Unraveling the Mysteries of the Brain to Treat Neuroscience Diseases

*August 2022* 

2Q 2022 Financial Results & Business Update



### **Forward-Looking Statements**

This presentation contains forward-looking statements that are based on management's beliefs and assumptions and on information currently available to management. In some cases, you can identify forward-looking statements by the following words: "may," "will," "could," "would," "should," "expect," "intend," "plan," "anticipate," "believe," "estimate," "predict," "project," "potential," "continue," "ongoing" or the negative of these terms or other comparable terminology, although not all forward-looking statements contain these words. These statements involve risks, uncertainties and other factors that may cause actual results, levels of activity, performance or achievements to be materially different from the information expressed or implied by these forward-looking statements. Although we believe that we have a reasonable basis for each forward-looking statement contained in this presentation, we caution you that these statements are based on a combination of facts and factors currently known by us and our projections of the future, about which we cannot be certain.

Forward-looking statements in this presentation include, but are not limited to, statements about: the potential attributes and benefits of our product candidates; the format and timing of our product development activities and clinical trials, including the timing, details and objectives of the emraclidine Phase 2 program, nonclinical and clinical pharmacology studies, ambulatory blood pressure monitoring trial, Phase 1 elderly healthy volunteer trial and plans for future development in other indications, including Alzheimer's disease psychosis, the timing for the darigabat Phase 2 proof-of-concept trial in focal epilepsy, the timing and details of the darigabat Phase 2 proof-of-concept trial in panic disorder, and other statements regarding the design of clinical trials and preclinical studies and the timing of initiation, completion and data readouts for clinical trials; the timing and outcome of regulatory interactions, including whether trials meet the criteria to serve as pivotal; the ability to compete with other companies currently marketing or engaged in the development of treatments for relevant indications; the size and growth potential of the markets for product candidates and ability to serve those markets; the rate and degree of market acceptance of product candidates, if approved; and the sufficiency of our cash, cash equivalents and marketable securities.

We cannot assure you that the forward-looking statements in this presentation will prove to be accurate. Furthermore, if the forward-looking statements prove to be inaccurate, the inaccuracy may be material. Actual performance and results may differ materially from those projected or suggested in the forward-looking statements due to various risks and uncertainties, including, among others: that clinical trial results may not be favorable; uncertainties inherent in the product development process (including with respect to the timing of results and whether such results will be predictive of future results); the impact of COVID-19 on the timing, progress and results of ongoing or planned clinical trials; other impacts of COVID-19, including operational disruptions or delays or to our ability to raise additional capital; whether and when, if at all, our product candidates will receive approval from the FDA or other regulatory authorities, and for which, if any, indications; competition from other biotechnology companies; uncertainties regarding intellectual property protection; and other risks identified in our SEC filings, including those under the heading "Risk Factors" in our Quarterly Report on Form 10-Q filed with the SEC on May 10, 2022 and our subsequent SEC filings.

In light of the significant uncertainties in these forward-looking statements, you should not regard these statements as a representation or warranty by us or any other person that we will achieve our objectives and plans in any specified time frame, or at all. The forward-looking statements in this presentation represent our views as of the date of this presentation. We anticipate that subsequent events and developments will cause our views to change. However, while we may elect to update these forward-looking statements at some point in the future, we have no current intention of doing so except to the extent required by applicable law. You should, therefore, not rely on these forward-looking statements as representing our views as of any date subsequent to the date of this presentation.



## Agenda

Introduction		<b>Matthew Calistri</b> Vice President, Corporate Strategy and Investor Relations
Overview		<b>Tony Coles, M.D.</b> Chairperson & Chief Executive Officer
Lead Program Updates		Raymond Sanchez, M.D. Chief Medical Officer
Early Pipeline Updates		John Renger, Ph.D. Chief Scientific Officer
Q2 Financial Performance	A STATE OF THE STA	Mark Bodenrader Interim Chief Financial Officer
Also available for Q&A		Abraham Ceesay President



### Business & Pipeline Updates

Pipeline Progress & Update

- Initiated Phase 2 EMPOWER program in schizophrenia in June 2022
  - Two adequately-powered placebo-controlled Phase 2 trials
  - Data for both trials expected in first half of 2024
  - 52-week open-label safety extension trial expected to initiate in third quarter of 2022
- Phase 1 trial of emraclidine to be initiated by year-end to support **future development in Alzheimer's disease psychosis** 
  - Will evaluate safety, tolerability and pharmacokinetics of emraclidine in elderly healthy volunteers 65-85 years old
- Panic disorder selected as second indication for darigabat
  - Planning underway for Phase 2 proof-of-concept

Capital

- Cash, cash equivalents and marketable securities of **\$531.2M** as of 6/30/2022
- Cash resources expected to support Cerevel's operations into 2024



## Making Rapid Progress: Accomplishments To Date



History of innovative deal-making - unique Bain & Pfizer transaction, ~\$440M go-public transaction and ~\$125M tavapadon financing



Positive Phase 1b data readout in 2021 for emraclidine in schizophrenia and positive Phase 1 data readout in 2022 for darigabat in acute anxiety



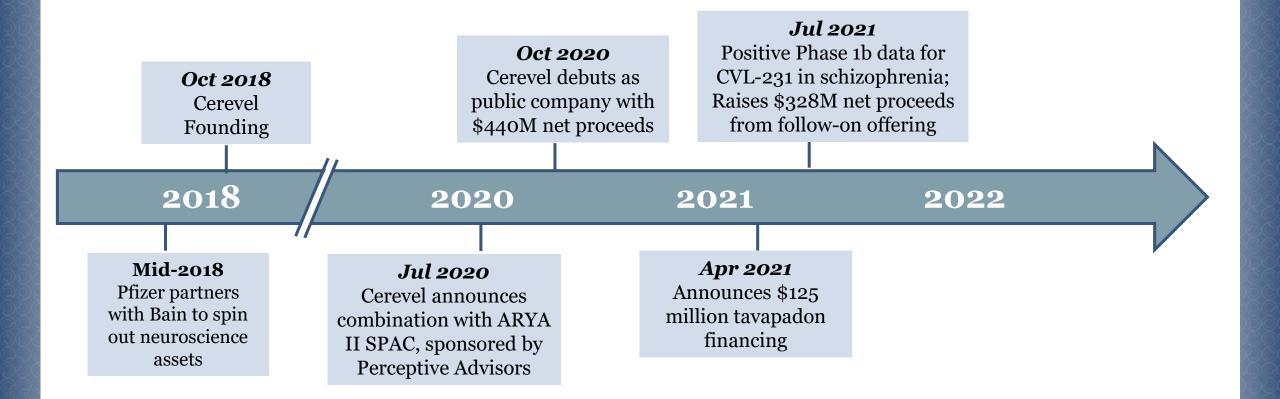
Multiple near- and medium-term catalysts, including five expected readouts in 2023



Experienced management team with a strong track record of over 20 prior drug approvals and launches



## History of Innovative Dealmaking





## Led by a Seasoned Life Sciences Management Team







Abraham Ceesay President



Raymond Sanchez, M.D. Chief Medical Officer



sanofi

**Bristol-Myers Squibb** 

John Renger, Ph.D. Chief Scientific Officer



**Kenneth DiPietro** *Chief Human Resources Officer* 



Kathleen Tregoning Chief Corporate Affairs Officer



(NPS Pharma

Biogen

**Scott Akamine** Chief Legal Officer

VERTEX

MERCK

Mark I Interim Officer

**Mark Bodenrader** Interim Chief Financial Officer

AVANIR

🍋 Allergan

Otsuka

IMBRIUM





AbilifyMyCite (aripiprazole tablets with sensor) 2,5,10,15,20,30 mg

Abilify Maintena (aripiprazole) for extended release injectable suspension



JYNARQUE® (tolvaptan) tablets





Kyprolis<sup>®</sup> (carfilzomib) fifection



(methylphenidate HCl) ( extended-release capsules



Cerevel

Yumanity THERAPEUTICS

#### **CEREVEL: Unraveling the Mysteries of the Brain**

A Deliberate and Differentiated Approach to Treating Neuroscience Diseases



#### **Targeted Neurocircuitry**

Cerevel unlocks new treatment opportunities by precisely identifying and targeting the neurocircuitry that underlies a given neuroscience disease.

#### **Receptor Subtype Selectivity**

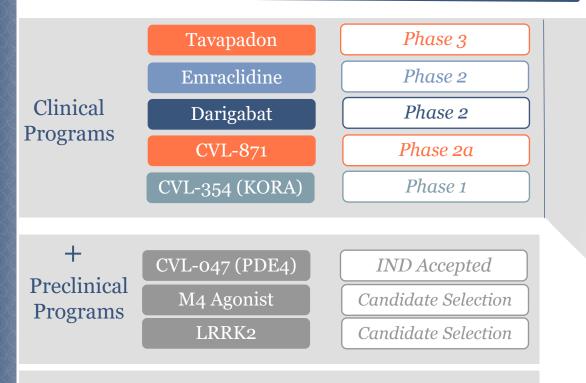
Cerevel is selectively targeting only the receptor subtype(s) related to the disease physiology, to minimize undesirable off-target effects while maximizing activity.

#### **Differentiated Pharmacology**

Cerevel designs full and partial agonists, antagonists, and allosteric modulators that can precisely fine-tune the receptor pharmacology and neurocircuit activity without over-activation or over-suppression of the endogenous physiologic range.

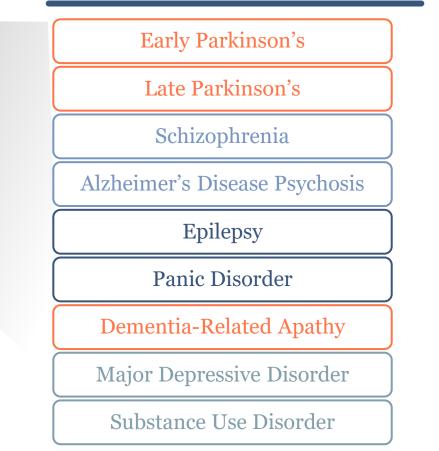
## Deep Pipeline with Multiple Upcoming Value Inflections

#### Multiple Assets Across All Stages of Development



Several undisclosed targets, including some with disease-modifying potential

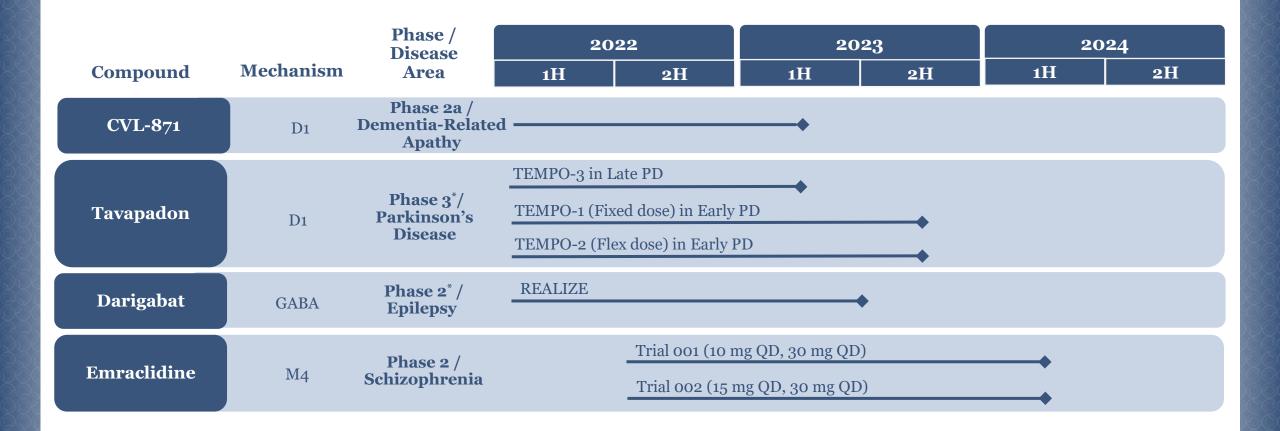
Large Patient Populations with High Unmet Need





+

## Key Milestones – Upcoming Data Readouts





## EMRACLIDINE

Selectively targeting the M4 muscarinic receptor with the goal of effectively treating psychosis-related symptoms and improving tolerability compared to standard of care

## Emraclidine: A Potential Next Generation Antipsychotic

#### **Opportunity for Innovation in Schizophrenia**

Current Standard of Care Uses Same Basic Mechanism of Action as Therapies from the 1950s

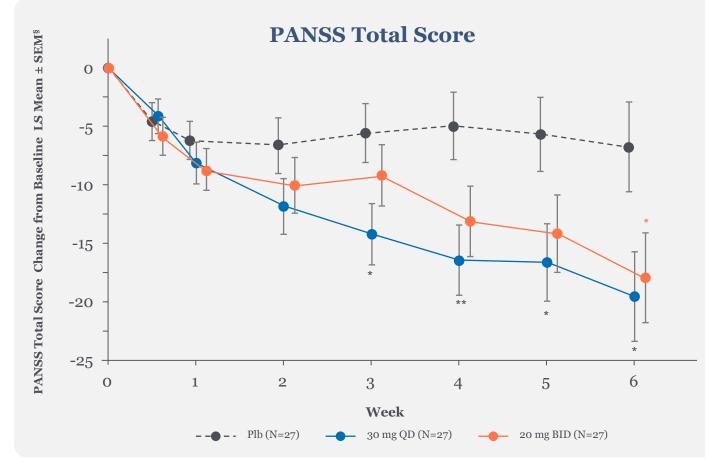


Large ~\$7B ~3.5% ~20M Market Growth Per Year Opportunity Patients Worldwide G7 Revenues in 2018 High Limited **Relapse Rates** Lead to Compliance Significant 90% Need for New Side Effect and at 1 year at 2 years Tolerability Treatment **High Discontinuation** Issues Options **Progression and** Lead to Worsening of Disease 
Lead to -Within 18 Months

Debilitating side effects of atypicals often lead to discontinuation and relapse, driving a vicious cycle of disease progression



## Emraclidine: Phase 1b Data Demonstrated Antipsychotic Activity



- Clinically meaningful improvements in PANSS total score
- Statistically significant difference in PANSS total score versus placebo\*
- Clinically meaningful improvements in both PANSS Positive and PANSS Negative subscales
- Generally well-tolerated

<sup>\*</sup> P<0.05 vs Placebo \*\* P<0.01 vs Placebo



§ Derived from a mixed model for repeated measures (MMRM) with treatment group, visit, treatment group-by-visit interaction as fixed effect, baseline value as a covariate and the measurements within subject as repeated measures. An unstructured covariance matrix was used.

## What's Next: Emraclidine Phase 2 Clinical Development

Comprehensive Ph 2 program to characterize dose range, assess efficacy and tolerability

#### **Overview of Phase 2 Program**

#### Two adequately-powered 3-arm Phase 2 trials

- N=372 per trial
- Two doses of emraclidine in each trial
  - Trial 001: 10 mg / 30 mg once-daily & pbo
  - Trial 002: 15 mg / 30 mg once-daily & pbo
- Designed to fully characterize the dose range

#### **Prioritizing key registration-enabling activities**

- Hepatic and renal insufficiency clinical trials
- 8-week ambulatory blood pressure monitoring trial
- CMC manufacturing scale-up
- Nonclinical safety pharmacology

#### Will initiate 52-week OLE trial with both rollover and de novo patients\*\*

#### **Key Features of Phase 2 Trials** Inclusion criteria

- Adults (18-65) with schizophrenia who are experiencing an acute exacerbation or relapse of psychotic symptoms
- PANSS total score 85-120, inclusive
- CGI-S ≥4

#### **Primary endpoint**

• Change from baseline in PANSS total score at Week 6

#### Key secondary endpoint

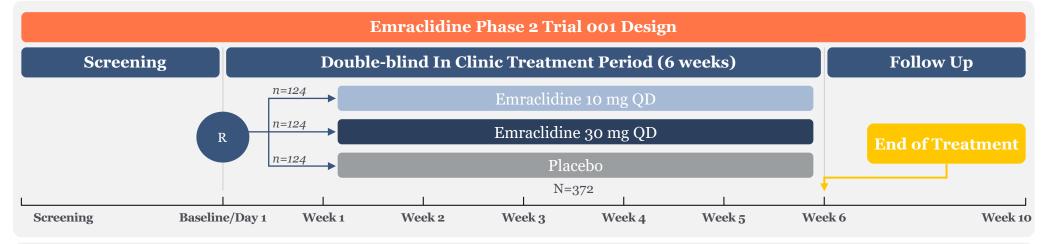
• CGI-S

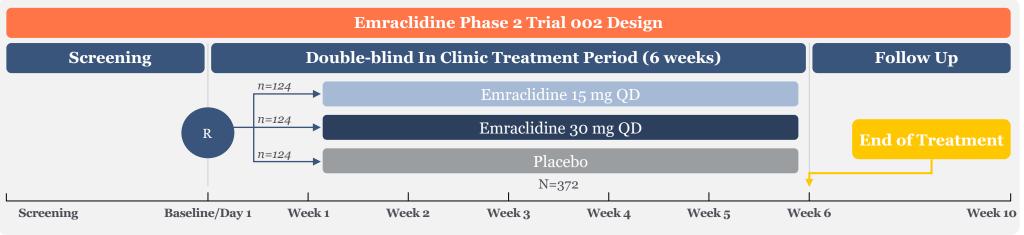
#### **Other endpoints**

- PANSS subscale scores and Marder Factor scores
- PANSS responder rate\*
- SF-6D (QOL) and BACS (cognition)



## Emraclidine Phase 2 Clinical Trial Designs: Data Expected 1H 2024





To initiate 52-week open-label extension trial to begin development of safety database



### DARIGABAT

Selectively targeting specific subunits of the GABA<sub>A</sub> receptor with the goal of providing anticonvulsant and anxiolytic activity with enhanced tolerability and potential for reduced abuse liability

## Darigabat: Potential To Become 1<sup>st</sup> Line and Adjunct Therapy in Epilepsy

#### Darigabat

A potential daily maintenance treatment with an improved side effect profile compared to traditional benzodiazepines

#### Large Market Opportunity

~65M

>\$6B

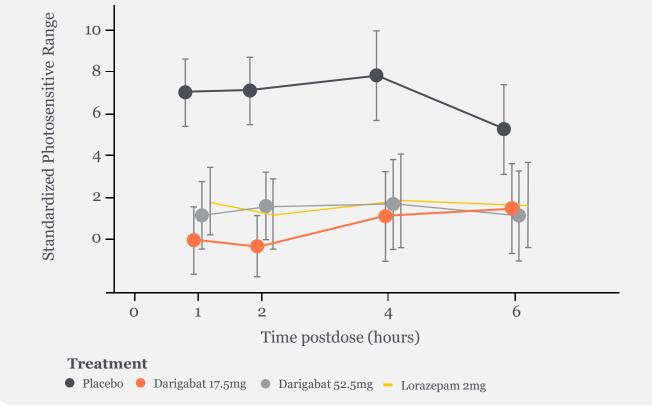
~6%

Patients Worldwide

G7 Revenues in 2018

Branded AED<sup>1</sup> Market Growth Per Year Through 2025







## Darigabat Data Showed a Favorable Side Effect Profile Relative to Benzodiazepines

#### Multiple doses of darigabat

Phase 1 MAD Study (Protocol: B7431011)

	Reaction	Week 1 (Titration)	Week 2 (Maintenance)	Week 3 (Maintenance)	Follow-up
Placebo	No Reaction	4/4	4/4	3 / 4	4/4
	Dizziness	-	-	1/4	-
	Somnolence	-			-
25 mg · BID (~80% RO <sup>(1)</sup> ) ·	No Reaction	5 / 8	7/8	8 / 8	8 / 8
	Dizziness	2 / 8	1 / 8	-	-
	Somnolence	3 / 8	-	-	-
42.5 mg · BID (>80% RO <sup>(1)</sup> ) ·	No Reaction	4/7	6 / 7	6 / 7	6 / 7
	Dizziness	3 / 7	1 / 7	1 / 7	1 / 7
	Somnolence	-	-	_	-

Phase 1 MAD Study – only mild AEs and limited somnolence up to 42.5 mg BID

Able to achieve >80% receptor occupancy without significant somnolence observed

Benzodiazepines achieve 10% to 15% receptor occupancy with significant somnolence observed

No evidence of withdrawal effects

No somnolence observed following titration through doses of 42.5 mg BID



## Phase 2 POC Trial Evaluating Darigabat in Focal Epilepsy (REALIZE): Data Expected Mid-Year 2023

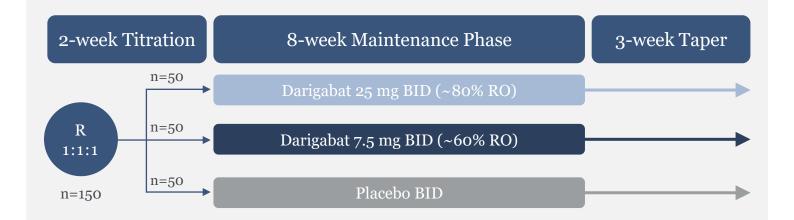
Focal epilepsy trial intended to establish proof of concept and tolerability profile to support development in broader epilepsy indications

#### **Inclusion criteria**

- Adults (18-75) with drugresistant focal onset seizures
- History of 4+ seizures per month for at least 3 months
- 1-3 stable background AEDs allowed

#### **Primary endpoint**

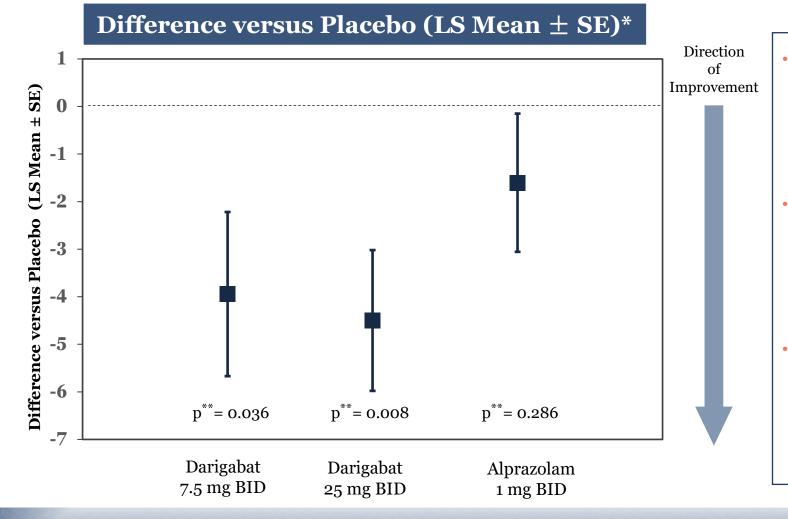
• Reduction in focal onset seizure frequency



Patients able to join 57-week open-label extension trial (REALIZE OLE) after completion of 8-week maintenance phase



## Positive Data in Phase 1 Acute Anxiety Trial: Change in Panic Symptoms List Score (PSL-IV) at Day 8



Darigabat 7.5 mg BID:

3.9-point improvement versus placebo at the end of 8-day treatment (9.9 on 7.5 mg BID versus 13.8 on placebo in PSL-IV total score increase following  $CO_2$  challenge) with  $p^{**}=0.036$ 

#### Darigabat 25 mg BID:

4.5-point improvement versus placebo at the end of 8-day treatment (12.5 on 25 mg BID versus 17.0 on placebo in PSL-IV total score increase following  $CO_2$  challenge) with  $p^{**}=0.008$ 

#### Alprazolam 1 mg BID:

1.6-point improvement versus placebo at the end of 8-day treatment (14.5 on alprazolam 1 mg BID versus 16.1 on placebo in PSL-IV total score increase following  $CO_2$  challenge) with p<sup>\*\*</sup>=0.286



\* Based on a separate linear mixed effect model for each cohort with treatment, period, and sequence as fixed effects, the baseline change score as covariate, and subject within sequence as a random effect. Compound symmetry covariance is utilized. Each subject serves as his/her own control in this model. \*\* p-value should be considered as nominal as no hypothesis testing was planned in the protocol.

## Phase 1 Healthy Volunteer Trial in Acute Anxiety: Conclusions

#### Pharmacodynamic Results

- □ Both doses of darigabat exhibited clinically meaningful and statistically significant anxiolytic activity compared to placebo based on the primary endpoint, PSL-IV total score
- □ Results were supported by improvements in the secondary endpoint, VAS Fear score
- Positive control alprazolam 1 mg BID confirmed validity of the clinical model and exhibited anxiolytic activity compared to placebo in line with expectations for the model

#### • Safety & Tolerability

 Darigabat was generally well-tolerated in this trial, with no serious adverse events and no discontinuations in the darigabat cohorts

#### Conclusions and Next Steps

- □ Trial demonstrated the anxiolytic potential of darigabat based on reduction of acute anxiety/panic evoked by CO<sub>2</sub> inhalation in healthy subjects
- Cerevel intends to advance development of darigabat in anxiety-related disorders



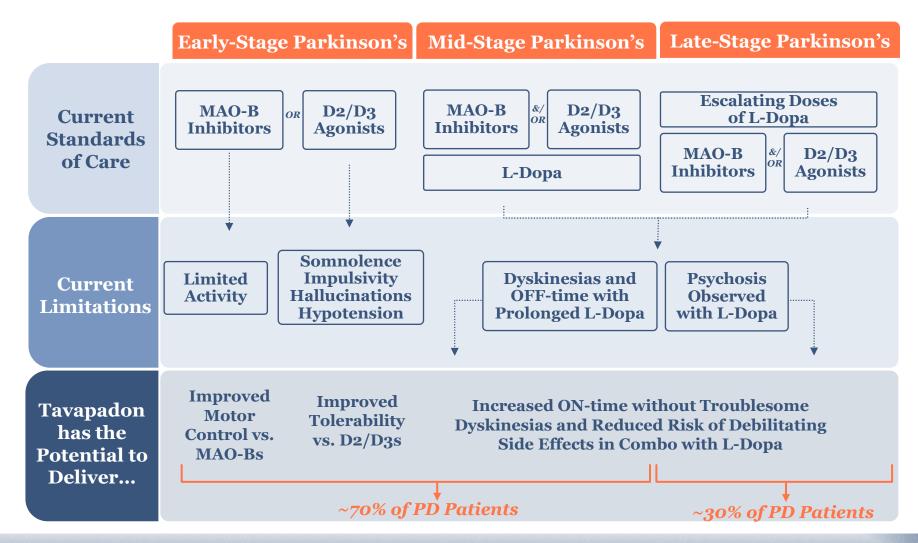
## TAVAPADON

Partial agonist selectively targeting the dopamine D1/D5 receptor with the goal of enhancing motor control and improving tolerability compared to standard of care

## Tavapadon Designed To Treat Patients Across All Stages of Parkinson's

#### Tavapadon, a Potential Firstin-Class Therapy

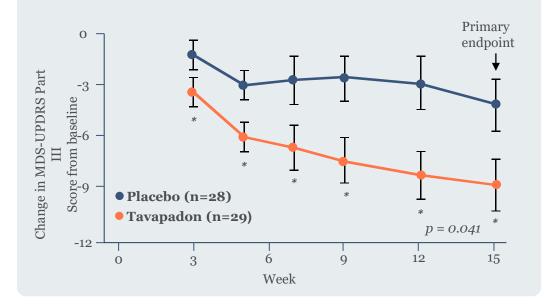
- First and only\* D1/D5 selective molecule
- First partial agonist for Parkinson's
- Selective direct motor pathway activation
- Predictable 24-hour activity





## Targeted Direct Motor Pathway Activation Designed To Provide Improved Treatment Option in Early Parkinson's: Phase 2 Data

Tavapadon demonstrated 4.8 point MDS-UPDRS III difference vs. placebo at week 15 (p=0.04)



Note: Average dose of tavapadon = 9 mg; 11 patients on 15 mg top dose at week 15. Baseline Part III scores of 24.3 (tavapadon) and 25.8 (placebo).

*Tavapadon demonstrated 5.8 point improvement* over placebo at week 15 on MDS-UPDRS Part II + III (p = 0.02)

#### **Additional Key Findings**

- When adjusted to exclude patients with baseline MDS-UPDRS II of 0 or 1, showed improvement of ~2 points over placebo on MDS-UPDRS Part II<sup>2</sup>
- Most common AEs included headache and nausea (can be mitigated with titration)
- Tavapadon's incidence of known D2/D3 side effects:
  - Somnolence: 14%
  - Nausea: 31%
  - Hallucinations: 0%<sup>3</sup>
  - Hypotension-Related Events: 7%
  - Dizziness: 7%



. Primary endpoint: Change from baseline in the MDS-UPDRS Part III total score at week 15. Allowed concomitant MAO-B inhibitors. 2. Excluding 8 participants (6 treatment, 2 placebo) with baseline MDS-UPDRS Part II scores of 0 or 1 resulted in an improvement on MDS-UPDRS II at week 15 of -2.4 points for the tavapadon arm (n=19) vs -0.6 points for the placebo arm (n=20), © Cerevel Therapeutics Holdings, Inc. resulting in a placebo-adjusted difference of 1.8 points (raw data, completers at week 15). Raw data placebo-adjusted difference is 1.3 points (including 8 participants). 3. Also observed 0% hallucinations in late-stage PD Phase 2 study B7601003 as adjunct to l-dopa.

## Tavapadon TEMPO-1 & -2 in Early PD: Data Expected 2H 2023

Registration-directed program includes three global Phase 3 trials optimally designed to maximize treatment effect

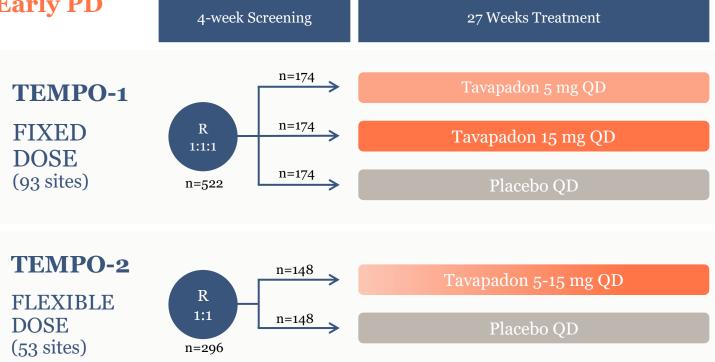
#### TEMPO-1 & TEMPO-2: Phase 3 in Early PD

#### Key inclusion criteria

- Adults 40-80 years old
- Baseline MDS-UPDRS<sup>(1)</sup> Part III Score ≥10 and Part II Score ≥2
- Modified Hoehn & Yahr<sup>(2)</sup> stage 1 to 2
- No concomitant meds except MAO-B inhibitors

#### **Primary endpoint**

Change in MDS-UPDRS
 Parts II+III





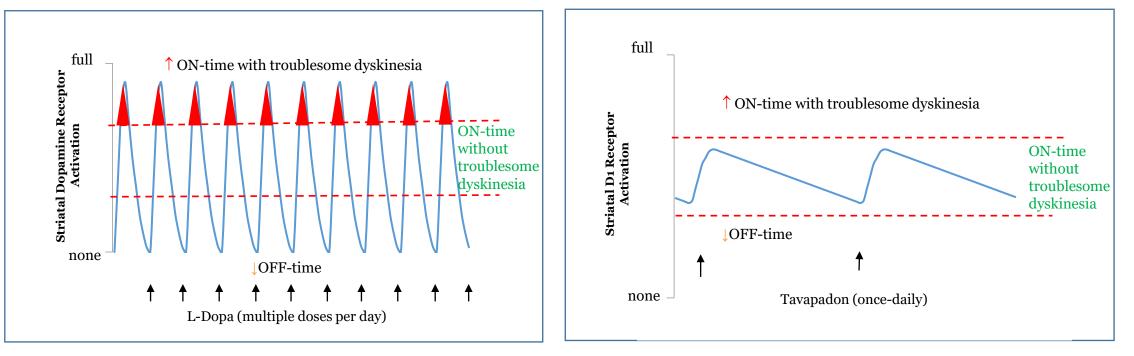
 MDS-UPDRS – Movement Disorder Society Unified Parkinson's Disease Rating Scale
 Hoehn & Yahr – staging system for characterizing the progression of symptoms for Parkinson's Disease Note: All studies will include an open-label extension, which will further support the safety database

# In Late PD, Goal is to Control Motor Fluctuations and Dyskinesias Driven by L-Dopa

#### L-Dopa vs. Tavapadon in Late-Stage PD<sup>1</sup>

L-Dopa is a **FULL** agonist with **SHORT** half-life

Tavapadon is a **PARTIAL** agonist with **LONG** half-life

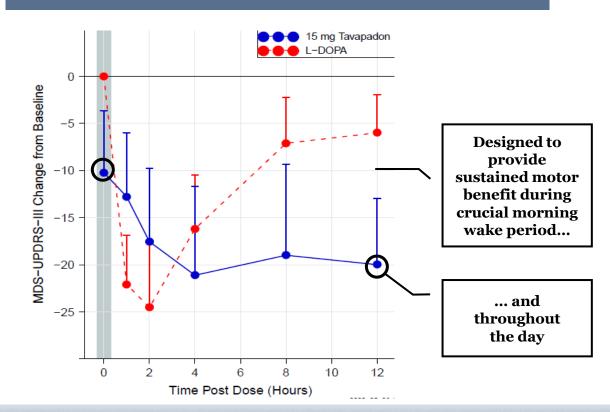


**30-40% of patients experience dyskinesias within 5 years on L-Dopa<sup>2</sup> 40% experience OFF-time within 3-5 years on L-Dopa<sup>2</sup>** 



## Predictable 24-hour Activity → Sustained Effect: Once Daily, Oral Dosing

In an open-label Phase 1b trial, Tavapadon demonstrated motor improvement on par with L-Dopa, sustained due to its 24-hour half-life



Study 1005: Tavapadon in Late-Stage PD<sup>1</sup>



1) Study B7601005: (n: l-dopa arm= 50, 15 mg = 11). One-sided 90% CI. Phase 1b, two-period open label dose escalation study in patients with Parkinson's disease and motor fluctuations; In period 1 of the study, l-dopa responsiveness was assessed. In period 2, levodopa was washed out and tavapadon was dosed QD over 21 days

## Tavapadon TEMPO-3 in Late PD: Data Expected 1H 2023

Registration-directed program includes three global Phase 3 trials optimally designed to maximize treatment effect

#### **TEMPO-3: Phase 3 in Late PD**

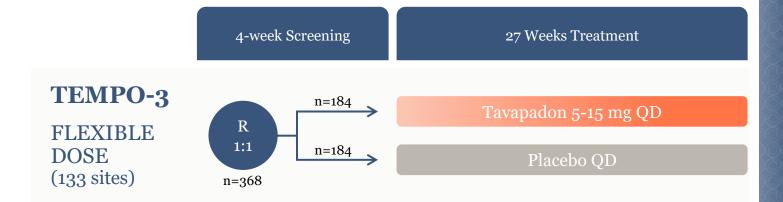
#### Adjunct to levodopa

#### Key inclusion criteria

- Adults 40-80 years old
- At least 2.5 hours OFF-time on 2 consecutive days at baseline
- Modified Hoehn & Yahr<sup>(1)</sup> stage 2 to 3, with response to L-Dopa

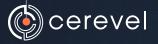
#### **Primary endpoint**

• Change in ON-time without troublesome dyskinesia





## Appendix



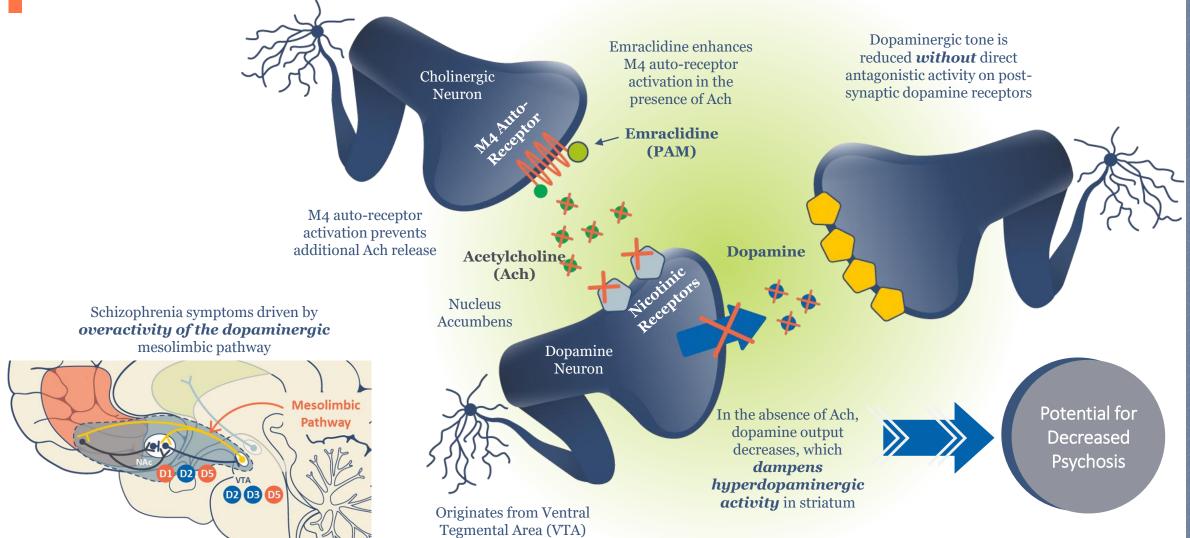
## Emraclidine

**Additional Slides** 





## M4 Receptor Activation Reduces Dopamine in the Striatum





# Emraclidine Phase 1b Trial in Schizophrenia



## Phase 1b in Schizophrenia: Topline Results

- Clinically meaningful improvements in PANSS Total Score:
  - 30 mg QD: -19.5 pts at week 6
  - 20 mg BID: -17.9 pts at week 6
- Statistically significant difference in PANSS Total Score versus placebo\*:
  - 30 mg QD: -12.7 pts (p=0.023) at week 6
  - 20 mg BID: -11.1 pts (p=0.047) at week 6
- Clinically meaningful improvements in both PANSS Positive and PANSS Negative subscales
- Generally well-tolerated:
  - Discontinuation rates similar between treatment and placebo (22% for each arm including placebo)
  - Not associated with extrapyramidal side effects, akathisia, or weight gain
  - Gastrointestinal (GI) side effects were infrequent and were similar between treatment and placebo
  - Serious adverse events included COVID-19, accidental overdose (cocaine), and exacerbation of schizophrenia (one instance of each); none considered related to study medication



## Emraclidine Phase 1b Trial Design

#### Part A: Safety Assessment



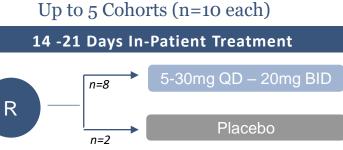
#### **Secondary Objective**

• PK



#### **Exploratory PD Assessment**

- Positive and Negative Syndrome Scale (PANSS)\*
  - PANSS Positive Score
  - PANSS Negative Score
- Clinical Global Impression Severity Scale (CGI-S)\*
- Brief Assessment of Cognition in Schizophrenia (BACS) symbol coding test\*



**6-Week In-Patient Treatment** 

n=27

n=27

n=27

R

1:1:1

CVL-231 20mg BID

CVL-231 30 mg QD

Placebo

#### **Target Patient Population**

- Male and female subjects, ages 18 to 50 years
- CGI-S  $\leq$  4 (normal to moderately ill) at screening and Day-1
- PANSS total score of ≤ 80 at the time of screening and Day-1

#### **Target Patient Population**

- Male and female subjects, ages 18 to 55 years
- PANSS total score of ≥80 at screening and Day -1
- CGI-S ≥4 (moderately to severely ill) at screening and Day -1
- History of relapse and/or exacerbation of symptoms when not receiving antipsychotic treatment, excluding the current episode
- Experiencing an acute exacerbation or relapse of symptoms, with onset less than 2 months prior to screening
- Population was enriched for key positive symptoms



## Phase 1b Part B: Demographics & Baseline Characteristics

	PBO N= 27	Emraclidine 30 mg QD N= 27	Emraclidine 20 mg BID N= 27	All Emraclidine N= 54	Total N= 81		
Demographics							
Age (years) at Screening: Mean (SD)	41 (9.7)	41 (8.1)	38 (9.8)	40 (9.0)	40 (9.2)		
% Male: N (%)	19 (70%)	23 (85%)	21 (78%)	44 (81%)	63 (78%)		
Race: N (%)							
Black or African American	17 (63%)	20 (74%)	19 (70%)	39 (72%)	56 (69%)		
White	9 (33%)	7 (26%)	7 (26%)	14 (26%)	23 (28%)		
Other	1 (4%)	0	1 (4%)	1 (2%)	2 (2%)		
Weight (kg) Prior to Dosing: Mean (SD)	90.0 (16.0)	85.4 (13.3)	85.4 (15.4)	85.4 (14.3)	86.9 (14.9)		
Disease Characteristics at Baseline: Mean (SD)							
PANSS Total Score	93 (8.8)	93 (7.3)	97 (7.9)	95 (7.7)	95 (8.1)		
PANSS Positive Score	24 (2.7)	25 (3.0)	26 (2.6)	26 (2.8)	25 (2.8)		
PANSS Negative Score	23 (3.3)	22 (3.7)	24 (3.8)	23 (3.8)	23 (3.6)		
CGI-S Score	5 (0.6)	5 (0.5)	5 (0.7)	5 (0.6)	5 (0.6)		



## Phase 1b in Schizophrenia: Pharmacodynamic Results\*

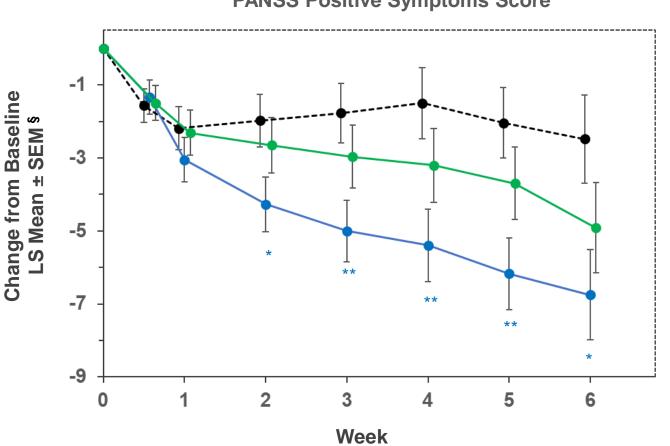
Week 6 (Day 42)	Placebo N=27	Emraclidine 30 mg QD N= 27	Emraclidine 20 mg BID N= 27	Combined Emraclidine N=54
PANSS Total Score				
LS Mean Change from Baseline	-6.8	-19.5	-17.9	-18.7
Difference vs Placebo (p-value) <sup>†</sup>		-12.7 <sup>†</sup>	-11.1 <sup>†</sup>	-11.9 <sup>†</sup>
		p = 0.023	p = 0.047	p = 0.014
PANSS Positive Score				
LS Mean Change from Baseline	-2.5	-6.8	-4.9	-5.8
Difference vs Placebo (p-value)		-4.3	-2.4	-3.3
		p = 0.016	p = 0.166	p = 0.028
PANSS Negative Score at Baseline				
LS Mean Change from Baseline	0.1	-3.0	-3.6	-3.3
Difference vs Placebo (p-value)		-3.1	-3.7	-3.4
		p = 0.009	p = 0.002	p = 0.001



\*Trial originally designed to be 59% powered to detect 7 point difference in PANSS total score vs. placebo <sup>†</sup>Corresponds to Cohen's D effect sizes at Week 6 of -0.68 for CVL-231 30 mg QD, -0.59 for CVL-231 20 mg BID, and -0.64 for the two doses combined



### Phase 1b: PANSS Positive Symptoms Score



**PANSS Positive Symptoms Score** 

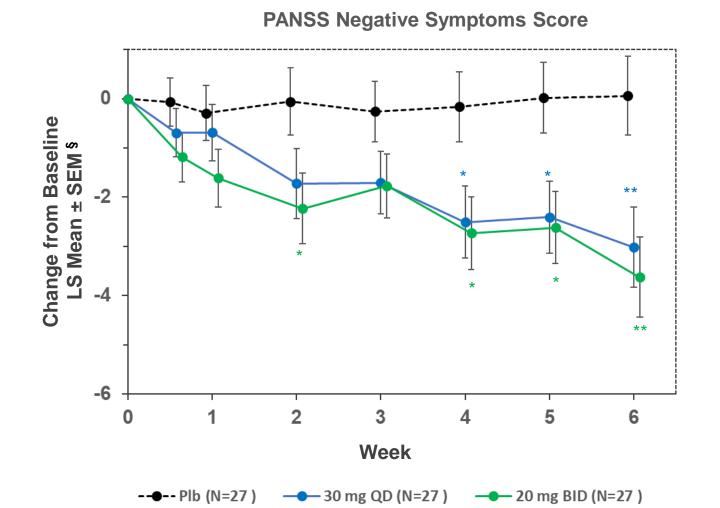
- 30 mg QD: 4.3 Point improvement versus placebo at Week 6 (6.8 of 30 mg QD vs 2.5 placebo) with P=0.016
- 20 mg BID: 2.4 Point improvement versus placebo at Week 6 (4.9 of 20 mg BID vs 2.5 placebo) with P=0.166
- Combined Emraclidine: 3.3
   Point improvement versus
   placebo at Week 6 (5.8 of
   Emraclidine vs 2.5 placebo) with
   P=0.028

#### P<0.05 vs Placebo \*\* P<0.01 vs Placebo

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<sup>§</sup> Derived from a mixed model for repeated measures (MMRM) with treatment group, visit, treatment group-by-visit interaction as fixed effect, baseline value as a covariate Cerevel Therapeutics Holdings, Inc. and the measurements within subject as repeated measures. An unstructured covariance matrix was used.

### Phase 1b: PANSS Negative Symptoms Score



- 30 mg QD: 3.1 Point improvement versus placebo at Week 6 (3.0 of 30 mg QD vs -0.1 placebo) with P=0.009
- 20 mg BID: 3.7 Point improvement versus placebo at Week 6 (3.6 of 20 mg BID vs -0.1 placebo) with P=0.002
- Combined Emraclidine: 3.4 Point improvement versus placebo at Week 6 (3.3 of Emraclidine vs -0.1 placebo) with P=0.001

#### P<0.05 vs Placebo \*\* P<0.01 vs Placebo

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<sup>§</sup> Derived from a mixed model for repeated measures (MMRM) with treatment group, visit, treatment group-by-visit interaction as fixed effect, baseline value as a covariate © Cerevel Therapeutics Holdings, Inc. and the measurements within subject as repeated measures. An unstructured covariance matrix was used.

# Phase 1b: Safety & Tolerability – Adverse Events

	PBO N= 27	Emraclidine 30 mg QD N= 27	Emraclidine 20 mg BID N= 27	All Emraclidine N= 54
Days on IMP				
Mean (SD)	37 (9.6)	36 (12.8)	35 (13.6)	36 (13.1)
Range	8, 42	4, 42	2, 42	2, 42
Number (%) Subjects with TEAE	14 ( 52%)	14 ( 52%)	15 ( 56%)	29 ( 54%)
Number (%) Subjects with TEAE Related to IMP	10 ( 37%)	7 ( 26%)	12 ( 44%)	19 ( 35%)
Number (%) Subjects with Serious TEAE	0	2 ( 7%)	1 ( 4%)	3 (6%)
Number (%) Subjects with AE of Special Interest (AESI)	3 ( 11%)	2 ( 7%)	4 ( 15%)	6 ( 11%)
Number (%) Subjects with TEAE Leading to Discontinuation of IMP	0	2 ( 7%)	1(4%)	3 (6%)



## Phase 1b: Safety & Tolerability - Adverse Events

### *Incidences of All Emraclidine* $\geq$ 2% and > *Placebo*

	РВО N= 27	Emraclidine 30 mg QD N= 27	Emraclidine 20 mg BID N= 27	All Emraclidine N= 54
Number (%) Subjects				
Headache	7 ( 26%)	8 ( 30%)	7 ( 26%)	15 ( 28%)
Nausea	1 ( 4%)	2 (7%)	2 ( 7%)	4 (7%)
Back pain	1 ( 4%)	2 ( 7%)	1 ( 4%)	3 (6%)
Blood creatine phosphokinase increased	0	1(4%)	2 ( 7%)	3 (6%)
Dizziness	0	1 ( 4%)	2 ( 7%)	3 (6%)
Dry mouth	0	3 ( 11%)	0	3 (6%)
Somnolence	0	1(4%)	2 ( 7%)	3 (6%)
Pruritus	0	1(4%)	1 ( 4%)	2 ( 4%)



# Serious AEs (SAEs) and AEs of Special Interest (AESIs)

	PBO N= 27	Emraclidine 30 mg QD N= 27	Emraclidine 20 mg BID N= 27	All Emraclidine N= 54
umber (%) Subjects with SAE				
COVID-19	0	0	1(4%)	1(2%)
Accidental overdose**	0	1(4%)	0	1(2%)
Schizophrenia <sup>**</sup>	0	1(4%)	0	1(2%)
umber (%) Subjects with AESI*				
Blood pressure increased	2 ( 7%)	0	0	0
Blood pressure increased Heart rate increased	2(7%) 1(4%)	0 0	0 1(4%)	0 1(2%)
•			<del>_</del>	
Heart rate increased	1(4%)	0	1 ( 4%)	1(2%)
Heart rate increased Blood pressure diastolic increased	1 ( 4%) 0	0 0	1 ( 4%) 1 ( 4%)	1(2%) 1(2%)
Heart rate increased Blood pressure diastolic increased Sinus tachycardia	1 ( 4%) 0 0	0 0 0	1 ( 4%) 1 ( 4%) 1 ( 4%)	1 ( 2%) 1 ( 2%) 1 ( 2%)

\*\*AEs leading to discontinuation of treatment with IMP. No other AE leading to discontinuation of IMP



\* AESIs specified in the protocol include 1. AEs that result in the discontinuation of treatment with IMP, 2. events that satisfy the criteria for suspected Hy's Law (AL or AST >3 × ULN, AND serum bilirubin ≥2 × ULN, AND alkaline phosphatase <2 × ULN), 3. events of heart rate >120 bpm, and confirmed by ECG, 4. events of confirmed QTcF is >500 msec or the increase from baseline is >75 msec in subjects without significant hypokalemia, 5. events of mean triplicate blood pressure reading >160 mmHg systolic or >100 mmHg diastolic with confirmation.

# Safety & Tolerability

### Cardiovascular AESI Summary

- Vital sign and ECG abnormalities defined in the AESI section of the protocol required immediate reporting to the sponsor for collection and risk characterization regardless of clinical significance.
  - Protocol defined CV abnormality thresholds included HR >120 bpm, systolic BP >160 mmHg, or diastolic BP >100 mmHg.
- Six (6) subjects had CV abnormality threshold AESI's reported (3 on active treatment, 3 on placebo). No subjects were symptomatic, and no events were considered clinically significant or associated with other reported AEs.

	Subject	Treatment	AESI PT (severity)	Start Date	End Date	Baseline value	Vital Sign Abnormality
0	1	Placebo	Blood pressure increased (mild)	Day 23 (2 hrs post a.m. dose)	Day 23	Systolic BP: 121 mmHg	Systolic BP: 168 mmHg
Placebo	2	Placebo	Blood pressure increased (mild)	Day 10 (2 hrs post a.m. dose)	Day 10	Systolic BP: 127 mmHg	Systolic BP: 162 mmHg
_ C_	3	Placebo	Heart rate increased (mild)	Day 21 (2 hrs post p.m. dose)	Day 22	HR: 75 bpm	HR: 128 bpm
BID)	4	Emraclidine 20 mg BID	Heart rate increased (mild)	Day 21 (2 hrs post p.m. dose)	Day 22	HR: 78 bpm	HR: 121 bpm
mg	5	Emraclidine 20 mg BID	Sinus tachycardia (moderate)	Day 1 (2 hrs post a.m. dose)	Day 1	HR: 83 bpm	HR: 123 bpm
ne (20	6	Emraclidine 20 mg BID	Blood pressure diastolic increased (mild)	Day 25 (2 hrs post p.m. dose)	Day 26	Diastolic BP: 81 mmHg	Diastolic BP: 111 mmHg
Emraclidine				Day 28 (2 hrs post p.m. dose)	Day 29	Diastolic BP: 81 mmHg	Diastolic BP: 103 mmHg
Emr				Day 39 (2 hrs post p.m. dose)	Day 40	Diastolic BP: 81 mmHg	Diastolic BP: 104 mmHg

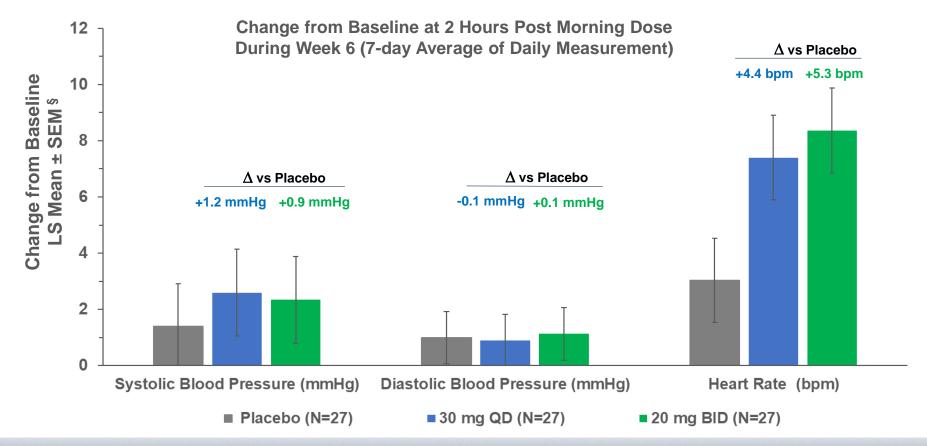


\* AESIs specified in the protocol include 1. AEs that result in the discontinuation of treatment with IMP, 2. events that satisfy the criteria for suspected Hy's Law (ALT or AST >3 × ULN, AND serum bilirubin  $\ge 2 \times$  ULN, AND alkaline phosphatase  $< 2 \times$  ULN), 3. events of heart rate >120 bpm, and confirmed by ECG, 4. events of confirmed QTcF is >500 msec or the increase from baseline is >75 msec in subjects without significant hypokalemia, 5. events of mean triplicate blood pressure reading >160 mmHg systolic or >100 mmHg diastolic with confirmation.

# Safety & Tolerability

### Blood Pressure and Heart Rate Effects

• Modest elevations in SBP, DBP, and HR that were observed with emraclidine compared to placebo that decreased over time, with the average change from baseline during Week 6 in SBP, DBP, and HR for both the 30 mg QD and 20 mg BID groups showing no clinically meaningful difference versus placebo





<sup>§</sup> Derived from a mixed model for repeated measures (MMRM) for weekly average with treatment group, visit, treatment group-by-visit interaction as fixed effect, baseline value as a covariate and the measurements within subject as repeated measures. An unstructured covariance matrix was used.

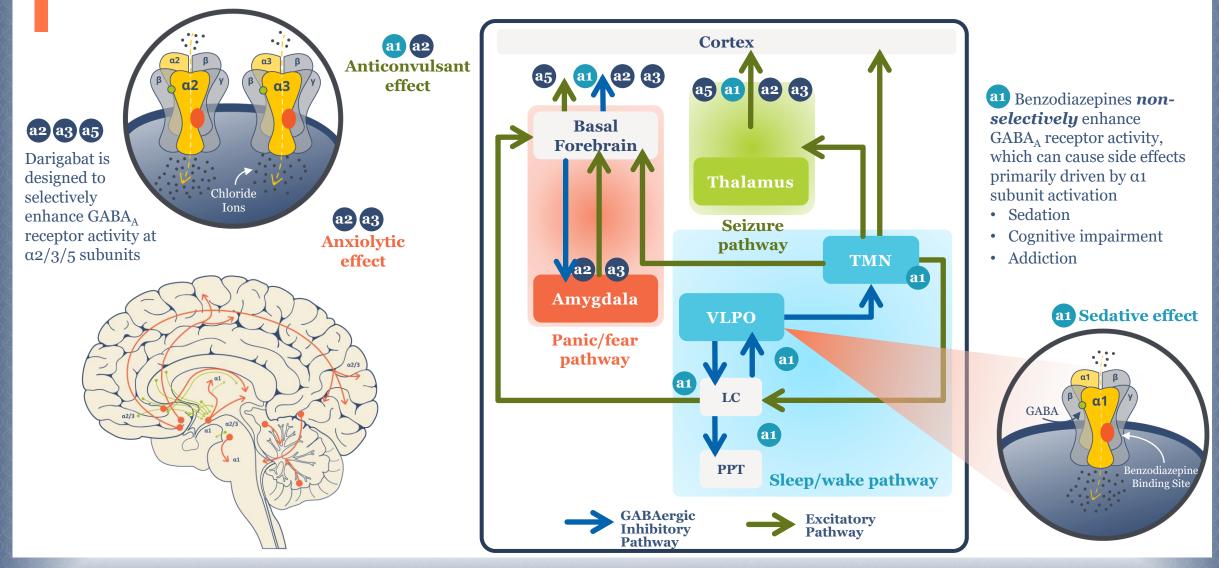
# Darigabat

**Additional Slides** 





# Darigabat Mechanism: Selective $\alpha 2/3/5$ GABA<sub>A</sub> Receptor PAM





## Selective GABAA Receptor PAM: Potential for Lower Seizure Rates, Reduced Side Effects

### GABA α-2/3/5 Can Differentially Address Symptoms

GABA subtype predicted effects:	α1	α2	α3	α5
Anti-convulsant	~~	<b>~ ~</b>		
Anxiolysis		<b>~</b>	$\checkmark\checkmark$	
Analgesia Benzodiazepin	пе	<b>~</b>	✓	~~
Muscle Relaxation side effects		<b>~ ~</b>	$\checkmark\checkmark$	
Sedation	~~			
Cognitive Impairment	~~	?	?	✓
Addiction	$\checkmark\checkmark$	√		

### Darigabat

#### Role for Targeted GABA α 2/3/5 Receptor Selectivity

- >10 benzodiazepines (BZDs broadspectrum GABA modulators) widely prescribed for anxiety, seizures and other indications
- Significant need for better-tolerated, less sedating and less addictive GABA modulators
- BZD Rx's increased >95% from 2003-2015

To our knowledge, darigabat is the only GABA  $\alpha$ -2/3/5 selective PAM in clinical trials for epilepsy and anxiety

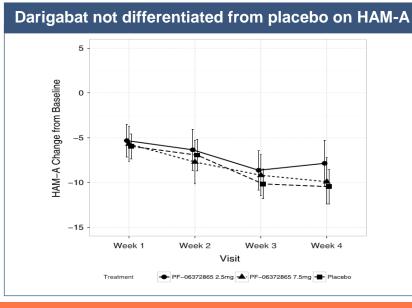


# Prior Clinical Studies in Anxiety and Chronic Low Back Pain

Use of subtherapeutic doses believed to account for lack of activity in prior trials

#### Phase 2: Generalized Anxiety Disorder

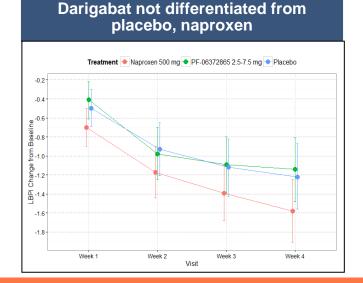
- Included drug-resistant patients on continued background treatment
- Sequential parallel comparison design
- Primary endpoint: HAM-A (minimum score at entry 20-22)
- 4 weeks on treatment: 2.5 mg BID darigabat, 7.5 mg BID darigabat, placebo
- Study stopped early for project prioritization 90 enrolled of planned 384



> 50% receptor occupancy remains unexplored in anxiety

#### Phase 2: Chronic Low Back Pain

- Included patients with > 6 months low back pain without radiculopathy
- Primary endpoint: change from baseline in low back pain score (measured on numerical rating scale)
- 4 weeks on parallel treatment: 7.5 mg BID darigabat, placebo, 500 mg naproxen BID (positive control)
- Study stopped early for futility following a planned interim analysis after 50% subjects had completed treatment



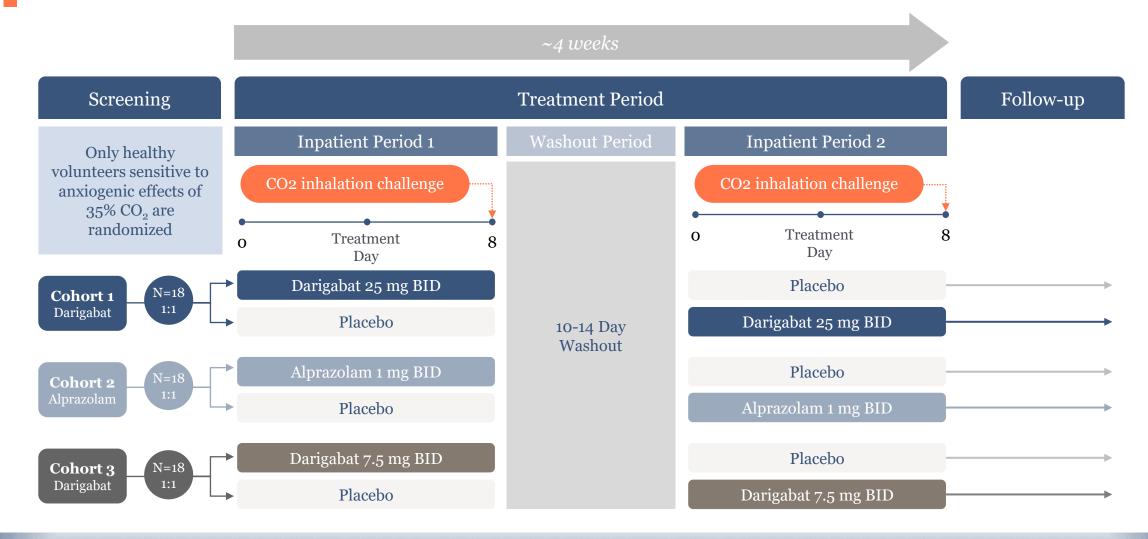
> 50% receptor occupancy remains unexplored in pain



# Darigabat Phase 1 Healthy Volunteer Trial in Acute Anxiety



# Trial Design: Phase 1 Trial Evaluating Darigabat in Acute Anxiety





1. The Panic Symptom List (PSL) includes 13 symptoms scored across a range of 0 (absent) to 4 (very intense) that is used to assess panic anxiety. Liebold et al. Trans Psychiatry. 2016.; Bailey et al. J Psychopharm. 2011.; Malizia et al. Arch Gen Psychiatry. 1998.; Salvatore et al. Translational Psychiatry 2020.

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# Phase 1 Trial of Darigabat in Acute Anxiety: Summary of Treatment Emergent Adverse Events (TEAE)

	Number (%) of Subjects*					
			Darig	abat		
	Placebo (Combined) (N=56)	Alprazolam 1 mg BID (N=20)	7.5 mg BID (N=18)	25 mg BID (N=18)		
Subjects with TEAE	28 (50%)	18 (90%)	13 (72%)	17 (94%)		
Mild	26 (46%)	18 (90%)	12 (67%)	16 (89%)		
Moderate	1 (2%)	0	1 (6%)	1 (6%)		
Severe	1 (2%)	0	0	0		
Subjects with Serious TEAE	0	0	0	0		
Subjects with TEAE Leading to Discontinuation	1 (2%)	0	0	0		
Subjects with TEAE Related to IMP	15 ( 27%)	17 ( 85%)	13 ( 72%)	17 ( 94%)		

\* Number of subjects with at least 1 AE reported



# Phase 1 Trial of Darigabat in Acute Anxiety: Subject Disposition

Number of Subjects	Cohort 1 ( Darigabat 25 mg BID / PBO)	Cohort 2 (Alprazolam 1 mg BID/PBO)	Cohort 3 ( Darigabat 7.5 mg BID / PBO)	Overall
Screened				241
Randomized	18	20	18	56
Discontinued	0	2	0	2
Adverse Event	0	1 <sup>a</sup>	0	1
Withdrawal by Subject	0	1 <sup>b</sup>	0	1
Completed Period				
Period 1	18	20	18	56
Period 2	18	18	18	54

<sup>a</sup> Subject discontinued during placebo treatment period (Period 2) due to adverse event of COVID-19 infection.

<sup>b</sup> Subject withdrew during placebo treatment period (Period 2).



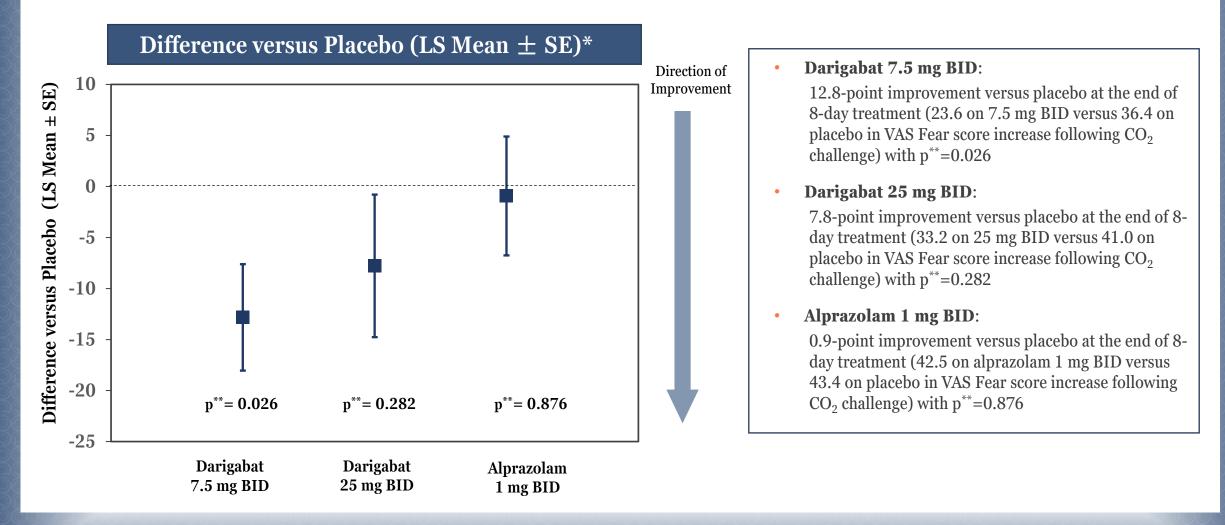
### Phase 1 Trial of Darigabat in Acute Anxiety: Demographic Characteristics<sup>\*</sup>

	Cohort 1 N= 18 (Darigabat 25 mg BID / PBO)	Cohort 2 N= 20 (Alprazolam 1 mg BID / PBO)	Cohort 3 N= 18 ( Darigabat 7.5 mg BID / PBO)	Overall N= 56
Age (years) at Screening				
Mean ± SD	$26.4 \pm 9.7$	$22.9 \pm 4.7$	$27.7 \pm 8.0$	$25.5 \pm 7.8$
Median	23.0	20.5	25.5	24.0
Sex N (%)				
Male	6 (33%)	6 (30%)	12 (67%)	24 (43%)
Female	12 (67%)	14 (70%)	6 (33%)	32 (57%)
Race N (%)				
Asian	0	0	1 (6%)	1 (2%)
Black	0	1 (5%)	0	1 (2%)
White	17 (94%)	18 (90%)	15 (83%)	50 (89%)
Other or Multiple	1 (6%)	1 (5%)	2 (11%)	4 (7%)
Weight (kg) <sup>a</sup>				
Mean ± SD	$69.6 \pm 14.3$	$68.8 \pm 12.2$	73.1 ± 12.0	$70.4 \pm 12.8$
Body Mass Index (kg/m <sup>2</sup> ) <sup>a</sup>				
Mean ± SD	$23.6 \pm 3.1$	$22.9 \pm 2.9$	$23.0 \pm 3.1$	$23.1 \pm 3.0$
Median	23.2	22.4	22.4	22.5



\*Study population characteristics consistent with that expected of healthy volunteer Racial distribution reflects local population of the single site in the Netherlands. <sup>a</sup> At screening visit.

# Phase 1 Trial of Darigabat in Acute Anxiety: Secondary Endpoint - Change in Fear Visual Analog Scale (VAS) at Day 8





\* Based on a separate linear mixed effect model for each cohort with treatment, period, and sequence as fixed effects, the baseline change score as covariate, and subject within sequence as a random effect. Compound symmetry covariance is utilized. Each subject serves as his/her own control in this model. \*\* p-value should be considered as nominal as no hypothesis testing was planned in the protocol.

# Adverse Events with Incidence $\geq 10\%^*$ and > Placebo with Any Active Treatments (1 of 2)

	Number (%) of Subjects					
			Dar	igabat		
Preferred Term	Placebo (Combined) (N=56)	Alprazolam 1 mg BID (N=20)	7.5 mg BID (N=18)	25 mg BID (N=18)		
Bradyphrenia	1 (2%)	1 (5%)	2 (11%)	9 (50%)		
Dizziness	1 (2%)	3 (15%)	6 (33%)	8 (44%)		
Somnolence	2 (4%)	10 (50%)	4 (22%)	8 (44%)		
Disturbance in attention	0	0	2 (11%)	6 (33%)		
Fatigue	6 (11%)	11 (55%)	5 (28%)	5 (28%)		
Headache	12 (21%)	0	3 (17%)	5 (28%)		
Balance disorder	1 (2%)	2 (10%)	2 (11%)	3 (17%)		
Abdominal pain upper	0	0	0	2 (11%)		
Dizziness postural	0	1 (5%)	0	2 (11%)		
Euphoric mood	0	0	2 (11%)	2 (11%)		
Insomnia	0	1 (5%)	0	2 (11%)		



# Adverse Events with Incidence $\geq 10\%^*$ and > Placebo with Any Active Treatments (2 of 2)

	Number (%) of Subjects					
			Darigabat			
Preferred Term	Placebo (Combined) (N=56)	Alprazolam 1 mg BID (N=20)	7.5 mg BID (N=18)	25 mg BID (N=18)		
Musculoskeletal pain	0	0	0	2 (11%)		
Nausea	3 (5%)	2 (10%)	3 (17%)	1 (6%)		
Feeling of relaxation	0	0	3 (17%)	0		
Drug withdrawal syndrome	0	3 (15%)	0	0		
Nasopharyngitis	1 (2%)	0	2 (11%)	0		
Dry mouth	1 (2%)	0	2 (11%)	0		
Abnormal dreams	0	2 (10%)	0	0		
Listless	0	2 (10%)	0	0		
Dysmenorrhoea	2 (4%)	2 (10%)	0	0		



# Tavapadon

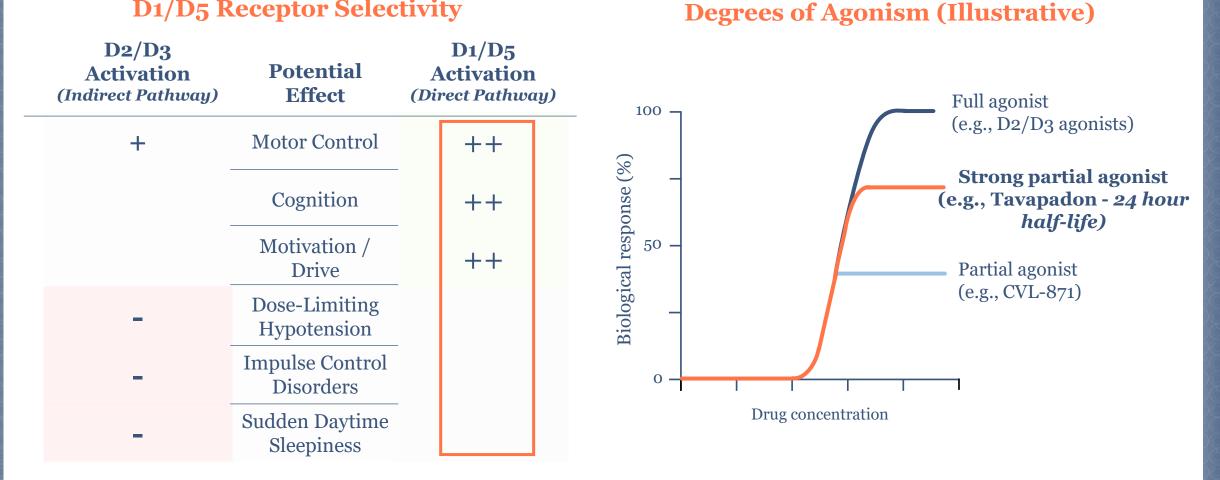
**Additional Slides** 





## Selectively Targeting Partial Agonism Designed to Improve Motor **Control and Tolerability**

### **D1/D5 Receptor Selectivity**

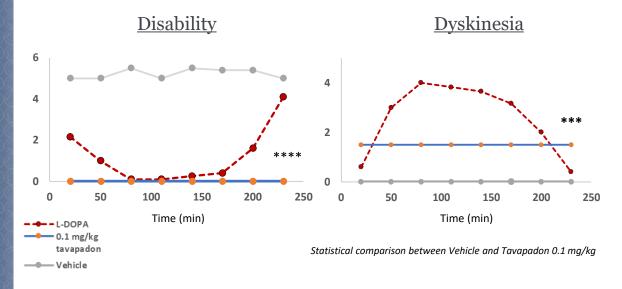




# First *Partial Agonist* for Parkinson's → Avoids Dyskinesias

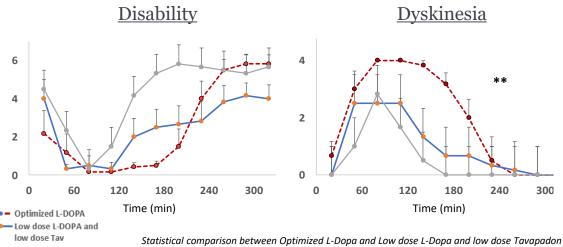
Unique and attractive combination of activity and low dyskinesias in highly translatable model of Parkinson's

# Effect of Tavapadon vs. L-dopa on Disability and Dyskinesia



Compared to L-dopa, tavapadon robustly reduced parkinsonian symptoms in the MPTP-lesioned primate model with a more *durable effect* and *lower dyskinesia* levels

### Potential to Reduce L-dopa Dose to Achieve Motor Control with Reduced Dyskinesia



------ Low Dose L-DOPA

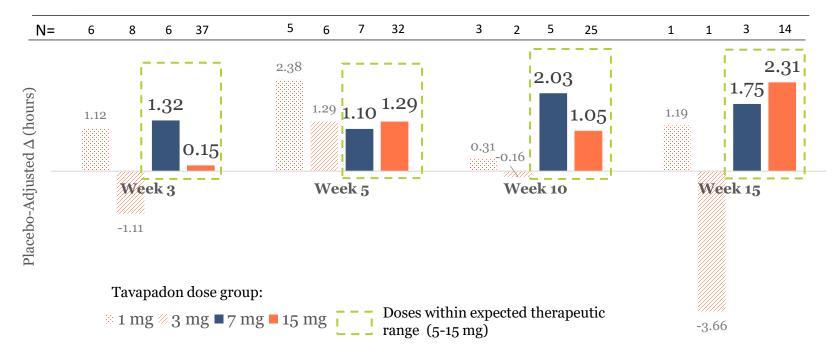
The combination of 33% L-dopa dose with 40% tavapadon dose showed *similar activity to L-dopa alone with statistically significant reduction in dyskinesia* 



## Tavapadon Phase 2 Results: Clinically Meaningful ON-Time without Troublesome Dyskinesias

• Tavapadon showed clinically meaningful benefit within therapeutic dose range of 5 mg to 15 mg

Tavapadon generally demonstrated at least 1 hour of improvement in ON-time without troublesome dyskinesias in late-stage PD



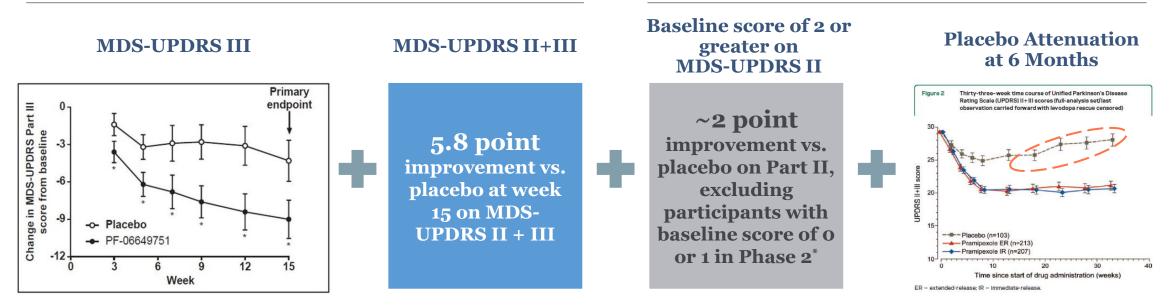
Note: Tavapadon showed -0.6 hour reduction on the primary endpoint, change in OFF-time at week 10



# Phase 3 Program Designed to Show Superior Treatment Profile

Phase 2 Results Inform Phase 3 Design Phase 2 Results

Phase 3 Design



Further upside from forced titration to achieve maximum tolerated dose of tavapadon (less than 40% of patients were on the top dose in Phase 2)



# Thank You

Contact:

### Matt Calistri

Investor Relations matthew.calistri@cerevel.com

