH001 dose.

GH001 (inhalable 5-MeO-DMT): Following the P1 trial, which included 22 healthy subjects administered GH001, a phase 1/2 trial was initiated with seven days of followup in 16 patients with TRD. In the phase 1 portion of the trial, two doses were evaluated; 12 mg and 18 mg as single doses. Like in the prior phase 1, GH001 was shown to be safe and well tolerated. Clinical activity was demonstrated with two patients in the 12 mg group and one in the 18 mg group experiencing MADRS remission on day seven after dosing, as well as a MADRS clinical response, and one further patient in the 18 mg group achieved a MADRS clinical response on day seven after dosing. The ongoing open-label, single-arm Phase 2 part of this trial aims to assess whether applying our individualized dosing regimen with intra-patient dose escalation of GH001 can further increase the MADRS remission rate compared to a single GH001 dose in patients with TRD. In addition to TRD, GH Research plans to initiate two P2a studies of GH001 in other psychiatric and neurological disorders, including major depressive disorder.

GH002 (injectable 5-MeO-DMT): GH002 is GH's next 5-MeO-DMT product candidate formulated for administration via a proprietary injectable approach. GH believes GH002 has the potential to be an attractive therapeutic option, e.g., in patients with underlying airway or pulmonary disease or in situations where it is difficult to assure that the GH001 inhalation is performed adequately, such as in acute psychiatric emergency care situations where a patient may be unable to properly use an inhalation device. GH002 is currently in preclinical development and GH anticipates developing GH002 in indications within its focus area of psychiatric and neurological disorders.

In addition to the inhalation and injection approaches, GH plans to investigate additional delivery systems and additional routes of administration for 5-MeO-DMT, which the company believes could expand the patient population that could benefit from our product candidates. The company is also continuing to expand its intellectual property portfolio around 5-MeO-DMT. Several patent applications have been filed covering novel aerosol compositions of matter of 5-MeO-DMT, novel manufacturing methods for the purification of 5-MeO-DMT, high purity 5- MeO-DMT and novel uses of 5-MeO-DMT in various disorders.

IPO: On 6/25/21, GH Research priced its IPO; 10,000,000 shares of common stock at $16 per share. Shares trade on NASDAQ under the symbol "GHRS".

Therapeutic Pipeline, Programs

Product	Indication, Program, Event	Discover/Preclincal	Phase I	Phase II	Phase III	Marketed
GH001 (inhalable 5-MeO-DMT)	Treatment resistant depression (TRD)					
GH001 (inhalable 5-MeO-DMT)	Psychiatric and neurological disorders					
GH002 (injectable 5-MeO-DMT)	Psychiatric and neurological disorders:					

Source:Company reports, Maxim Research

Financial metrics are as of market close 06/25/2021.

Senior Management

Theis Terwey, PD, MD, Chief Executive Officer. Theis serves as GH Research's Chief Executive Officer. Dr. Terwey is one of GH Research's co-founders and was a Director from founding in 2018 to 2020. Currently, Dr. Terwey also serves as a Senior Consultant for Forward Pharma A/S, a position he has held since 2015. Previously, Dr. Terwey was Partner at NB Capital ApS, a position he held from 2015 to 2020, and he served in a variety of roles at NB Capital Research GmbH, where he was Managing Director from 2012 to 2015, and Medical Advisor from 2009 to 2012. Dr. Terwey holds a Dr. Med. from Charité — University Medicine Berlin, where he also is a private lecturer (Privatdozent), and completed his specialist degree for Internal Medicine.

Magnus Halle, Managing Director. Mr. Halle has served as GH Research Managing Director, Ireland since November 2020, is one of the co-founders, and served as a consultant to GH from founding in 2018 to 2020. Previously, Mr. Halle served an Analyst at NB Capital ApS, a position he held from 2018 to 2021. Additionally, from 2019, he served as the Money Laundering Reporting Officer at NB Capital ApS. Prior to that, from 2016 to 2018, he was the Personal Assistant to Florian Schönharting at NB Capital ApS. Mr. Halle holds a BSc in economics and business administration from Copenhagen Business School.

Julie Ryan, ACA, Group Finance Director. Ms. Ryan has served as GH Research's Group Finance Director since January 2021. Previously, Ms. Ryan has served in a number of senior finance roles including Ardagh Group plc, where she was Group Reporting Manager from 2018 to 2020, Sherry FitzGerald, where she was Commercial Business Partner in 2018, ICON plc, where she was Assistant Manager, Commercial/Finance Business Partnering from 2015 to 2018 and Brambles Ltd, where she was Finance Manager from 2013 to 2015. Ms. Ryan qualified as a chartered accountant with PricewaterhouseCoopers and holds a B.Comm (Acc) from University College Dublin and a MAcc from University College Dublin's Michael Smurfit Graduate Business School.

Florian Schönharting, Chairman, Co-Founder. Mr. Schönharting has served as the Chairman of GH Research's board of directors since 2018. Mr. Schönharting is one of the co-founders. Mr. Schönharting is also co-founder of Forward Pharma A/S, has served on its board of directors since 2005, and as chairman of the board of directors since 2011. He has also founded or co-founded several other biopharmaceutical companies, including Genmab A/S, Veloxis A/S (f/k/a Life Cycle Pharma A/S), Zealand Pharma A/S and Acadia Pharmaceuticals Inc. Mr. Schönharting has more than 25 years of investment executive experience in public and private equity funds involved in the biopharmaceutical industry. We believe that Mr. Schönharting is qualified to serve on our board of directors because of his experience, attributes, and skills, including his extensive pharmaceutical and executive experience.

**Financial metrics are as of market close 06/25/2021.*

IntelGenx Corp (OTC: IGXT, CVE: IGX)

IntelGenx Corp.

www.intelgenx.com
6420 Rue Abrams
Saint-Laurent (Quebec), Canada
H4S 1Y2

Price:	**$0.54**
52 week range:	**$0.12-$0.69**
Shares Outstanding:	**149M**
Market Cap:	**$82M**
Listing Date	**Jan 2007**

Company Description

IntelGenx is a leading drug delivery company focused on the development and manufacturing of pharmaceutical films. IntelGenx's superior film technologies, including VersaFilm®, DisinteQ™, VetaFilm™ and transdermal VevaDerm™, allow for next generation pharmaceutical products that address unmet medical needs. IntelGenx's innovative product pipeline offers significant benefits to patients and physicians for many therapeutic conditions. IntelGenx's highly skilled team provides comprehensive pharmaceuticals services to pharmaceutical partners, including R&D, analytical method development, clinical monitoring, IP and regulatory services. IntelGenx's state-of-the-art manufacturing facility offers full service by providing lab-scale to pilot- and commercial-scale production.

While the company has a pipeline of products both internal and partnered, as it relates to this particular profile note on psychedelics-based therapeutics, IntelGenx is partnered with two players in the space; atai Life Sciences and Cybin Inc. The partnership with atai is for an undisclosed psychedelic asset and for Cybin it is for psilocybin. More details are shown below.

IntelGenx manufacturing: IntelGenx's highly skilled team provides technological expertise in scale-up, technology transfer, and manufacturing of pharmaceutical films. The company has unique experience at all scales of pharmaceutical film production, including suspensions, solubilizations, monolayer or multilayer film products. IntelGenx's equipment and procedures have been designed to comply with all regulatory standards. Its GMP facility is dedicated to the development and manufacturing of pharmaceutical films, and the company is licensed to handle narcotics and controlled substances.

IntelGenx development services: IntelGenx has more than 14 years of experience in development services across the full product lifecycle of drug development. The company offers a broad spectrum of analytical and testing services in a GMP-compliant setting including raw materials testing, drug product release analytical testing, stability studies, formulation prototype development and clinical monitoring. IntelGenx serves partners in several jurisdictions worldwide.

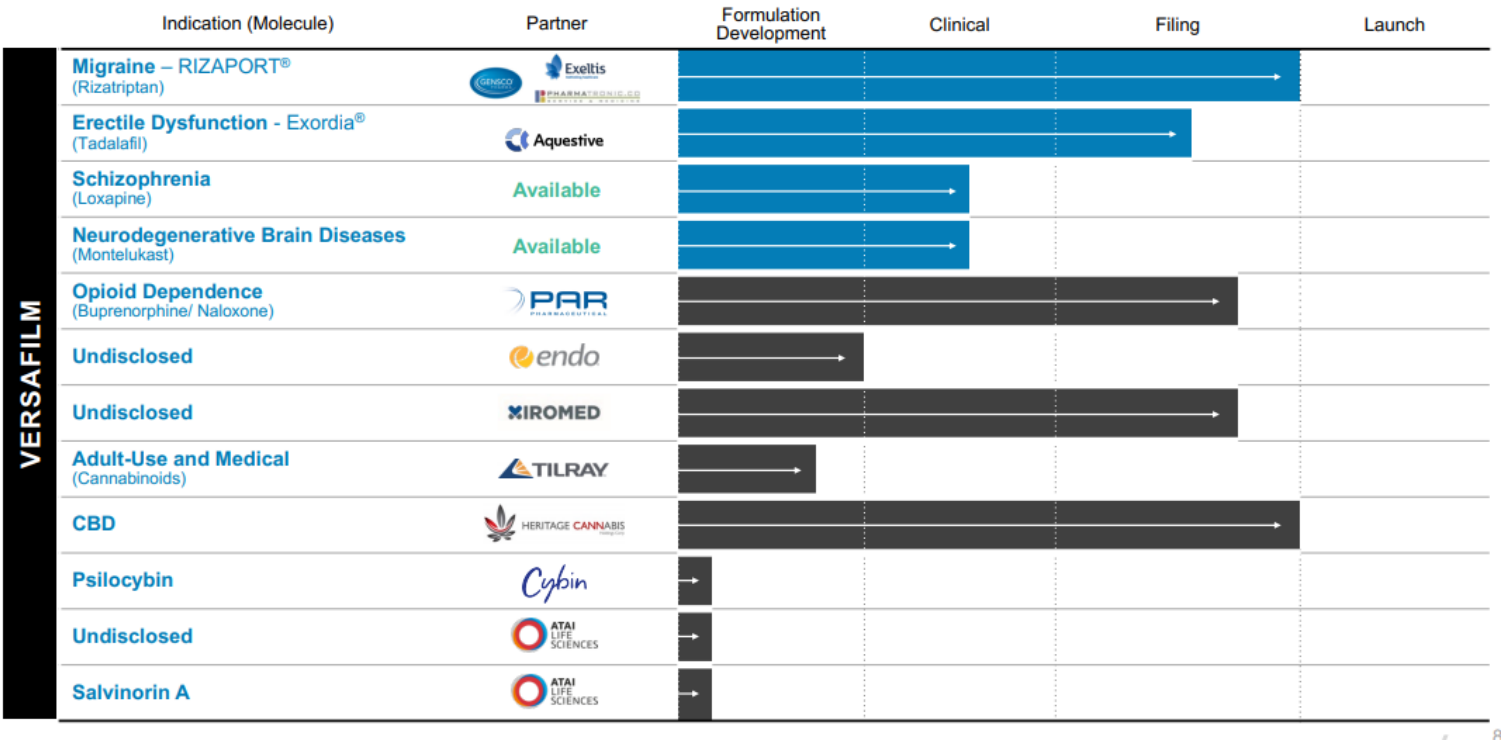
IntelGenx Development

IntelGenx Manufacturing

Source: IntelGenx, Maxim Research

**Financial metrics are as of market close 06/25/2021.*

Therapeutics Pipeline, Programs



Source: IntelGenx presentation

Strategic Partnerships & Collaborations

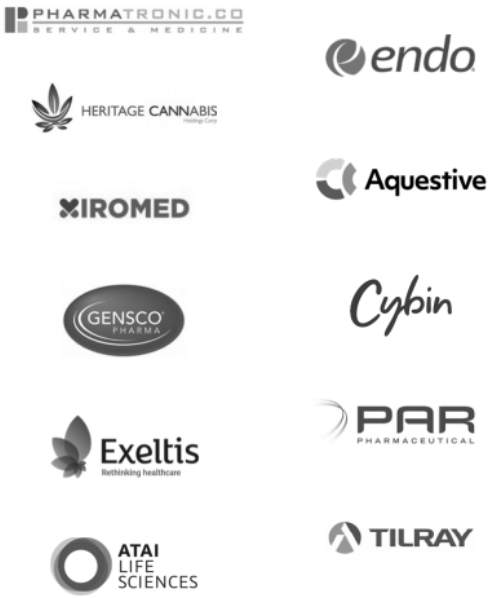
Psychedelic-focused partnerships/collaborations:

atai Life Sciences partnership: On August 20, 2020, the company had entered into a feasibility agreement with atai Life Sciences AG for the development of novel formulations of pharmaceutical-grade psychedelics (the "Product") based on IntelGenx's polymeric film technologies. IntelGenx announced On March 15, 2021 that it had agreed to the terms of a strategic partnership with atai, including an equity investment by atai, pursuant to which atai will initially acquire an approximate 25% interest in the Corporation. The Corporation also announced that atai has granted to IntelGenx a secured loan in the amount of US$2,000,000. As part of the strategic partnership, IntelGenx will exclusively partner with atai to develop compounds for the prevention or treatment of mental health diseases or disorders, including compounds that have psychedelic, entactogenic, and/or oneirophrenic properties. On May 14, 2021, IntelGenx announced it had entered into a second feasibility agreement (the "SFA") with atai for developing novel formulations of Salvinorin A, a naturally occurring psychedelic compound being developed for the treatment of treatment-resistant depression and other indications. As of the closing on May 14th atai holds ~25% of IntelGenx common stock.

Cybin Partnership: On July 7, 2020, IntelGenx announced it had entered into a feasibility agreement with Cybin, Canada's premier mushroom life sciences company focused on advancing psychedelic and nutraceutical-based products derived from fungi, for the development of an orally-dissolving film for the delivery of pharmaceutical-grade psilocybin.

**Financial metrics are as of market close 06/25/2021.*

IntelGenx partnerships/collaborations:



Source: IntelGenx presentation

Senior Management

Horst G. Zerbe, Ph.D., Founder, Chief Executive Officer. Dr. Zerbe is the founder of IntelGenx Corp. and has been the Chief Executive Officer, and Chairman of IntelGenx Technologies Corp. since April 2006. In addition, Dr. Zerbe has served as the Chief Executive Officer and Director of IntelGenx Corp., our Canadian Subsidiary, since 2005. He also served as president of both entities until May 2019. Dr. Zerbe retired from his positions as President and Chief Executive Officer on January 1, 2014, and at the request of the Board, was re-appointed as President and CEO effective July 15, 2014. Dr. Zerbe has more than 35 years of experience in the pharmaceutical industry. He started his career at Schwarz Pharma and subsequently at 3M Pharmaceuticals in Germany. From 1998 to 2005, he served as the President of Smartrix Technologies Inc. in Montreal; previously, from 1994 to 1998, he served as Vice President of R&D and Technology Transfer at LTS Lohmann Therapy Systems in West Caldwell, NJ. During his assignments at 3M and LTS, he gained considerable experience in the technology transfer and commercial manufacturing of transdermal as well as oral film products. Dr. Zerbe has extensive executive level experience, and has been responsible for many strategic and business initiatives. Dr. Zerbe has been involved in new drug development and the acquisition and disposition of new drug candidates and other technology, licensing, and distribution matters. He has published numerous scientific papers in recognized journals and holds more than 30 patents.

Andre Godin, Chief Financial Officer. Mr. Godin has been IntelGenx's President and Chief Financial Officer since May 8, 2019. He has previously served as Executive Vice President and Chief Financial Officer since August 2015. Mr. Godin has more than 25 years of experience in the Biotech/Pharma industry and has a strong background in capital markets, finance and operations. Most recently, from April 2014 to April 2015, he served as Interim CEO and CFO of Neptune Technologies and Bioresources Inc. and both of its subsidiaries, Acasti and NeuroBioPharm. He started with Neptune in April of 2003 as Vice President, Administration and Finance and was named its CFO in 2008. Prior to joining Neptune, Mr. Godin was President of a dietary supplement corporation and a corporate controller for a pharmaceutical corporation in OTC products. Mr. Godin holds a Bachelor of Business Administration degree from the University of Quebec in Montreal. He is a member of the Canadian Chartered Professional Accountants and the Canadian Institute of Chartered Accountants.

Additional IntelGenx team members and their bios can be found here; LINK.

**Financial metrics are as of market close 06/25/2021.*

Lobe Sciences (OTC: GTSIF, CNSX: LOBE)

www.lobesciences.com
Suite 1400-1199 West Hastings Street
Vancouver, BC, Canada
V6E3T2

Price:	$0.09
52 week range:	$0.03-$0.22
Shares Outstanding:	200M
Market Cap:	$18M
Listing Date	Oct 2019

Company Description

Lobe Sciences is a life sciences company focused on the research and development of psychedelic medicines. It focuses on clinical development of devices and medicines to treat neurological disorders and brain traumas. Lobe is undertaking the development of innovative medicines and devices to treat mental health disorders and improve well being while building a growing a portfolio of intellectual property to protect its technologies.

Psychedelics (serotonergic hallucinogens) are powerful psychoactive substances that alter perception and mood and affect numerous cognitive processes. They are generally considered physiologically safe and do not lead to dependence or addiction. N-acetylcysteine (NAC) is a dietary supplement derived from the amino acid L-cysteine. Taking NAC increases the level of glutathione, a potent antioxidant and anti-inflammatory molecule, in cells. Glutathione's function is to protect cellular compounds such as DNA and prevent damage to them from reactive oxygen species and inflammatory cytokines. It is also used as an antidote for acetaminophen overdose.

Lobe's approach to mental health and brain injury incorporates four components:

- Micro-dosing psilocybin: Psilocybin combined with NAC for the treatment of mTBI and PTSD and other neurological disorders. Additionally, pairing them with odorants to create memory odor imprint pairing.
- Micro-dosing MDMA: MDMA combined with NAC for the treatment of mTBI and PTSD and other neurological disorders. Additionally, pairing them with odorants to create memory odor imprint pairing.
- Patent-pending medical devices: Medical Devices for immediate delivery of medicines directly to the Olfactory Bulb for best therapeutic outcomes.
- Virtual reality integration. Virtual Reality Headset combined with Medical Devices to improve efficiency and raise response to treatment.

Strategic Partnerships & Collaborations, development programs.

Production and supply agreement: On May 14, 2021, Lobe Sciences announced it had entered into a production and supply agreement (the "Agreement") with HAVN Life Sciences Inc. (CSE: HAVN, OTC: HAVLF, FSE: 5NP - NR), a biotechnology company pursuing standardized extraction of psychoactive compounds and the development of natural healthcare products. Pursuant to the Agreement, HAVN will produce and supply Lobe's recently acquired Vitamind line of natural health products ("NHP"), including plant-based compounds and non-psychoactive mushrooms. The Company acquired the Vitamind line of products as announced on May 4, 2021.

Vitamind Line Acquisition: On May 4, 2021, Lobe Sciences announced that it had acquired, through its wholly owned subsidiary Eleusian Biosciences Corp, the consumer goods product line, "Vitamind", pursuant to an asset purchase agreement dated April 30, 2021, between Eleusian and a holding corporation that holds the rights to Vitamind. Vitamind is a brand of non-psychedelic functional mushroom products that includes three product lines specifically focused on boosting immune response and increasing mental clarity. The Vitamind line of products are adaptogenic functional mushroom extract blends, which are specifically designed to promote wellness, including supporting immune response, and mental clarity, including improving memory function and reducing anxiety. The products include a blend of reishi, cordyceps, lion's mane, turkey tail, mesima, maitake, bacopa and/or shitake mushrooms. The Vitamind line currently consists of three product lines: 911 IMMUNITY, 911 IMMUNITEA, and LIFE HACK. The products include multiple delivery forms, including capsules, tea bags and powder, allowing for ease of consumption and convenience, catering to consumer preferences. Additional transaction details can be found here; LINK.

Psilocybin + NAC, University of Miami: On November 30, 2020 the company launched preclinical research studies using psilocybin and N-Acetylcysteine ("NAC") for the treatment of mild traumatic brain injury/concussion ("mTBI") with post-traumatic stress disorder ("PTSD"). The study is in collaboration with a multidisciplinary team of scientists and physicians at the University of Miami Miller School of Medicine under the lead of Michael E. Hoffer, M.D., professor of otolaryngology and neurological surgery. NAC has been shown to be safe and efficacious in a phase I human clinical

Financial metrics are as of market close 06/25/2021.

study in treating military personnel who had suffered mTBI. The initial research focus is to demonstrate the safety and efficacy of the combination of psilocybin and NAC using broadly accepted rodent models. Final results are expected in 2H21.

Nasal Mist Device, Psilocybin + NAC, Visionworks Engineering: The device includes a nasal delivery system for administration of pharmaceutical agents such as a psilocybin-derived agent and/or N-acetylcysteine ("NAC") at preselected dosages and times. The Company holds several provisional patent applications including for a nasal mist device entitled "Device and Method for the Treatment of Traumatic Brain Injuries and Post-Traumatic Stress Disorder". Successful completion of phase one development of the device. A test platform was constructed and used to quantify key characteristics of the actuator, atomizer, and control system. The testbed was also used to refine the mist volume, quality, and spray pattern. The results reflect a clear path for delivering precise doses of drugs to the upper region of the nasal cavity. The completion of the prototype phase is an important milestone towards developing effective delivery methods for commercialization.

CoreOne Labs, Joint Venture: The joint venture gives Lobe the potential to provide cGMP grade psilocybin for the use in clinical studies it plans to initiate in the future. The joint venture involves the development, regulatory approval and marketing of biosynthetic psilocybin and other psychedelic compounds. Core One Labs will develop and manage the cGMP production and delivery of biosynthetic psilocybin. Lobe is responsible for the clinical development, and commercialization. Vocan Biotechnologies Inc., a wholly-owned subsidiary of Core One Labs, will produce the biosynthetic psilocybin and other psychedelic compounds to be used. Vocan has identified a patentable method of producing psilocybin, the active ingredient in psychotropic mushrooms.

Virtual Psychedelics, Joint Venture: Development of Krysalis Therapeutic Pod to Deliver Headset-free Virtual Experience with Biometric Monitoring with Virtual Psychedelics. Partnered with industry-leading pioneers, including Hollywood director Brett Leonard and researcher and USC professor Dr. Skip Rizzo, with respect to the joint design, development, and commercialization of a new psychedelic/virtual experience ("VX") pod. The Pod will be designed to be powered by a custom tech stack incorporating advanced display technology and state-of-the-art bio-monitoring with the goal of improving psychedelic therapy by optimizing set, setting, and the overall experience for clinical and other uses. The KrysalisTM Pod will be designed as a headset-free, virtual experience that uses multisensory stimulation to create an application that can offer treatment options for cognitive, psychological, motor, and functional impairments across a wide range of clinical health conditions.

Cowlitz Divestiture, Ionic Brands: On March 8, 2021 the company completed the sale of Washington-based Cowlitz County Cannabis Cultivation Inc. to Ionic Brands Corp. The transaction generated C$1.75 million cash for Lobe on closing. Lobe Sciences received 100,406,701 series E non-voting preferred shares of CNSX:IONC which convert on a one-to-one basis and carry an annual dividend of 13% for a period of two years. Lobe Sciences also received of 4,000,000 five year C$0.30 Ionic Brand warrants. IONIC BRANDS is a national cannabis holdings company based in Washington and led by a team of successful entrepreneurs. The company is focused on building a multi-state consumer-focused cannabis concentrate brand portfolio focusing on the premium and luxury segments.

Source: Lobe Sciences presentation

Senior Management

**Financial metrics are as of market close 06/25/2021.*

Philip Young, Chief Executive Officer. Mr. Young is an analytical and results driven life sciences executive who has successfully managed public and private companies through product development, international growth, commercialization, and M&A transactions. He has served as a Director and Chief Executive Officer for public companies for the past 20 years, where he created significant shareholder value, built integrated scientific, manufacturing and commercial operations, directed successful M&A transactions, and was responsible for generating more the $900M through acquisitions and equity financings. Mr. Young started his management career in the biopharmaceutical industry at Genentech Inc., where he was responsible for their cardiovascular and endocrine product launches sales and marketing.

Brian Zastiko, Chief Financial Officer. Brian has over 13 years of experience across a variety of private and public sector companies in the cannabis, agriculture, manufacturing, and utility industries. He has extensive experience in financial reporting and corporate governance, as well as in the capital markets. Previously, Brian was a manager at Ernst & Young LLP, where he obtained his CPA, CA designation.

Maghsoud Dariani, Chief Science Officer. Prior to leading science and technology efforts at LOBE, Dariani was President of Focus Pharmaceuticals, Inc., where he managed the development and approval of drug products, achieving one FDA approval and bringing another to the clinical evaluation stage, then successfully negotiated the sale of the company in February 2003. Prior to Focus, Maghsoud was Vice President of the chiral pharmaceutical business unit at Celgene Corporation. During his twelve years at Celgene, he was responsible for the successful development and FDA approval of the chirally pure versions of Ritalin, which are currently marketed by Novartis under the Focalin and Focalin XR trade names.

Additionally, Board of Directors and Advisors, along with their bios can be found here; LINK1, LINK2.

**Financial metrics are as of market close 06/25/2021.*

Multidisciplinary Association for Psychedelic Studies ("MAPS", non-profit research group)

www.maps.org
3141 Stevens Creek Blvd #40563
San Jose, Ca. 95117

Organization Description

Founded in 1986, the Multidisciplinary Association for Psychedelic Studies (MAPS) is a 501(c)(3) non-profit research and educational organization that develops medical, legal, and cultural contexts for people to benefit from the careful use of psychedelics and marijuana. MAPS is active in research and development across a spectrum of psychedelic molecules including 3,4-methylenedioxymethamphetamine (MDMA), medical marijuana, lysergic acid diethylamide (LSD), ibogaine, and ayahuasca.

MDMA: The organization's highest priority is sponsoring FDA drug development research into MDMA-assisted therapy for the treatment of post-traumatic stress disorder (PTSD). FDA has designated MDMA-assisted therapy for PTSD a Breakthrough Therapy and has come to agreement with MAPS on Phase 3 protocol designs after a rigorous Special Protocol Assessment (SPA) process. MAPS' goal is to develop MDMA-assisted therapy for PTSD into an FDA-approved prescription treatment. The Phase 3 trials are expected to be complete in 2022.

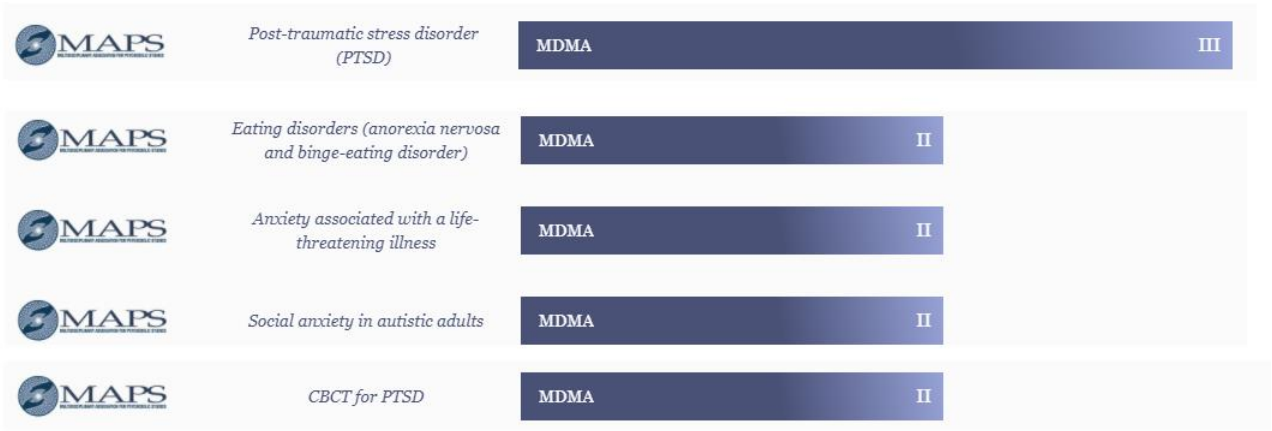
On May 3, 2021, MAPS announced that the first MDMA phase 3 trial in PTSD replicated and expanded on phase 2 results, indicating that MDMA-assisted therapy may be an effective and cost-saving treatment for PTSD. On May 10, *Nature Medicine* published the peer-reviewed paper detailing the results of the study. In this first Phase 3 trial of any psychedelic-assisted therapy, participants who received MDMA-assisted therapy reported a significant reduction in PTSD symptoms compared to those who received placebo with therapy ($p<0.0001$), successfully achieving the prespecified primary endpoint for the trial. In fact, 67% of the group who received MDMA, compared to 32% of the group who received placebo, no longer qualified for a PTSD diagnosis after three treatment sessions. In addition, participants treated with MDMA-assisted therapy had statistically significant reductions for the key secondary endpoint of functional impairment relative to placebo with therapy ($p=0.0116$).

LSD: MAPS' completed Phase 2 pilot study in 12 subjects found positive trends in the reduction of anxiety following two LSD-assisted psychotherapy sessions. The study results also indicate that LSD-assisted psychotherapy can be safely administered in these subjects and justify further research.

Ibogaine: MAPS has completed two observational studies of the long-term effects of ibogaine treatment on patients undergoing therapy at independent ibogaine treatment centers in Mexico (study publication, LINK) and New Zealand (study publication, LINK).

Ayahuasca: MAPS supports research into the safety and effectiveness of ayahuasca-assisted treatment for drug addiction and PTSD.

Therapeutic Pipeline, Upcoming Events



Source: Information, images derived from psilocybinalpha.com.

**Financial metrics are as of market close 06/25/2021.*

Senior Management

Rick Doblin, Ph.D., Founder and Executive Director. Rick Doblin, Ph.D., is the founder and executive director of the Multidisciplinary Association for Psychedelic Studies (MAPS). He received his doctorate in Public Policy from Harvard's Kennedy School of Government, where he wrote his dissertation on the regulation of the medical uses of psychedelics and marijuana and his master's thesis on a survey of oncologists regarding smoked marijuana vs. the oral THC pill in nausea control for cancer patients. His undergraduate thesis at New College of Florida was a 25-year follow-up to the classic Good Friday Experiment, which evaluated the potential of psychedelic drugs to catalyze religious experiences. He also conducted a thirty-four year follow-up study to Timothy Leary's Concord Prison Experiment. Rick studied with Dr. Stanislav Grof and was among the first to be certified as a Holotropic Breathwork practitioner. His professional goal is to help develop legal contexts for the beneficial uses of psychedelics and marijuana, primarily as prescription medicines but also for personal growth for otherwise healthy people, and eventually to become a legally licensed psychedelic therapist. He founded MAPS in 1986, and currently resides in Boston with his wife, dog, and the empty rooms of three children, one of whom is in college and two who have graduated.

Amy Emerson, Chief Executive Officer of MAPS PBC. Amy Emerson is the Chief Executive Officer at the MAPS Public Benefit Corporation (MAPS PBC), a wholly owned subsidiary of the Multidisciplinary Association for Psychedelic Studies (MAPS), a 501(c)(3) non-profit. As the Chief Executive Officer, Amy has led the growth and development of this new subsidiary and is responsible for overall global regulatory strategy and implementation of research programs with a focus on the MDMA-assisted psychotherapy program within MAPS PBC. Amy started as a pro bono consultant at MAPS in 2003, and since then has built MAPS' clinical department while managing the MDMA Clinical Development Program with a focus on the PTSD indication. In 2014, MAPS Public Benefit Corporation was incorporated to focus on psychedelic drug development, therapist training programs, and future sales of prescription psychedelics prioritizing public benefit above profit. Amy brings decades of pharmaceutical development and research experience in Phase 1 through Phase 3 Randomized Controlled Trials including supporting three successful regulatory approvals for new biologics. Her professional experience at Novartis, Chiron, and other pharmaceutical companies (1993-2009) spans various fields including immunology, oncology, and vaccines.

Corine de Boer, M.D., Ph.D., Chief Medical Officer MAPS PBC. Corine de Boer, M.D., Ph.D. is the Chief Medical Officer at MAPS Public Benefit Corporation. She received her medical degree from Radboud University in Nijmegen, the Netherlands, and completed residency and fellowship training in pediatrics and pediatric nephrology. Her Ph.D. was focused on peritoneal dialysis in children, and she joined the academic staff at the Radboud University after completing her training. Before moving to the United States in 2000, she worked as a pediatrician in the largest inner-city hospital (OLVG) in Amsterdam, where she was responsible for in- and outpatient care for a multi-racial patient group including sickle-cell disease, thalassemia, and AIDS. For the last 20 years, she has contributed to the development of meningococcal and hepatitis vaccines during her tenure at GSK vaccines (formerly Novartis Vaccines and Chiron Corporation) and Dynavax prior to starting her own consulting company where she provides strategic advice and support for a variety of clients working on biologics, small molecule/polymer therapeutics and vaccines.

Ana LaDou, Chief Operating Officer MAPS PBC. Ana LaDou serves as the Chief Operating Officer (COO) for MAPS Public Benefit Corporation (MAPS PBC). Ana is a dynamic leader and creative strategist who nurtures leaders, mobilizes teams, and develops strategic processes that result in stronger, scalable organizations. Ana specializes in leadership: providing it, supporting it, and developing it. She has worked on projects with local, national, and international reach where her ability to design straightforward strategies and gain consensus among the Board of Directors and outside stakeholders consistently results in innovative solutions and meaningful community impact. She graduated from Columbia University in New York, launched her career in marketing at Miramax Films, and maintains her ties to the industry. Her strengths in relationship building and collaborative leadership ensure ongoing support for the organization and meaningful change in their community. She is committed to her vipassana mindfulness and Nonviolent Communication (NVC) practices, and engaging Boards of Directors and executive leaders in deeper conversations and actions to address current cultural challenges.

Andrew "Mo" Septimus, Chief Financial Officer MAPS PBC. Andrew "Mo" Septimus is an experienced entrepreneur with a track record of managing multimillion-dollar raises and budgets, complex projects, and teams. He has worked in private equity and acted as CFO in various industries. Mo brings a compassionate, outgoing, and resourceful leadership style, coupled with practical optimism and a sense of humor. He enjoys craft beverages, hockey, herring, kiddish club, and long walks on the beach. Mo is from Queens, New York, and lives with his family in Surfside, Florida.

Other board members for MAPS and MAPS Public Benefit Corporation can be found here, LINK.

**Financial metrics are as of market close 06/25/2021.*

Novamind Inc (OTC: NVMDF, CSE: NM)

www.novamind.ca
10 Wanless Ave Suite 201
Toronto, Ontario Canada
M4N 1V6

Price:	**$0.79**
52 week range:	**$0.70-$1.90**
Shares Outstanding:	**42M**
Market Cap:	**$34M**
Listing Date	**Jan 2021**

Company Description

Novamind is a leading mental health company enabling safe access to psychedelic medicine through a network of clinics, retreats, and clinical research sites. Novamind provides ketamine-assisted psychotherapy and other novel treatments through its network of Cedar Psychiatry clinics and operates Cedar Clinical Research, a contract research organization specialized in clinical trials and evidence-based research for psychedelic medicine. Both Cedar Psychiatry and Cedar Clinical Research are wholly owned subsidiaries of Novamind.

Subsidiaries:

Cedar Clinical Research, Cedar Psychiatry: Cedar clinical research is led by Dr. Reid Robinson, a board-certified psychiatrist with fellowship training in neurodevelopmental genetics and clinical research. Dr. Reid also serves as the Chief Medical Officer of Novamind. Dr. Robison is widely recognized for his contributions as a clinician and researcher in the use of psychedelic-assisted psychotherapy in psychiatry. He has led over 100 clinical trials in neuropsychiatry and serves as the coordinating investigator for the Multidisciplinary Association for Psychedelic Studies' (MAPS) phase II clinical trial examining MDMA-assisted psychotherapy for the treatment of eating disorders. The clinical research team at Cedar includes in addition to Dr. Robinson, Principal Investigator Clark Johnson, MD, Erika Williams (Director and Raters), Megan Cuello (Research Coordinator, and Sub-Investigators and Raters Bob McNutt LCSW, Karl Tucker DNP PMHNP-BC and Stephen Thayer PhD. Their bios and information about the clinical work and other aspects of Cedar Clinical Research can be found here; LINK.

On May 4, 2021, Novamind announced that it will open four new Cedar Psychiatry clinics, bringing its total number of clinics to eight once completed. The expanded capacity is forecasted to increase Novamind's patient volume from 20,000 client visits in 2020 to ~65,000 in 2021. As per the announcement in May, construction has begun on three of the new clinics with the property leased for the fourth. The clinics are expected to open in 3Q21 and offer ketamine-assisted psychotherapy, Spravato, Cognitive Behavioral Therapy (CBT) and Transcranial Magnetic Stimulation (TMS). Novamind is making additional strategic investments in infrastructure to support rapid growth in client volumes at clinics. Cedar Psychiatry (LINK) has administered over 7,000 ketamine treatments since 2016 and is undergoing an expansion of its clinic network in the United States.

Source: Novamind corporate presentation

Strategic Partnerships & Collaborations

In addition to operating clinics via its Cedar Clinical Research and Cedar Psychiatry subsidiaries, the company continues to expand its collaborations and investment into the space. On April 21, 2021, Novamind collaborated with "Center for Change", specialty psychiatric hospital and leading treatment facility for eating disorders on preliminary findings from two studies using ketamine-assisted psychotherapy protocols to treat eating disorders: Emotion-Focused Ketamine-Assisted Psychotherapy (EF-KAP) and Group-based Ketamine-Assisted Psychotherapy (G-KAP).

**Financial metrics are as of market close 06/25/2021.*

On April 13, 2021, Novamind announced an increased strategic investment in Bionomics Limited ("Bionomics") (ASX: BNO, OTCQB: BNOEF - NR), a biopharmaceutical company dedicated to developing better treatments for central nervous system disorders. Novamind purchased an additional 951,133 common shares at AU$0.145 per share for a total investment of AU$137,914 (approximately C$132,000) in Bionomics' recently completed rights offering (the "Rights Offering"). In addition to Novamind's initial AU$827,486 investment (approximately C$810,000) announced on February 11th, 2021, Novamind has invested in Bionomics a total of AU$965,400 (approximately C$942,000). Bionomics' plans to initiate a phase IIb clinical trial for BNC210, a drug that has received Fast Track Designation from the U.S. Food and Drug Administration for the treatment of post-traumatic stress disorder (PTSD). Bionomics is evaluating Cedar Clinical Research as a research site for the BNC210 clinical trial that is anticipated to start mid-2021.

On March 18, 2021, Novamind announced that its subsidiary, Cedar Clinical Research was selected as a research site for a clinical trial focused on treatment-resistant depression by Merck (MRK – NR). The study will evaluate Merck compound MK-1942 for the treatment of TRD as an add on to stable antidepressant therapy. The trial initiated in March 2021 (trial ID: NCT04663321).

Senior Management

Yaron Conforti, Chief Executive Officer, Director, Co-Founder. Yaron Conforti is an entrepreneur and the principal of EmmCap Corp., an investor in venture-stage companies. EmmCap actively participates in its early-stage investments via board and management roles. Yaron has over 20 years of venture capital investing and operating experience, including founder and CEO roles in companies across different industries. Past EmmCap investments include Abacus Health Products (acquired by Charlotte's Web), GR Silver Mining (TSXV:GRSL), IM Cannabis (NASDAQ:IMCC) and Enveric Biosciences (NASDAQ:ENVB). Yaron previously served in senior investment banking roles at Desjardins Securities and Sandfire Securities where he focused on micro/small cap equities.

Pierre Bou-Mansour, P. Eng., Chief Operating Officer. Pierre Bou-Mansour is Novamind's Chief Operating Officer. Prior to joining Novamind, Pierre served as the Chief Operating Officer of LifeLabs, a diagnostic laboratory services company he scaled exponentially into an industry leader with 5,700 employees and 355 patient service centers across three provinces. Pierre recently oversaw Public Health Ontario's COVID-19 testing effort, increasing its capacity from approximately 7,000 tests per day to over 22,000 per day and serving a population of 14.7 million people. He has lived and worked in Europe, Asia, and the United States, held an executive role in consumer health manufacturing for Novartis, and served as director for global operations strategy for Bausch & Lomb.

Reid Robison, M.D., MBA., Chief Medical Officer, Director. Dr. Reid Robison is a board-certified psychiatrist who was named Best Psychiatrist in Utah by Salt Lake City Weekly's Best of Utah Body & Mind 2020. Dr. Robison is the co-founder of Cedar Psychiatry and serves as the Medical Director for the Center for Change, a leading eating disorder center. He is currently the coordinating investigator for the MAPS-sponsored MDMA-assisted psychotherapy study of eating disorders. As an early adopter and researcher of ketamine in psychiatry, Dr. Robison led a pivotal IV ketamine study for treatment-resistant depression by Janssen, leading up to the company's recent FDA-approval of Spravato™. To date, Dr. Robison has guided thousands of ketamine therapy journeys and hundreds of Spravato™ dosing sessions. As a social entrepreneur, Dr. Robison has built a number of purpose-driven companies including Tute Genomics, which was acquired by PierianDx in 2016. Dr. Robison is also an adjunct professor at both the University of Utah and Brigham Young University and is the founder of the Polizzi Free Clinic, a free mental health clinic for marginalized people based in Salt Lake City, Utah.

**Financial metrics are as of market close 06/25/2021.*

Numinus Wellness Inc (OTC: LKYSF, CVE: NUMI)

Numinus

www.numinus.ca
33 Water St Suite 801
Vancouver, BC
BC V6B 1R4, Canada

Price:	**$0.77**
52 week range:	**$0.59-$1.53**
Shares Outstanding:	**199M**
Market Cap:	**$154M**
Listing Date	**May 2020**

Company Description

Numinus Wellness empowers people to heal and be well through the development and delivery of innovative mental health care and access to safe, evidence-based psychedelic-assisted therapies. The Numinus Wellness model - including psychedelic production, research, and clinic care - is at the forefront of a transformation aimed at healing rather than managing symptoms for depression, anxiety, trauma, pain, and substance abuse. At Numinus, they are leading the integration of psychedelic-assisted therapies into mainstream clinical practice and building the foundation for a healthier society. Numinus has two key operations; Numinus Clinics and Numinus Bioscience.

Numinus Clinics: Numinus looks forward to helping practitioners develop and deliver the highest quality of care to patients, centered around psychedelic-assisted psychotherapy. By offering Numinus-owned training, resources and facilities, the company partners to medical leaders across psychedelic and mental health programming as they help patients achieve their wellness goals. On December 15, 2020, Numinus announced the acquisition of Montreal-based a Quebec-based psychedelic programming leader, Numinus now supports practitioners across three clinic locations. This is an expansion beyond Numinus' original Vancouver clinic.

Numinus Bioscience: Numinus is a global leader in supporting and expanding the safe, accessible, and evidence-based use of psychedelic-assisted psychotherapies (PAP). Operating a state-of-the-art research facility in British Columbia, Canada, Numinus Bioscience holds a Controlled Drugs and Substances license issued by Health Canada to allow the possession, production, assembly, sale, export, and delivery for a wide variety of psychedelic compounds and natural source materials, including *Psilocybe* mushroom fruiting bodies and extracts, Psilocybin, Psilocin, Ketamine, LSD, DMT, Mescaline and DMT.

Therapeutic Pipeline, Upcoming Events

Ketamine-assisted Psychotherapy (KAP): Offered via Mindspace to be prescribed for treatment-resistant depression (TRD).

Psilocybin and MDMA Special Access: Pending approval of regulatory change, Numinus intends to support practitioners in helping their patients navigate possible Special Access to psychedelic-assisted therapies for a range of conditions noting that this program is for patients with potentially life-threatening conditions. Health Canada has posted its Notice of Intent to revise its Special Access Program to allow legal access to psilocybin and MDMA outside of clinical trials, while the substances await formal approvals. Numinus supports Health Canada's leadership and stands in solidarity with the individuals and organizations who have advocated increasing safe and evidence-based accessibility. By working together and supporting evidence-based approaches to mental health, psychedelic-assisted psychotherapy can become a routine part of the healthcare system. Through a formal briefing note to Minister Patty Hajdu, Numinus provided research evidence and clinical recommendations to help inform Health Canada's decision on SAP.

Psilocybin and MDMA Compassionate Access Trials: Numinus is undertaking two compassionate access clinical trials, which will be conducted by our medical team in our Vancouver clinic. Both trials will be open to Canadian participants.

1. **MDMA-assisted Psychotherapy:** For PTSD, in collaboration with psychedelic research and advocacy pioneer MAPS (Multidisciplinary Association for Psychedelic Studies)
2. **Psilocybin-assisted Psychotherapy:** For substance use disorders.

Senior Management

Payton Nyquvest, Co-Founder, Chief Executive Officer. Payton is the Co-Founder and CEO of Numinus, a company that empowers people to heal and be well through the development and delivery of innovative mental health care and access to safe, evidence-based psychedelic-assisted therapies. He has deep business leadership experience, particularly in the finance sector, and is recognized innovator and visionary in mental health care. At Numinus, he guides teams leading strategy, innovation, research and clinic network expansion, and supports the marketing and capital markets functions. He is responsible for raising over $70M for Numinus in the past year, and is quoted widely in media such as CTV, Forbes and the NY Times. In addition, he brings more than 12 years of working in finance, investment and retail banking with some of Canada's leading independent

**Financial metrics are as of market close 06/25/2021.*

investment firms, including Jordan Capital Markets, Canaccord Financial, and Mackie Research Capital. In these and other roles, he has raised more than $100M for a variety of small cap companies.

Stacey Wallin, Co-Founder and Chief Strategy Officer. Former founder and CEO of LifeBooster, a tech startup now helping Fortune 100 clients detect and proactively respond to workplace injury risks. She most recently was the Director of Venture Programs at the BC Tech Association, leading the team developing accelerators for scale companies in BC with a mandate of solving the largest ecosystem and policy-related challenges facing growth and scale stage technology companies. She also founded and runs the Canadian Accelerator Incubator Network.

Dr. Evan Wood, MD, PhD, Chief Medical Officer. Published 500+ scientific articles and made major contributions to the establishment of innovative policy and therapeutic programs. Early in his career, Dr. Wood's research contributed to revision of international guidelines for the treatment of HIV infection among drug users. Subsequently led efforts that have contributed to the legalization of adult cannabis use in Canada, the establishment of supervised injecting as a standard of care nationally, as well as clinical therapeutic guidelines for a range of substance use disorders. Prior Tier 1 Canada Research Chair and Professor of Medicine at the University of British Columbia and was founding Executive Director of the British Columbia Centre on Substance Use.

Michael Tan, Chief Operating Officer. Former/first Executive Director, BCLDB Cannabis Division. Successfully launched recreational cannabis operations in BC. Twenty years' operations management, strategic planning, and execution with national and multinational corporations including Hudson's Bay, Saks Fifth Avenue, and UPS. Seasoned, high-impact operations, product development, and marketing executive with a track record of driving performance excellence and profitable revenue growth.

John Fong, Chief Financial Officer. Experienced financial operator growing technology companies for the past five years, most recently as Managing Director of Invoke Digital. Prior to that, he spent 15 years building international financial operations with companies listed on the TSX, NYSE, London AIM, and Lima Stock Exchange, the highlight of which was being on the founding team of Rio Alto Mining, a gold company that in three years went from exploration stage to generating net income of $100 million and operating cash flow of $98 million in its first year of commercial production.

**Financial metrics are as of market close 06/25/2021.*

Seelos Therapeutics (NASDAQ: SEEL)

www.seelostherapeutics.com
300 Park Ave
New York, NY 10022

Price:	**$2.90**
52 week range:	**$0.56-$6.60**
Shares Outstanding:	**102M**
Market Cap:	**$297M**
Listing Date	**Jan 2019**

Company Description

Seelos Therapeutics is a clinical-stage biopharmaceutical company focused on achieving efficient development of products that address significant unmet needs in Central Nervous System ("CNS") disorders and other rare disorders. Seelos' business model is to advance multiple late-stage therapeutic candidates as well as earlier stage assets with proven mechanisms of action or with strong scientific rationale that address large markets with unmet medical needs and for which there is a strong economic and scientific rationale for development. Seelos' product development pipeline includes:

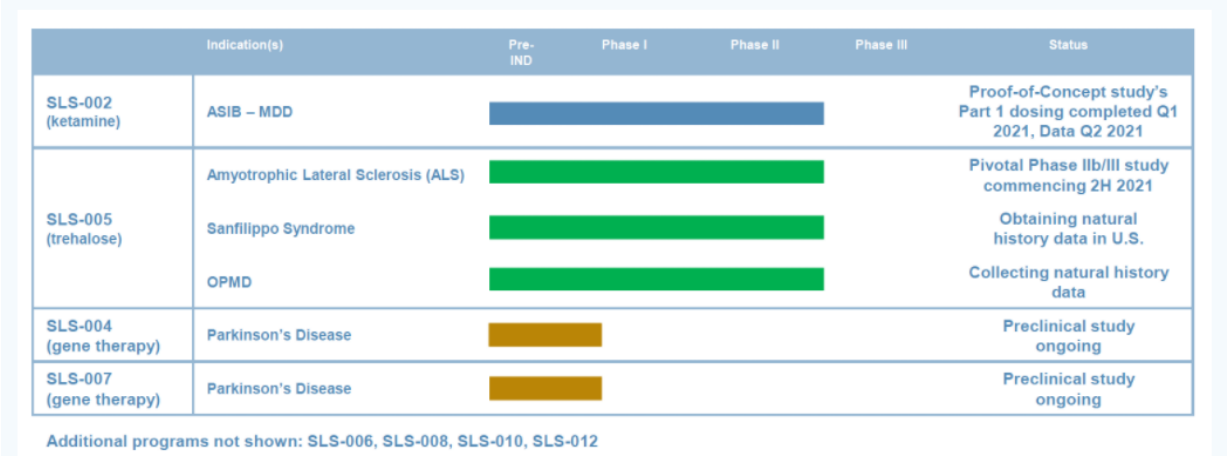
SLS-002 is intranasal racemic ketamine with investigational new drug applications for the treatment of ASIB in MDD or Post-Traumatic Stress Disorder (PTSD). SLS-002 was originally derived from a Javelin Pharmaceuticals, Inc./Hospira, Inc. program with 16 clinical studies involving approximately 500 subjects. SLS-002 is being developed to address an unmet need for a therapy to treat suicidal ideation in the U.S. Traditionally, anti-depressants have been used in this setting, but many of the existing treatments are known to contribute to an increased risk of suicidal thoughts in some circumstances, and if they are effective, it often takes weeks for the full therapeutic effect to be manifested.

On May 17, 2020, Seelos announced positive top-line data from the open-label study of SLS-002, demonstrating significant treatment effect and a well-tolerated safety profile for acute suicidal ideation and behavior in patients with major depressive disorder (MDD). This study enrolled 17 subjects diagnosed with MDD requiring psychiatric hospitalization due to significant risk of suicide with a baseline score of 28 points on the Montgomery-Åsberg Depression Rating Scale (MADRS), a score of 5 or 6 on MADRS Item-10, a score of 15 points on the Sheehan-Suicidality Tracking Scale (S-STS) total score and a history of previous suicide attempt(s), as confirmed on the Columbia Suicide Severity Rating Scale (C-SSRS) with a history of at least one actual attempt, or if the attempt was interrupted or aborted, is judged to have been serious in intent.

More specifically, SLS-002 demonstrated a 76.5% Response Rate in the Primary Endpoint on MADRS 24 Hours After First Dose, with a Mean Reduction in Total Score from 39.4 to 14.5 points. A 92.9% Response Rate was Observed in a Key Secondary Endpoint on Day 16 (after five doses), Achieving a Mean MADRS Score of 7.4 points. Rapid, Robust, and Sustained Reduction in Suicidality was Observed by All 3 Scales Measuring Suicidality as well as MADRS Item-10. Persistence of Effect Seen in 100% of Study Subjects on MADRS, Sheehan-Suicidality Tracking Scale and MADRS Item-10 at Day 29, 14 Days After Last Dose of SLS-002.

Seelos is also developing SLS-005 (trehalose) for amyotrophic lateral sclerosis (ALS) with a P2b/3 trial planned for 2H21. SLS-008 is also being developed for Sanfilippo syndrome and OPMD. Gene therapy programs in early stage development include SLS-004 and SLS-007, both for Parkinson's disease. Seelos has other programs as well. All of these though are detailed on the company website and presentation, but are outside the scope of psychedelics and are therefore not in more detail in this profile.

Therapeutics Pipeline, Programs



Source: https://seelostherapeutics.com/pipeline/

**Financial metrics are as of market close 06/25/2021.*

Senior Management

Raj Mehra, PhD Chairman, Founder, and Chief Executive Officer	23 years experience as VC/investor
Michael Golembiewski Sr. Vice President, Finance	28 years experience in public company accounting and finance
Tim Whitaker, MD Chief Medical Officer	24 years experience with 19 NDAs and sNDAs approved in CNS
Warren Wasiewski, MD Senior Neuro Advisor	23 years of experience as pediatric neurologist, 18 years in pharma industry, and designed clinical trials for 5 orphan CNS programs
Jessica Kardish Head of Clinical Operations	26 years experience with 5 NDAs in CNS and rare diseases
Gopal Krishna, PhD Head of Manufacturing & Technical Operations	27 years experience in cGMP, GLP, and CMC regulations
Anthony Marciano Head of Corporate Communications	25 years experience in Healthcare Investor Engagement

Source: https://seelostherapeutics.com/discovering-seelos-copy/

**Financial metrics are as of market close 06/25/2021.*

Small Pharma (OTC: DMTTF, TSXV: DMT)

Small Pharma

www.smallphara.UK
6-8 Bonhill Street
London, EC2A 4BX, UK

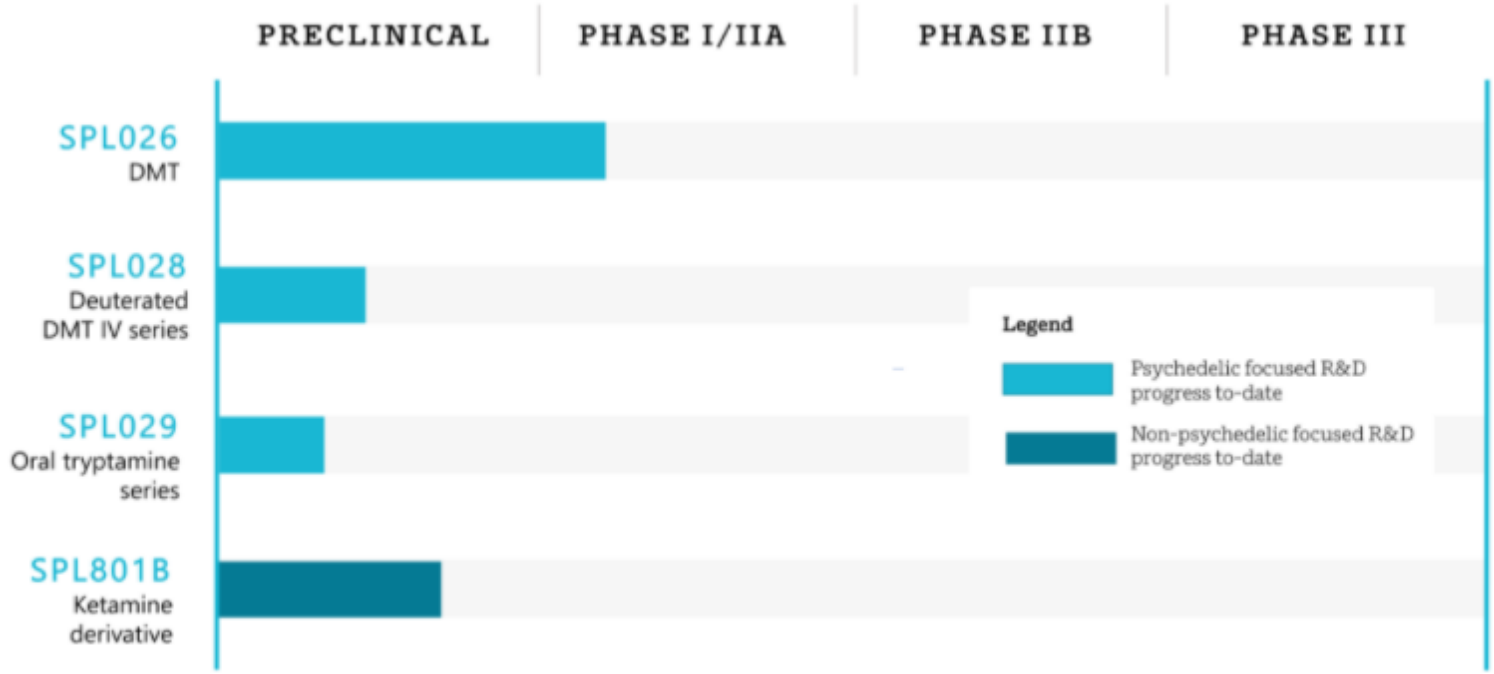
Price:	$0.37
52 week range:	$0.35-$0.53
Shares Outstanding:	317M
Market Cap:	$123M
Listing Date	Jun 2021

Company Description

Small Pharma is a neuropharmaceutical company specializing in IP led development of novel treatments for mental health conditions, with a focus on depression. Small Pharma is developing N,N-dimethyltryptamine (DMT) and deuterium-enriched tryptamines in combination with psychotherapy as a potential rapid onset, sustained treatment for mental health disorders. The company initiated a clinical program into DMT-assisted therapy in February 2021. This program includes a Phase 1/2a trial on its lead candidate SPL026 alongside development of a robust pipeline of proprietary preclinical assets.

The Phase 1/2a program in collaboration with experts for the Centre for Psychedelic Research it Imperial College London. The trial includes healthy subjects and patients in London. The team at Imperial College have previously initiated studies using DMT to explore the mechanisms underpinning the effects of DMT on the brain. Dosing of part A (phase 1) of the trial started in February 2021 and is being conducted at Hammersmith Medicines Research Ltd, London, UK. The company and its collaborator are currently recruiting therapists for the phase 2a portion of the study and have a therapist training program.

Therapeutics Pipeline, Programs



Source: Small Pharma corporate presentation

Senior Management

Peter Rands, Chief Executive Officer. Mr. Rands is a qualified patent attorney in the UK and Europe with over 10 years' experience in the pharmaceutical industry. Mr. Rands has always had a passion for pharmaceutical innovation. Mr. Rands graduated from the University of Oxford in 2003 with a first-class degree in chemistry, following which he trained and qualified as a UK and European patent attorney specializing in pharmaceuticals. In 2008, Mr. Rands joined Teva Pharmaceutical, a generic drug company, to work directly with pharmaceutical formulation teams. Peter left Teva in 2011 to return to private practice with AmLaw 100 firm Mintz

**Financial metrics are as of market close 06/25/2021.*

Levin, where he advised start-up and mid-cap innovative pharma firms on IP and legal matters. Mr. Rands left Mintz Levin in 2015 to set up Small Pharma.

Marie Layzell, Chief Operating Officer, Head of CMC. Ms. Layzell has over 20 years' experience in the pharmaceutical industry as an analytical scientist and consultant, and has advised multiple large pharmaceutical projects on CMC drug development. Ms. Layzell graduated from the University of Hertfordshire in 1998 with a degree in human biology, following which she worked in numerous Contract Diagnostic Organizations including Prova (R&D) Ltd, Bodycote Testing and Exova Group. During this time, Ms. Layzell managed the CMC development for numerous small molecules and biological entities; supervising teams of analysts and working with formulators to progress development. Since 2011, Ms. Layzell worked as an analytical consultant at Eviva Pharma. Ms. Layzell has worked with Small Pharma since 2015 and assumed the role of Senior Research Manager heading up CMC activities in May 2016.

George Tziras, Chief Business Officer. Mr. Tziras has over 15 years of experience in investment banking and international capital markets, having worked at a number of global financial institutions including Goldman Sachs, Credit Suisse, Nomura, Lehman Brothers, and CIBC. Mr. Tziras has worked on a broad range of transactions including debt and equity financings; mergers, disposals and acquisitions; private equity buyouts and debt restructurings. He has also worked across a number of industries, including healthcare. Mr. Tziras holds a BA degree from the University of Oxford and a MA degree from the Johns Hopkins School of Advanced International Studies. Mr. Tziras has been a director of Small Pharma since 2015.

**Financial metrics are as of market close 06/25/2021.*

Usona Institute (non-profit research group)

www.usonainstitute.org
2800 Woods Hollow Rd.
Madison, WI 53711

Organization Description

Usona Institute is a 501(c)(3) non-profit medical research organization dedicated to supporting and conducting pre-clinical and clinical research to further the understanding of the therapeutic effects of psilocybin and other consciousness-expanding medicines. Usona's focus is on alleviating depression in people for whom current medical treatments fall short in offering relief and a better quality of life. Based in Madison, Wisconsin, Usona was founded in 2014 by Bill Linton, CEO and Founder of the international life sciences company Promega Corporation, and Malynn Utzinger, M.D., Director of Integrative Practices at Promega Corporation. The Institute was founded shortly after Bill was inspired by the meaningful impact that a psilocybin study at Johns Hopkins University had on a friend suffering from cancer.

Psilocybin program: Usona is currently exploring the therapeutic potential of psilocybin in the treatment of major depressive disorder (MDD). Our work in this area builds upon the strength of early-phase studies conducted at leading institutions, including many of their collaborators. As an FDA drug "sponsor", Usona is responsible for the initiation, management, and financing of the clinical trials towards FDA new drug approval, as well as for the production of cGMP psilocybin that is tested for safety and purity under highly controlled and monitored conditions.

Medicinal chemistry program: Usona's medicinal chemistry team enables the field by optimizing synthetic processes in support of cGMP manufacture and commercial roll-out, building a library of new psychedelic compounds for early-phase research, and publishing on new discoveries. Usona's Medicinal Chemistry team has published a number of significant research articles in collaboration with scientists around the globe.

Therapeutic Pipeline, Upcoming Events

Product	Indication, Program, Event	Discover/Preclincal	Phase I	Phase II	Phase III
Psilocybin (PSIL201), niacin (Usona sponsored)	Major depressive disorder (MDD)			NCT03866174	
Psilocybin (Usona collaboration)	Psychotherapy in patients with cancer		NCT04522804		
Psilocybine, nicotinamide (Usona collaboration)	Treatment resistant depression (TRD)			NCT04670081	

Source:Company reports, Maxim Research

Strategic Partnerships & Collaborations

Collaborators:

D'Or Institute for Research and Education (IDOR)
Hans Knöll Institute
Imperial College London
Heffter Research Institute
MAPS Public Benefit Corporation
MIND Foundation
Osmond Foundation
Swiss Neuromatrix Foundation
University of Wisconsin Hospital and Clinics
University of Wisconsin–Madison School of Pharmacy

Michael Bogenschutz, MD, New York University
Robin Carhart-Harris, PhD, Imperial College London
Roland Griffiths, PhD, Johns Hopkins University School of Medicine
Charles Grob, MD, Harbor-UCLA Medical Center
Dirk Hoffmeister, PhD, Friedrich Schiller University and Hans Knöll Institute
Matthew Johnson, PhD, Johns Hopkins University School of Medicine
Benjamin Kelmendi, MD, Yale School of Medicine
Janis Phelps, PhD, CIIS Center for Psychedelic Therapies and Research
Stephen Ross, MD, New York University
Franz Vollenweider, MD, University of Zürich
Joshua Woolley, MD, PhD, UCSF School of Medicine

Source: Usona.org

**Financial metrics are as of market close 06/25/2021.*

Senior Management

Bill Linton, Executive Director. Bill Linton is the Executive Director of Usona Institute, and President of the Board of Directors. Inspired by the meaningful impact a psilocybin study had on a friend suffering from cancer, Bill, along with Malynn Utzinger MD, co-founded Usona Institute in 2014. Linton founded Promega Corporation in 1978 and has served continuously as its President and Chief Executive Officer. A global life science research company, Promega employs over 1,400 worldwide and serves scientists in several markets including human therapeutics, diagnostics, human identity, agriculture, and environmental testing, among others. Under Bill's leadership Promega, starting in 1991, established and developed two non-profits that have proven valuable to the community: Woods Hollow Children's Center (WHCC), which offers infant through pre-school childcare, and the BioPharmaceutical Technology Center Institute (BTC Institute), which provides community education in biotechnology. With Linton's guidance, Promega also lends unique forms of community support that include offering meeting space to outside organizations, quarterly art exhibits and annual scientific symposia. Linton has served as director or advisor for numerous industry, government, and community organizations. In addition to his roles at Usona and Promega, Linton currently serves as director for the following entities: Bruker Biosciences, ALDA (Analytical Life Science and Diagnostics Association), BioPharmaceutical Technology Center Institute (BTC Institute), Heffter Research Institute.

Charles Raison, M.D., Director of Clinical and Translational Research. Charles Raison, MD, is the Director of Clinical and Translational Research at Usona Institute. He is also the Mary Sue and Mike Shannon Chair for Healthy Minds, Children & Families and Professor, School of Human Ecology, and Professor, Department of Psychiatry, School of Medicine and Public Health, University of Wisconsin–Madison. Prior to this he was Professor in the Department of Psychiatry, College of Medicine, and the Barry and Janet Lang Professor of Integrative Mental Health at the Norton School of Family and Consumer Sciences, College of Agriculture and Life Sciences, University of Arizona. In addition to his academic positions, Dr. Raison serves as the founding Director of the Center for Compassion Studies in the College of Social and Behavioral Sciences at the University of Arizona and is the mental health expert for CNN.com. Dr. Raison has an undergraduate degree in anthropology from Stanford University and a Master's degree in English literature from the University of Denver.

The Usona Institute bios for additional Board of Director members, Scientific Advisory Board members, Clinical Advisory Board members and Staff can be found here; LINK.

**Financial metrics are as of market close 06/25/2021.*

DISCLOSURES

To receive full disclosures for the companies under Maxim Group coverage that are mentioned in this report, please send your request to: Maxim Group c/o Mitchell J. Speiser, CFA; 300 Park Avenue, 16th Floor, New York, NY 10022

I, Jason McCarthy, Ph.D., attest that the views expressed in this research report accurately reflect my personal views about the subject security and issuer. Furthermore, no part of my compensation was, is, or will be directly or indirectly related to the specific recommendation or views expressed in this research report.I, Michael Okunewitch, attest that the views expressed in this research report accurately reflect my personal views about the subject security and issuer. Furthermore, no part of my compensation was, is, or will be directly or indirectly related to the specific recommendation or views expressed in this research report.
The research analyst(s) primarily responsible for the preparation of this research report have received compensation based upon various factors, including the firm's total revenues, a portion of which is generated by investment banking activities.

DISCLAIMERS

Some companies that Maxim Group LLC follows are emerging growth companies whose securities typically involve a higher degree of risk and more volatility than the securities of more established companies. The securities discussed in Maxim Group LLC research reports may not be suitable for some investors. Investors must make their own determination as to the appropriateness of an investment in any securities referred to herein, based on their specific investment objectives, financial status and risk tolerance.

This communication is neither an offer to sell nor a solicitation of an offer to buy any securities mentioned herein. This publication is confidential for the information of the addressee only and may not be reproduced in whole or in part, copies circulated, or disclosed to another party, without the prior written consent of Maxim Group, LLC ("Maxim").

Information and opinions presented in this report have been obtained or derived from sources believed by Maxim to be reliable, but Maxim makes no representation as to their accuracy or completeness. The aforementioned sentence does not apply to the disclosures required by FINRA Rule 2241. Maxim accepts no liability for loss arising from the use of the material presented in this report, except that this exclusion of liability does not apply to the extent that such liability arises under specific statutes or regulations applicable to Maxim. This report is not to be relied upon in substitution for the exercise of independent judgment. Maxim may have issued, and may in the future issue, other reports that are inconsistent with, and reach different conclusions from, the information presented in this report. Those reports reflect the different assumptions, views and analytical methods of the analysts who prepared them and Maxim is under no obligation to ensure that such other reports are brought to the attention of any recipient of this report.

Past performance should not be taken as an indication or guarantee of future performance, and no representation or warranty, express or implied, is made regarding future performance. Information, opinions and estimates contained in this report reflect a judgment at its original date of publication by Maxim and are subject to change without notice. The price, value of and income from any of the securities mentioned in this report can fall as well as rise. The value of securities is subject to exchange rate fluctuation that may have a positive or adverse effect on the price or income of such securities. Investors in securities such as ADRs, the values of which are influenced by currency volatility, effectively assume this risk. Securities recommended, offered or sold by Maxim: (1) are not insured by the Federal Deposit Insurance Company; (2) are not deposits or other obligations of any insured depository institution; and (3) are subject to investment risks, including the possible loss of principal invested. Indeed, in the case of some investments, the potential losses may exceed the amount of initial investment and, in such circumstances, you may be required to pay more money to support these losses.

ADDITIONAL INFORMATION IS AVAILABLE UPON REQUEST

Corporate Headquarters

New York City
300 Park Ave., 16th Floor
New York, NY 10022
Tel: 212-895-3500

Miami Beach
555 Washington Ave., Suite 320
Miami Beach, FL 33139
Tel: 786-864-0880

Capital Markets/Syndicate: 212-895-3695
Corporate Finance: 212-895-3811
Corporate Services: 212-895-3631
Equity/Options Trading: 212-895-3790
Equity Research: 212-895-3736
Fixed Income Trading: 212-895-3875
Global Equity Trading: 212-895-3623
Institutional Sales: 212-895-3873
Institutional Sales Trading: 212-895-3873
Portfolio/Transition Trading: 212-895-3567
Prime Brokerage: 212-895-3723
Wealth Management: 212-895-3624

Woodbury, Long Island

100 Crossways Park Drive West
Suite 207
Woodbury, NY 11797
Tel: 516-393-8300

Red Bank, New Jersey

246 Maple Avenue
Red Bank, NJ 07701
Tel: 732-784-1900

West Palm Beach, Florida

105 South Narcissus Avenue
Suite 222
West Palm Beach, FL 33401
Tel: 561-465-2605

San Rafael, California

4040 Civic Center Drive
Suite 200
San Rafael, CA 94903
Tel: 212-895-3670

Aventura, Florida

20801 Biscayne Blvd
Suite 432 / 433
Aventura, FL 33180
Tel: 516-396-3120

Stamford, Connecticut

700 Canal Street
Stamford, CT 06902