



# *A Rare Approach to Therapeutics*

*January 2025*

**NasdaqGS: ZVRA**



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Presentation may contain forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements relate to future events or our future financial performance. We generally identify forward-looking statements by terminology such as “may,” “will,” “would,” “should,” “expects,” “plans,” “anticipates,” “could,” “intends,” “target,” “projects,” “contemplates,” “believes,” “estimates,” “predicts,” “assume,” “intend,” “potential,” “continue” or other similar words or the negative of these terms. We have based these forward-looking statements largely on our current expectations about future events and financial trends that we believe may affect our business, financial condition and results of operations. Forward-looking statements are not guarantees of future actions or performance. These forward-looking statements include statements regarding the promise and potential impact of our preclinical or clinical trial data, including without limitation the timing and results of any clinical trials or readouts, our anticipated financial performance, our industry, our intellectual property, business strategy, plans, goals and expectations concerning our market position, future operations, the timing or results of any Investigational New Drug Applications (NDA) and NDA submissions, communications with the U.S. Food and Drug Administration (FDA), the potential uses or benefits of MIPLYFFA, KP1077, SDX celiprolol or any other product candidates for any specific disease indication or at any dosage, the potential benefits of any of Zevra’s product candidates, the success or timing of the launch or commercialization of any products or related sales milestones, and our strategic and product development objectives. These forward-looking statements are based on information currently available to Zevra and its current plans or expectations and are subject to a number of known and unknown uncertainties, risks and other important factors including those discussed under the caption “Risk Factors” in our Annual Report for the year ended December 31, 2023, on Form 10-K and filed with the Securities and Exchange Commission (SEC) on April 1, 2024, and in our other filings with the SEC could cause actual results, performance, or achievements to differ materially from those indicated by the forward-looking statements made herein.

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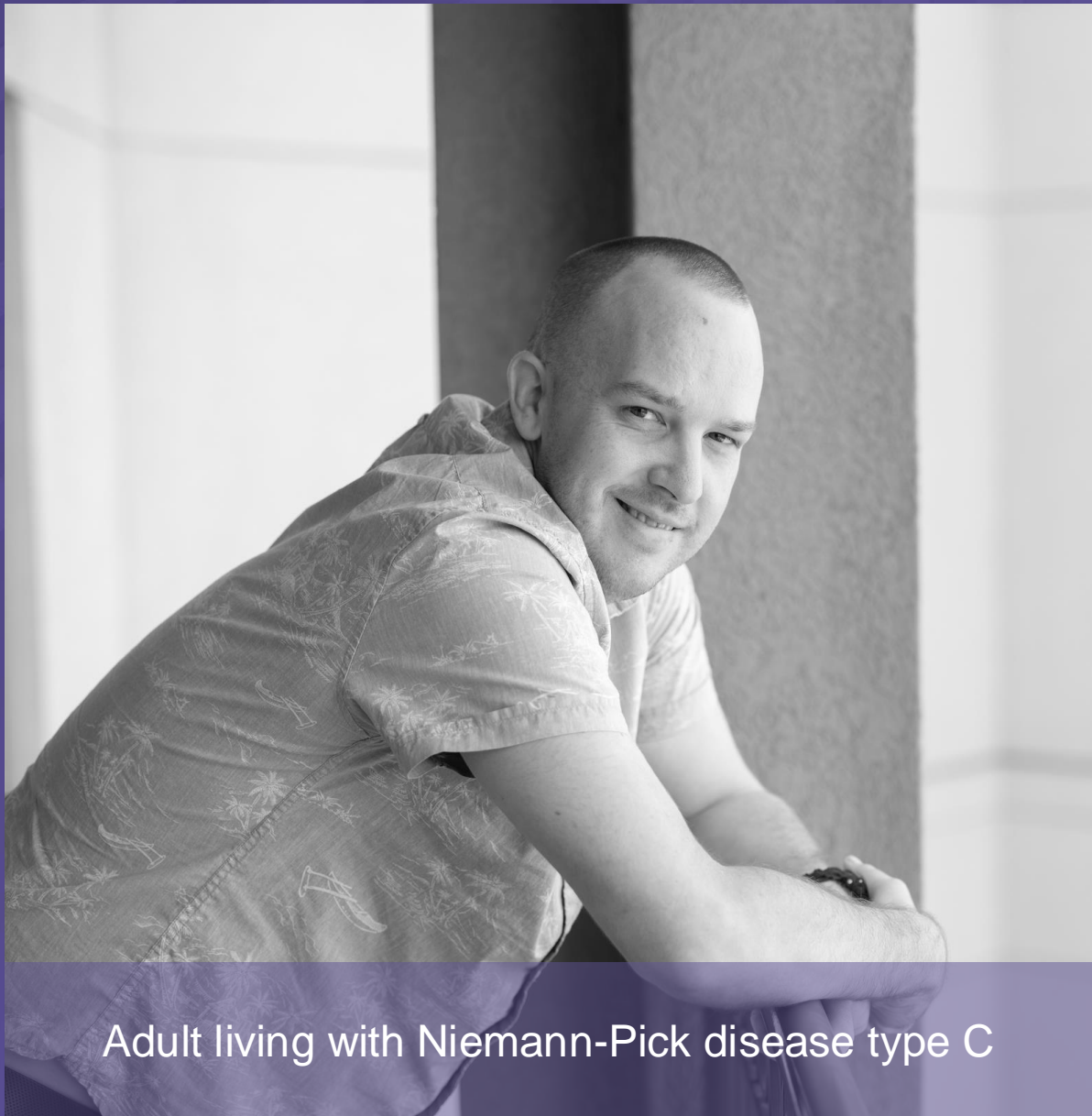
# Zevra Has a Unique Opportunity to Impact People Living with Rare Diseases

Two commercial-stage rare disease products

Advanced clinical development pipeline

Existing infrastructure supportive of future growth

Strong financial position with cash runway into 2027



Adult living with Niemann-Pick disease type C

# Pursuing our Mission to Bring Life-Changing Therapeutics to the Rare Disease Community

**Execute**

**Focus**

**Innovate**

Resources prioritized across four pillars to achieve our vision

**Commercial  
Excellence**

**Synergistic  
commercial  
products  
supporting patient  
access to  
therapeutics**

**Pipeline and  
Innovation**

**Potential for growth  
in-line with  
commercial  
capabilities to  
deliver maximum  
value to patients**

**Talent and  
Culture**

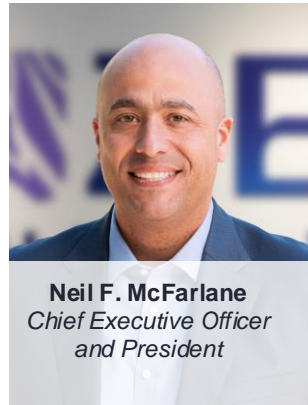
**Experienced team  
with rare disease  
expertise**

**Corporate  
Foundation**

**Demonstrating  
Financial Discipline**



# Experienced Team with Rare Disease Expertise



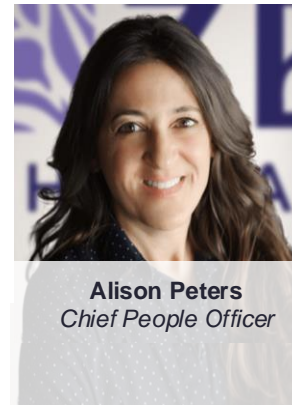
**Neil F. McFarlane**  
Chief Executive Officer  
and President



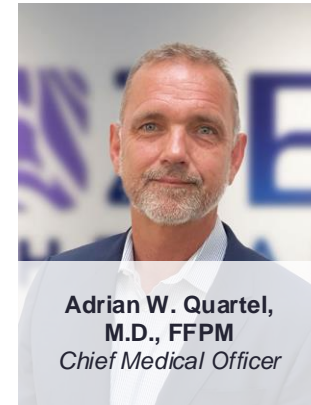
**R. LaDuane Clifton, CPA**  
Chief Financial Officer  
and Treasurer



**Joshua Schafer**  
Chief Commercial Officer  
and EVP of BD



**Alison Peters**  
Chief People Officer



**Adrian W. Quartel,  
M.D., FFPM**  
Chief Medical Officer



**Rahsaan W. Thompson**  
Chief Legal Officer,  
Secretary, and Compliance  
Officer

## RARE DISEASE EXPERIENCE



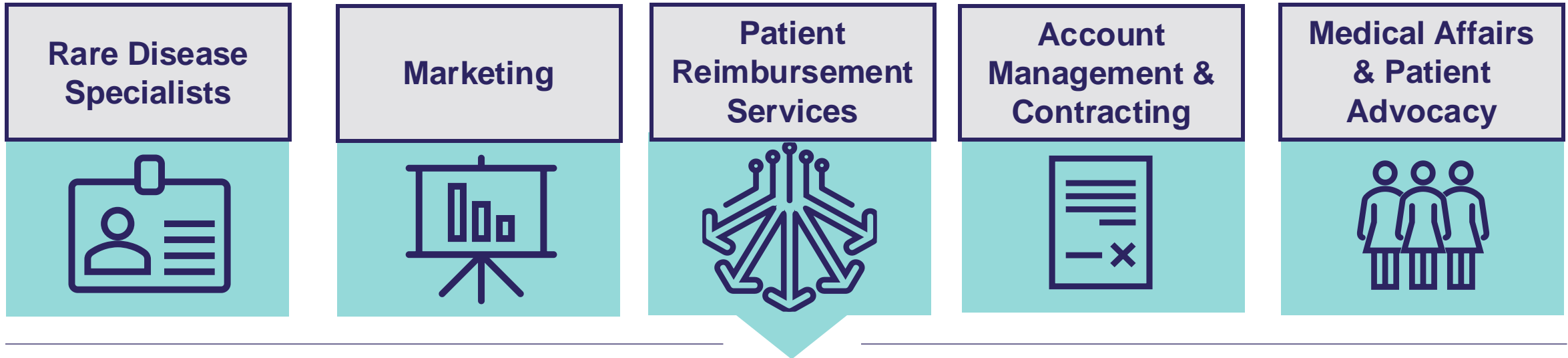
## RARE DISEASE PRODUCT EXPERIENCE



# Diversified Portfolio to Deliver Value for Patients

	PHASE 1	PHASE 2	PHASE 3	NDA/MAA <sup>iv</sup>	FDA APPROVED	STATUS AND IP	Zevra's Portfolio
U.S. Commercial	<b>MIPLYFFA™</b> <i>arimoclomol</i> <b>Niemann-Pick Disease Type C (NPC)</b>					FDA Approval: Sep 20, 2024 Launch: Nov 21, 2024  IP through 2031 via ODE <sup>i</sup>	✓ Asset portfolio targeting rare diseases
	<b>OLPRUVA®</b> <i>sodium phenylbutyrate for oral suspension</i> <b>Urea Cycle Disorders (UCD)</b>					FDA Approval: Dec 22, 2022 Launch: Jan 29, 2024  IP through 2036	
Partnered	<b>AZSTARYS®</b> <i>serdexmethylphenidate and dexamethylphenidate</i> <b>Attention Deficit Hyperactivity Disorder (ADHD)</b>					Receiving royalties and milestones on net sales <sup>ii</sup>  IP through 2037	✓ Leverage areas of synergy for commercial portfolio
Pipeline	<b>Arimoclomol</b> <b>Niemann-Pick Disease Type C (NPC)</b>					Exploring regulatory path in Europe and other countries	✓ Lean infrastructure that can be leveraged with additional products
	<b>Celiprolol</b> <b>Vascular Ehlers-Danlos Syndrome (VEDS)</b>					Ph. 3 trial ongoing  IP through 2038	✓ Multiple upcoming milestones and catalysts
	<b>KP1077</b> <b>Idiopathic Hypersomnia (IH)</b>					Seeking strategic alternative; Ph. 3 trial ready <sup>iii</sup>  IP through 2037	
	<b>KP1077</b> <b>Narcolepsy</b>					Ph. 3 trial potential <sup>iii</sup>	✓ Portfolio with commercial and clinical assets

# Efficient Team Approach to Providing Patient Access



Zevra's comprehensive patient support program



To support the individual needs of eligible patients and those who care for them

**Personalized insurance coverage education and support**

**Disease state information and tools for therapy management**

**Copay & alternate funding identification assistance for eligible patients' product needs**

**Interactions to address barriers while facilitating timely prescription refills**

# U.S. Prescribing Information for MIPLYFFA™ (arimoclomol capsules)

## Indication

MIPLYFFA is indicated for use in combination with miglustat for the treatment of neurological manifestations of Niemann-Pick disease type C (NPC) in adult and pediatric patients 2 years of age and older.

## Recommended Dose

Recommended MIPLYFFA oral dosage, in combination with miglustat, for patients with actual body weight of:

- 8 kg to 15 kg, is 47 mg three times a day
- > 15 kg to 30 kg, is 62 mg three times a day
- > 30 kg to 55 kg, is 93 mg three times a day
- > 55 kg, is 124 mg three times a day

MIPLYFFA can be administered with or without food





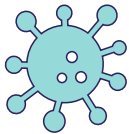
# NPC is a Neurodegenerative Lysosomal Storage Disorder



NPC causes cholesterol buildup that leads to cell death



NPC gene mutations produce abnormal, absent, or non-functional NPC proteins<sup>1</sup>

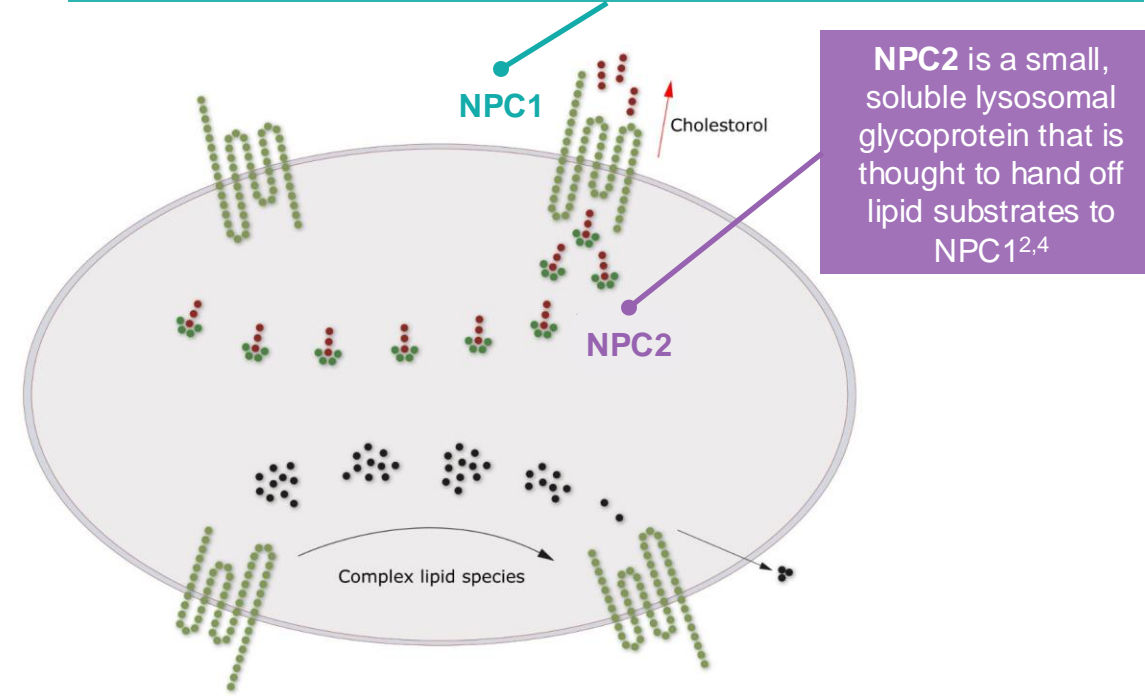


Progressive lipid build up leads to cell death and ultimately organ dysfunction in the spleen, liver, and brain



Disease results in impairment and loss of cognition, speech, swallow ability, fine motor skills, and ambulation

NPC1 is a large, transmembrane domain protein with specific domains that are involved in the transport of lipophilic substrates such as cholesterol and sphingolipids<sup>2,3</sup>



Cholesterol buildup leads to cell death; MIPLYFFA may enhance cholesterol metabolism through improved lysosomal function and upregulation of genes belonging to the CLEAR network<sup>i,5</sup>

# NPC is an Ultra-Rare, Heterogenous and Fatal Disease



Child living with Niemann-Pick disease type C

~1,800

Individuals in the U.S. and Europe diagnosed and live with NPC  
~900 patients the U.S., of which ~300 are diagnosed or treated<sup>6</sup>

Onset at Any Age

Makes NPC particularly difficult to diagnose

Heterogeneous

Rate of progression, always fatal

~13 Years

Mean age of death<sup>6</sup>

~80%

Of patients who participated in the Phase 2/3 clinical trial took miglustat<sup>7</sup>

Miglustat

The primary treatment for NPC patients in the EU and U.S.<sup>i</sup>

# MIPLYFFA is Cornerstone Treatment for NPC

## Efficacy

**Proven effectiveness using the rescored 4-domain NPC clinical severity scale (R4DNPCCSS)**

MIPLYFFA used in combination with miglustat shown to halt disease progression through 12-months of treatment<sup>7</sup>

- Only U.S. approved product for NPC with 5+ years of evidence-based data outcomes

## Safety

**Generally well-tolerated therapy**

Adverse events were generally mild to moderate in severity and few led to a withdrawal of treatment<sup>7</sup>

- >270 NPC patients have been treated, including pivotal studies, open label extension, and Expanded Access Program (EAP)

## Dosing

**Oral, weight-based dosing**

3x per day, either by swallowing the whole capsule with or without food, or by adding the contents to a small amount of water, apple juice, or soft foods, or via a feeding tube

## Advantage

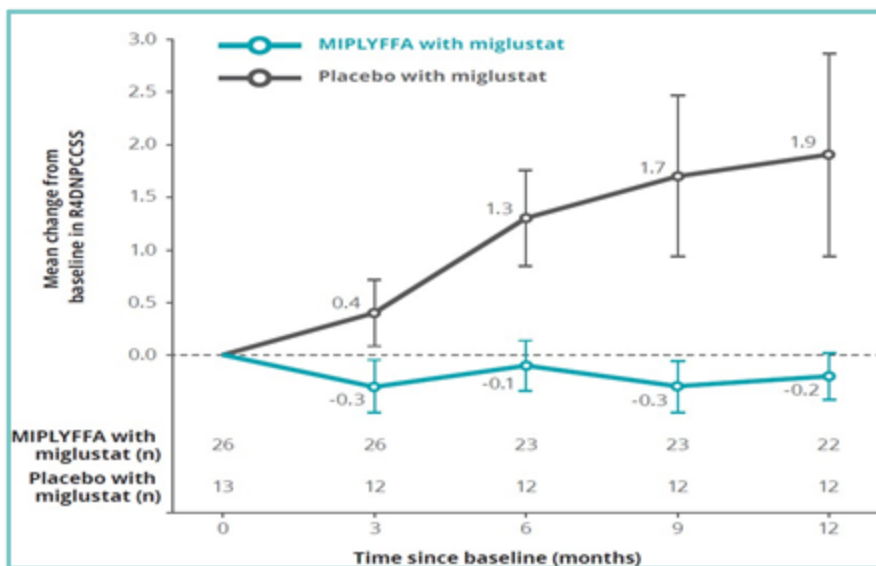
- **MIPLYFFA is the first product approved for treatment of NPC and the only product approved in combination with miglustat shown to halt disease progression through 12-months**

# MIPLYFFA has Proven Effectiveness in Stopping Disease Progression in Patients who also Received Miglustat

**Proven Effectiveness:** Shown to halt disease progression in patients who also received miglustat<sup>7</sup>

The estimated placebo adjusted mean change from baseline at month 12 was **-2.2 pts.** ↓

**NPC SYMPTOM REDUCTION AT 12 MONTHS**  
as measured by the R4DNPCCSS score:  
ambulation, speech, swallow, and fine motor skills



**Well-Tolerated Safety Profile:** Adverse events were generally mild to moderate in severity and few led to a withdrawal of treatment<sup>7</sup>

Adverse reaction <sup>1</sup>	MIPLYFFA with miglustat n=26 n (%)	Placebo with miglustat n=13 n (%)
Upper respiratory tract infection*	8 (31)	2 (15)
Diarrhea	6 (23)	3 (23)
Decreased weight	4 (15)	0
Decreased appetite	3 (12)	0
Tremor	3 (12)	0
Urticaria**	3 (12)	0
Headache	3 (12)	1 (8)
Lower respiratory tract infection	3 (12)	1 (8)
Seizure	3 (12)	1 (8)

\*Upper respiratory tract infection: combined incidence of upper respiratory tract infection and rhinitis.

\*\*Urticaria: Includes one patient in which urticaria occurred alone (3%) and two patients who had urticaria with angioedema (6%).



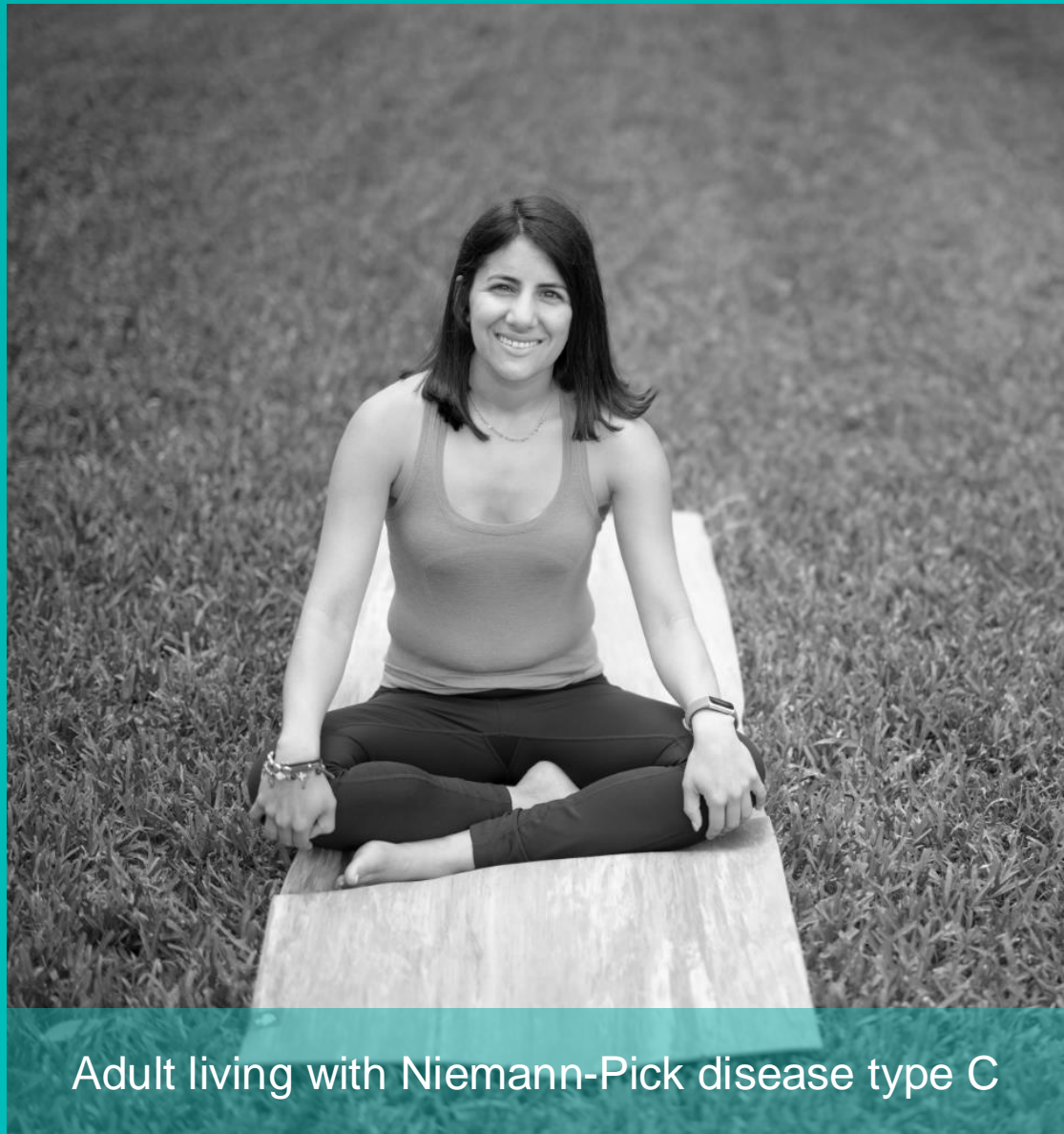
# Early MIPLYFFA Launch Metrics

## U.S. Launch Metrics as of October 31, 2024<sup>i</sup>

- **90** prescription enrollment forms received
  - **69** of which were from U.S. EAP participants
  - **21** patients new to MIPLYFFA and outside of the EAP
- **30%** of all prescription enrollment forms approved for reimbursement

## Exploring Regulatory Path in EU

- EU-based EAP continues with ~70 to 80 patients
- ~\$2.1M per quarter in net reimbursements from French EAP
- Exploring regulatory path in Europe and other countries



Adult living with Niemann-Pick disease type C

# U.S. Prescribing Information for OLPRUVA<sup>®</sup> (sodium phenylbutyrate) for Oral Suspension

## Indication

OLPRUVA is a nitrogen-binding agent indicated as adjunctive therapy to standard of care, which includes dietary management, for the chronic management of adult and pediatric patients weighing 20 kg or greater and with a body surface area (BSA) of 1.2 m<sup>2</sup> or greater, with urea cycle disorders (UCDs) involving deficiencies of carbamylphosphate synthetase (CPS), ornithine transcarbamylase (OTC), or argininosuccinic acid synthetase (AS).

## Recommended Dose

The recommended dosage is 9.9 -13 g/m<sup>2</sup>/day.



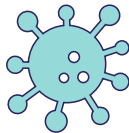
# UCDs are Rare Inherited Metabolic Disorders Characterized by Hyperammonemia



Defect in one of the **6 enzymes** or **2 transporters** in urea cycle leads to accumulation of ammonia<sup>8,14</sup>



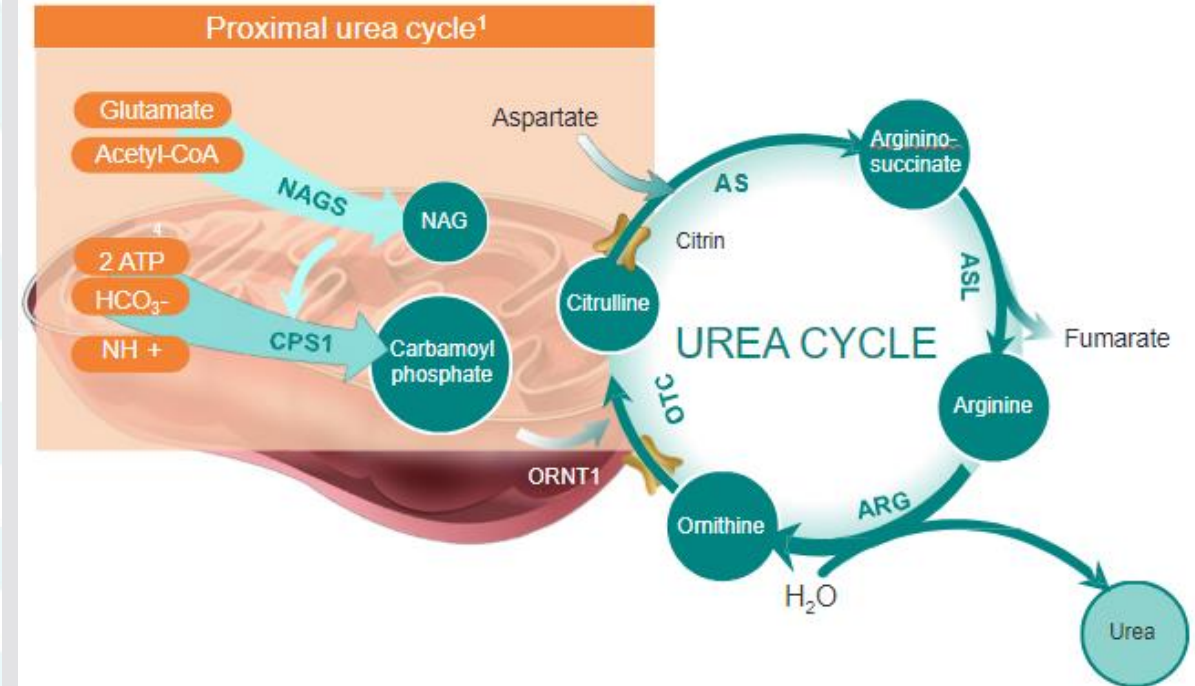
Elevated ammonia can be neurotoxic, leading to neurocognitive damage and even death<sup>9-12</sup>



Signs and symptoms of hyperammonemia can present acutely or chronically, and can first manifest across the age spectrum<sup>9,13-15</sup>



Treatment goals are to prevent hyperammonemia, achieve normal development & neurocognitive function, & minimize the risk of chronic complications<sup>9,16</sup>

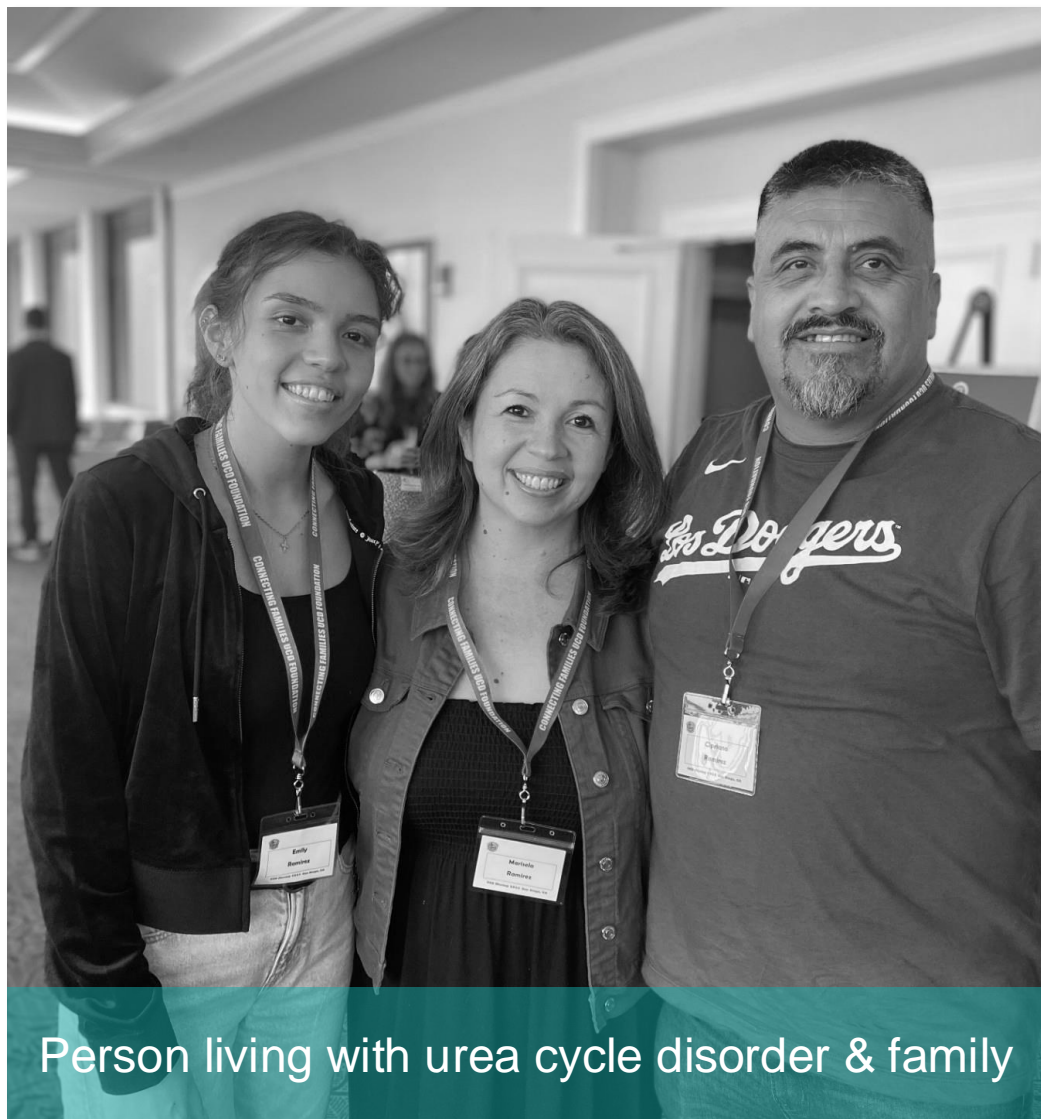


OLRPUVA is a nitrogen scavenger that removes excess ammonia

Figure adapted from Summar ML, Mew NA. *Pediatr Clin North Am.* 2018;65(2):231-246.<sup>1</sup>



# Poor Treatment Adherence Remains an Unmet Need in UCDs



Person living with urea cycle disorder & family

~1,100

Individuals in the U.S. diagnosed in the U.S.<sup>17</sup>

~80%

Of patients have deficiencies in the CPS, OTC, or AS enzymes<sup>i</sup>

>800

Patients are currently receiving treatment in the U.S.<sup>17</sup>

>25%

Of hyperammonemic crises stem from poor treatment adherence<sup>18</sup>



# Potential to Improve Compliance with OLPRUVA through Formulation Designed for Convenience and Palatability

## Efficacy

### Established efficacy profile through 505(b)(2) filing in-line with market leader

- OLPRUVA is indicated as adjunctive therapy to standard of care for long-term management of adults and children in UCDs involving deficiencies of CPS, OTC and AS

## Safety

### Safety profile in-line with other nitrogen scavengers

- Demonstrated by use of sodium phenylbutyrate for the treatment of UCDs since 1996

## Dosing

### Oral, weight-based dosing

- Convenient pre-measured, single-dose envelopes for ease of use and “ammonia control on the go”
- Unique formulation designed for palatability and adherence

## Advantage

**Novel dual-coated formulation of sodium phenylbutyrate delays release in water for up to 5 minutes**

# Unmet Medical Needs in UCDs

Important reasons to reassess therapy for patients currently on a nitrogen scavenger therapy

1

Poor Adherence

2

Recurrent Hospital Visits  
(hyperammonemic crises)

3

Not on Optimal Treatment & Mild  
Undiagnosed UCD



Adult living with urea cycle disorder

# Driving Adoption of OLPRUVA through Patient Experience



## Adult Patients Diagnosed with busy lifestyles

- **Need to take their medication at work**
- Have jobs that allow limited time for treatment
- **Missing their midday dose**
- Patients who travel
- **May want to be discreet or more private with their treatment**
- Experiencing symptoms such as vomiting, confusion, mental fogginess, lethargy



## Diagnosed and naïve to treatments

- Taking medication was inconvenient / not worth the trouble
- Couldn't tolerate previous medications
- Didn't like the taste or texture of previous medications
- **May want to be discreet or more private with their treatment**
- **Elevated ammonia and/or glutamine**
- Experiencing symptoms such as vomiting, confusion, mental fogginess, lethargy

# Celiprolol

## Potential Treatment for Vascular Ehlers-Danlos Syndrome (VEDS)



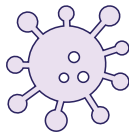
# VEDS Impairs Connective Tissue



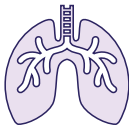
Most severe Ehlers-Danlos syndrome subtype<sup>19</sup>



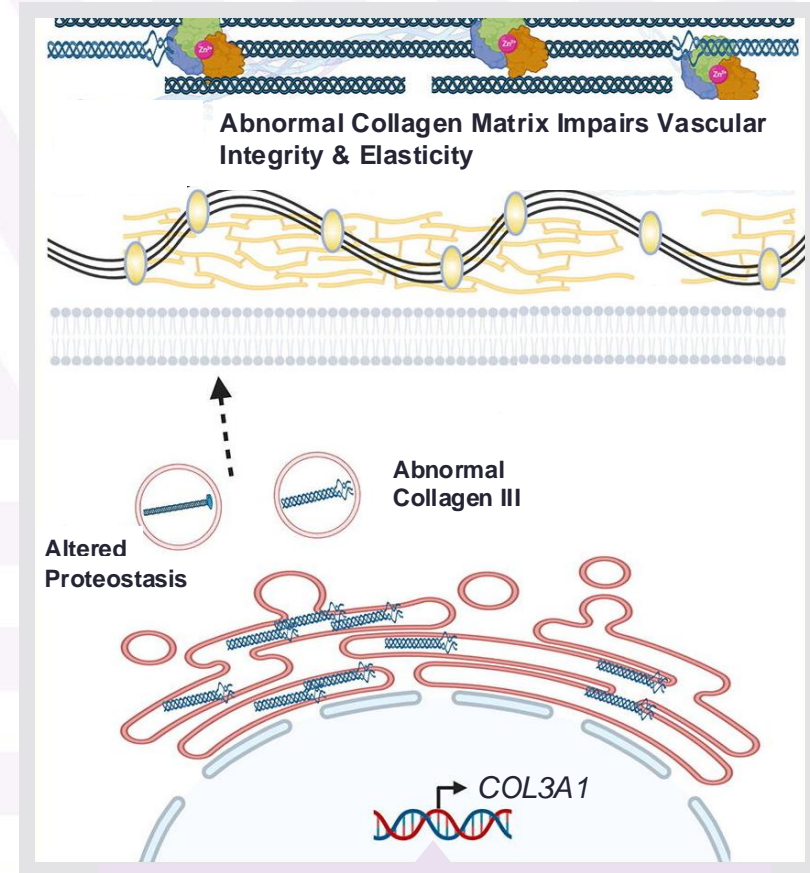
Inherited **connective tissue disorder** caused by **COL3A1** gene mutations



Leads to defect in type III procollagen in vessel walls and hollow organs



Characterized by arterial aneurysms and hollow organ ruptures<sup>19</sup>



Diagnosis confirmed by presence of mutations in the **COL3A1** gene

Figure adapted from Omar R, et al. Matrix Biol Plus. 2021 Nov 9;12:100090.

# Significant Unmet Need in VEDS with No Approved Treatments



Adult living with VEDS

~7,500

Individuals in the U.S. diagnosed and live with VEDS<sup>21</sup>

Majority (95%) have genetically confirmed (**COL3A1**) diagnosis<sup>19, 20</sup>

~25%

Of patients experience an event before the age of 20<sup>19</sup>

~90%

Of patients experience an event by the age of 40<sup>19</sup>

51 Years

Median survival age with arterial rupture being the most common cause of sudden death<sup>19</sup>

Surgical intervention

Is the current treatment paradigm

Celiprolol

Is the primary treatment for VEDS patients in several European countries<sup>22</sup>

# Celiprolol is a Potential Treatment of Patients with COL3A1+ VEDS

Celiprolol designed to reduce mechanical stress on collagen fibers within arterial wall

New Chemical Entity in the U.S., Orphan Drug Designation and Breakthrough Therapy Designation, & IP to 2038

- Selective adrenergic modulator (SAM)
- Mechanism of action in VEDS patients is thought to be through vascular dilatation and smooth muscle relaxation
- May reduce the mechanical stress on collagen fibers within the arterial wall

## Previously Completed Studies & Ongoing DiSCOVER Trial

- Multicenter, randomized, controlled, open-label, event blinded Ph3 study
- Results: 5% annual risk of major vascular event in celiprolol treated vs. 12% in not-treated

**BBEST Trial, 2010<sup>23</sup>**

- Retrospective observational study
- Patients not treated with celiprolol had a worse survival outcome than treated patients (p=0.0002)

**Long-Term Observational: French Cohort, 2019<sup>24</sup>**

- Observational study
- 66% reached target dose of 400mg and tolerated celiprolol well
- Follow up of 106 patient years, five patients suffered major vascular events, 4.7% annual risk

**Long-Term Observational: Swedish Cohort, 2021<sup>25</sup>**

- DiSCOVER Phase 3 decentralized (virtual) pivotal study ongoing
- Special Protocol Assignment (SPA) in place

**DiSCOVER Trial, Ongoing**

# KP1077 (Serdexmethylphenidate)

Potential Treatment for  
Idiopathic Hypersomnia (IH)



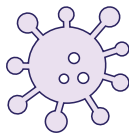
# IH Causes Brain Fog, Excessive Daytime Sleepiness, & Sleep Inertia



Rare, debilitating, chronic neurologic disorder



Unknown pathophysiology

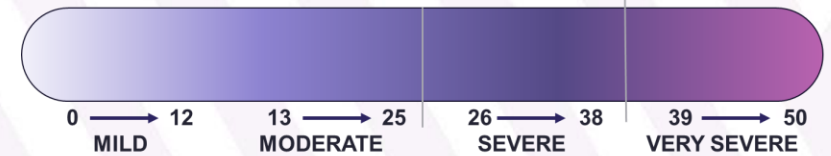


Also characterized by excessively long sleep times, difficulty waking, & long and unrefreshing naps<sup>i</sup>



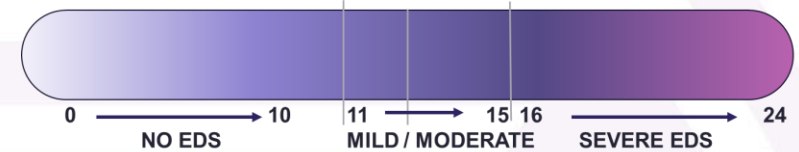
Symptoms measured by Idiopathic Hypersomnia Severity Scale & Epworth Sleepiness Scale

## Idiopathic Hypersomnia Severity Scale



- 14 questions on a scale of 0 to 3 or 0 to 4, totaling 50 points<sup>26</sup>
- Higher scores, indicate more severe/frequent symptoms<sup>26</sup>
- Minimal Clinically Important Difference (MCID) of 4 points<sup>27</sup>

## Epworth Sleepiness Scale



- 8 questions on a scale of 0 to 3, totaling 24 points<sup>28</sup>
- Higher scores, indicate more severe daytime sleepiness<sup>28</sup>
- 2- to 3-point change is considered MCID in sleep disorders<sup>29</sup>

# Remaining Unmet Need in IH

~37,000

Individuals in the U.S. diagnosed and live with IH, though the total population may be much larger<sup>30</sup>

~66%

Report IH symptoms as High Impact including not feeling refreshed, fatigue, excessive daytime sleepiness, and brain fog<sup>31</sup>

~85%

Require more than a first-line therapy due to unresolved symptoms<sup>32</sup>

## Current Treatments Don't Address Needs

Patients rated **current medication effectiveness as poor** (5.4 on a 10-point scale)<sup>33</sup>



Adult living with IH

# KP1077 has a Differentiated Profile Addresses Unmet Needs in IH

## KP1077 for IH

- SDX<sup>i</sup> is a proprietary prodrug of d-MPH
- Two dosing regimens being explored:
  - Once daily at bedtime
  - Twice daily once in the morning and once at bedtime

## Improved Safety and Tolerability Over Existing Treatments

- Unique pharmacokinetic profile to overcome key symptoms
- Greater tolerability, lower cardiovascular effects, lower abuse potential
- No DDI potential with hormonal contraceptives; antidepressants

## Regulatory & IP Advantages

- Orphan Drug Designation in IH
- Conducted End-of-Phase 2 meeting with the FDA at the end of Q3 2024
- SDX is designated Schedule IV controlled substance by DEA in the U.S.<sup>ii</sup>

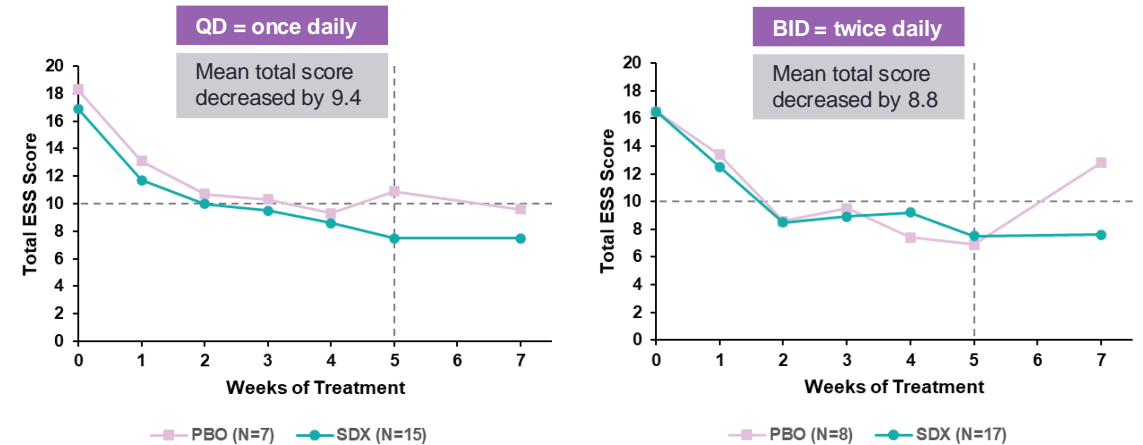
i. Serdexmethylphenidate

ii. Zevra's proprietary prodrug of d-methylphenidate (d-MPH) has been classified as a Schedule IV controlled substance by the U.S. Drug Enforcement Administration (DEA)

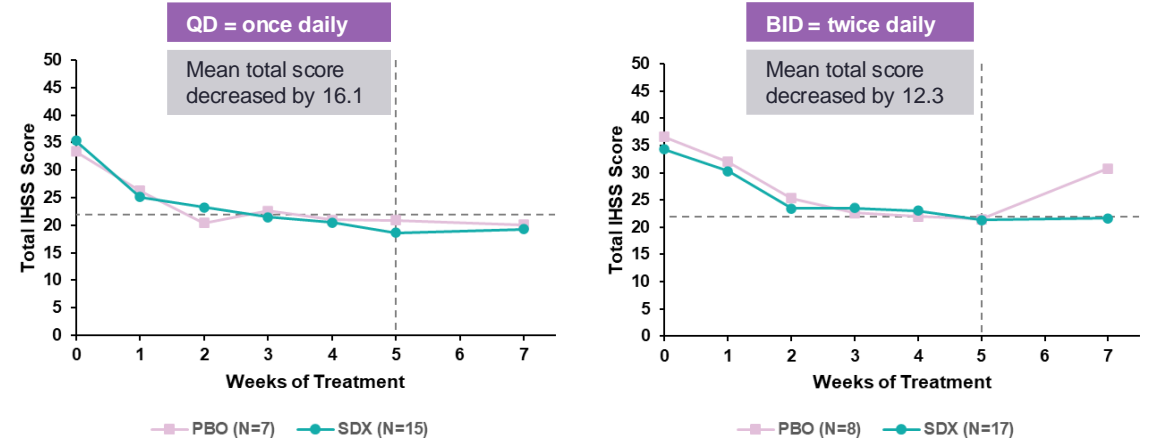
iii. Data presented at SLEEP 2024, Houston, Texas, June 1-5, 2024

## Results from Ph. 2 Clinical Trial<sup>iii</sup>; All patients received active drug in Weeks 1-5; (decrease = improvement)

### A. Epworth Sleepiness Scale (ESS)



### B. Idiopathic Hypersomnia Severity Score (IHSS)



# Strong Corporate Foundation Demonstrating Financial Discipline



# Financial Position is a Source of Strength

## Q3 2024 Income Statement Details:

- Net revenue of \$3.7M, comprised of \$2.6M from the arimoclomol French EAP program, and \$1.1M under the AZSTARYS® license agreement
- Q3 2024 net loss attributable to common stockholders of (\$33.2M), or (\$0.69) per basic and diluted share, driven primarily by R&D expense of \$10.9M, and general and administrative expense of \$16.2M

## Q3 2024 Balance Sheet Details:

- Cash, cash equivalents and investments were \$95.5M
- Available cash, cash equivalents and investments expected to extend cash runway into 2027
  - cash runway does not include potential proceeds from sale of PRV<sup>i</sup>
- Debt of \$60M, additional \$20M tranche available

## Common and Fully Diluted Shares Outstanding:

- As of Sep 30, 2024, common and fully diluted shares outstanding were:

	(millions)
<b>Common shares outstanding</b>	<b>53.2</b>
Outstanding awards under equity incentive plans	9.0
Outstanding common stock warrants	5.5
<b>Fully diluted shares outstanding</b>	<b>67.7</b>

# Zevra has a Unique Opportunity to Impact People Living with Rare Diseases

## Two commercial-stage rare disease products

- Launch of MIPLYFFA, cornerstone therapy for people living with NPC
- OLPRUVA launched for the treatment of certain UCDs

## Advanced clinical development pipeline

- Prioritizing arimoclomol's regulatory submission in Europe
- Ongoing Phase 3 program for treatment of VEDS
- Seeking strategic alternatives to develop and commercialize KP1077, Phase 3 ready, for rare sleep disorders

## Existing infrastructure supportive of future growth

- Aspire to become a “partner of choice” for rare disease products
- Leverage current commercial infrastructure

## Strong financial position with cash runway into 2027

- Disciplined capital allocation
- Cash runway into 2027 without potential proceeds from sale of PRV
- Potential to monetize PRV
- Royalty generating asset (AZSTARYS) and French EAP (arimoclomol) contribution



# *A Rare Approach to Therapeutics*

*January 2025*

**NasdaqGS: ZVRA**



Children living with Niemann-Pick disease type C



# SOURCES

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2. Carstea ED et al. *Science*. 1997;277:228-231.
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