LONGBOARD PHARMACEUTICALS

Investor & Analyst Day

SEPTEMBER 16, 2024

Forward-Looking Statements and Other Legal Notices

This presentation contains forward-looking statements about Longboard Pharmaceuticals, Inc. ("we," "Longboard" or the "Company"), including statements regarding: our vision; commercial opportunities and analogs, including annual sales/revenue potential; anticipated milestones and timing; the prevalence of, unmet need associated with, and market opportunity for, Developmental and Epileptic Encephalopathies (DEEs); the potential of a broad DEE indication and label; the potential of bexicaserin (LP352) (including to be best-in-class, to satisfy unmet need, to benefit from Breakthrough Therapy designation, to be a safer, efficacious, and less burdensome therapy, to have differentiated selectivity and specificity, to expand the market to a broader population, to limit adverse events, to be indicated across a range of DEEs, to avoid drug-drug interactions, including through optimized dosing, to have paths to BID dosing, to be desired or preferred by physicians, patients and caregivers, to change the DEE landscape, and to expand, broaden or capture market share); a new wave of hope; plans regarding our global DEEp Phase 3 program for bexicaserin (including the approach, characteristics, expectations, objectives and anticipated milestone timing); the product profile sampled with healthcare professionals (HCPs) and caregivers; expectations and objectives regarding the Phase 1 MAD study for LP659 (including regarding the timing of initiation); our intellectual property; our ability to obtain regulatory approval and commercialize our drug candidates (in the manner we may propose or at all); and other statements that are not historical facts, including statements that may include words such as "will", "may", "can", "would", "plan", "anticipate", "expect", "believe", "potential", "goal", "opportunity", "possibility", "thesis", "vision", "hope", "strategy" and similar words.

For such statements, we claim the protection of the Private Securities Litigation Reform Act of 1995. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including, but not limited to, those related to: enrollment challenges we may experience that materially impact the expected timing of our clinical trials; adverse events, complete or partial clinical holds, or other challenges that materially impact the timing and success of clinical trials; nonclinical and clinical data are voluminous and detailed, and regulatory authorities may interpret or weigh the importance of data differently and reach different conclusions than us or others, request additional information, have additional recommendations or change their guidance or requirements before or after approval; topline or interim data may not reflect the complete or final results of a particular study or trial, and are subject to change; our nonclinical and clinical studies may not be successful; receiving Breakthrough Therapy designation may not lead to a faster development or regulatory review or approval and does not mean bexicaserin will receive marketing approval for seizures associated with DEEs or for any other indication; we expect to have discussions with regulators regarding a partial clinical hold on repeat does studies of LP659, but we may not be successful in addressing the partial clinical hold; our ability to obtain and maintain regulatory approval to conduct our clinical trials (in the manner we propose or at all) and, ultimately, to market our product candidates; our ability to effectively commercialize our product candidates, if approved; our ability to compete in the marketplace; risks regarding our license and dependencies on others; our ability to obtain and maintain intellectual property protection and freedom to operate for our product candidates; our ability to manage our growth; our limited operating history; our history of incurring net losses and expectation that we will continue to incur net losses for the foreseeable future; our need for additional funding; and other risks, uncertainties, assumptions and factors disclosed in our filings with the U.S. Securities and Exchange Commission (SEC), including in the section titled "Risk Factors" in the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2024. We operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. The forward-looking events and circumstances discussed in this presentation may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements. Except as required by law, we assume no responsibility for the accuracy and completeness of the forward-looking statements, and we undertake no obligation to update any forward-looking statements after the date of this presentation to conform these statements to actual results or to changes in our expectations.

Certain information contained in or that may orally accompany this presentation relate to or are based on studies, research, publications, surveys and other data obtained from third-party sources and our own internal estimates and research. While we believe these third-party studies, research, publications, surveys and other data to be reliable as of the date of this presentation, they have not been independently verified, and we make no representations as to the adequacy, fairness, accuracy or completeness of any information obtained from third-party sources.

This presentation discusses product candidates (bexicaserin and LP659) that have not yet been approved for marketing by the U.S. Food and Drug Administration (FDA) or any other regulatory authority.

Investor & Analyst Day Speakers & Agenda

Longboard Participants

Kevin Lind
President & Chief Executive Officer

Randall Kaye, MD
EVP, Chief Medical Officer

Brandi Roberts
EVP, Chief Financial Officer

Julie Baker
VP, Commercial Strategy

Featured Guest Speakers

Dennis Dlugos
MD, MSCE

Professor of Neurology & Pediatrics at Children's Hospital of Philadelphia (CHOP) and University of Pennsylvania School of Medicine; Director, CHOP Epilepsy Program; Vice President, Epilepsy Study Consortium; Principal Investigator on PACIFIC Study

Ilene Penn Miller
J.D., LLM

Director

Rare Epilepsy Network (REN)

100+ rare epilepsy organizations committed to improving outcomes for patients through collaborative research

Welcome to Longboard's Investor & Analyst Day

Topic	Themes	Speaker	Timing
Introduction	• Longboard Thesis / Vision • 2024 An Unprecedented Year	**Kevin Lind**	10 min
Caregiver Journey & Advocacy	• REN Formation • REN Journey	**Ilene Penn Miller**	10 min
DEEs	• The Epilepsy Study Consortium • DEE Classification • Why DEE is an interesting approach	**Dr. Dennis Dlugos**	15 min
The Opportunity for Bexicaserin	• Global Phase 3 DEEp Program	**Dr. Randall Kaye**	30 min
Commercial Opportunity	• Physician Market Research Data • Current Landscape • Market Opportunity	**Julie Baker**	15 min
Q&A		**All**	30 min
Closing Remarks		**Kevin Lind**	

Differentiated & innovative clinical approaches

CNS programs with significant commercial opportunities

Bold & experienced leadership with expertise in CNS and rare disorders

LONGBOARD THESIS

Our Vision is Backed by **20+ Years** of World Class GPCR Research

VISION

A world where ~~**devastating**~~ neurological conditions are no longer devastating

Pipeline with differentiated PK / PD and target engagement

Well-understood targets

Relevant M&A analogs

Epilepsy

JAZZ - GW $7.2B

UCB - Zogenix $1.9B

S1P Receptor Modulators

Pfizer - Arena $6.7B

Celgene - Receptos $7.2B

Definitions: CNS = central nervous system; PK = Pharmacokinetic; PD = Pharmacodynamic; GPCR = G-coupled protein receptors

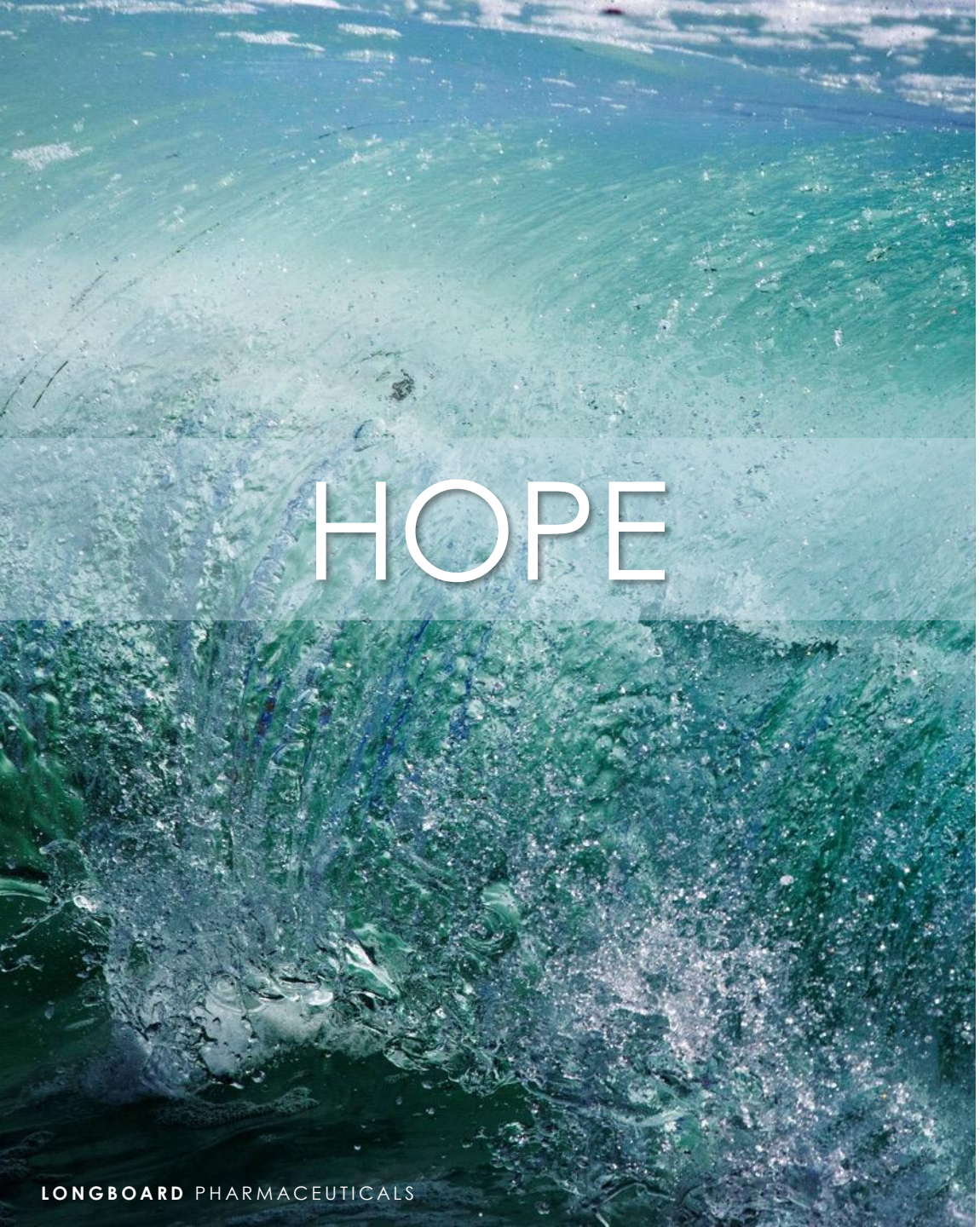
2024 LBPH's Unprecedented Year: The Potential of Bexicaserin*

businesswire
A BERKSHIRE HATHAWAY COMPANY

Longboard Pharmaceuticals Receives Breakthrough Therapy Designation for Bexicaserin (LP352)

*Breakthrough Therapy designation is not the same as drug approval. Bexicaserin is an investigational drug candidate.

PACIFIC Developmental and Epileptic Encephalopathies Study



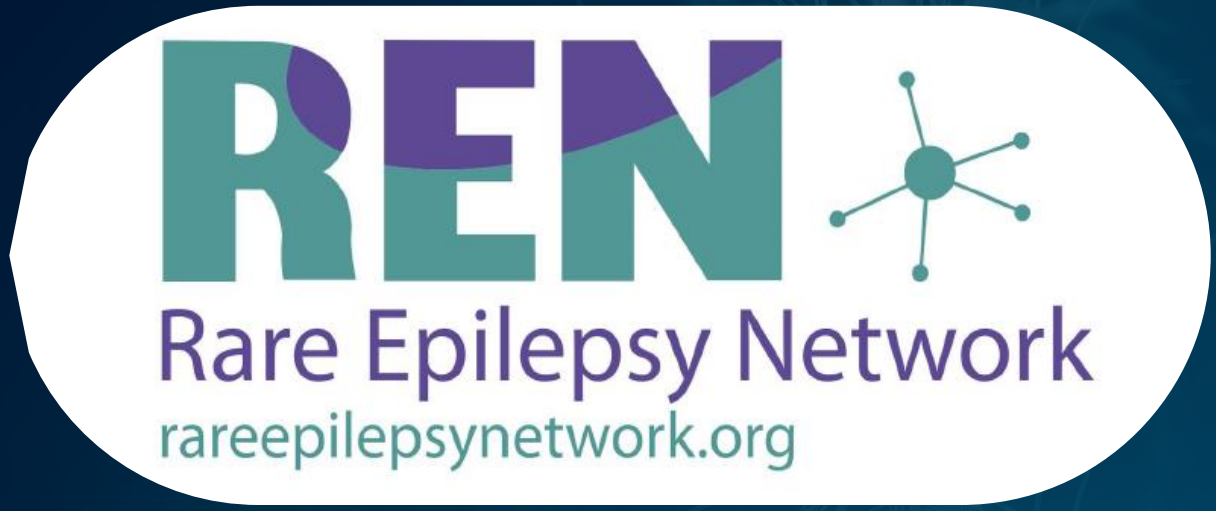
A New Wave of Hope for Patients With DEEs

DEE Journey

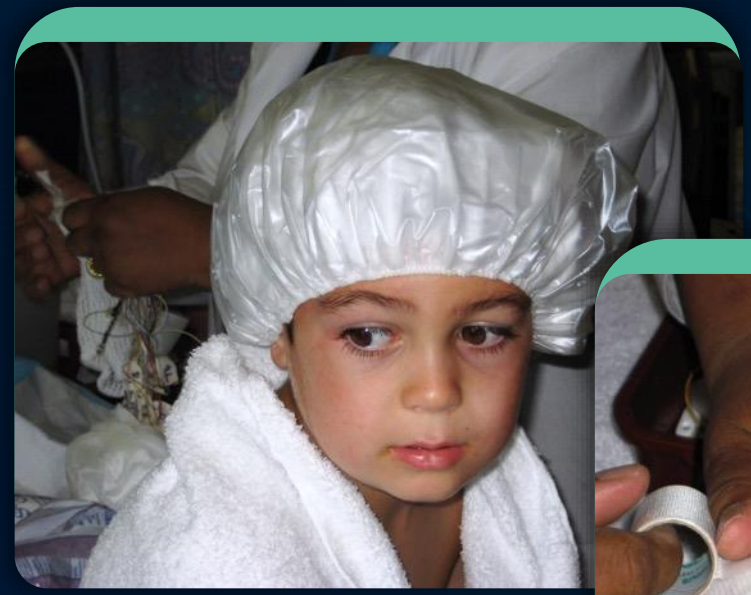
ILENE PENN MILLER, J.D., LLM

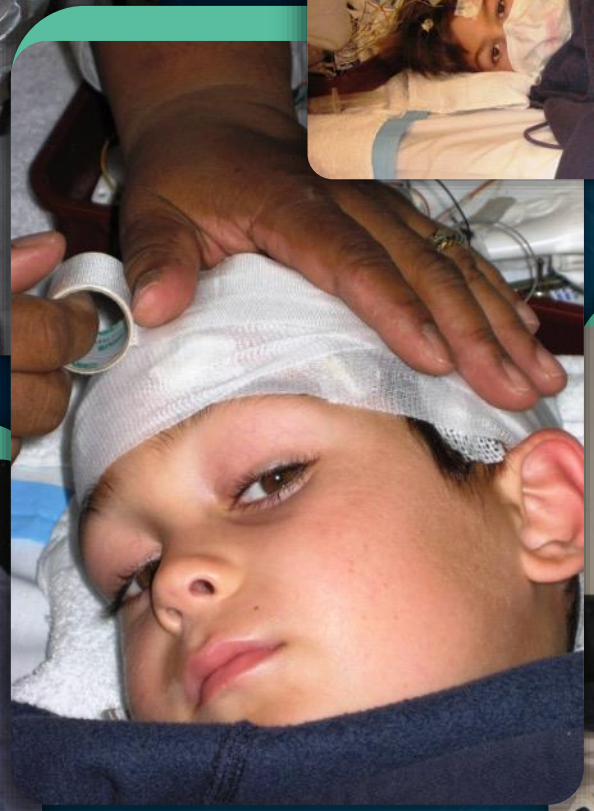
DIRECTOR, REN

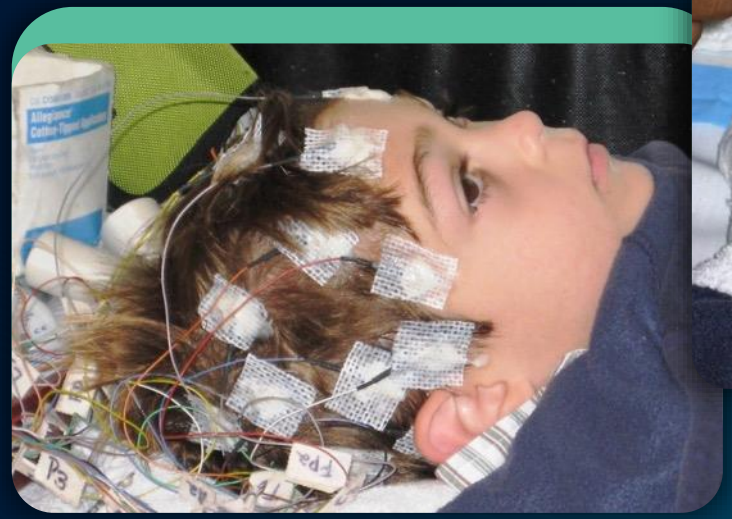
150+ RARE EPILEPSY ORGANIZATIONS COMMITTED TO IMPROVING OUTCOMES FOR PATIENTS THROUGH COLLABORATIVE RESEARCH

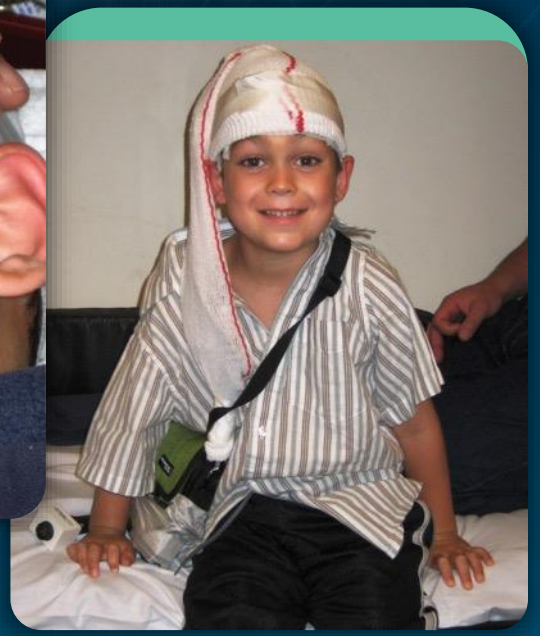


Overview: My Why









History: REN is Born

2013

FIRST-EVER RARE EPILEPSY REGISTRY LAUNCHED; 10 Orgs

2014

$3M PCORI GRANT AWARDED; 32 orgs

2019

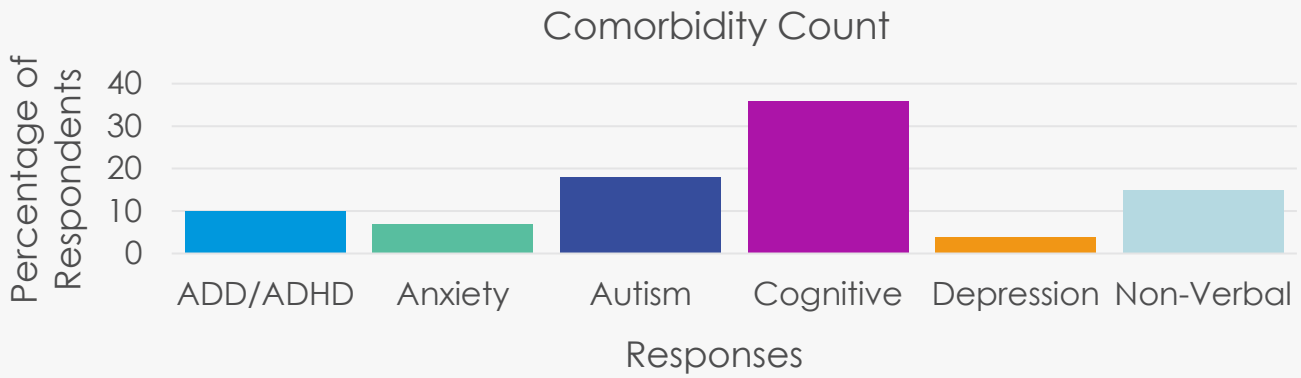
1,500 Patient Records; 41 Disorders

2020

TRANSITION TO INDEPENDENT NETWORK; 53 orgs

2024

Explosive growth: 150 rare epilepsy organizations



EXPLOSIVE GROWTH: FROM 10 to 150+

Work with **urgency** to **collaboratively improve outcomes of rare epilepsy patients and families** by fostering **patient-focused research and advocacy**

REN Rare Epilepsy Network rareepilepsynetwork.org

Why Studying DEEs Broadly is So Important!

- My Story is **not uncommon**
- There are **thousands of DEE families without treatments**
- Every day, children and adults are suffering and dying
- We **don't have the time** to work on one disorder at a time
- DEEs Require **Urgent Action & Creative Thinking**
- We **HAVE** to do this together!

DEE Landscape

DR. DENNIS DLUGOS

PROFESSOR OF NEUROLOGY & PEDIATRICS AT CHILDREN'S HOSPITAL OF PHILADELPHIA (CHOP) AND UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE; DIRECTOR, CHOP EPILEPSY PROGRAM; VICE PRESIDENT, EPILEPSY STUDY CONSORTIUM; PRINCIPAL INVESTIGATOR ON PACIFIC STUDY

Dr. Dennis Dlugos

MD, MSCE

- Professor of Neurology at Children's Hospital of Philadelphia
- Director, Pediatric Epilepsy Program, Division of Neurology, Children's Hospital of Philadelphia
- 24 years in clinical practice, 20 years clinical trial experience
- Vice President, Epilepsy Study Consortium, Inc. (ESCI)

The Epilepsy Study Consortium

ESCI review maintains consistency across all sites:

- Ensure all seizures are classified and captured correctly
- Determine which seizures should be considered "countable"
- Review any new seizure types after screening period

Group of scientific investigators from academic medical research centers dedicated to accelerating the development of new therapies in epilepsy

Aim to optimize clinical trial methodology to responsibly speed new treatments to patients

Expert epileptologists at academic medical centers to perform independent patient adjudication

Reduces site-to-site variability and limits placebo response rate

ESCI Countable Motor Seizures

Primary Outcome Seizure Types (Countable Motor Seizures)

- Generalized tonic-clonic
- Clonic (bilateral)
- Tonic (bilateral) (with likely fall)
- Atonic (with likely fall)
- Myoclonic-Atonic (with likely fall)
- Tonic/Atonic – cannot differentiate (bilateral) (with likely fall)
- Focal motor/observable (aware, impaired or unknown awareness)
- Focal to bilateral tonic-clonic
- Hemi-clonic

DEEs with FDA Approved Treatments

- Dravet syndrome (DS)
- Lennox-Gastaut syndrome (LGS)
- Tuberous sclerosis complex (TSC)
- CDKL5 deficiency disorder (CDD)

Unmet Needs

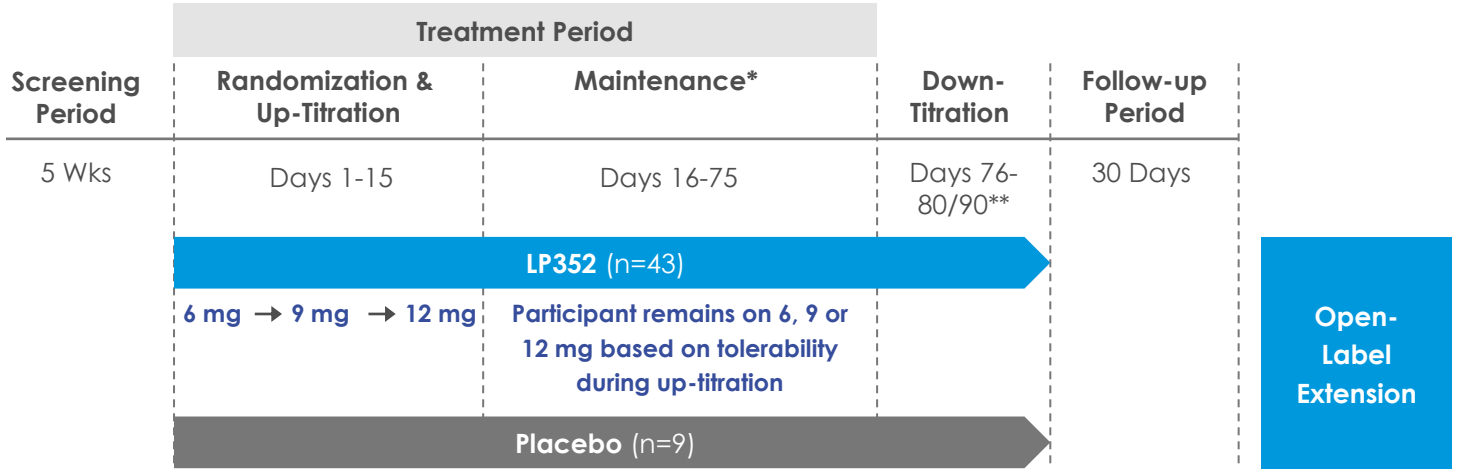
- Most DEEs have no approved treatments
- The vast majority of DEE patients are on **polytherapy and cycle through medications** over time (on average 2-4 ASMs + additional non-medication therapies)
- Virtually all patients with DEEs have too many seizures and too many treatment-related side effects

Conclusions

Despite all of the great work across "Approved 4": Dravet, LGS, CDD, TSC – there remains a significant need for seizure control

- Bexicaserin and the PACIFIC Study offer a unique clinical opportunity with a broad approach
  - LGS patients that have a variety of underlying etiologies, but respond to drugs approved to treat seizures associated with LGS
  - DEE patients, similar to LGS, are a heterogenous yet a definable and treatable population - which is appropriate for a similar approach for drug development

Bexicaserin (LP352) Ph 1b/2a PACIFIC Study in Participants with DEEs



Key Inclusion Criteria:

- DEEs with average of ≥ 4 motor seizures per 4-week period during the 12 weeks prior to screening and ≥ 4 motor seizures in the 4-week period of screening
- DEEs (multiple syndromes) including LGS, Dravet syndrome, SCN2A-related epilepsies, CDD, among others

Key Exclusion Criteria:

- Use of fenfluramine & lorcaserin

Basic Information:

- **Sites:** 34 sites
- **Ages:** ≥ 12 to ≤ 65 yrs old

Double-blind, placebo-controlled study to assess the safety, tolerability, pharmacokinetics and efficacy of bexicaserin

Study Objectives:

Evaluate reduction in countable motor seizures across a broad group of epilepsies

Identify potential indications for pivotal studies

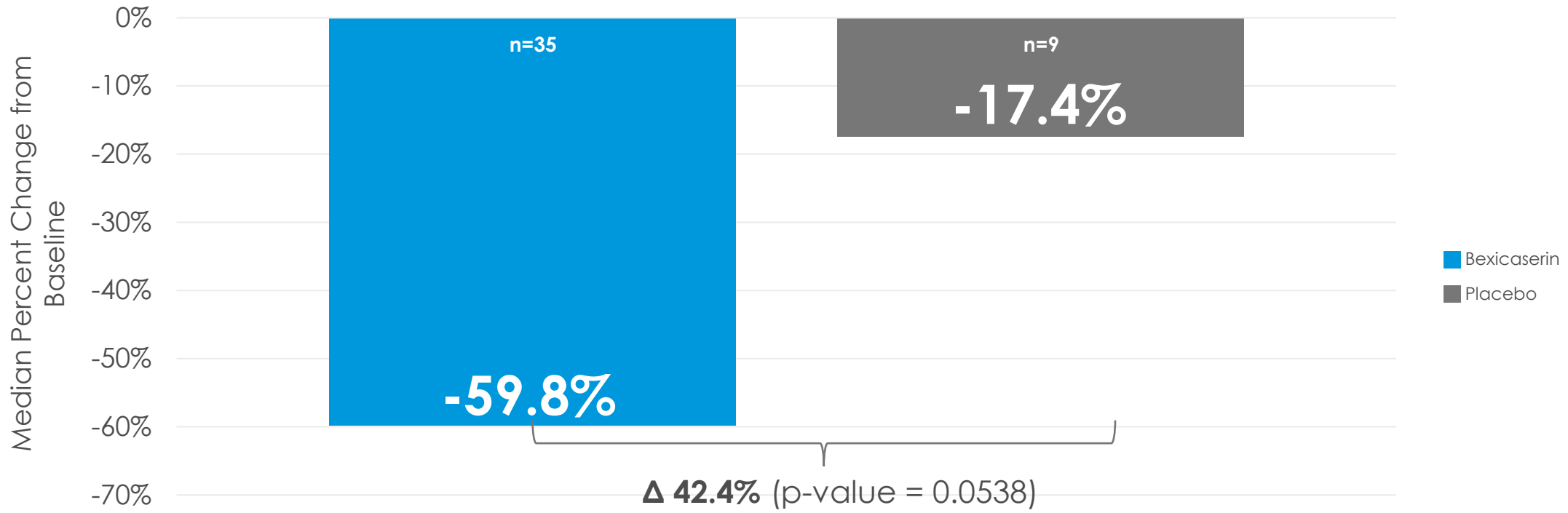
Analyze concentration response to understand dosing in different seizure types and disorders

No Echocardiograms Required

* Maintenance Dose of bexicaserin (TID): 6 mg, 9 mg, 12 mg or placebo TID
** Up to a 15-day down-titration/taper period (reducing dose every 5 days) depending on the last maintenance dose
Definitions: LGS = Lennox-Gastaut Syndrome, CDD = CDKL5 Deficiency Disorder

PACIFIC Developmental and Epileptic Encephalopathies Study

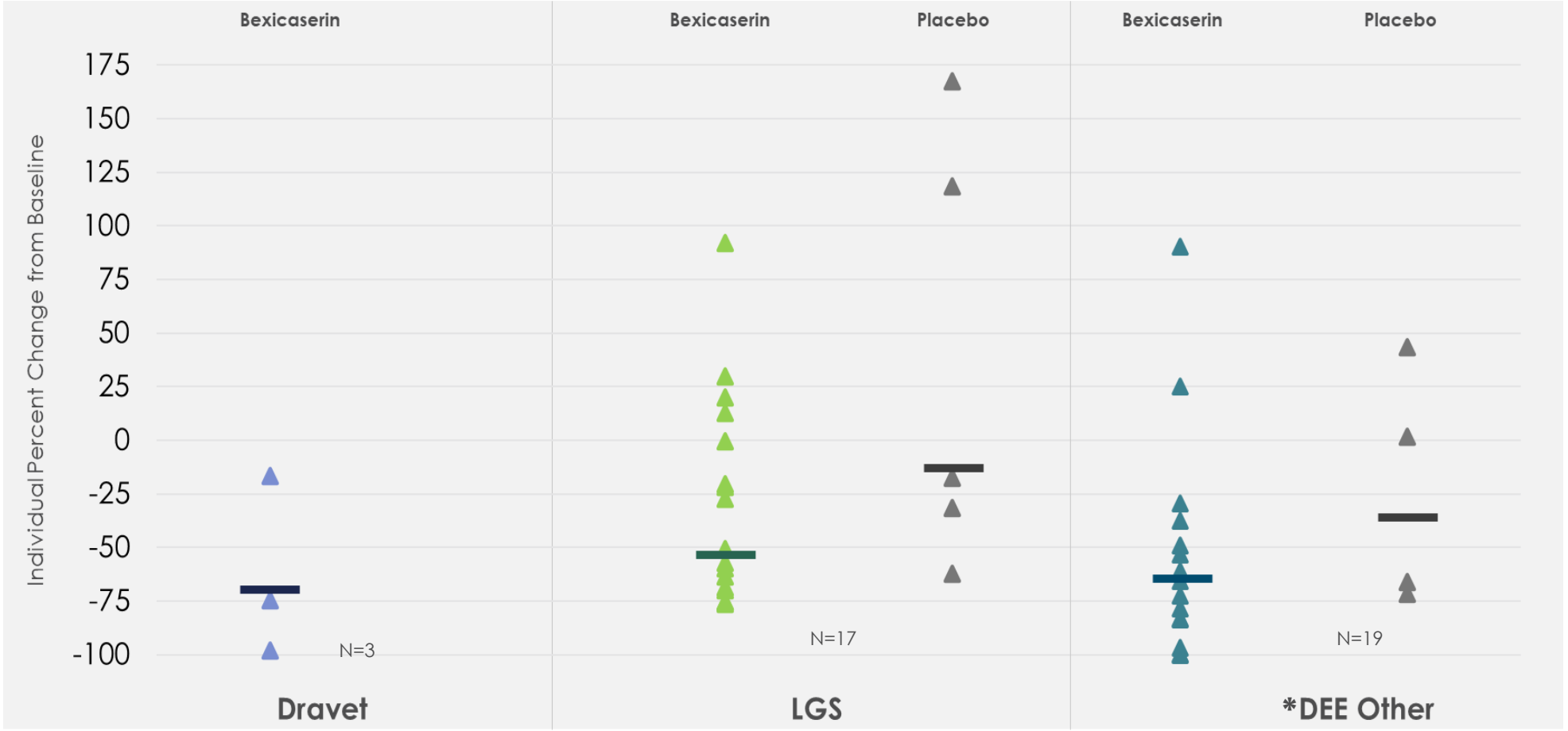
Bexicaserin Achieved Median Observed Countable Motor Seizure Reduction of 59.8% vs. 17.4% Placebo Across the DEE Study Population



Bexicaserin Achieved Placebo Adjusted Mean Seizure Reduction of 51.9% (p-value = 0.0206, post-hoc exploratory analysis)

DEE, Developmental and Epileptic Encephalopathies.
Reference: Data on file.

Individual Percent Change from Baseline in Observable CMS Frequency During Treatment Period and Encephalopathy Type



The PACIFIC Study included over 12 unique subtypes within the DEE Other Cohort

"—" Depicts Median Observable Countable Motor Seizure Frequency Reduction. CMS = Countable Motor Seizures, LGS = Lennox-Gastaut Syndrome; DEE = Developmental and Epileptic Encephalopathy; Reference: Data on file.

PACIFIC Developmental and Epileptic Encephalopathies Study

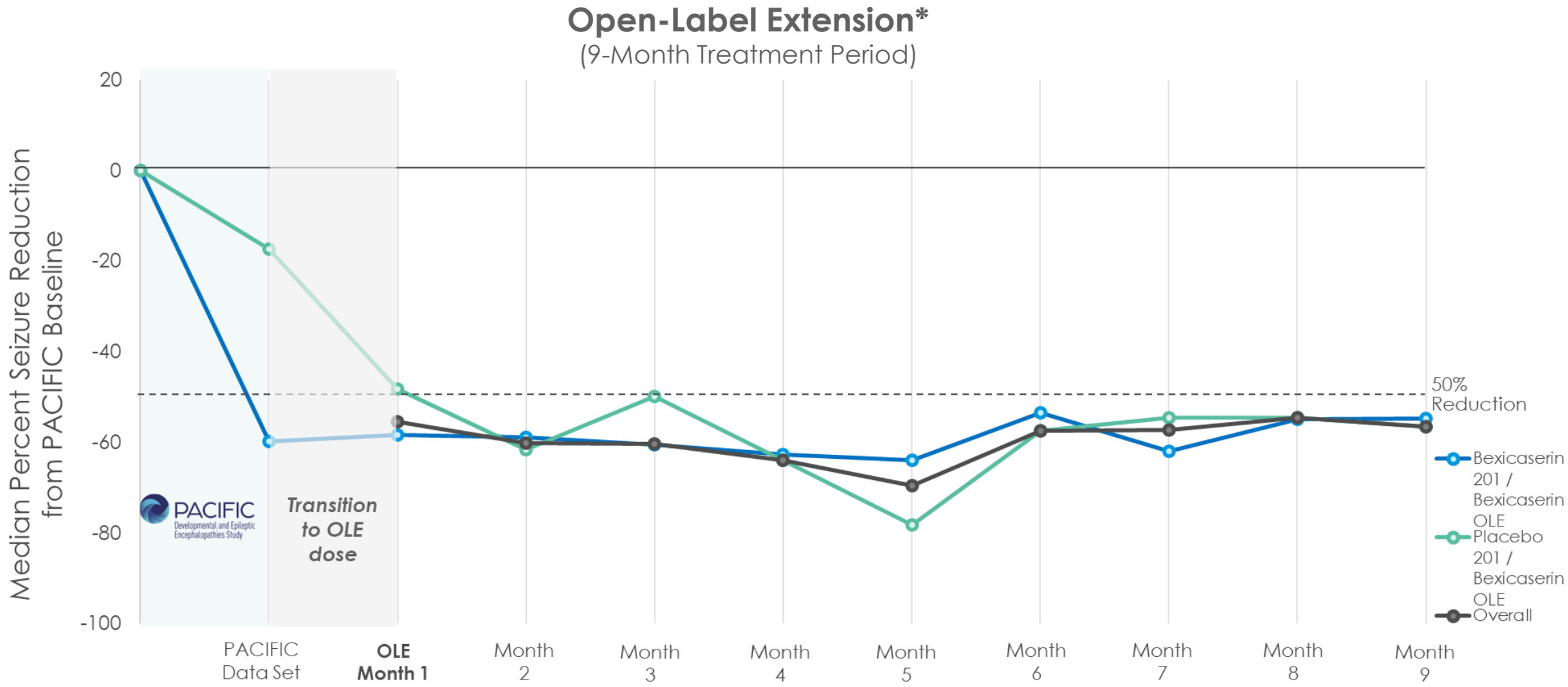
PACIFIC Safety Results Summary

n(%)	Bexicaserin (LP352) (N=43)	Placebo (N=9)	Overall (N=52)
Participants with any TEAEs	35 (81.4)	8 (88.9)	43 (82.7)
Drug-Related TEAEs	28 (65.1)	3 (33.3)	31 (59.6)
TEAEs Leading to Discontinuation	9 (20.9)	0	9 (17.3)
TEAEs Leading to Discontinuation (Titration)	7 (16.3)	0	7 (13.5)
TEAEs Leading to Discontinuation (Maintenance)	2 (4.7)	0	2 (3.8)
Participants with any SAEs	3 (7.0)	0	3 (5.8)
Number of Deaths	0	0	0

- The most common AEs* observed were somnolence, decreased appetite, constipation, diarrhea and lethargy
- SAEs were ankle fracture, constipation and increased seizures
- Vast majority of participants stayed on bexicaserin once they achieved the maintenance phase
- **Favorable safety and tolerability results**

*Over 5% of bexicaserin participants and greater than placebo
Definitions: TEAE = Treatment Emergent Adverse Event; SAE = Serious Adverse Event, AE = Adverse Event

Bexicaserin (LP352) Median Observed Countable Motor Seizure Reduction in OLE (Interim Analysis #2)



*Percent change from PACIFIC Study (LP352-201) baseline in monthly seizure frequency

Bexicaserin Comprehensive Global Phase 3 DEE Program

DEEpOCEAN — **Study 301: DEEs** (n=320)

DEEpSEA — **Study 302: Dravet Syndrome** (n=160)

→ **DEEpOLE** — **Study 303: 52-Week Open-Label Extension**

Planned Study Parameters*:

Primary Endpoint: Reduction in Countable Motor Seizures
Ages: ≥ 2 years of age and older (weight-based dosing for participants of lower weight/age)
Sites: ~80 sites across the US, AUS, Europe, other potential regions

Breakthrough Therapy designation granted for bexicaserin for the treatment of seizures associated with Developmental and Epileptic Encephalopathies (DEEs) for patients ≥ 2 years of age

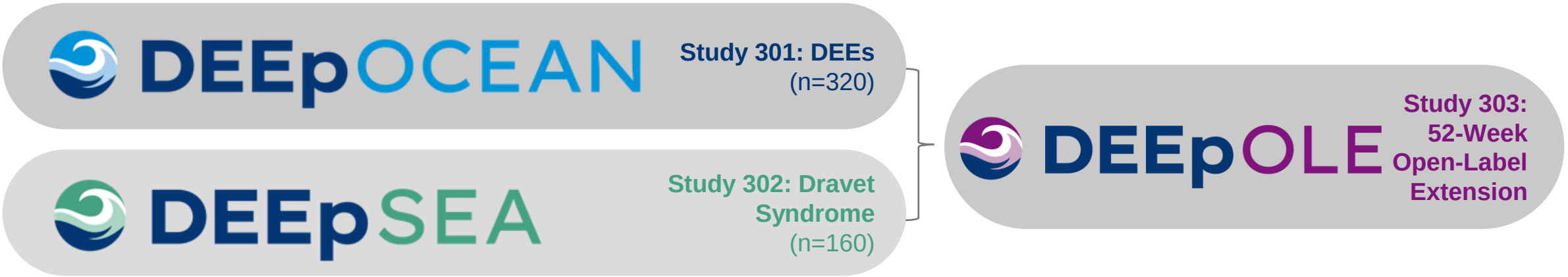
*Subject to regulatory discussions
Breakthrough Therapy designation is not the same as drug approval. Bexicaserin is an investigational drug stage candidate

Bexicaserin (LP352)

Potential Best-in-Class 5-HT2C Superagonist - Entering a Ph 3 Program to Treat a Broad Range of DEEs

RANDALL E. KAYE, MD
EVP, CHIEF MEDICAL OFFICER

Bexicaserin Comprehensive Global Phase 3 DEE Program



Planned Study Parameters*:

Primary Endpoint: Reduction in Countable Motor Seizures
Ages: ≥ 2 years of age and older (weight-based dosing for participants of lower weight/age)
Sites: ~80 sites across the US, AUS, Europe, other potential regions

Breakthrough Therapy designation granted for bexicaserin for the treatment of seizures associated with Developmental and Epileptic Encephalopathies (DEEs) for patients ≥ 2 years of age

*Subject to regulatory discussions
Breakthrough Therapy designation is not the same as drug approval. Bexicaserin is an investigational drug stage candidate

Bexicaserin (LP352) Global Regulatory Strategy

NEWS Update: U.S. FDA has granted Breakthrough Therapy designation for bexicaserin for the treatment of seizures associated with Developmental and Epileptic Encephalopathies (DEEs)

> "We are thrilled to receive Breakthrough Therapy designation for bexicaserin and believe this important milestone underscores our innovative approach to potentially treating a broad range of DEE patients. The FDA will work closely with us to provide guidance on subsequent development of bexicaserin to help us design and conduct a development program as efficiently as possible. We are looking forward to initiating our global Phase 3 program later this year."

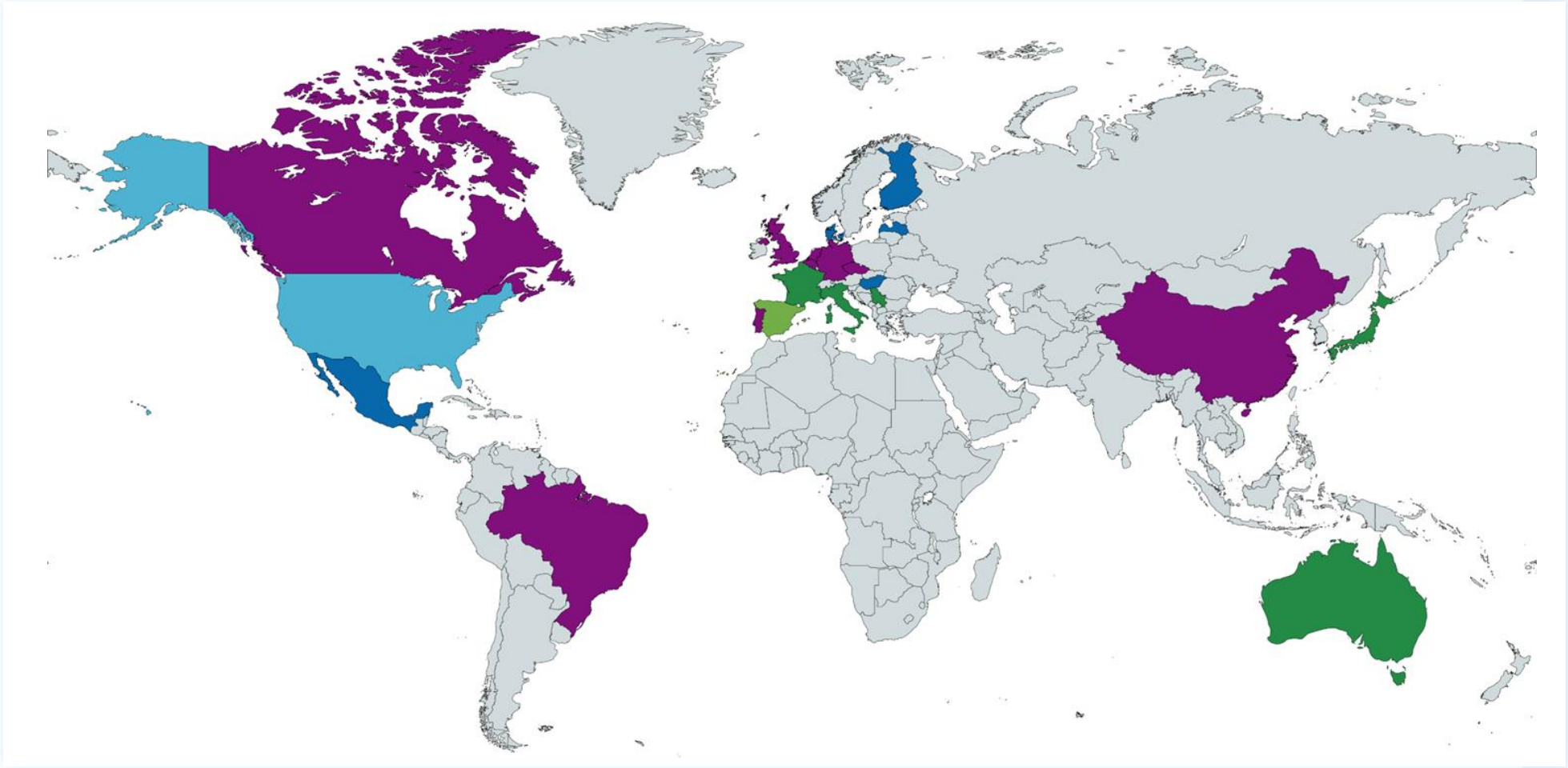
Regulatory Dialogue ongoing in ROW (e.g. Europe, Australia)

Regulatory Designation	Breakthrough Therapy Designation (BTD)
Qualifying Criteria	A drug that is intended to treat a serious condition AND **preliminary clinical evidence indicates that the drug may demonstrate substantial improvement** on a clinically significant endpoint(s) over available therapies
Status	**Granted on 28 June 2024**
Benefits	• **Intensive FDA Guidance:** Frequent interactions with FDA to ensure efficient drug development • **Organizational Commitment:** Senior FDA managers are involved in the review process providing high level oversight • **Rolling Review:** Submit portions of the marketing application as they are completed • **Eligible for Priority Review:** Faster NDA review time vs standard applications

Definitions: ROW = Rest of World
*Breakthrough Therapy designation is not the same as drug approval. Bexicaserin is an investigational drug stage candidate.

DEEp Planned Global Footprint Strategy

~480 Total DEE participants ages 2 years of age and older expected



~10
Rapid start sites

~90%
Site Overlap
= Operational Efficiencies

>80
sites

5
continents

21
countries

Operational Differentiation: Strategy to Optimize Enrollment, Timelines, Data Integrity and Participants Across DEEp

Speed

- **~10 Rapid Start Sites**
- Activate sites as quickly and efficiently as possible
- Focus on completing enrollment rather than first patient enrolled

Efficiency

- **~90% of Ph 3 sites overlap across DEEp studies**
- Optimize operational synergies
- Timeline / cost / resource efficiencies

Support Sites & Caregivers

- **Dedicated team to serve as "site concierge"**
- Patient support services tailored specifically for patients with DEEs and their caregivers

Work Closely with HCPs

- **Hands-on approach to running the trial**
- Medical and operational support to work in close partnership with sites

Bexicaserin Dose Optimization Strategy

Titration

- Start low/go slow
- 3-steps
- 21 days
- Titrate based on tolerability

Maintenance

- 3-month treatment period
- Maintain on highest tolerated dose
- Daily diary

Formulation

- Convenient / Palatable
- Fixed dosing (adolescent/adults)
- Weight-based (pediatric)

Open-Label Extension

- Equitable access for placebo subjects
- Long-term safety and efficacy
- Introduction of alternative dosing regimens

Bexicaserin (LP352)

DEEp - Global Phase 3 Program

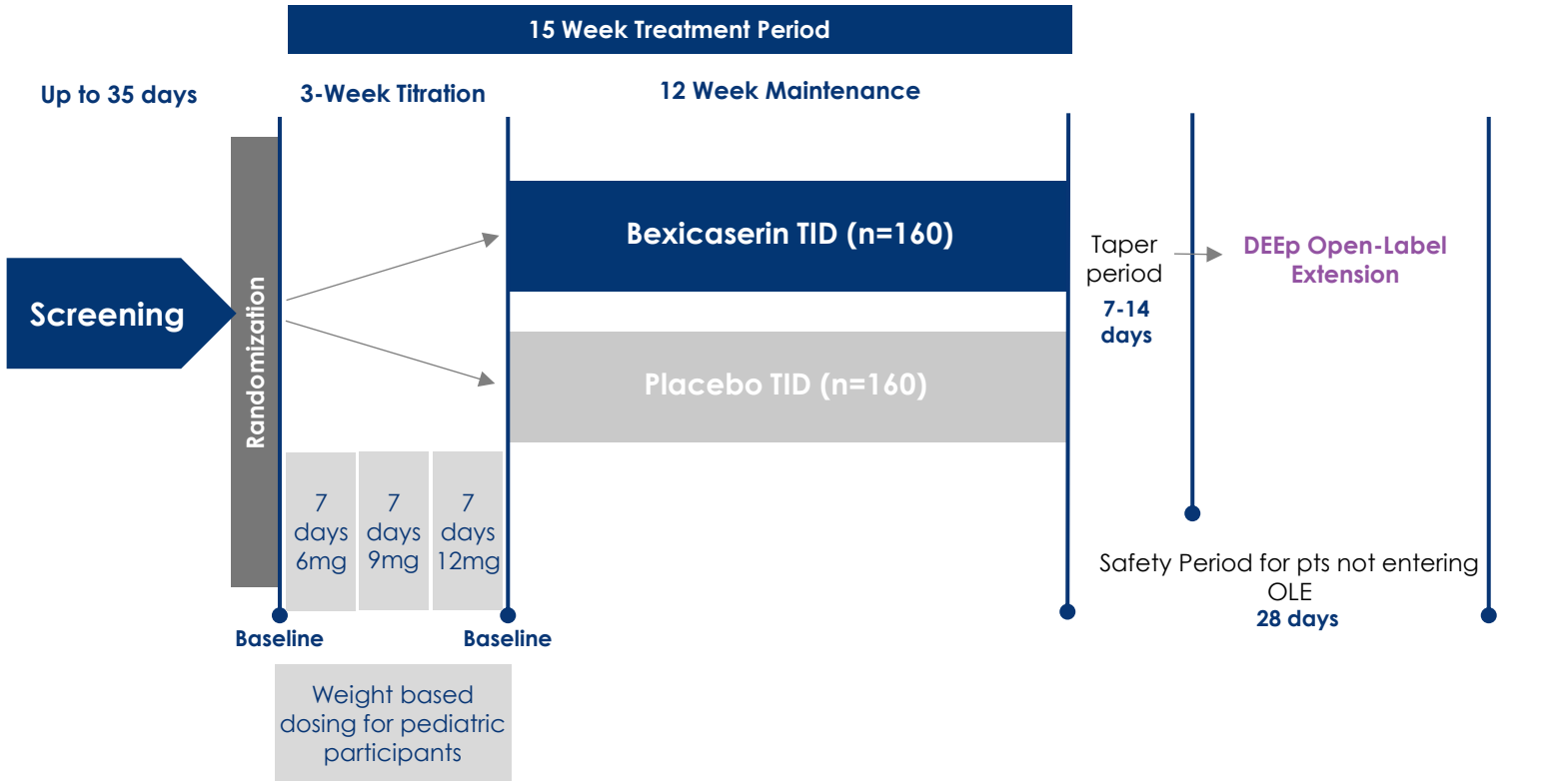
Bexicaserin Phase 3 Global DEEp Program Inclusion

	DEEpOCEAN Study 301		DEEpSEA Study 302
	DEEs (non LGS or DS)	**LGS**	**Dravet**
Onset	Unprovoked seizures before 5 years	Before 8 years of age	Between 3–19 months
Seizure Type	Combined focal and generalized seizure types, or multiple generalized seizure types	Tonic or tonic/atonic seizures & more than 1 type of generalized seizure (tonic-clonic, tonic-atonic, atonic, tonic, myoclonic or drop)	Generalized tonic-clonic, unilateral clonic or bilateral clonic seizures
Developmental History	Delayed	Delayed	Initially normal, then delayed
EEG	Slow or disorganized	Consistent with LGS diagnosis*	One of the following: • Emergence of another seizure type after the first • Induced by warm temperatures, fevers, or visual stimuli • Genetic test consistent with Dravet
Additional Criteria	No history of idiopathic generalized seizures	More than 1 type of generalized seizure for ≥6 months before screening	

All patients: Treatment-resistant countable motor seizures with average of ≥ 4 observed/countable motor seizures per 4-week period during 12 weeks before screening while on stable ASM treatment

*Abnormal inter-ictal EEG background activity with inter-ictal slow spike-and-wave pattern ≤2.5 Hz or inter-ictal generalized paroxysmal fast activity
Definitions: DS=Dravet syndrome, LGS=Lennox-Gastaut syndrome

DEEp OCEAN(301) - Bexicaserin (LP352) Ph 3 Global Clinical Program in Participants with DEEs



No Echocardiograms Required

Primary Objective:

- Evaluate the efficacy of bexicaserin in Developmental and Epileptic Encephalopathy (DEE) as assessed by countable motor seizures

Secondary Objectives:

- Evaluate the safety and tolerability of bexicaserin
- Characterize Plasma exposures of bexicaserin using PopPK and perform E-R analysis

DEEp OCEAN Key Endpoints In DEE

Primary Endpoint

- Frequency percent change in countable motor seizures during Treatment (28-day average) compared to Baseline (28-day average) as assessed by eDiary

Key Secondary Endpoints (Safety)

- Incidence and severity of treatment-emergent adverse events, including serious adverse events and adverse events leading to discontinuation
- Safety laboratory parameters
- Physical examination findings
- Vital signs
- Growth parameters (height, weight)
- 12-lead electrocardiograms

Key Secondary Endpoints (Efficacy)

- 50% responder rate (the percentage of participants with a ≥ 50% reduction in countable motor seizures) during Treatment (28-day average) compared to Baseline (28-day average) as assessed by seizure eDiary
- Frequency percent change in countable motor seizures during Maintenance (28-day average) compared to Baseline (28-day average) as assessed by eDiary

90% power based on a true mean difference (bexicaserin minus placebo) in % Change from Baseline in seizure frequency using a two-sided test of alpha=0.05

DEEp OCEAN Key Inclusion/Exclusion Criteria

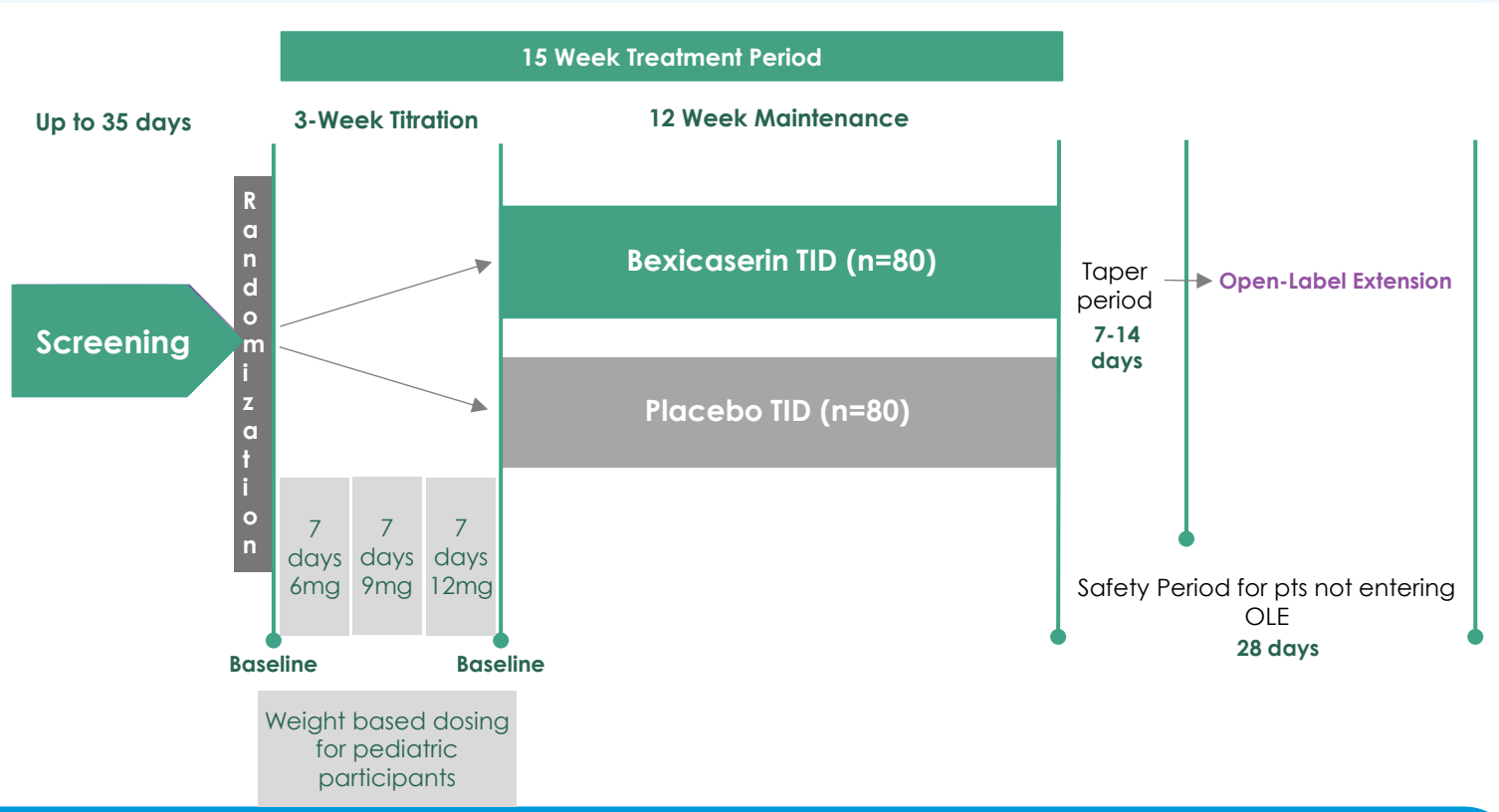
Key Inclusion Criteria

1. Age ≥ 2 to ≤ 65 years at time of Screening with body weight ≥ 10kg
2. Diagnosis of DEE must fulfill all of the following criteria:
    a. Characterized as having LGS must fulfill all of the following criteria:
        i. Onset of seizures ≤ 8 years old
        ii. History of tonic/tonic-atonic seizures plus at least 1 of the following seizure type(s): atypical absence, atonic, myoclonic, focal impaired awareness, generalized tonic-clonic, nonconvulsive status epilepticus, or epileptic spasms
        iii. Presence of developmental plateauing or regression
        iv. History of EEG showing generalized slow (< 2.5 Hz) spike-and-wave complexes
    b. Characterized as having DEE must fulfill all following criteria:
        i. Does not meet criteria for LGS
        ii. Onset of seizures at ≤ 5 years old
        iii. Presence of developmental plateauing or regression
        iv. History of multiple seizure types
        v. History of interictal EEG background showing diffuse or multifocal slowing (with or without epileptiform activity)
3. Current occurrence of at least 1 of the following CMS types:
    i. Generalized tonic-clonic
    ii. Tonic (bilateral)
    iii. Clonic (bilateral)
    iv. Atonic (bilateral) with truncal/leg involvement
    v. Focal motor (including hemiclonic)
    vi. Focal to bilateral tonic-clonic
4. Demonstrated an average ≥4 observed CMS/month for the 3 months prior to Screening based on participant/caregiver report & investigator's assessment

Key Exclusion Criteria

1. Has a diagnosis of Dravet Syndrome (DS) or has a mutation of the SCN1A gene consistent with DS
2. Has an abnormal and clinically significant 12-lead electrocardiogram at Screening or any unstable, clinically significant cardiovascular (e.g., pulmonary arterial hypertension, cardiac valvulopathy, orthostatic hypotension/tachycardia) disease
3. Currently taking monamine oxidase (MAO) inhibitors, serotonergic agonists such as, fenfluramine or lorcaserin, or felbamate, topiramate or zonisamide
4. Use of any cannabis product or cannabidiol that is not in oral solution/capsule/tablet form, not obtained from a government-approved dispensary, or containing ≥ 50% THC
5. Any clinically significant neurologic (other than the disease being studied; e.g., recurrent strokes), psychiatric, pulmonary, hepatic, renal, metabolic, gastrointestinal, urologic, immunologic, hematopoietic, or endocrine disease or other abnormality which may impact the ability of the participant to participate or potentially confound the study results
6. Current or recent history of moderate or severe depression, anorexia nervosa, or bulimia per the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition or at risk of suicidal behavior per the C-SSRS

DEEp SEA (302) - Bexicaserin (LP352) Ph 3 Global Clinical Program in Participants with Dravet Syndrome



No Echocardiograms Required

Primary Objective

- Evaluate the efficacy of bexicaserin in Dravet Syndrome (DS) as assessed by countable motor seizures

Secondary Objectives

- Evaluate the safety and tolerability of bexicaserin
- Characterize plasma exposures of bexicaserin using PopPK and perform E-R analysis

DEEpSEA

DEEp SEA Primary Endpoint in Dravet Syndrome

Primary Endpoint

- Frequency percent change in countable motor seizures during Treatment (28-day average) compared to Baseline (28-day average) as assessed by seizure eDiary

Key Secondary Endpoints (Safety)

- Incidence and severity of treatment-emergent adverse events, including serious adverse events and adverse events leading to discontinuation
- Safety laboratory parameters
- Physical examination findings
- Vital signs
- Growth parameters (height, weight)
- 12-lead electrocardiograms

Key Secondary Endpoints (Efficacy)

- 50% responder rate (the percentage of participants with a ≥ 50% reduction in countable motor seizures) during Treatment (28-day average) compared to Baseline (28-day average) as assessed by seizure eDiary
- Frequency percent change in countable motor seizures during Maintenance (28-day average) compared to Baseline (28-day average) as assessed by seizure eDiary

Powering: 90% power based on a true mean difference (bexicaserin minus placebo) in % Change from Baseline in seizure frequency using a two-sided test of alpha=0.05

DEEp SEA Key Inclusion/Exclusion Criteria

Key Inclusion Criteria

1. Age ≥ 2 to ≤ 65 years at the time of Screening with a body weight ≥ 10kg
2. Diagnosis of DS must fulfill all of the following criteria:
    a. Onset of seizures age >1 & <20 months in an otherwise healthy infant
    b. History of ≥ at least 1 of the following seizure type(s)
        i. Prolonged generalized tonic-clonic
        ii. Hemiclonic
        iii. Myoclonic
        iv. Tonic
        v. Atonic
        vi. Atypical absence
        vii. Focal impaired awareness
        viii. Nonconvulsive status epilepticus
    c. Some seizures are induced by prolonged exposure to warm temperatures, fevers due to illness or vaccines, high levels of activity, sudden temperature changes, and/or strong natural/fluorescent lighting or certain visual patterns
    d. Development was normal or only mildly delayed prior to the onset of seizures
    e. Current developmental plateauing or regression
    f. In the absence of inclusion criterion 2c or 2e, documented history of SCN1A gene mutation consistent with DS is required
    g. There is no alternative diagnosis that can be attributed to the participant's seizure etiology
3. Current occurrence of at least 1 of the following CMS types:
    a) Generalized tonic-clonic
    b) Tonic (bilateral)

Key Exclusion Criteria

1. Has an abnormal and clinically significant 12-lead electrocardiogram at Screening or any unstable, clinically significant cardiovascular (e.g., pulmonary arterial hypertension, cardiac valvulopathy, orthostatic hypotension/tachycardia) disease

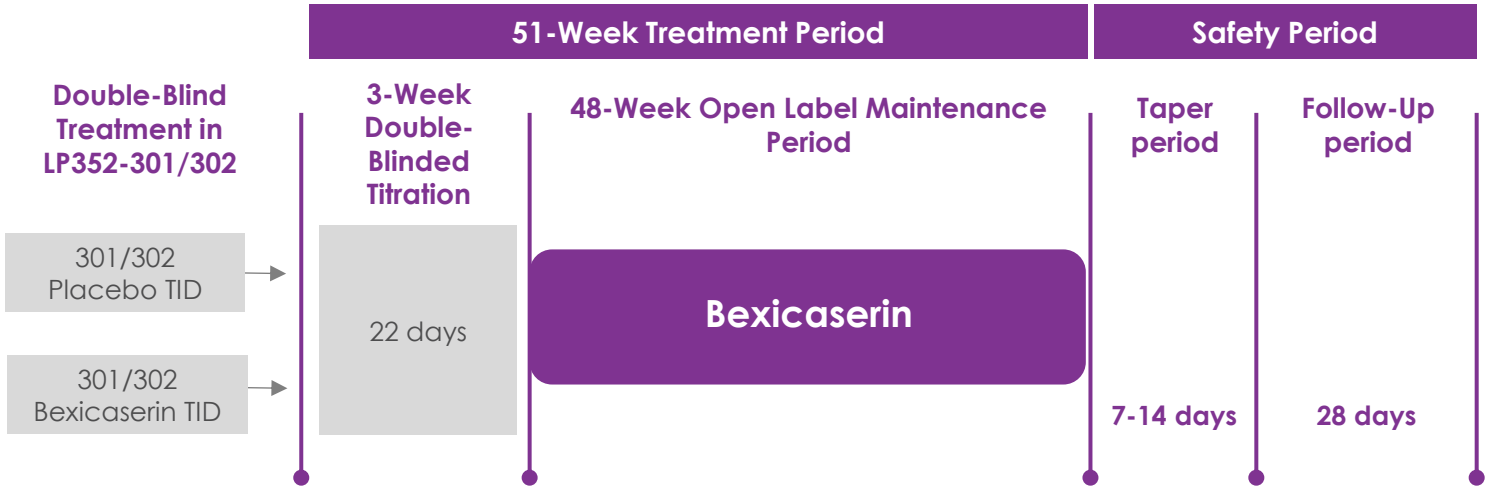
2. Currently taking monamine oxidase (MAO) inhibitors, sodium channel blockers that increased seizure frequency in the participant, including phenytoin, carbamazepine, oxcarbazepine, eslicarbazepine, lamotrigine, lacosamide, rufinamide, serotonergic agonists such as, fenfluramine or lorcaserin, or felbamate, topiramate or zonisamide

3. Use of any cannabis product or cannabidiol that is not in oral solution/capsule/tablet form, not obtained from a government-approved dispensary, or containing ≥ 50% THC

4. Any clinically significant neurologic (other than the disease being studied; e.g., recurrent strokes), psychiatric, pulmonary, hepatic, renal, metabolic, gastrointestinal, urologic, immunologic, hematopoietic, or endocrine disease or other abnormality which may impact the ability of the participant to participate or potentially confound the study results

5. Current or recent history of moderate or severe depression, anorexia nervosa, or bulimia per the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition or at risk of suicidal behavior per the C-SSRS

DEEp Open-Label Extension (303) - Bexicaserin (LP352) Ph 3 Global Clinical Program in Participants with DEEs



Study Objectives:

Evaluate the safety and tolerability of multiple doses of bexicaserin in DEE

Evaluate the efficacy of bexicaserin in DEE

DEEpOLE

Bexicaserin (LP352)

Road to Potential Approval

DEEp Phase 3 Timeline Goals

Q2/Q3 2024	Q4 2024	Mid-Year 2026	YE 2026
6/28 - End of Ph 2 Meeting	DEEp SEA (302) Initiation	DEEp	DEEp
7/1 - BTD	DEEp OCEAN (301) Initiation	Full enrollment expected ~18 months from initiation	Ph 3 DEEp Topline Data – Around YE 2026

Definitions: BTD = Breakthrough Therapy designation

Additional Differentiation Strategy to Potentially Create THE Best-in-Class DEE Product

Differentiation

- Safety
- Drug-Drug interactions
- Broad dataset for safety/efficacy
- Nonclinical data generation

Optimizing Polytherapy

- Providing data to support switching (safety issues)
- Providing alternative solutions due to medication failures (lack of efficacy)

Convenience

- Multiple paths to BID
- Regulatory dialogue ongoing

Value

- Health Economic Outcomes Research
- Non-seizure outcomes
- Exploratory endpoints

Bexicaserin (LP352)

Commercial Strategy

JULIE BAKER
VP, COMMERCIAL STRATEGY

Bexicaserin Has Commercial Blockbuster Potential

Differentiation

- Potentially highly differentiated product profile in a **1st ever indication** with Breakthrough Therapy designation from FDA

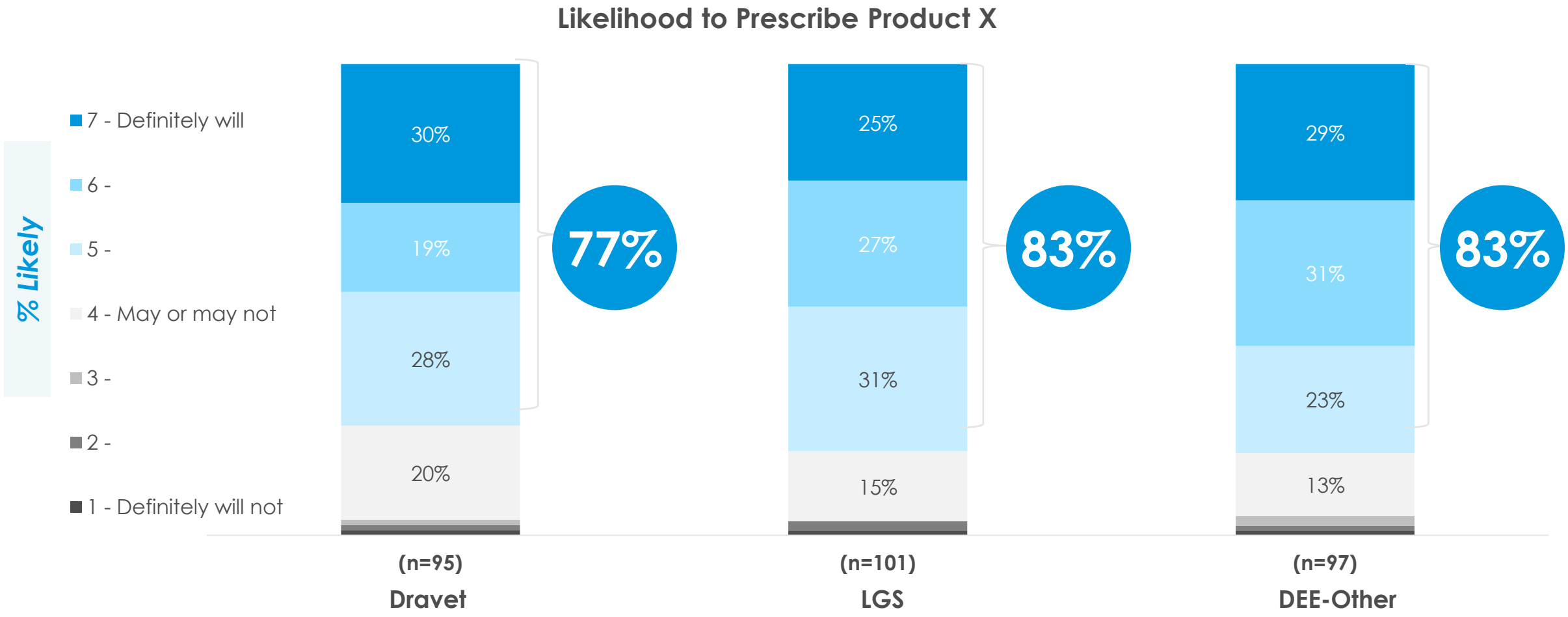
Sizeable Addressable Opportunity

- Substantially larger on-label patient population than current DEE therapies could deliver **most successful product launch to date** in this space

HCP Buy-In

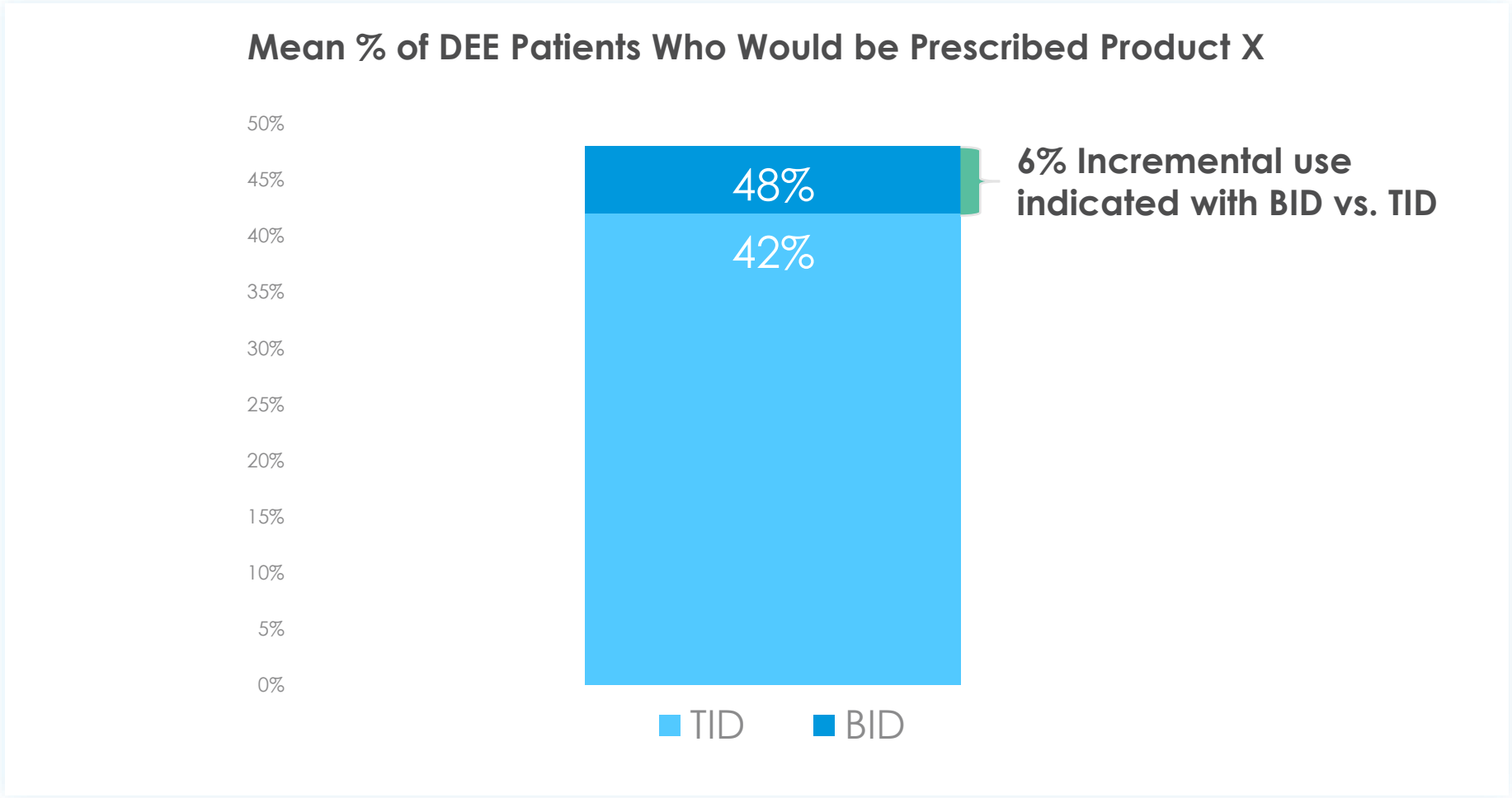
- Target Product Profile based on PACIFIC study results **positively received by epileptologists and neurologists** who treat DEE patients

A Significant Majority of HCPs are Likely to Prescribe Product X Across all DEE Types (In Combination with Other Therapies)



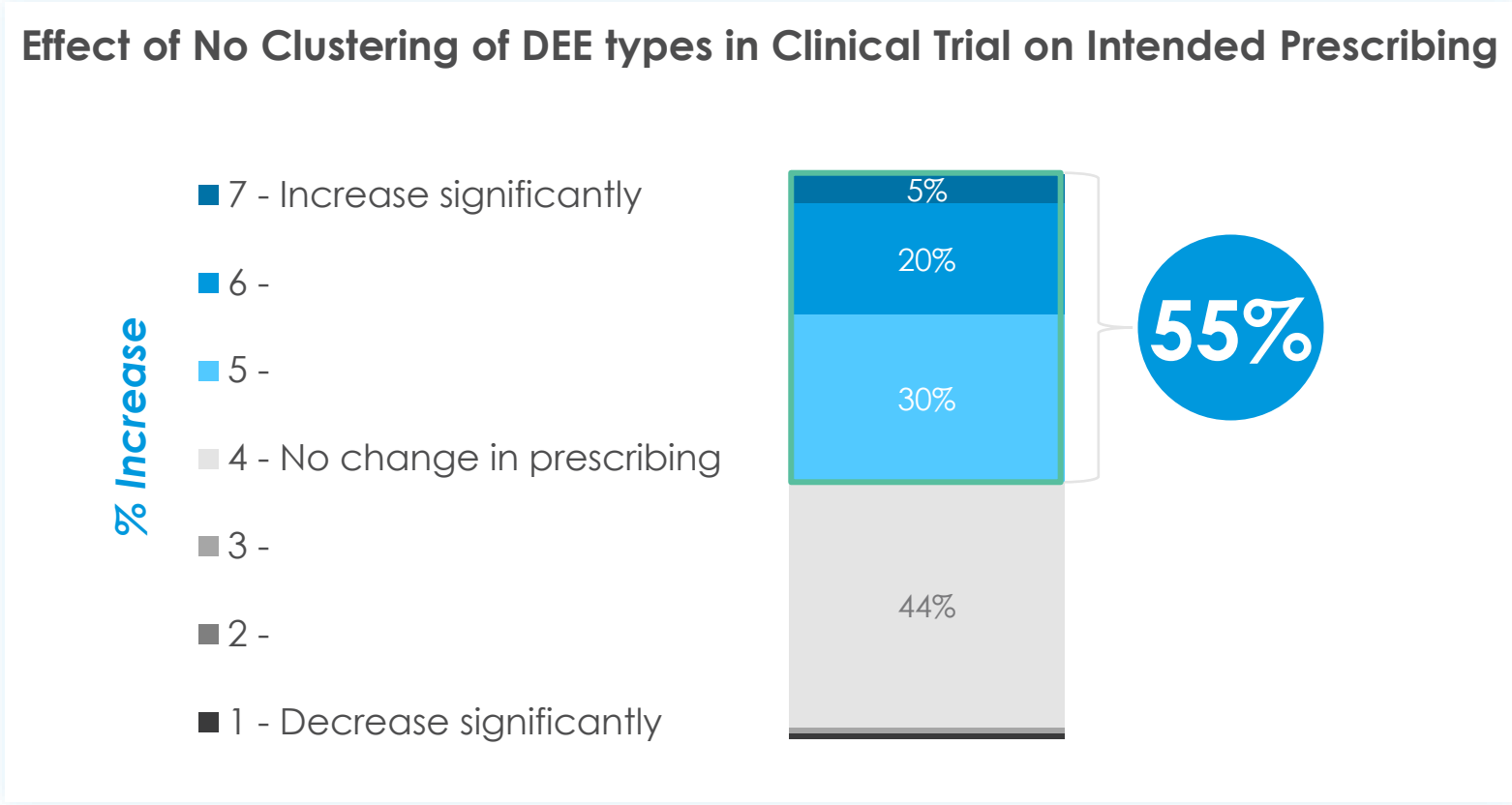
Based on data on file and Longboard sponsored interviews of 101 HCPs and a Product X profile based on PACIFIC Study results (including TID dosing).

HCPs Are Likely to Prescribe Product X to Nearly Half of DEE Patients



Based on Longboard sponsored interviews of 101 HCPs and a Product X profile based on PACIFIC Study results. Note: A large variety of perceptions like availability, cost, coverage, and real-world efficacy can influence what patients HCPs consider likely to receive a treatment

No Clustering of DEE Types Among "DEE-Other" Patients Leads to Increased Potential Prescribing



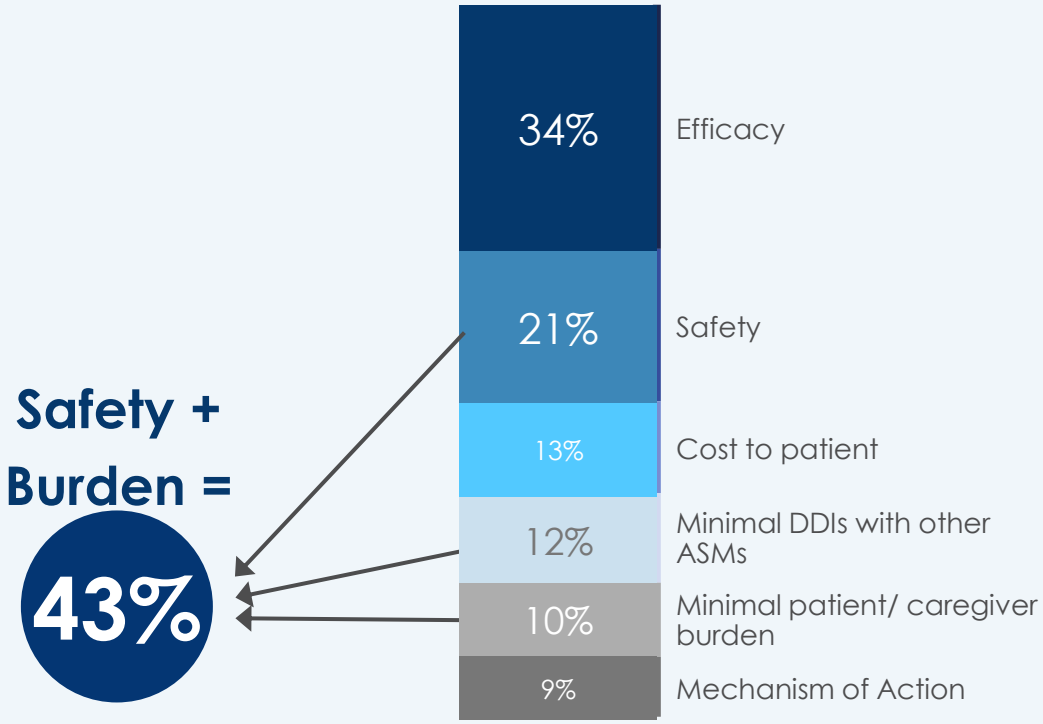
Clustering: *In a Ph 2 trial of Product X there were 19 DEE-Other patients, with* ***no cluster*** *of particular DEEs—meaning there were a variety of DEE Other types represented*

Based on Longboard sponsored interviews of 101 HCPs and a Product X profile based on PACIFIC Study results

Surveyed HCPs Are Balancing Efficacy, Safety & Burden Given Polytherapy is the Norm

Influence on ASM Decisions*

When allocating 100 points across factors



- ***HCPs are cognizant that polytherapy is the current standard of care (SOC)***
- ***With patients being on over 25 concomitant medications in PACIFIC, bexicaserin is expected to be additive to current SOC***

*Based on Longboard quantitative survey of 100 HCPs who treat DEEs in 2023
Bexicaserin is an investigational stage drug candidate and is not approved for marketing by the FDA or any other regulatory agency

Global Enthusiasm for DEE Approach and Target Product Profile

US

"**It seems like a drug designed to be perfect for this patient population**...The **effect is impressive and compelling especially compared to other serotonergic agents**...AEs are consistent with most meds in refractory epilepsy, so it's **well-tolerated**. It's great that **there aren't significant DDIs** because these patients are often on 3-4 ASMs,"

– Neurologist, Primarily Adult

"It's a **much more significant indication because there's a higher unmet need**. LGS and Dravet have a high disease burden but there are treatments available. But with DEEs, **50% are not able to qualify for newer treatments**,"

- Neurologist, Primarily Pediatric

Europe

"As there is an increasing focus on unmet needs of patients with DEEs, **I am very excited about the inclusive approach to develop a future treatment option for underserved DEE patients and their families** including European sites,"

– Epileptologist, Primarily Adult

"**Patients and families are very excited about the DEE approach** as this is the **first time** they can be **included in a promising clinical trial**. A future medication with this **profile provides new hope for all DEE patients**,"

- Epileptologist, Primarily Adult

Europe is the 2nd Largest Region Worldwide; 5 Major Markets Represent Patient Opportunity Equal to the US

- The **EU includes 27 member states**; **EMA covers all with one regulatory submission** (excluding the UK, CH)
- Patients living with DEEs have **high unmet need and need new treatment options** with improved efficacy & tolerability, positive non-seizure outcomes **and ease of use**
- Patients are **highly concentrated** in a limited number of prescribing centers with the benefit to operate with a **lean organization (EU4/UK ~500 centers, ~1,700 HCPs Tier 1-2)**

US population 333M vs. European major 5 markets (DE, UK, FR, ES, IT) 321M; wider Europe 529M*

ASM: anti-seizure medication; CDD: CDKL5 Deficiency Disorder; CH: Switzerland; DE: Germany; DS: Dravet Syndrome; EMA: European Medicine Agency; ES: Spain; FR: France; HCP: Health care professional; IT: Italy; LGS: Lennox-Gastaut Syndrome; TSC: Tuberous Sclerosis Complex: UK: United Kingdom

*does not include countries on the European continent e.g. Turkey, Russia, Ukraine, Balkan States

Commercial Global US + ROW Strategy

U.S. & EUROPE

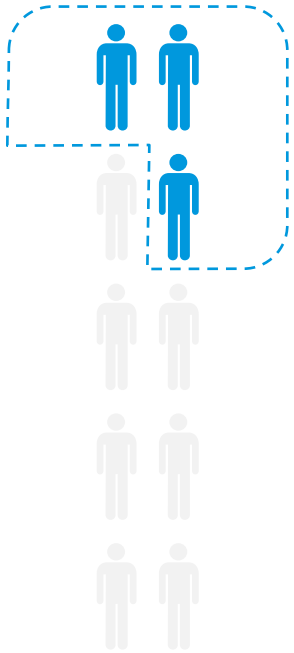
Longboard is continuing to build the expertise to commercialize successfully in major markets

ASIA & SMALLER EMERGING MARKETS

Longboard is considering partnering opportunities in certain geographic regions

How Do DEEs Fall Within the Broader Hierarchy of Epilepsy?

Epilepsy Population



25% - 40%

Epilepsy patients with ongoing drug-resistant seizures

Classifying Drug Resistant Seizures

Seizure and Epilepsy Type

- Focal
- Generalized
- Generalized & Focal
- Unknown

Etiologies

- Structural
- Genetic
- Infectious
- Metabolic
- Immune
- Unknown

DEEs are characterized by a mix of seizure type and etiologies

Focus on DEEs

- Dravet Syndrome
- Lennox-Gastaut Syndrome
- Tuberous Sclerosis Complex
- CDKL5 Deficiency Disorder
- DUP15q Syndrome
- SCN2A-DEE
- SCN8A-DEE
- KCNQ2-DEE
- KCNQ3-DEE
- Angelman Syndrome
- DEE-SWAS
- Early Myoclonic Encephalopathy
- KCNT1-DEE
- SynGAP1-DEE
- Rett Syndrome
- EIEE
- PCDH19
- Myoclonic-Atonic Epilepsy
- Ring14
- Ring20
- Others

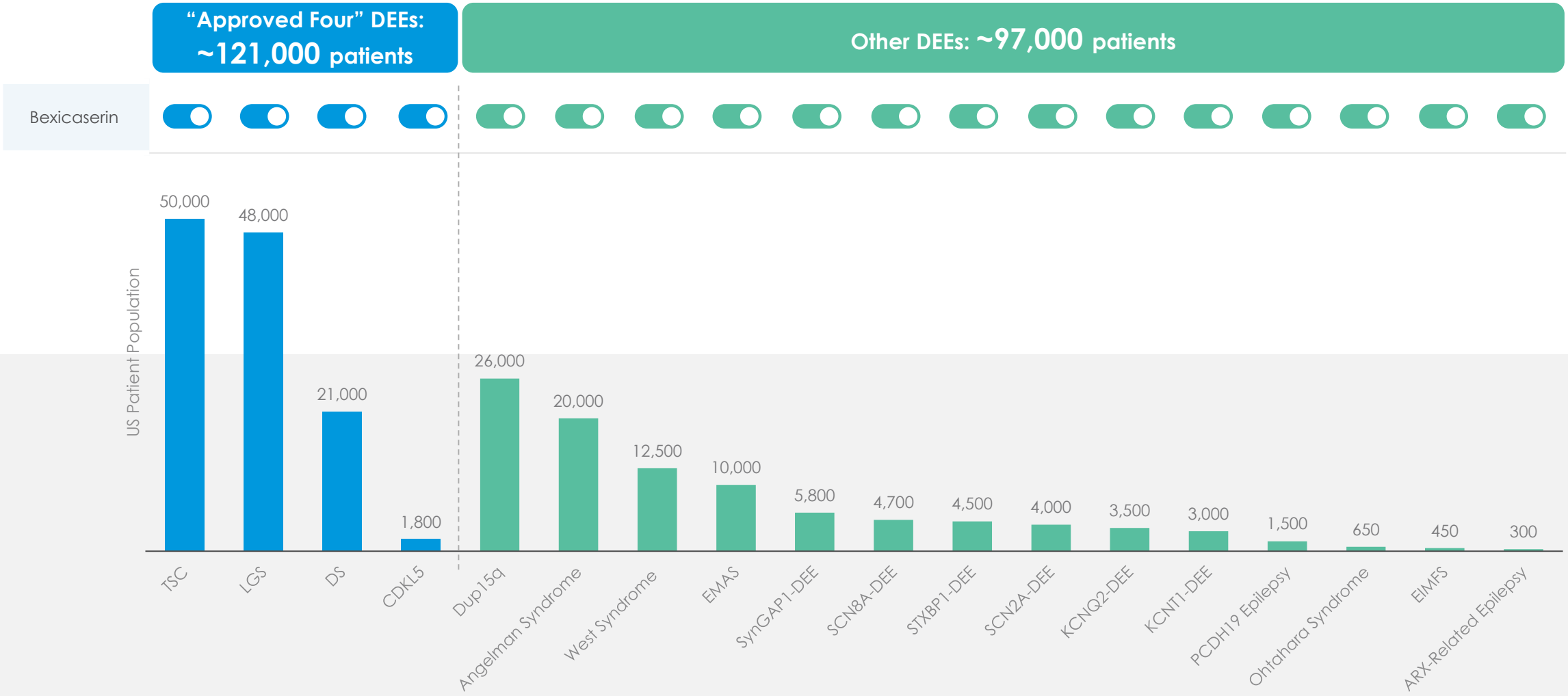
4

Number of DEEs with approved drugs

Significant room for improvement based on better understanding of biological drivers of disease

Source: Company presentations and International League Against Epilepsy
Note: Approved drug count does not account for Daybue trofinetide, which is indicated for the broader patient population in Rett Syndrome vs. the subset with epilepsy

Sizing the Potential Opportunity Across All DEEs Beyond the Approved Four DEEs



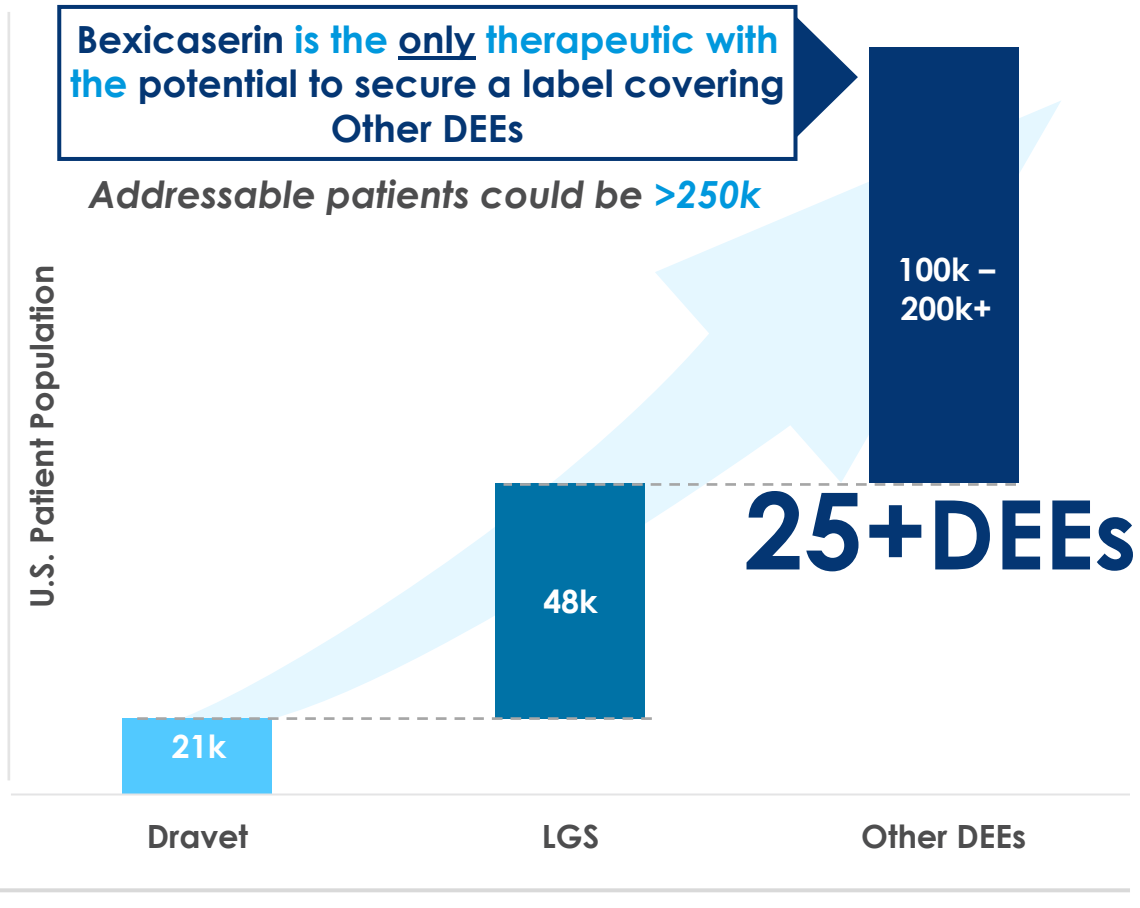
Source: Company filings, Dravet Syndrome Foundation and LGS Foundation

Framing the Bexicaserin Commercial Opportunity

Totality of DEE Opportunity is Significant, With High Unmet Need

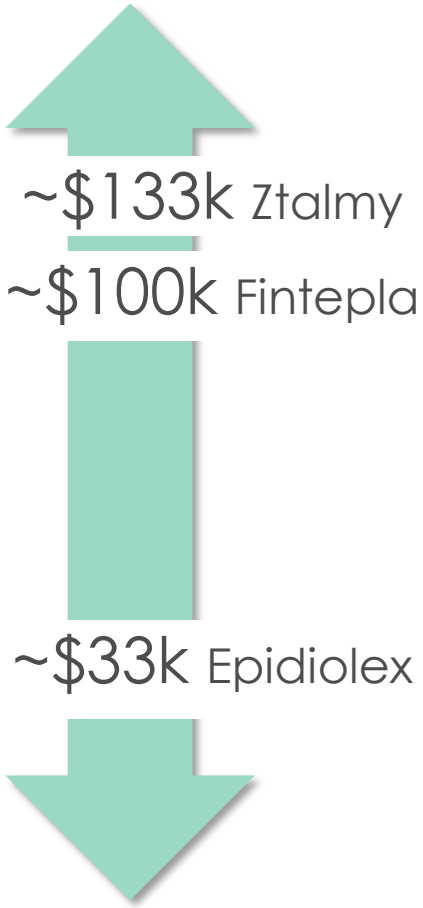
Bexicaserin is the only therapeutic with the potential to secure a label covering Other DEEs

Addressable patients could be >250k



Pivotal Study Plan — Study 302; Study 301 — ***Aligned with FDA on broad DEE expansion plan***

Broad Range of Pricing for Recent Analogues



Reflects announced prices (per year) at launch; actual price varies by patient weight

TAM Supporting Potential Blockbuster Asset

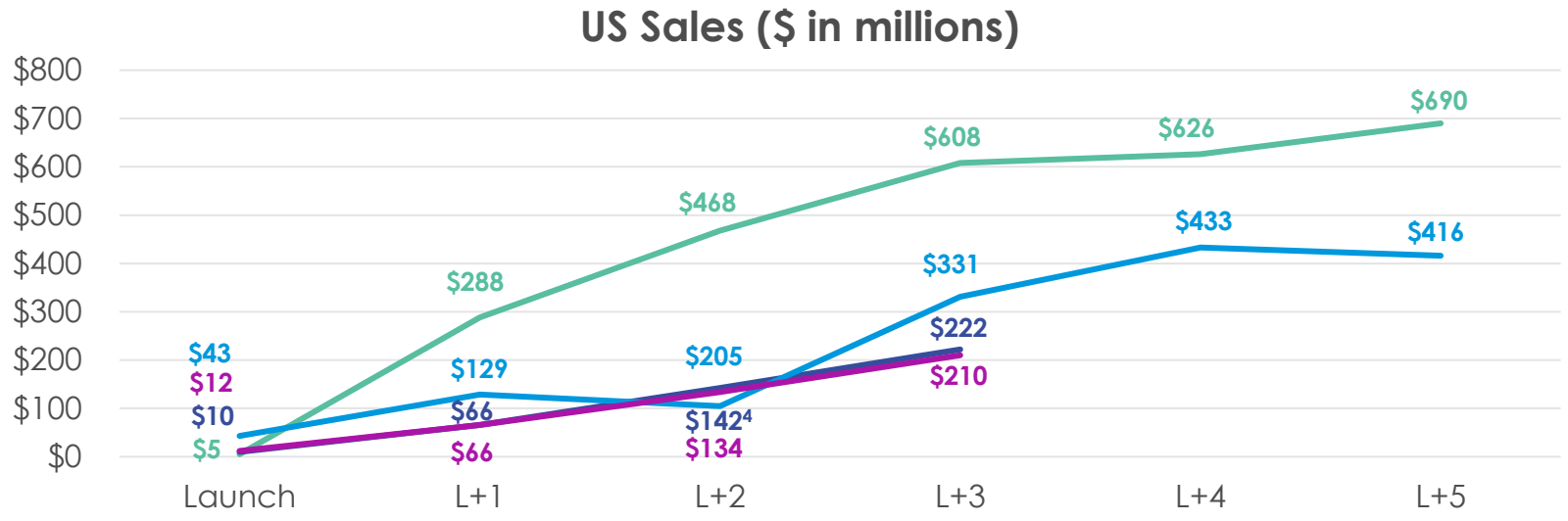
Unlocking the DEE Indication Adds Significant Size to an Already Large Addressable Market with High Unmet Medical Need

Regardless of pricing, total DEEs TAM supports blockbuster asset potential

Source: Public filings, Dravet Syndrome Foundation and LGS Foundation.
Note: LGS = Lennox-Gastaut Syndrome; DEE = Developmental and Epileptic Encephalopathy
Ztalmy, Fintepla and Epidiolex are registered trademarks of third parties not affiliated with Longboard

Select Recent Launches of Anti-Seizure Medications

Based on Commercial Launch, Rare Epilepsy Drugs Outcompete Focal Epilepsy Drugs



	DEE Focused		Partial-Onset Focused	
	Fintepla[2]	Epidiolex[1]	Xcopri[3]	Vimpat[2]
US Launch	Jul 2020	Nov 2018	May 2020	Jun 2009
US Total Addressable Pts[5]	~69,000	~119,000	N/A	N/A
# of Pts in Initial P3 Study[6]	263 (LGS), 232 (DS)	396 (LGS), 120 (DS), 224 (TSC)	655	1,300 (partial-onset), 242 (PGTC)

Indication Overview

Fintepla (≥2 years of age)
(Fenfluramine)
DS, LGS

Epidiolex (≥1 year of age)
(Cannabidiol)
DS, LGS, TSC

Xcopri (Adult Patients)
(Cenobamate)
- Partial-onset Seizures

Vimpat
(Lacosamide)
- Partial-onset Seizures (≥1 month of age)
- PGTC (≥4 years of age)

Source: Press releases, company filings, presentations and Evaluate Pharma as of 8/23/24
Note: ND denotes values that are not disclosed; foreign-reported revenues were converted to USD at YE spot rates
1. Based on GW public filings pre-acquisition & equity research est. post-acquisition (since US sales figures of Epidiolex are not publicly disclosed)
2. Based on public filings except the year of Zogenix's acquisition in which equity research estimates were used
3. Per SK Biopharmaceuticals public filings
4. Per UCB financials reporting $114M in US sales from 3/7/22 to YE'22 since closing of acquisition; Zogenix sales contribution from 1/1/22 to 3/6/22 per equity research estimates from Evaluate Pharma as of 8/23/24
5. Dravet Syndrome Foundation, LGS Foundation
6. Patient count includes all arms of the study (including placebo); excludes studies ran in already-approved indications

Definitions: DS=Dravet syndrome, LGS = Lennox-Gastaut syndrome, TSC = Tuberous sclerosis, CDD = CDKL5 deficiency disorder

Global Strategy for Broad Optimization

Differentiation

- Market research US, EU + UK to understand unmet needs and opportunities for differentiation
- KOL advisory boards
- Preliminary positioning work
- Scientific narrative
- MOA
- Data generation plan

Payers

- US payer research
- Advice meetings with GBA and NICE
- HEOR
- Value proposition
- Modeling
- DEE burden of illness

Global Reach

- GM for Europe / International
- Global congress strategy
- Global commercial strategy

DEE Education

- Medical education initiative
- Collaboration with professional societies and patient advocacy organizations
- Field medical team
- CME grants

Timelines & Financial Summary

BRANDI ROBERTS

EVP, CHIEF FINANCIAL OFFICER

Bexicaserin Planned Key Value Creation Milestones

Clinical Milestones:

2024	2025	2026	2027
DEEp Ocean Initiation		DEEp Enrollment Completion	US NDA Submission
DEEp Sea Initiation	PACIFIC OLE Data	DEEp Ph 3 Topline Data	US Approval / Launch
			DEEp Ph 3 OLE Data

Other Potential Milestones:

- Additional regulatory milestones (US + ROW)
- Continue to generate differentiating data
- Strong presence and continued education at medical meetings (globally)
- Publications in peer-reviewed journals
- BID progress & updates
- Non-seizure outcomes studies
- Potential regional partnerships
- Health Economic Outcomes Research

Financial Summary & Milestones

Cash, Cash Equivalents & Investments

$304.9 million

As of June 30, 2024

Shares Outstanding

38.9 million

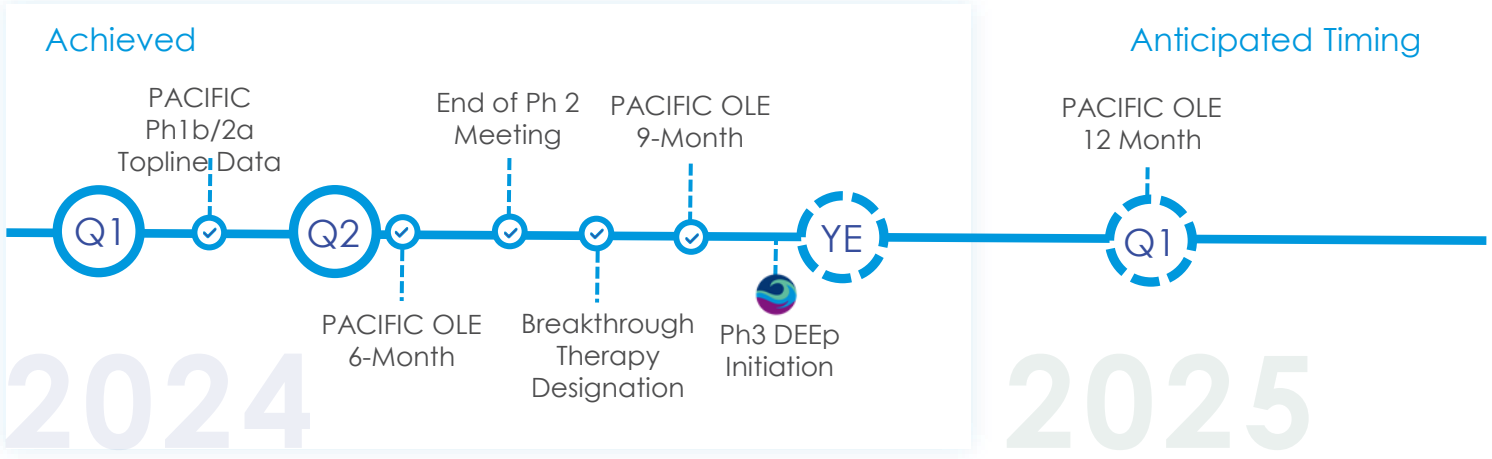
As of July 30, 2024

Second Quarter 2024 Operating Expenses

$25.6 million

- R&D - $20.4 million
- G&A - $5.2 million

Bexicaserin (LP352)



LP659

*Subject to regulatory discussions

Questions & Answers Session

Thank you

Nasdaq: LBPH

IR@LONGBOARDPHARMA.COM