MIRA™
Pharmaceuticals

NASDAQ: **MIRA**

Investor Presentation

June 2023

Forward Looking **Statements**

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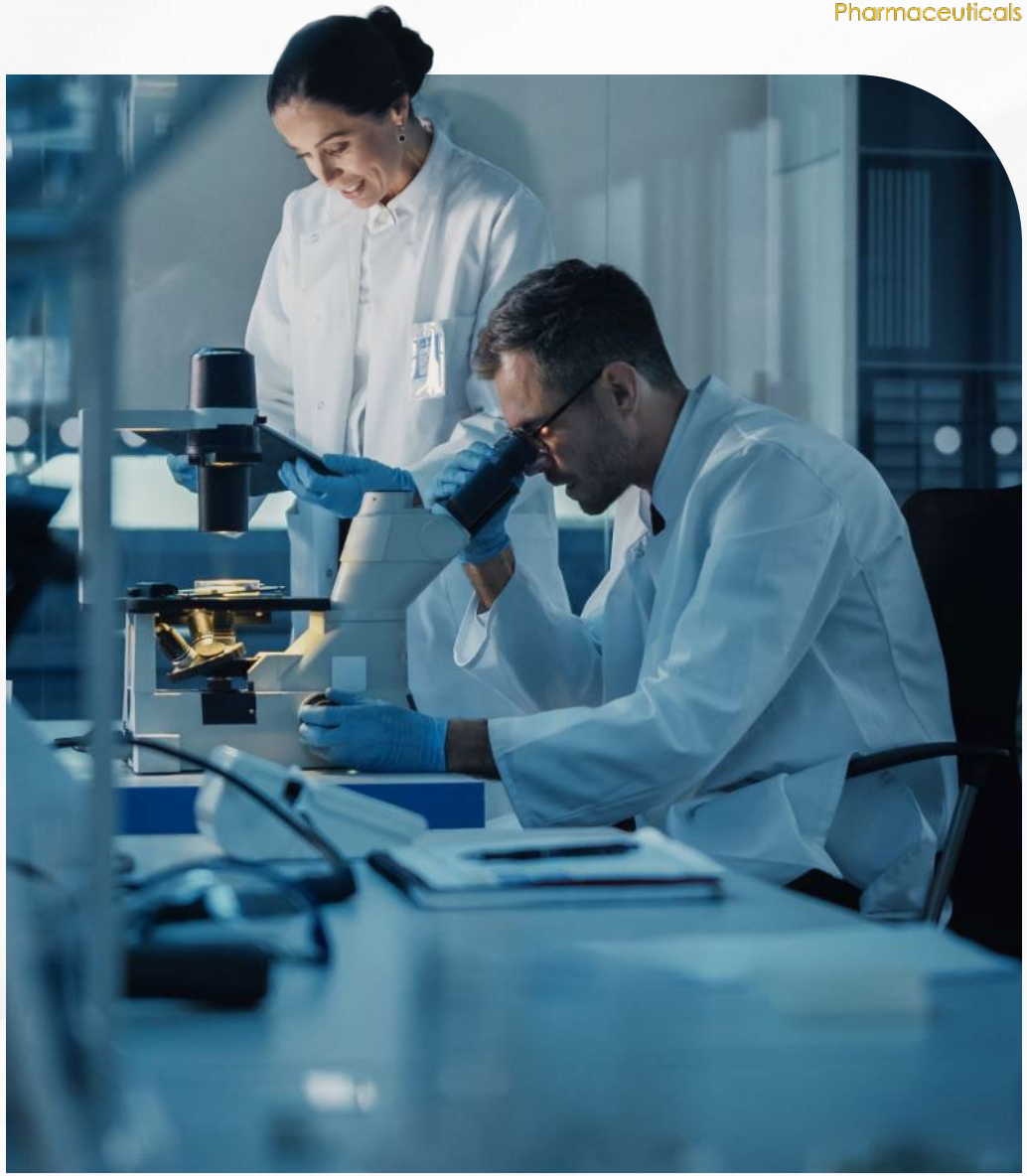
These forward-looking statements involve known and unknown risks and uncertainties and are based on current expectations, assumptions, estimates and projections about the Company and the industry in which the Company operates.

The Company undertakes no obligation to update forward-looking statements to reflect subsequent occurring events or circumstances, or to changes in its expectations, except as may be required by law.

Although the Company believes that the expectations expressed in these forward looking statements are reasonable, it cannot assure you that such expectations will turn out to be correct, and the Company cautions investors that actual results may differ materially from the anticipated results.

Offering **Summary**

Issuer	MIRA Pharmaceuticals
Type of Offering	Initial Public Offering
Book-Running Manager	Kingswood Capital Partners, LLC
Co-Manager	
Expected Offering Price	
Offering Size	**XXX** shares
Pre/Post Shares Outstanding	**XXX** shares
Over-Allotment Option	
Exchange	NASDAQ Capital Market
Proposed Symbol	MIRA
Use of Proceeds:	**Working capital and general corporate purposes**



Corporate **Overview**

Developing the next generation FDA approved THC analog.

MIRA Pharmaceuticals is an early-stage life sciences company focused on the development and commercialization of MIRA1a, a synthetic analog of THC.

MIRA1a is being developed to treat anxiety and cognitive decline in the elderly and chronic pain without impurities or the negative side effects associated with cannabis plant extracts.

MIRA1a Key Differentiating Factors

- **Synthetic:** Eliminates the negative side effects of impurities found in marijuana extracts
- **Regulated:** Expected FDA approval
- **Unscheduled:** Upon review of the chemical structure , the DEA has determined MIRA1a is not a controlled substance

Massive TAM, with a dual-path

- **$90B+** traditional neurological markets focused on treating anxiety and chronic pain
- **$30B** cannabis markets (medical + recreational)

Source: IQVIA Analysis, IQVIA Global Uses of Medicine Report – 2022 and 2023, Mira Analysis

Source: IQVIA Analysis, Mira Analysis

MIRA1a
Value Proposition

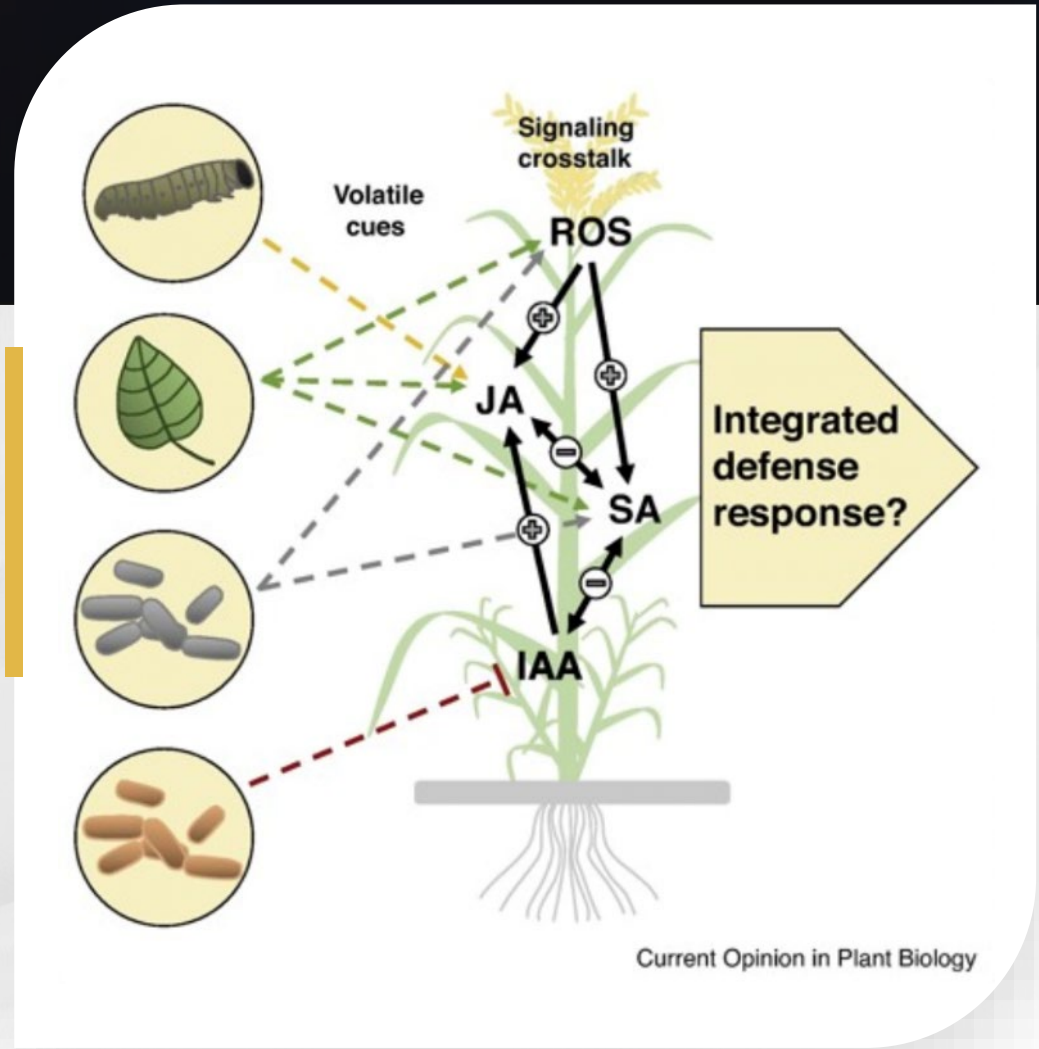
MIRA1a is primed for success across multiple indications given the lack of effectiveness and side effect burden in current therapies.

Molecule	**Synthetic cannabinoid analog** Marinol, Syndros, and Cesamet are approved synthetic cannabinoids; Epidiolex is an approved CBD formulation
Unmet Needs	Severe **Chronic Pain** and **Anxiety** medications (e.g. opiates, benzodiazepines, respectively) have significant side-effects especially when used long-term; **Dementia** medications remain limited in efficacy
Addressable Gaps	Many prescribers are open to new therapies that enable better patient outcomes while minimizing severe adverse effects
Value Proposition	If MIRA1a can maximize effectiveness while presenting a safer profile than opiates or benzodiazepine medications, it will be a well-received branded option

MIRA1a
A Novel Synthetic Cannabinoid Analog

Making a Better Molecule:
From Plant Defense to Human Drug

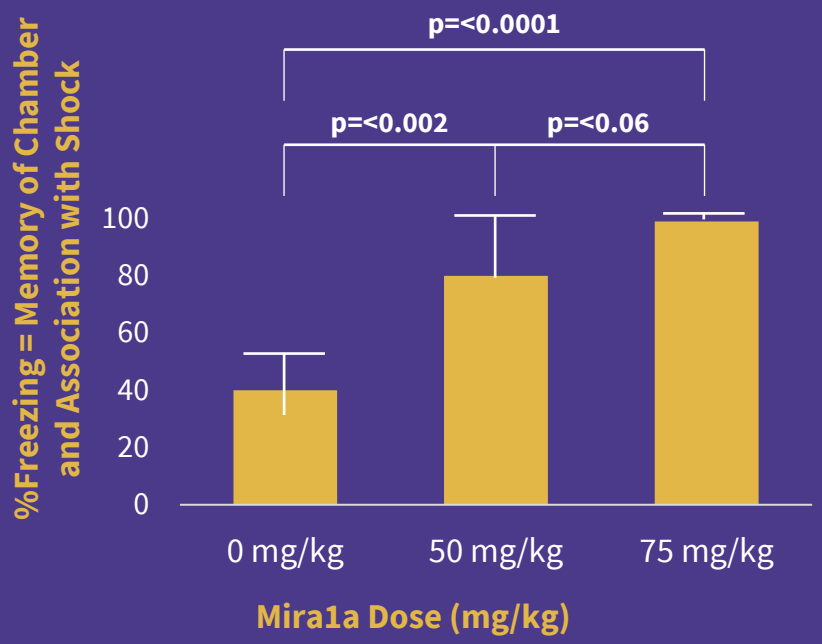
- Plant to Human: The Need to Improve Upon Nature.
- Plants generate alkaloids as a defense against predators.
- Not therefore surprising that cannabinoids have negative side-effects.
- Alkaloids are toxins with some positive side effects.
- We set out to improve upon what nature provided.
- **Removed 1 Carbon: Substituted a 5-member in place of a 6-member ring.**



Pre-Clinical **Research**

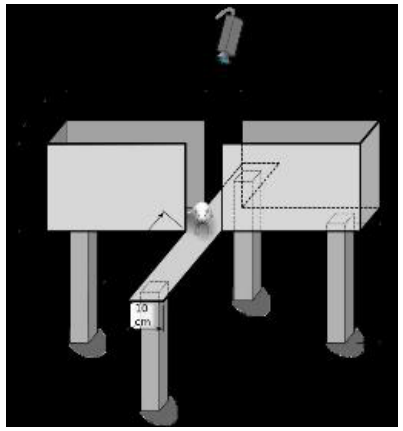
Cognitive Performance: MIRA1a has demonstrated its ability to enhance memory improve cognitive performance in pre-clinical fear conditioning models

Context Conditioning

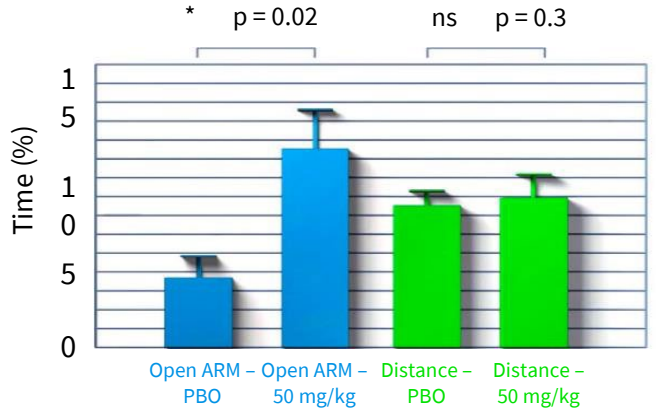


Source: MIRA Analysis

Anti-Anxiety Effects: MIRA1a has potent anti-anxiety effects without sedation in preclinical Elevated Plus Maze-Model of Anxiety

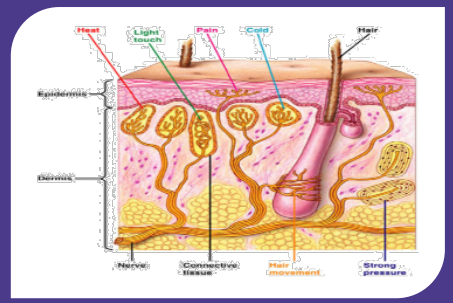


Anti-Anxiety Effects MIRA1a

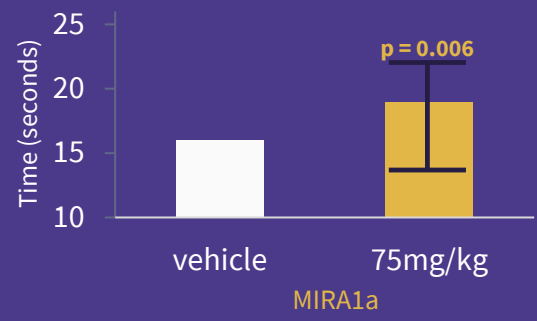


Pain Reduction:MIRA1a has demonstrated its ability to reduce and relieve pain in pre-clinical heat tolerance models

Structure of Human Skin



Thermal Sensitivity



What is MIRA1a?

Key Differentiating Factors

THC

- Scheduled
- Negative side effects
- Legal/regulatory hurdles
- Heightened competition
- Shipping/manufacturing issues

MIRA1a

- Unscheduled
- Based on preclinical studies, we expect MIRA1a to have a better side effect burden (e.g. minimal anxiety across the dose range
- FDA-regulated
- First-mover advantage
- No transportation issues

Therapeutic Focus Areas

MIRA1a is under evaluation for two indications with high disease burden and significant unmet needs

Chronic Pain

- **Chronic pain** is pain lasting longer than 12 weeks, which typically continues after the causative injury / illness has resolved
- Affecting **~50 Mn people per year** in the US, existing therapies are geared towards mild sufferers (ex. NSAIDs), or carry serious side effects that can include addiction (ex. Opiates)
- Chronic pain is the leading cause of long-term disability in the US, with $635 Bn spent every year on treatment[1]
- Developing novel non-opiate therapies is a stated goal of multiple companies, with CBD-like therapies in the running alongside other solutions

Key Therapeutic Areas

Anxiety and Cognitive Decline in the Elderly

- Anxiety disorders are chronic conditions marked by an excessive & persistent sense of apprehension, with physical symptoms such as sweating, palpitations, and feelings of stress
- **~40 million US adults** have an anxiety disorder[2], including phobias, Social Anxiety Disorder, PTSD, Generalized Anxiety Disorder, and Panic Disorder[3]
- Standard treatment leverages cognitive-behavioral therapy, though pharmacological options include. SSRIs, SNRIs, and TCAs*

Cognitive Impairment

- Cognitive Impairment encompasses conditions marked by notable decline in **one's cognitive abilities** including Alzheimer's disease and dementia
- **~16 million people** in the US are living with cognitive impairment
- Current treatments for cognitive impairment are only ableto **temporarily alleviate** symptoms instead of stopping or reversing the disease progression

1. Pain Facts Infograph 10-11-19 (uspainfoundation.org); **2.** Anxiety Disorders | NAMI: National Alliance on Mental Illness; **3.** Anxiety Disorders Facts and Statistics | The Recovery Village Drug and Alcohol Rehab; *SSRIs - Selective serotonin reuptake inhibitor; SNRIs - Serotonin–norepinephrine reuptake inhibitor, TCAs – Tricyclic antidepressants, IQVIA Analysis, Mira Analysis

Market **Opportunity**

Summary of US Epidemiology

The eligible patient pool analysis for MIRA1a highlights a large patient pool looking for potential treatments to their conditions

MIRA1a Target Indications	Total Eligible Population	Diagnosed Prevalence	Treatment Rate	Total Addressable Population
Anxiety and Cognitive Decline in the Elderly (Severe)	246.7M	~4.4%[1]	36.9%	4.0M
Chronic Pain (Severe)	246.7M	~7.9%[2]	58.0%	7.1M
Cognitive Impairment	330M (US Population)	~16M Adults	~45%[1]	~7.2M

Key Highlights

- Total addressable populations are derived from published literature on epidemiology for each disease and by applying estimated diagnosis and treatment rates (except where diagnosed prevalence used)
- Treatment paradigms for these conditions can differ from patient to patient due to the vast array of potential root causes, external factors, and treatment options
- Healthcare professionals are consistently looking for more efficacious treatments with fewer side effects and faster onset of action to help patients
- In many patient populations, non-US legal marijuana may not be the first or a viable option for treatment of neurological disorders. As a result, these patients will typically use non-steroidal anti-inflammatory drugs (NSAIDs) or various mood management drugs, opening them up to a range of non-ideal outcomes

Source: US Census, CDC; XXX. 1) Diagnosis rate (XX%) and (XX%) aggregated for Anxiety (severe). 2) Diagnosis rates (XX%) and prevalence (XX%) of high impact chronic pain.

US Legal
Marijuana Market

Initial dual path focus: Potentially winning in traditional markets and the marijuana analog markets using a safe, effective and FDA-approved treatment option.

MIRA1a vs Medical Marijuana

SAFER:	BETTER:	Potential Revenue:
Fewer Side-Effects	Higher Efficacy	$10B of $40B

$10B
Legal Medical Marijuana

$30B
Legal Recreational Marijuana

$4B
MIRA1a - (Physician Rx, Insurance Coverage, FDA Regulated)

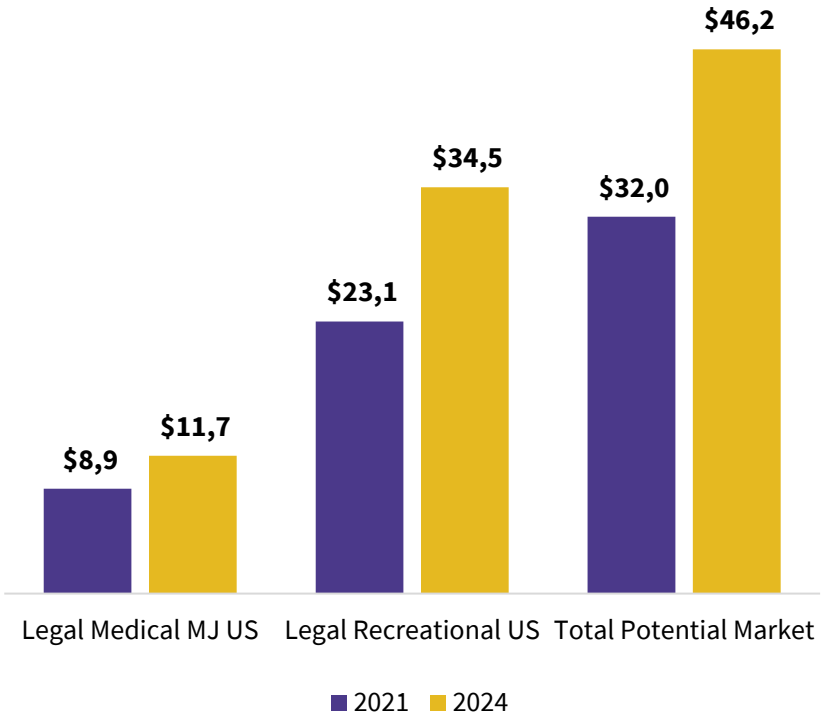
$50B
Cannabis Market By 2028

$4B
MIRA1a New indications

$2B
MIRA1a - (Portion Self Medicating)

Source: Medical Marijuana in the U.S. - statista.com ID 1086593

Total Potential US Legal Marijuana Market
$ in Billions



Dual Pathway
to Commercialization

To deliver **MIRA1a** as a commercialization asset, we are proceeding on a dual pathway designed to establish its safety and efficacy

1

Pre-Clinical Testing

Focus on pre-clinical testing including genetic toxicology, safety pharmacology and general toxicology testing to enable the filing of an IND application with the US FDA.

2

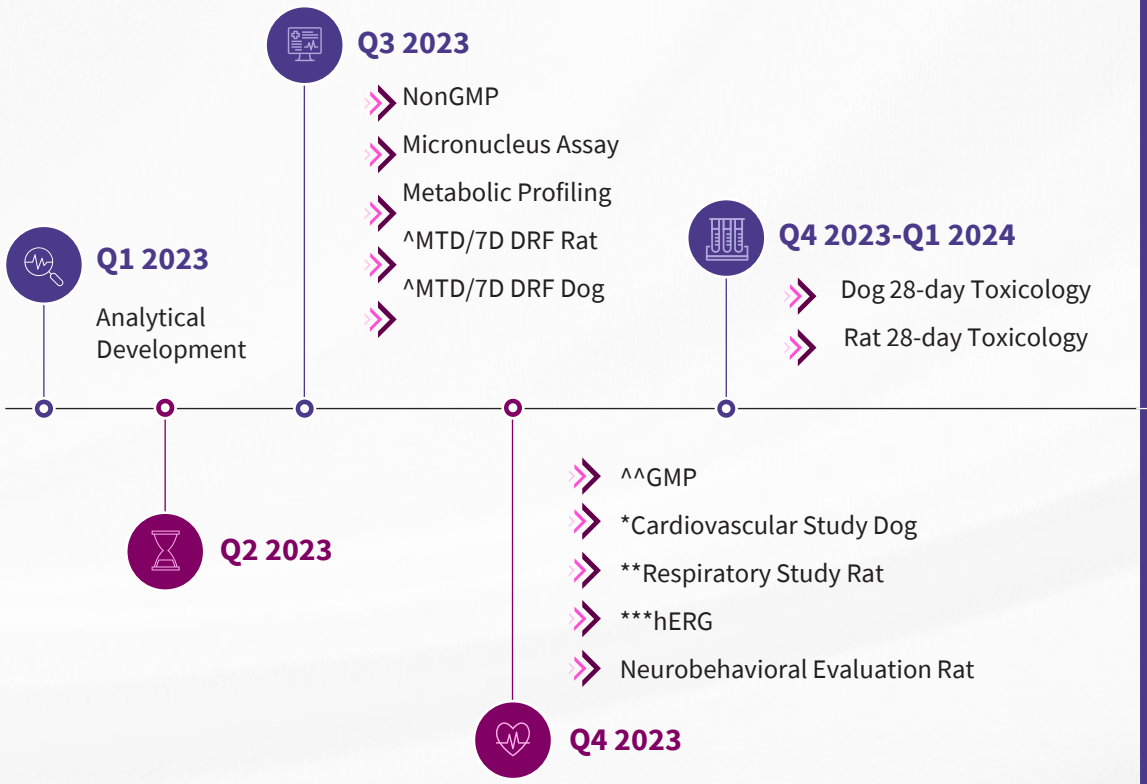
Clinical Trials

Clinical testing and trials based on guidance from FDA with a focus on our initial prioritized indications while preserving optionality to add 1 or 2 more indications with strategic partners.

Source: Mira Analysis

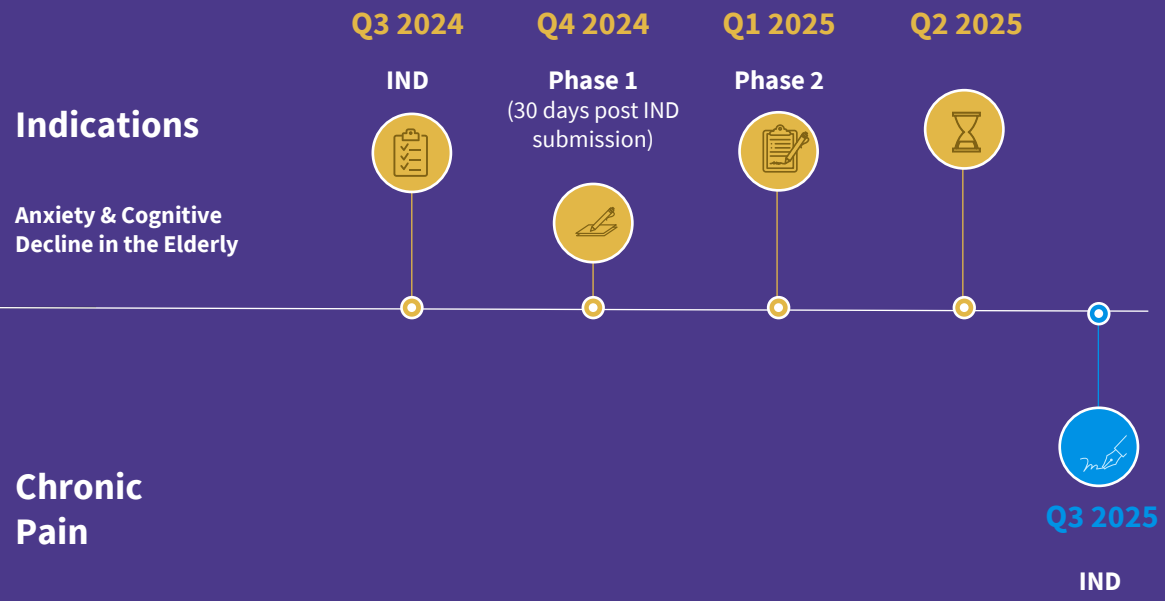
Timeline

Pre-clinical work is underway and should be completed by Q1'24



* Neurobehavioral Evaluation of Orally Administered MYMD1 in Rat
** Respiratory Evaluation of Orally Administered MYMD1 in Rat
*** In vitro Testing for Effects of MYMD1 on human Ether Related Gene (hERG) Channel Currents
^ Maximum Tolerated Dose (MTD); Dose Range Finding (DRF)
^^ Good Manufacturing Practice (GMP)

Positioning MIRA for an initial IND filing in Q3 2024



Growth **Strategy**

- **Advance our MIRA1a** through clinical development and approval
- **Continue pre-clinical development** of MIRA1a across a range of central nervous system diseases and progress into clinical development
- **Increasingly leverage the 1+ million** doctors and 350+ thousand nurse practioners that potentially can write a prescription for MIRA1a
- **Identify additional product** candidates and expand current candidates into additional neurological diseases
- **Explore strategic collaborations** and partnerships to maximize the value of our product candidates

Revenue Opportunity

~$0.5-$4.0 Billion MIRA1a unadjusted peak revenue opportunity in the US, with a base case of ~$1.6 B by 2035 across the two targeted indications

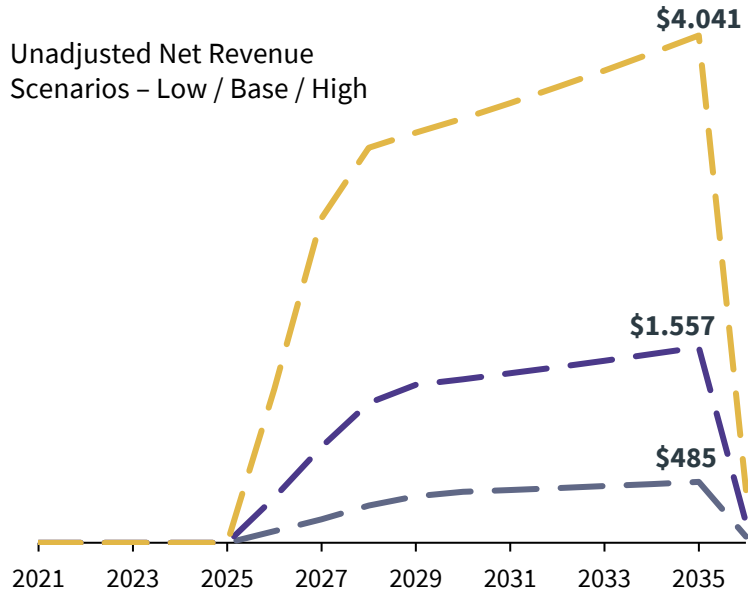
Base Case: Potential revenue growth drivers could peak at ~$1.6B

- **Superior Profile:** Delivering superior efficacy / safety vs existing options, and comparable experience to other approved drugs in a similar class (Epidiolex) will drive uptake.
- **Lower Pricing** within the range of $10-30 per dose will be reasonable as per payors, while lower when compared to other branded products in this space, should provide favorable formulary access & uptake.

Upside Opportunities: Potential upside revenue drivers could peak at ~$4B

- **Expanded patient uses:** Includes those who could not use THC due to regulatory limitations, such as banking, military, government employees (including ~4 million federal employees), athletes and other bonded professionals
- **Hence**, KOLs have demonstrated keen interest in cannabinoid-like MoAs in refractory patients; payors had a positive perception of MIRA1a as an Rx
- **Increased Patient / HCP Advocacy:** A strong patient advocacy strategy combined with HCP outreach and existing HCP & patient familiarity with cannabinoids derivatives can potentially increase share.
  – Potential pediatric approval will expand the overall market.
- **REMS Avoidance:** Approval REMS program (ex. Epidiolex) will remove Rx friction and increase share.

MIRA1a: US Net Revenue Forecast
$ in Millions



Factors influencing market share / price of MIRA1a will drive the upside and downside revenue opportunity scenarios

Source: IQVIA Analysis, Mira Analysis

Pre-IPO
Capitalization Table

Fully Diluted Summary	Number	Percentage
Common Stock Outstanding	13,313,000	87%
Warrants	1,000,000	6.5%
Options Outstanding	980,001	6.4%
Preferred	-	0.0%
Fully Diluted	**15,293,001**	**100%**

Management

Erez Aminov
Chief Executive Officer

- Experienced biotechnology investor and adviser with 18+ years of experience;
- Founder of Locate Venture Corp, a strategy and investment consulting firm which has advised multiple, early-stage life sciences companies including MYMD Pharma (Nasdaq: MYMD), Telomir Pharma and Tyna Pharma on fund raising and strategic partnerships.

Adam Kaplin, M.D. , PhD
Co-founder, President & Chief Scientific Officer
Psychiatrist

- Chief Scientific Officer of MyMD Pharmaceuticals, Inc. (Nasdaq: MYMD)
- Served in several positions at John Hopkins U., including Principal Neuro-Psychiatric Consultant to the Multiple Sclerosis Center of Excellence
- Served as Adjunct Faculty at the George Mason University Department of Global and Community Health; B.S from Yale University; M.D from Johns Hopkins School of Medicine

Michelle Yanez, MBA
Chief Financial Officer

- Senior financial executive with 25+ years of experience in public and privately held biotech, pharmaceuticals, and life science companies
- Served as Corporate Controller at Telomir Pharmaceuticals, Inc.
- Held various positions, including Director of Financial Reporting at BioDelivery Sciences International, Inc.(NASDAQ:BDSI)

Christos Nicholoudis, ESQ
General Counsel & Director

- Florida-licensed attorney who has practiced with his own firm, The Law firm of Christos Nicholoudis PLLC where he handles a wide range of legal matters including contract work, personal injury, real estate, wills trusts and estates and criminal law.
- Previously employed by the State of Florida as a Public Defender for the 12th Judicial Circuit

Board of Directors

Chris Chapman, M.D
Co-Founder, Executive Chairman

- President, Chief Medical Officer, and director of Pharmaceuticals, Inc. (MYMD);
- Served as a director and as Consultant Regulatory Affairs and Drug Development since November 2021;
- Serves as Executive Chairman since March 2023.;
- Serves as President, Chief Medical Officer, and a director of MyMD. Dr. Chapman has also served as the Chief Executive Officer of Chapman Pharmaceutical Consulting, Inc.

Talhia Tuck
Chair of Compensation Committee

- Project Director with Georgetown Law School's Center for Innovations in Community Safety;
- Served as an Associate Director of Admissions at Georgetown University;
- Worked in the investment relations and communications field as Vice President for Communications and Investor Relations at Star Scientific, Inc. (OTC: STSC);

Dave Vorhoff
Chair of Audit Committee

- Chief Executive Officer and Co-founder of Creo Valo, a financial services company;
- Partner of Texas Atlantic Group, a Family Office and Advisory firm;
- Co-founder and Chairman of the Board of directors for Fintag Holdings, Inc.;
- Served as SVP of Corporate Development and Strategy for Premier Inc. (NASDAQ: PINC)

Brad Kroenig

- Principal occupation has been serving as one of the world's leading fashion models;
- Serves as a business and strategy consultant for many private firms and early-stage companies, where as a part of his consulting business he advises companies regarding building management teams and managing relationships with investors

Hugh McColl III

- Co-Managing Member of Collwick Capital LLC, a fund of funds;
- Managing Member of McColl Brothers Lockwood, a family investment office;
- Senior Advisor at Brown Brothers Harriman Capital Partners;
- Served as private investments portfolio manager for Round Table Investment Management

Scientific Advisory Board

Ryan Vandrey, PhD

- Professor of Psychiatry and Behavioral Sciences at the Behavioral Pharmacology Research Unit at Johns Hopkins Medical School
- Research focuses primarily on the behavioral pharmacology of cannabis (marijuana) and includes controlled laboratory studies with adult research volunteers, clinical trials, web-based survey research, and natural history studies with patient populations using cannabis/cannabinoids for therapeutic purposes.

Investment **Highlights**

MIRA Pharmaceuticals

Differentiated product

MIRA1a is a synthetic drug that treats anxiety and cognitive decline in the elderly and chronic pain in a safe and effective way, eliminates the negative side effects of impurities found in marijuana extracts .

Lower risk profile

MIRA1a is classified as an unscheduled drug by the U.S. Drug Enforcement Administration (DEA). As such, MIRA1a avoids the risks/challenges typically associated with marijuana including abuse/dependency, legal and regulatory hurdles, elevated production costs, heightened competition and manufacturing/transportation issues.

Large/unmet target markets

Well positioned to gain share across $100B+ traditional neurological markets AND $30B cannabis markets reflecting MIRA1a's differentiation and first-mover advantages.

Promising preclinical studies

Initial research shows MIRA1a has potent anti-anxiety effects and an ability to reduce and relieve pain – two indications with high disease burden and significant unmet needs.

Commercialization timeline

The initial Investigational New Drug (IND) application for anxiety and cognitive decline in the elderly is expected to be filed with the FDA in Q1 of 2025 with a Phase I trial to begin 30 days post IND submission.

Sizeable revenue opportunity

Base case forecast of ~$1.6 billion of peak revenue by 2035 based on conservative uptake/pricing assumptions.

MIRA Pharmaceuticals | MZ Investor relations

Company
XXX

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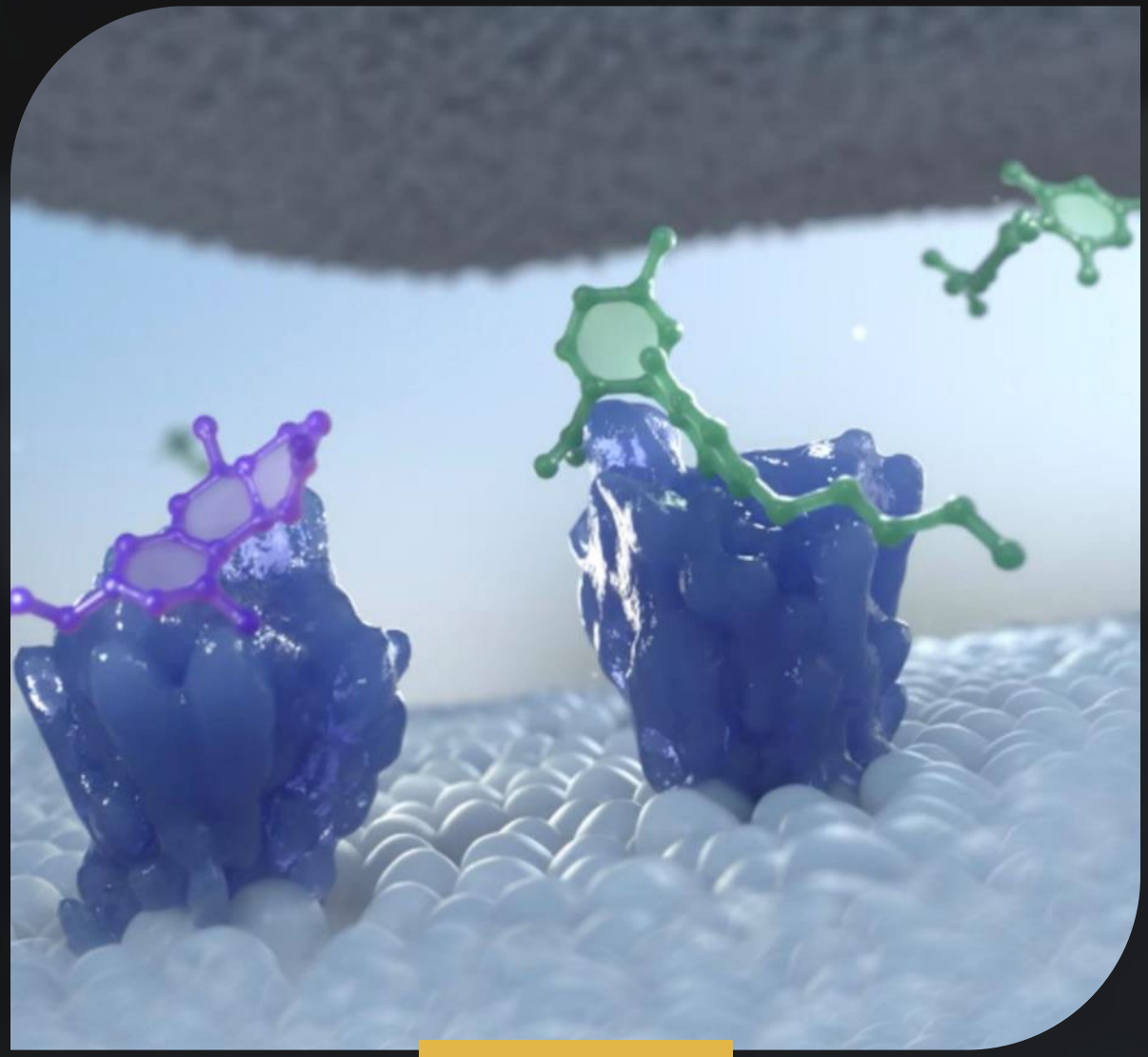
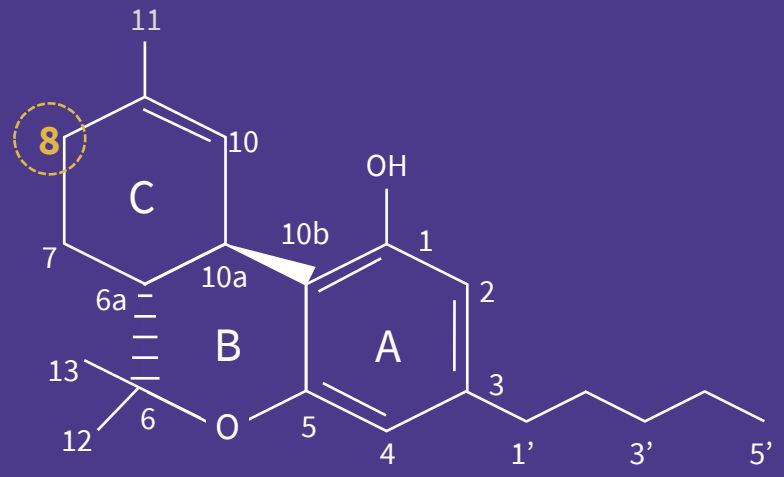
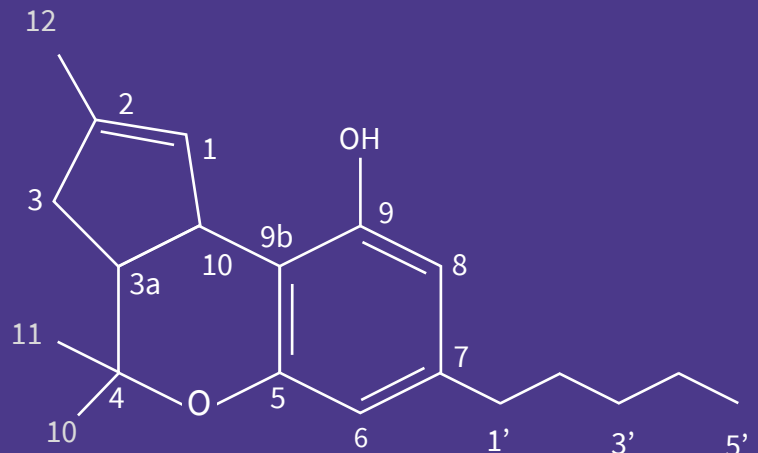
Appendix



THC vs **MIRA1a**

Removing C8 - A Small Change with a Big Impact





(—)-Δ9-THC

(6aR,10aR)-6,6,9-trimethyl- 3-pentyl-6a,7,8,10a-tetrahydro- 6H-benzo[c]chromen-1-ol

MIRA-1a

2,4,4-trimethyl-7-pentyl-3,3a,4,9b-tetrahydrocyclopenta[c]chromen-9-ol

Impact of MIRA1a
on Cognition

MIRA1a Effect Size

- Stimulants for ADHD & Students
- Student's use of stimulants: 5-50%, Meta-analysis 17%
- Effects sizes are small: ~5%
- Up to 100% improvement seen with MIRA1a

Potential Applications

- Alzheimer's market size by 2027: $6B US, $26B Worldwide
- Other Dementias, ADHD, Military

Differentiates from other Cannabinoids

- Nabilone muddled thinking 12%.
- THC impairs cognition

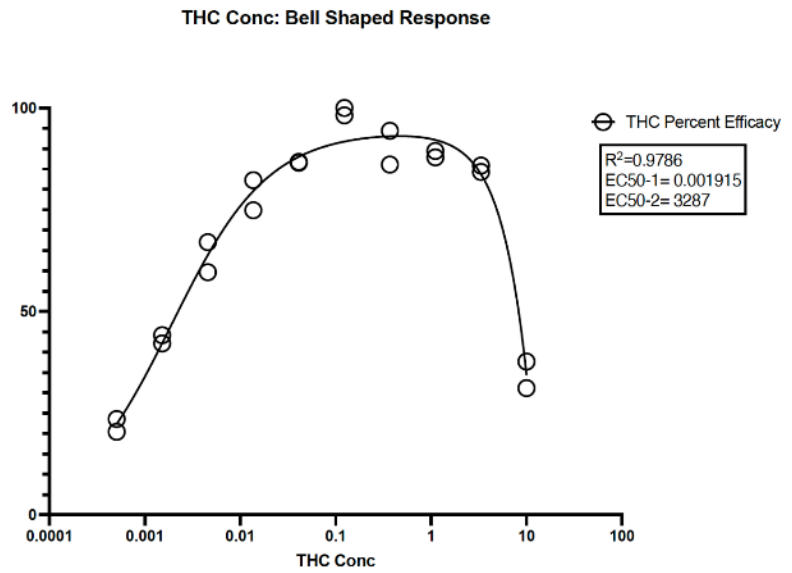
THC vs **MIRA1a**

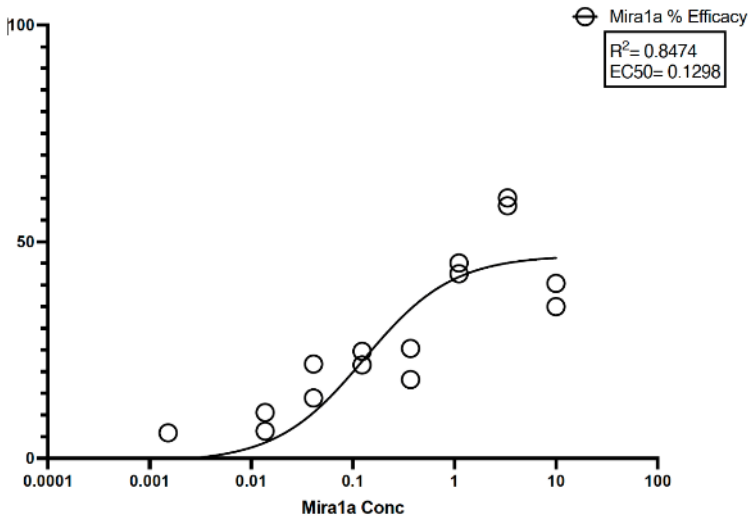
Initial research shows that MIRA1a is differentiated from THC in that it lowers anxiety at high dose versus THC…(1 of 2)

THC has Biphasic Effects: Agonist at Low Doses (anti-anxiety) and Antagonist at High Doses (pro-anxiety). MIRA1a is a Monophasic Partial Agonist. That allows us to conclude that:

- Predict MIRA1a will have only Anti-Anxiety Effects with little to no Pro-Anxiety Side Effects seen with THC.

Source: Mira Analysis

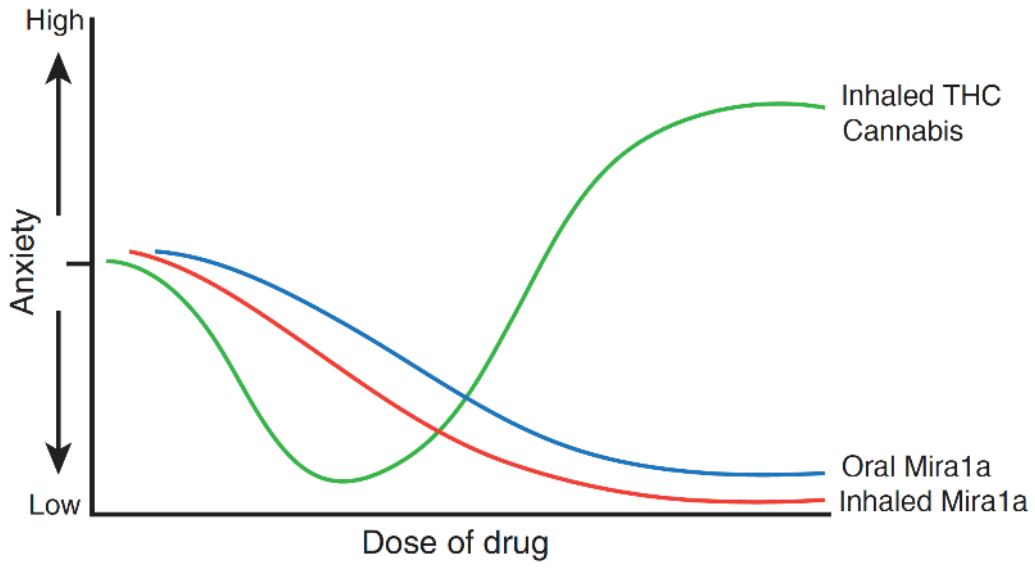




Minimizing Negative **Side Effects**

Based on dose response model, we anticipate that MIRA1a minimizes negative side effects seen with THC (e.g. Anxiety/Paranoia)

MIRA1a: Model of Biphasic THC vs. Graded MIRA1a Effects



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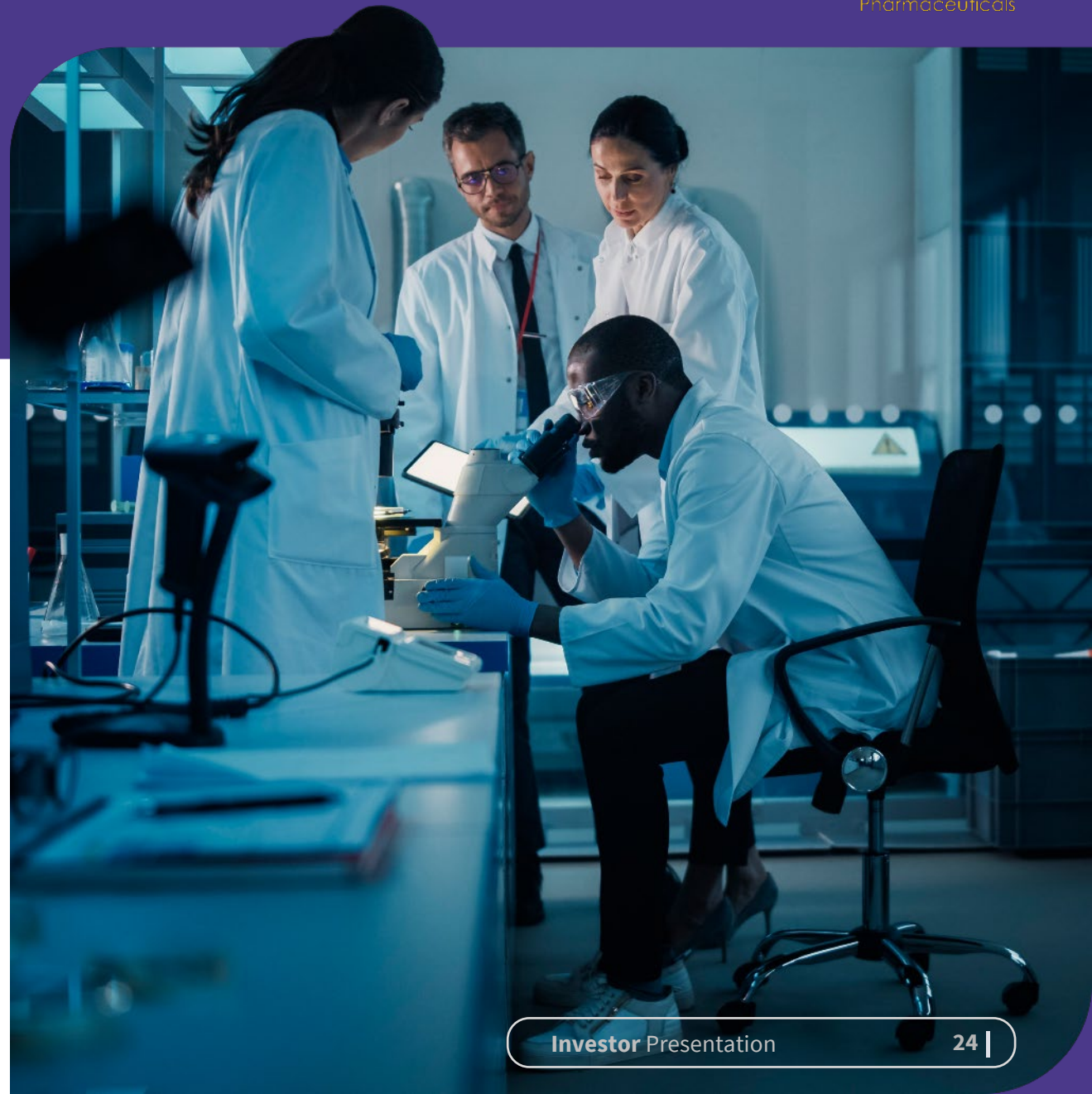
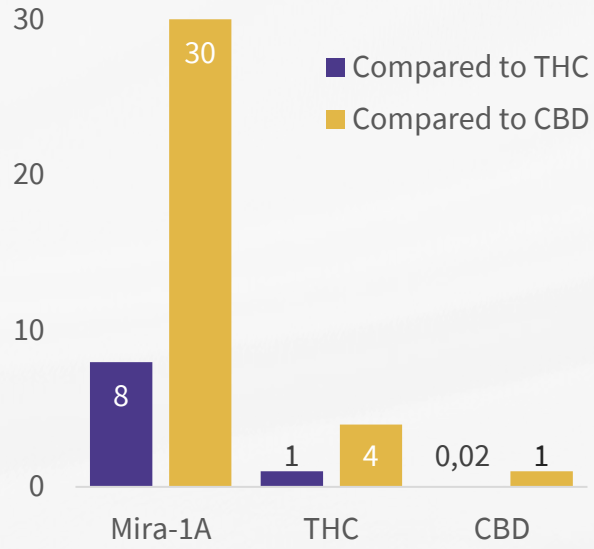


Superior CB2 **Agonist Activity**

MIRA1a delivers superior CB2 Agonist activity / receptor activation as measured by intracellular cAMP effects

MIRA1a: Agonist Receptor Effects Model

CB2 Agonist Activity (cAMP)



Source: Mira Analysis

CB2 Agonism vs Antagonism

CB2 Agonism associated with:

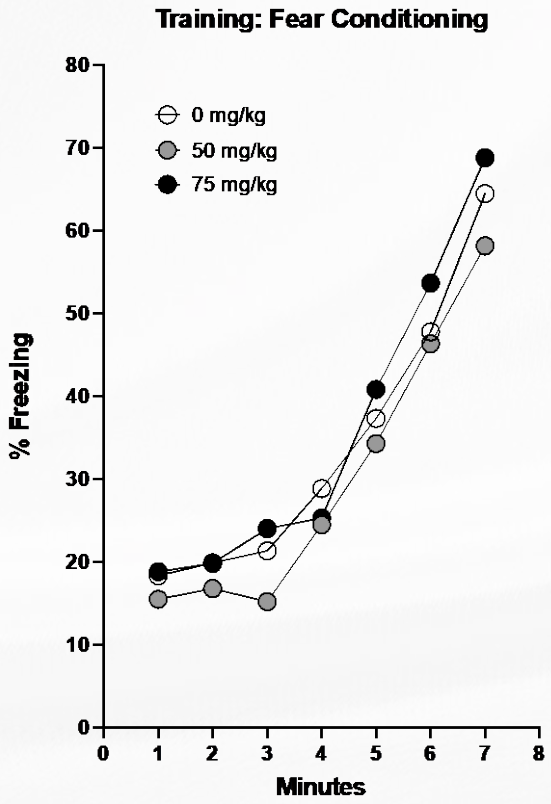
No psychoactivity
Pain relief
Anti-inflammatory
Neuroprotection
- Parkinson's disease
- Alzheimer's disease

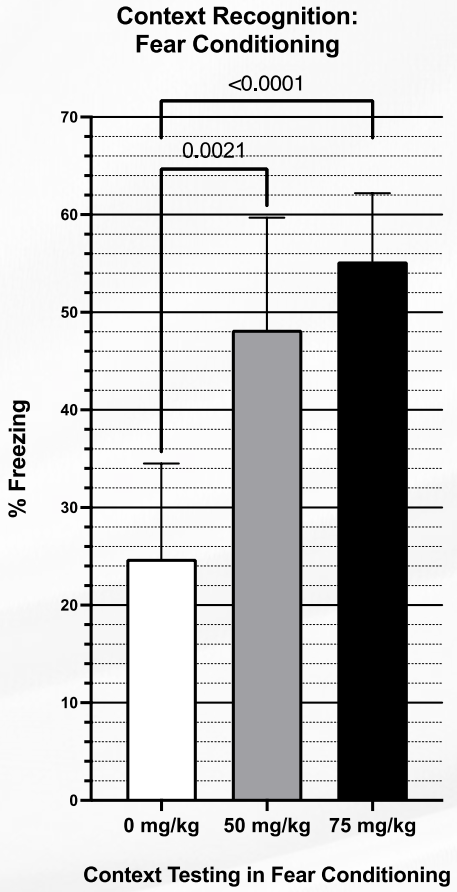
Anti-fibrotic
Osteoporosis
Antipsychotic
Cancer
- Lung cancer
- Neuroblastoma
- Colon cancer

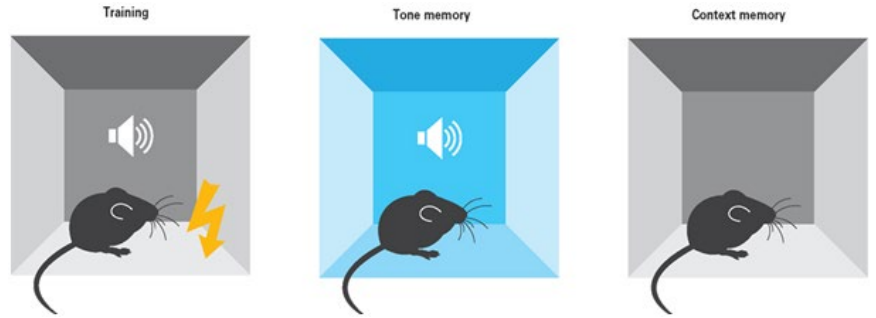
Immune disorders
- Organ or skin graft transplantation
- Autoimmune encephalomyelitis

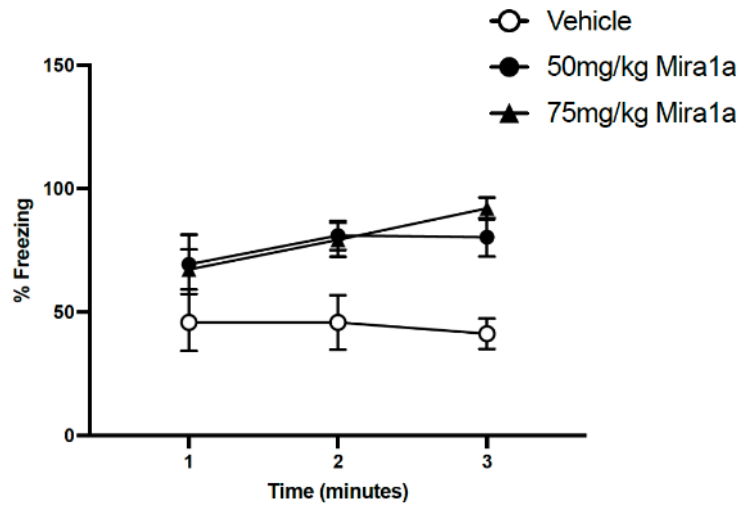
Rheumatoid arthritis

Cognition in Mouse Model **of Fear Conditioning**









Pre-Clinical Research:
Cognition Improvement

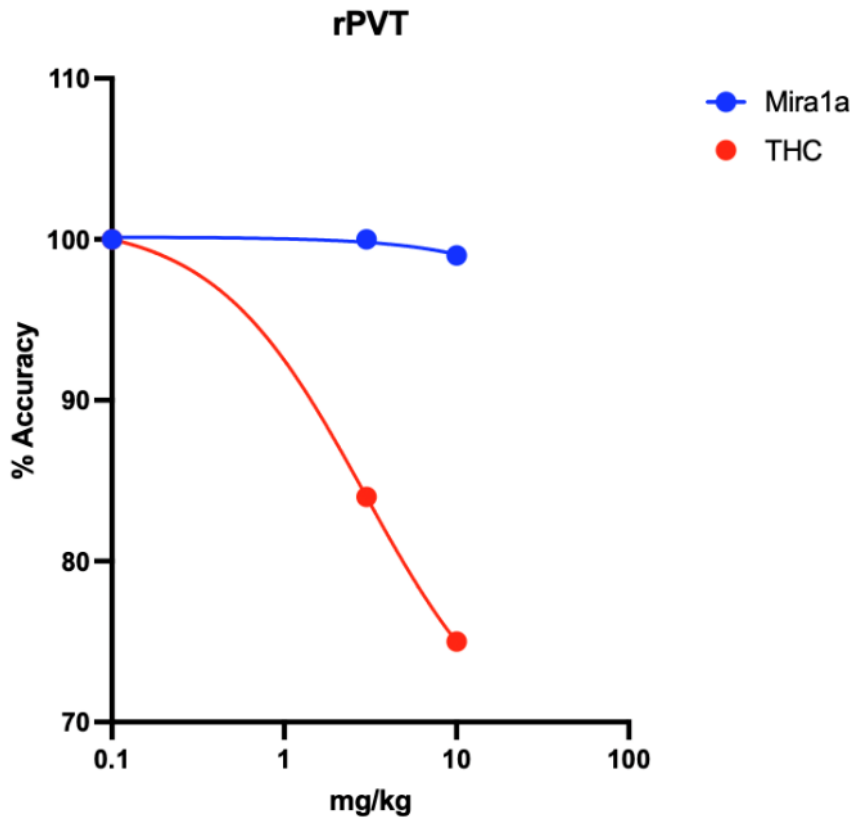
MIRA1a does not have Cognitive Impairing effects compared to THC in the rat PVT

Cognitive Impairment from THC

Because marijuana impairs short-term memory and judgment and distorts perception, it can impair performance in school or at work and make it dangerous to drive.

Research has shown that marijuana's negative effects on attention, memory, and learning can last for days or weeks after the acute effects of the drug wear off, depending on the person's history with the drug.

Some studies have also linked marijuana use to declines in IQ, especially when use starts in adolescence and leads to persistent cannabis use disorder into adulthood.



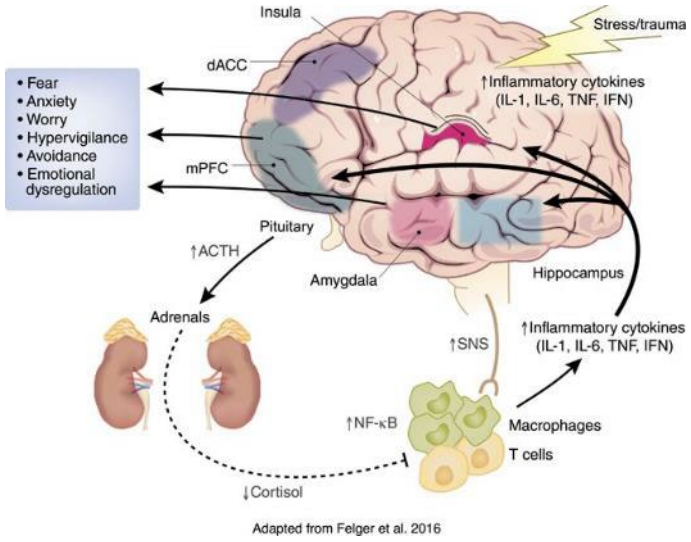
Source: Davis et al, Journal of Neuroscience Methods. V. 259, 1 February 2016, Pages 57-71, Mira Analysis

Anxiety

A chronic condition with multiple potential causes, requires effective treatments and options for refractory patients

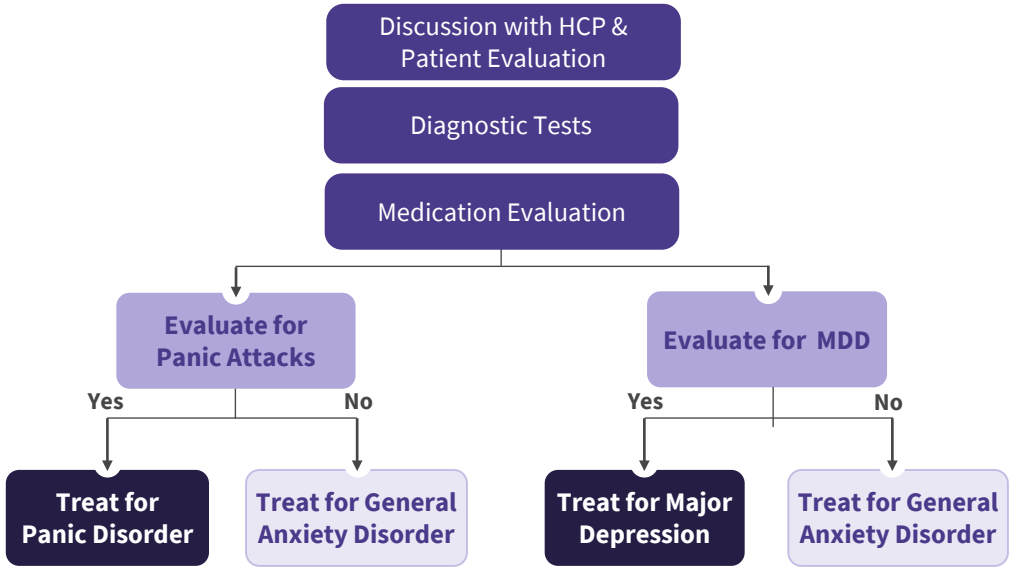
Anxiety Overview

Breakdown of Anxiety Stimuli Reaction



Adapted from Felger et al. 2016

Anxiety Diagnosis Breakdown



- Anxiety disorder is a chronic condition characterized by an excessive and persistent sense of apprehension, with physical symptoms such as sweating, palpitations, and feelings of stress; diagnosis may involve physical exams, symptom inquiry, or blood tests;
- Anxiety is classed as Mild, Moderate, or Severe; while lifestyle changes and CBT* are useful to treat mild anxiety, more severe forms require medication such as clonazepam (Rivotril), alprazolam (Xanax) and lorazepam (Ativan);
- There are several unmet needs in the treatment of anxiety disorders such as the need for more effective, rapidly acting, medications; early identification of nonresponsive treatment; effective treatments for refractory disorders; and prevention of possible relapse

***CBT:** Cognitive Behavioral Therapy; Sources: 1. Oxford University Press, 2. WebMD, 3. NIH, 4. AAFP, IQVIA Analysis, Mira Analysis

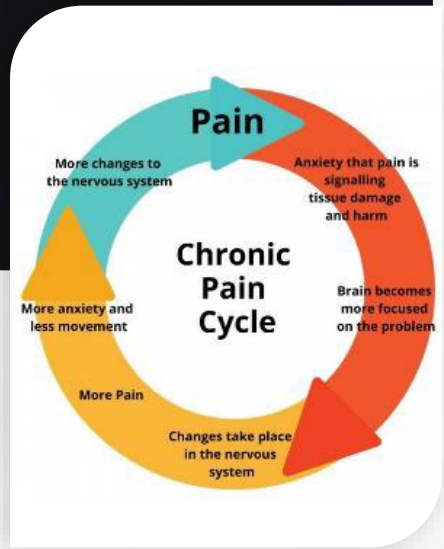
Chronic Pain

Chronic Pain treatment is beginning to vary as HCPs are more cautious with prescribing opiates given the side effects

Chronic Pain Overview

Key Highlights

- **Chronic pain** is pain that lasts longer than 12 weeks; this type of pain typically continues even after the injury/illness that caused it has healed or gone away
- **High Impact Chronic Pain** is severe chronic pain that is accompanied by at least one major activity restriction, such as being unable to work outside the home or go to school
- Chronic Pain can be classified as nociceptive or neuropathic
  - Nociceptive pain is managed utilizing high dose NSAIDs
  - Neuropathic pain is managed with a combination of antidepressants and antiepileptic drugs
  - Opioids are only considered as later-stage options for patients in whom other therapies are ineffective



Key Unmet Needs

- Current treatment strategies do not address the multifactorial nature of this condition
- Less addictive/harmful treatment strategies are needed – 500,000 Americans died from opioid overdose in 2019

Future Opportunity within Indication

- Approximately **50 million people** within the US are dealing with Chronic Pain and **19 Million** deal with High Impact Chronic Pain, with ~63% receiving treatment

Source: 1. Capital Area, 2. CDC, 3. Cleveland Clinic, 4. UptoDate, IQVIA Analysis, Mira Analysis

Diagnosis

Primary Care Provider

Early symptoms:
Joint Pain, Muscle Aches, Burning Pain, Fatigue, Sleep Problems, Loss of Stamina

Lab / Primary Care Provider

Screening
Potential testing methods can include Blood Tests, Electromyography, Imaging Tests, Nerve Conductions, Spinal Fluid, and Urine Tests

Confirmed Diagnosis – potential causes
- Osteoarthritis
- Rheumatoid arthritis
- Fibromyalgia
- Back Pain
- Surgical Trauma
- Idiopathictic

Treatment

Medication (Nerve Blocks, NSAID, Opioids, Antidepressants)

Therapy (Physical or Behavioral Therapy)1

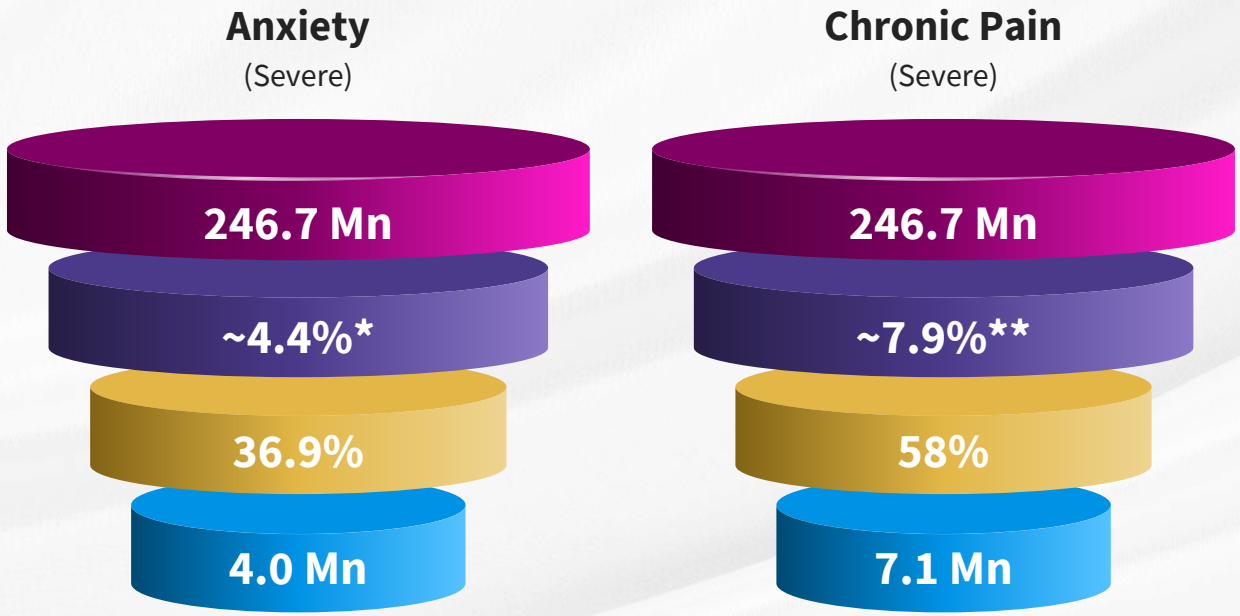
Epidemiology

The eligible patient pool analysis for MIRA1a highlights a large patient pool looking for potential treatments to their conditions

Summary of US Epidemiology

MIRA1a

- Total eligible population
- Diagnosed Prevalence
- Treatment rate
- Total addressable population



Key highlights

- Total addressable populations for Anxiety and Chronic Pain are derived from published literature on epidemiology for each disease and by applying estimated diagnosis and treatment rates (except where diagnosed prevalence used)
- Treatments paradigms for these conditions can differ from patient to patient due to the vast array of potential root causes, external factors, and treatment options
- Healthcare professionals are consistently looking for more efficacious treatments with fewer side effects and a faster onset of action to help patients

Source: US Census; CDC; ADAA; NIMH; AZ Pain; NIH; *Diagnosis rate (~19%) and severity (~23%) aggregated for Anxiety (severe); **Diagnosis rate (~20%) and prevalence (~39%) of high impact chronic pain aggregated, IQVIA Analysis, Mira Analysis

Epidemiology

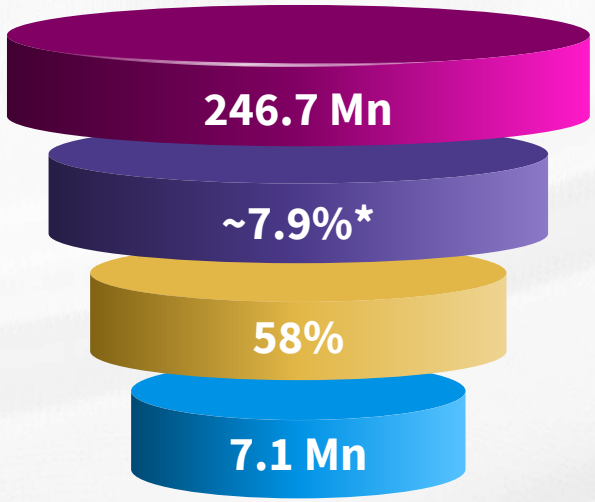
Chronic Pain is a highly prevalent condition in the US, with ~20% of the population affected in some capacity

Summary of 2021 US Epidemiology in Chronic Pain

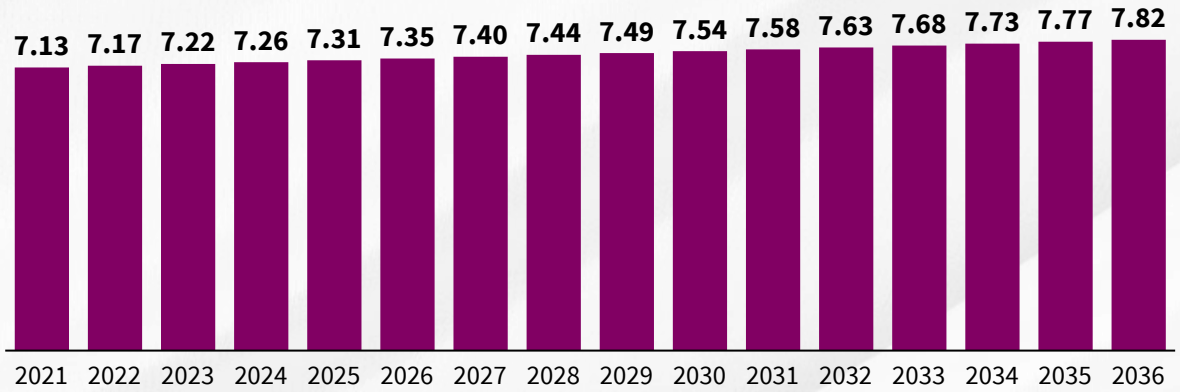
MIRA1a

- Total eligible population
- Diagnosed Prevalence
- Treatment rate
- Total addressable population

Chronic Pain
(Severe)



Potential Patient Pool (Mn)



- Chronic pain is the No. 1 cause of disability and disease burden in the US, costing the US up to $635 billion every year
- ~8% of the US adult population experiences High Impact Chronic Pain, defined as lasting 3 months or longer and accompanied by at least one activity restriction (ex., cannot do chores); in contrast, roughly 20% of the US adult population suffers from Chronic pain in some form (mild and moderate included)
- Chronic pain is particularly prevalent in the elderly, with ~65% of adults aged 65 and older experiencing chronic pain

Source: US census; United States Demographic Statistics | Infoplease; Prevalence of Chronic Pain and High-Impact Chronic Pain Among Adults — United States, 2016 | MMWR (cdc.gov)); AZ Pain; AAC; * Diagnosis rate (~20%) and prevalence (~39%) of high impact chronic pain aggregated, IQVIA Analysis, Mira Analysis

Epidemiology

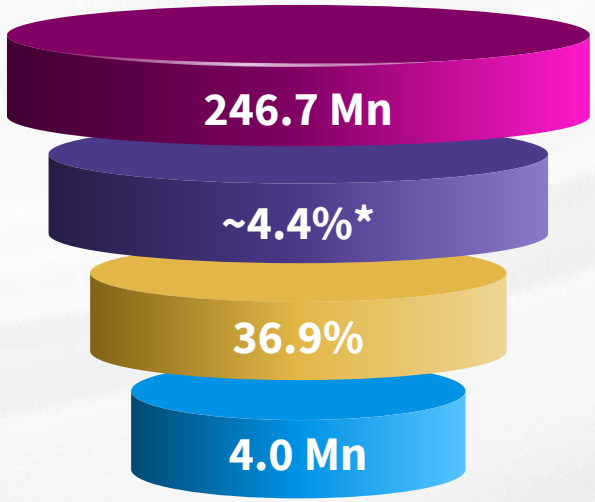
The US population diagnosed with Anxiety is seeking new treatments at an increasing rate

Summary of 2021 US Epidemiology in Anxiety

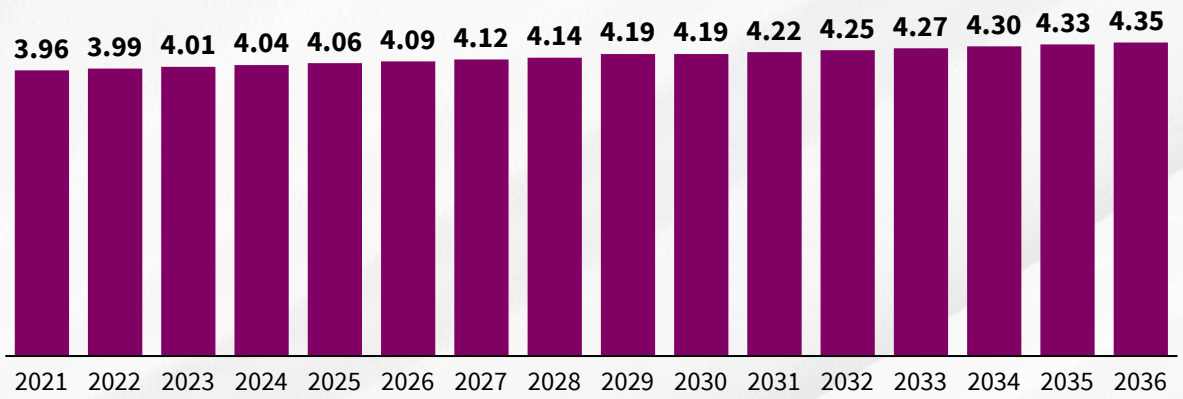
MIRA1a

- Total eligible population
- Diagnosed Prevalence
- Treatment rate
- Total addressable population

Anxiety
(Severe)



Potential Patient Pool (Mn)



- Anxiety disorders are highly prevalent in the US, especially with adults between the ages 18-25 (~15% of this age group diagnosed)
- From January to September 2020, ~315k people took the anxiety screening assessment, representing a 93 percent increase over 2019 figures
- The number of people screening with moderate to severe symptoms of depression and anxiety together has continued to increase throughout 2020, remaining higher than the diagnosis rate prior to the COVID-19 pandemic

Source: US census; United States Demographic Statistics | Infoplease; Prevalence of Chronic Pain and High-Impact Chronic Pain Among Adults — United States, 2016 | MMWR (cdc.gov)); AZ Pain; AAC; * Diagnosis rate (~20%) and prevalence (~39%) of high impact chronic pain aggregated, IQVIA Analysis, Mira Analysis

Pipeline

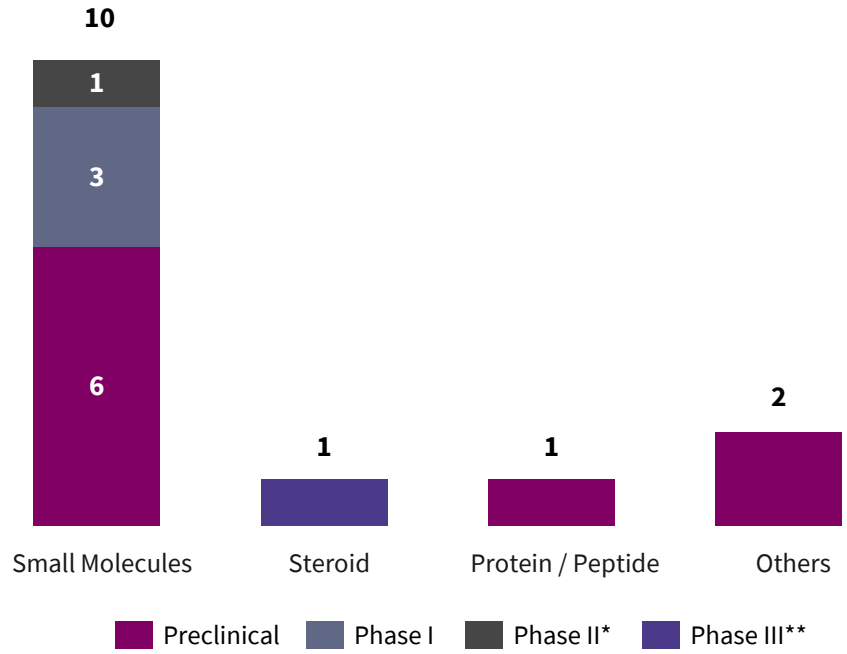
4 different opiate reformulations are in development; most other assets are voltage-gated sodium and potassium channels

Chronic Pain Competitive Landscape

The majority of assets under development for chronic pain indications are small molecules, with only two assets past Phase I:

- **Small Molecules:** ***Four companies are developing assets targeting opioid receptors directly;*** out of 4 assets in clinical trials (three Phase I, one Phase II), the phase II asset is an inhaled cannabinoid receptor product under development by Tetra Bio – Pharma Inc.
- **Steroid:** Sorrento's non-opioid epidural steroid injectable SP-102 is in Phase III, targeting the glucocorticoid receptors, and is the most advanced non-opiate non-device product in the space
- **Protein / Peptide:** Angiochem is developing a preclinical non-opioid therapy targeting neurotensin receptors (types 1 and 2) in the peptide segment
- **Others:** One asset is a transcription factor decoy platform, targeting members of the Kruppel-like family of TFs belonging to Adynxx; the other is RLVT-14-02, targeting MMP-14, responsible in triggering chronic neuropathic pain (by Releviate Therapeutics)

Most pipeline chronic pain assets still target opioid receptors; novel cannabinoids are under investigation as it is a promising MoA



Source: Biomedtracker; excludes approved, suspended, IND and NDA assets, *Includes Phase I/II and IIb; ** Includes Phase II/III, IQVIA Analysis, Mira Analysis

Pipeline

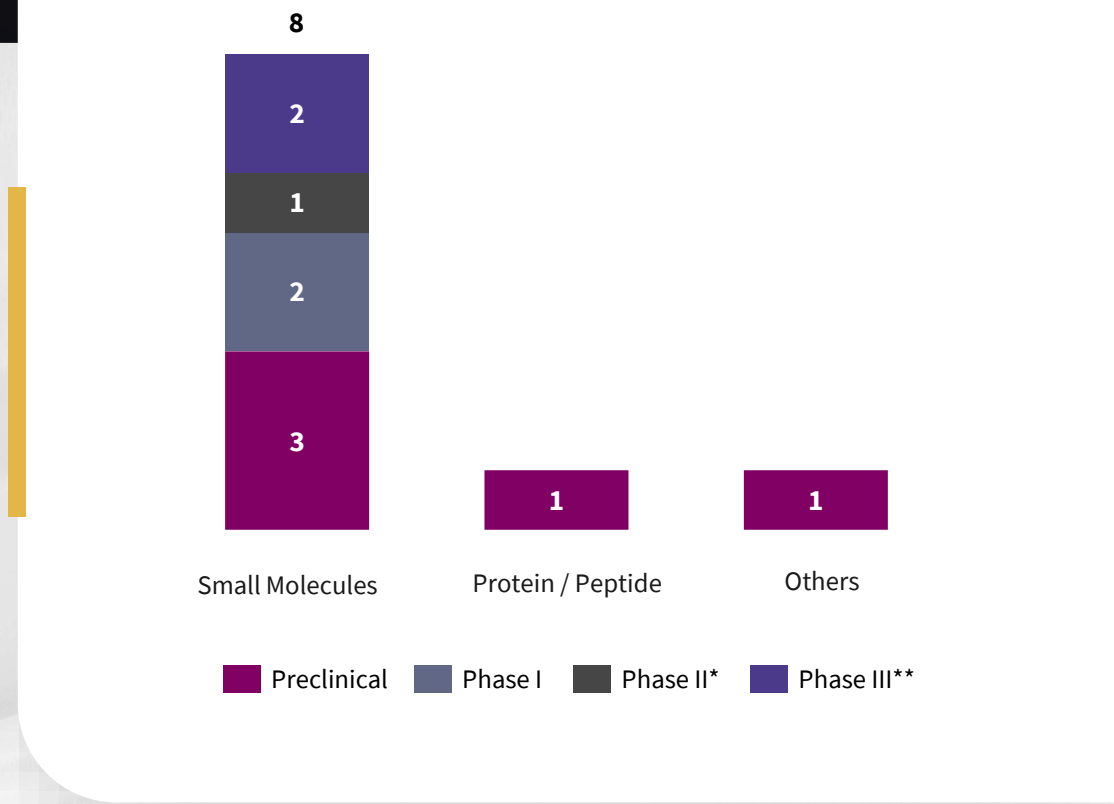
Only ten assets are in the anxiety pipeline, with eight of them as small molecules (most oral)

Anxiety Competitive Landscape

Only ten pipeline assets are being explored for anxiety, with most assets as small molecules:

- **Small Molecules:** Five companies are conducting clinical trails for their respective oral products targeting GABA-A, Serotonin receptors and Glutamine channels. Biohaven's orally dissolving BHV-0223 (new formulation of riluzole) and Allergan's Viibryd targeting glutamine and serotonin 5-HT1 receptors respectively are currently in phase III. BNC210 by Bionomics is the single phase II asset, acting as negative allosteric modulator of the α7 nicotinic acetylcholine receptor. Two of the products (CVL–865 from Cerevel Therapeutics & Xcopri from SK Biopharmaceuticals) which target GABA-A receptors are currently in phase I.
- **Peptide:** Protagenic is developing a pre-clinical Corticotropin Releasing Hormone (CRH), lead product candidate PT00114 in the US and can be administered subcutaneously, sublingually, or intra-nasally subcutaneously, sublingually, or intra-nasally
- **Others:** Cybin has recently announced that the company has selected generalized anxiety disorder ("GAD") as its initial target indication for its proprietary psychedelic molecule CYB004 (deuterated tryptamine)

Very few anti-anxiety pipeline options have advanced past Phase I, indicating large whitespace opportunity for MIRA1a



Source: Biomedtracker; excludes approved, suspended, IND and NDA assets, *Includes Phase I/II and IIb; ** Includes Phase II/III, IQVIA Analysis, Mira Analysis

Landscape

The branded Chronic Pain market is declining on both TRx & sales bases; products are generally older and are primarily opioids

Chronic Pain Market Landscape

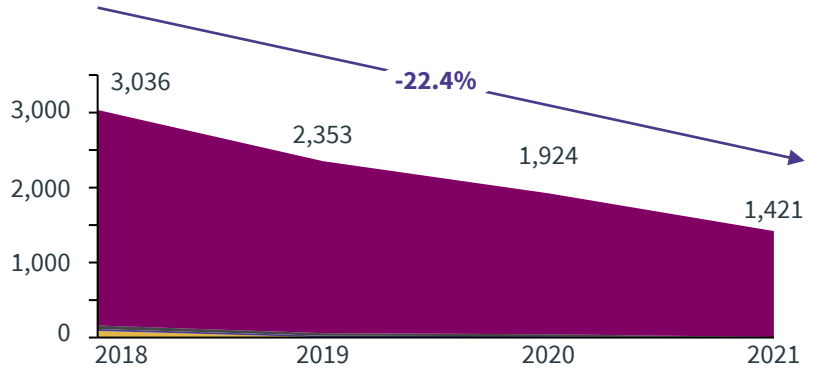
Key highlights

- The overall market for branded drugs has recorded a 21% decline due to the implementation of new regulatory frameworks (and increases in regulations for opiates), the prevalence of generics (accounting for >95% of sales), and CDC guideline recommendations regarding the preference of non-opioid therapy for chronic pain
- Oxycontin (oxycodone HCl: opioid receptor stimulants) from Purdue Pharma stands as the topmost contributor for branded drug sales, achieving about 96% of Q2 2021 sales; usage has been steadily declining due to increasing regulation and legal action
- While total volumes (branded & generic) are increasing, continued genericization means that branded sales and volumes will continue to decline with out significant innovation; if a company enters the space with a differentiated product (not under the same restrictions as opiates), the novel asset will likely face reduced competition from other branded assets

Source: IQVIA NSP / FIA National, *Ultram consists of Ultram & Ultram E- LoE year for Ultram E, **Opana consists of Opana & Opana ER-LoE year for Opana ER, IQVIA Analysis, Mira Analysis

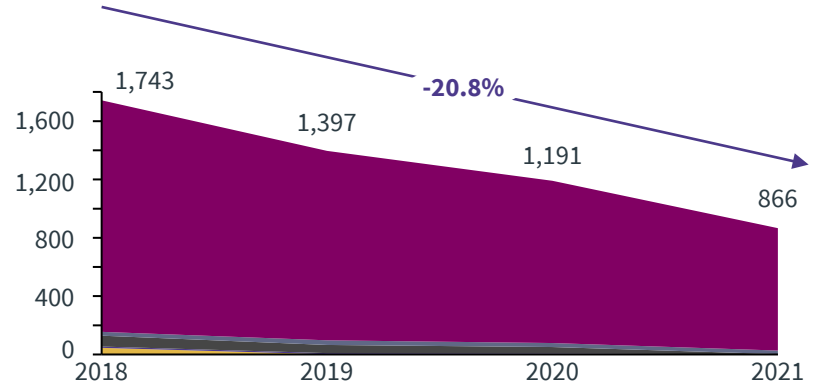
Chronic Pain TRx Share ('000s)

MAT Q2'21 basis, Branded Only



Chronic Pain Total Gross Revenues ($ Mn)

MAT Q2'21 basis, Branded Only



Brand Name – LoE Year

- OXYCONTIN-2030
- PRIALT-2024
- DURAGESIC-2010
- ULTRAM-2014*
- OPANA-2023**

Landscape

The branded Anxiety market is declining in terms of both TRx & sales; products are generally older and have significant generic competition

Anxiety Market Landscape

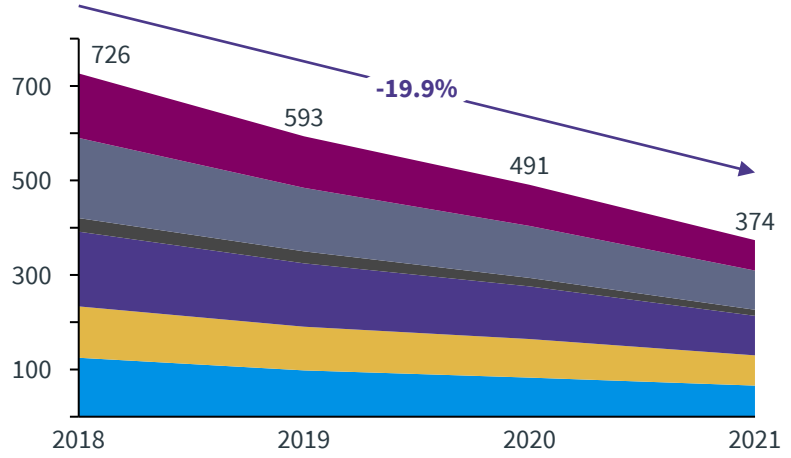
Key highlights

- The overall sales for branded drugs has declined 14% due to significant patent expirations of major antidepressant drugs (used to treat anxiety symptoms) and an increase in the number of generics
- EFFEXOR XR (venlafaxine: serotonin-norepinephrine reuptake inhibitor), LEXAPRO (escitalopram: selective serotonin reuptake inhibitor), ATIVAN (lorazepam: GABA agonist) and CYMBALTA (duloxetine: selective serotonin and norepinephrine reuptake inhibitor) are the top four products in this space contributing about 77% of the overall branded sales in Q2 2021

Source: IQVIA NSP / FIA National, *Ultram consists of Ultram & Ultram E- LoE year for Ultram E, **Opana consists of Opana & Opana ER-LoE year for Opana ER, IQVIA Analysis, Mira Analysis

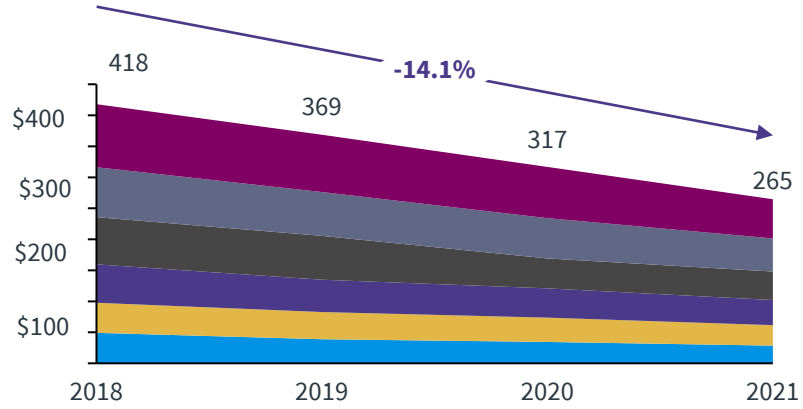
Anxiety TRx Share ('000s)

MAT Q2'21 basis, Branded Only



Anxiety Total Gross Revenues ($ Mn)

MAT Q2'21 basis, Branded Only



Brand Name – LoE Year

- EFFEXOR XR-2008
- LEXAPRO-2012
- ATIVAN-1983*
- CYMBALTA-2013
- XANAX-2006**
- OTHERS

KOL perceptions of MIRA1a are positive, and recommended proactive action on price and exclusion criteria

PMR Insights – KOLs

General Mechanism of Action Information

General Considerations

Both KOLs stated there is significant unmet need across both the indications, particularly within Chronic Pain

- KOLs noted that current treatment methods have considerable adverse effects and do not provide consistent outcomes for all patients
- However, one KOL was intrigued to utilize therapies with cannabinoid like MoAs in refractory patients, given that many of his patients will have experienced cannabinoids in other forms

The KOLs have additional concerns regarding potential DEA scheduling; both KOLs mentioned difficulties in dispensing scheduled substances and access challenges for scheduled drugs such opiates

Product Considerations

- Given the availability of generics and their place in the treatment algorithm, KOLs discussed that price and insurance coverage are key considerations for their patients, and that 2L+ positioning is most likely

Proactive marketing to increase awareness of a new MoA such as for MIRA1a will be needed to inform prescribers of the exact use cases, as well as increasing ease of reimbursement

> *"Having the reps there will be important so they can explain to us about what the medication does and how it works. Good communication will be key to drive good performance."*
>
> - **KOL**

Specific Product Information

Reaction to TPP

- After viewing TPPs, the KOLs reiterated concerns around exclusion criteria for patients – prior usage of cannabis
  - Many of one KOL's patients will have likely tried cannabis / medical marijuana, even if not reimbursed
- KOLs considered the TPP endpoints (based on existing therapies) to be appropriate for new therapies, and would be looking for anecdotal RWE to increase adoption of products

Additional Thoughts on TPP

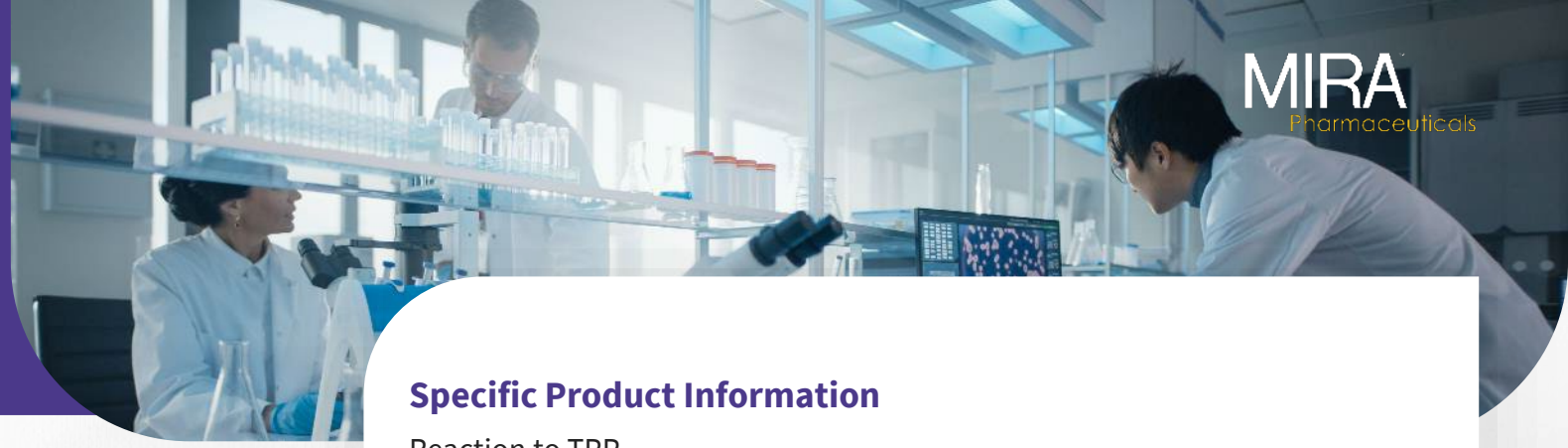
- Once-daily oral administration would increase adherence over current orals
- One KOL notes that some subgroups of patients will shy away from products due to perceived association with controlled substances
- KOLs mentioned it will take a few years for the product to become potential first line therapies, even if superiority over generics is demonstrated

> *"Scheduling only makes it a hassle – there has been public and scientific backlash. It's a hassle with the pharmacy and only one place dispenses it and patients are not organized enough to get the medicine"*
>
> - **KOL**

RWE: Real World Evidence (post-trial) Source: IQVIA Analysis, Mira Analysis

Payors reacted positively to MIRA1a, and provided additional guidance on insurance coverage and pricing

PMR Insights – Payors



General Mechanism of Action Information

General Considerations

Payors mentioned unmet needs for medication with quicker onset and better tolerability for patients, due to adherence issues
Payors also discussed the likely prior authorization & step requirements prior to MIRA1a, given generic entrenchment across TAs

- Receiving a DEA scheduling of III or above, or a REMS requirement, would invite further payor scrutiny, limiting prescriptions overall

Product Considerations

- Efficacy and safety considerations were key, given the burden that patients pose to health plans (despite the availability of low-cost generics); given the plethora of options, payors desired head-to-head comparisons
- During PMR, payors mentioned that a WAC price (starting at $300-900 per month) will be reasonable but will differ from patient to patient. They also mentioned that the product might not be prescribed if there is a high co pay or not covered by insurance

> *"60% of patients getting stable remission, that is pretty good, though products getting schedule 3 with a REMS program will automatically get prior authorization and step therapy with at least two prior treatments."*
>
> – **National Payor**

Specific Product Information

Reaction to TPP

- After viewing the TPPs, initial payor reactions placed the potential treatment in 2L+, as per other newer options in the disease areas
- One payor noted that, given medical marijuana would likely never be reimbursed by his plan, MIRA1a could be an acceptable alternative
- Payors were intrigued by the lower discontinuation rates and mentioned that products achieving those goals would likely be covered

Additional Thoughts on TPP

- Overall, the product seems promising to payors, but therapy selection will depend upon quality-of-life improvements and efficacy
- Payors noted that an endpoint of 60% stable remission would demonstrate superior efficacy and would drive pricing / uptake
- Payors also mentioned challenges associated with other cannabinoid products in the market and that an oral RoA adds increased benefit, despite utilization management

RWE: Real World Evidence (post-trial) Source: IQVIA Analysis, Mira Analysis

Competitor products were analyzed depending on various attributes to finalize scenario prices for MIRA1a

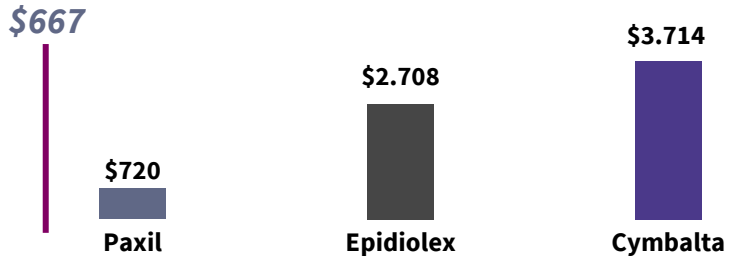
Pricing Analogs

BRAND	PAXIL PAROXETINE HCl	Epidiolex® (cannabidiol)	Cymbalta® chlorhydrate de duloxétine
Company	GlaxoSmithKline	GW Pharmaceuticals	Eli Lilly and Company
Route of Administration	Oral	Oral	Oral
Drug Class	Selective serotonin reuptake inhibitors (SSRIs)	Cannabinoids	Serotonin and norepinephrine reuptake inhibitor (SNRI)
Approved Indications	GAD	Seizures	GAD, CP
Approval (US)	2001	2018	2004
Recommended Dose	20 - 50mg once daily	5 mg/kg/day – 20mg/kg/day	60 mg once daily
WAC Current Unit Price	$24	$1,235 (100 ml) [4]	$124 [3]
Monthly WAC Cost (estimated)	**$720**	**$2,708**	**$3,714**

Additional analogs for consideration: Effexor XR

Source: WAC data from PriceRx Pulls; 1. EPIDIOLEX 2. EPIDIOLEX LABEL 3.GoodRx 4. Epidiolex List Price 5. PAXIL LoE
LGS - Lennox-Gastaut syndrome, TSC – Tuberous Sclerosis Complex, GAD – Generalized Anxiety Disorder, CP – Chronic Pain, IQVIA Analysis, Mira Analysis

Monthly Analog Prices (USD)



Epidiolex[1] was tested for the following reasons:

- First and only FDA-approved prescription cannabidiol (CBD); approved to treat seizures associated with LGS, Dravet syndrome and TSC[2]
- Launched recently in the US (2018); however, payors noted a straight up rare disease pricing for the product

Pre-LoE Cymbalta was tested, but was universally rejected as an analogue due to post-LoE pricing affecting the field:

- Approved in all indications related to MIRA1a
- Lost its patent protection in 2013[3]

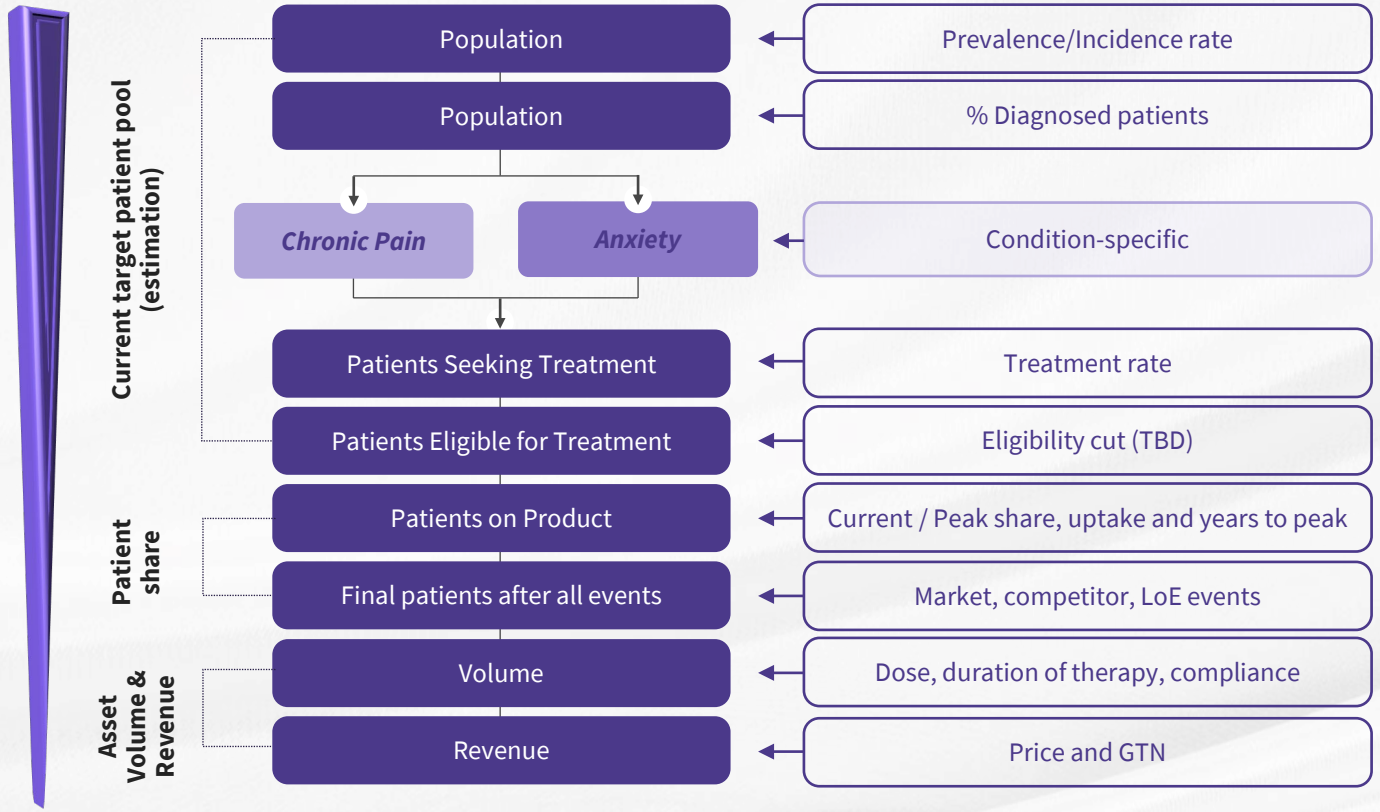
Pre-LoE Paxil was tested but was not considered further as:

- Approved way back in 2001 for Anxiety disorder
- Lost its patent protection in 2006[5]

During primary market research with payors, respondents considered $667 / month as an appropriate base case, and price ranging between $10-30 per dose will be reasonable allowing for favorable positioning

Analysis used a patient-based approach to estimate the net revenues for Anxiety and Chronic Pain

Forecast methodology



- Population data will be sourced from standard sources (World Bank, US government, etc.)
- Treated patients can be determined based on assumption from reports on prevalence, diagnosis and treatment rates, market research, or analogues
- Potential patient share can be determined from analogue analysis for market share and uptake
- Pipeline analysis can reveal the potential launch of competitor assets and can be quantified through analogue analysis

Source: IQVIA Analysis, Mira Analysis

MIRA™

Pharmaceuticals