UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): March 12, 2024

Longboard Pharmaceuticals, Inc.
(Exact name of Registrant as Specified in Its Charter)

Delaware	**1-40192**	**84-5009619**
(State or Other Jurisdiction of Incorporation)	**(Commission File Number)**	**(IRS Employer Identification No.)**
4275 Executive Square, Suite 950 La Jolla, CA		**92037**
(Address of Principal Executive Offices)		**(Zip Code)**

Registrant's Telephone Number, Including Area Code: (858) 789-9283

N/A
(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common stock, par value $0.0001 per share	LBPH	The Nasdaq Global Market

Indicate by check mark whether the registrant is an emerging growth company as defined in Rule 405 of the Securities Act of 1933 (§ 230.405 of this chapter) or Rule 12b-2 of the Securities Exchange Act of 1934 (§ 240.12b-2 of this chapter).

Emerging growth company ☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Item 2.02 Results of Operations and Financial Condition.

On March 12, 2024, Longboard Pharmaceuticals, Inc. ("Longboard") issued a press release announcing its financial results for the year ended December 31, 2023. A copy of the press release is attached hereto as Exhibit 99.1.

The information contained under this Item 2.02, including Exhibit 99.1 attached hereto, shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liability of that section, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933, as amended, or under the Securities Exchange Act of 1934, as amended, regardless of any general incorporation language in any such filing, unless Longboard expressly sets forth in such filing that such information is to be considered "filed" or incorporated by reference therein.

Item 7.01 Regulation FD Disclosure.

Included as Exhibit 99.2 to this Form 8-K are slides that are part of a corporate presentation dated March 12, 2024, which are incorporated herein by reference. We intend to utilize these slides and their contents in various meetings with securities analysts, investors and others.

The information in this Item 7.01 of this Current Report on Form 8-K, including Exhibit 99.2, shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liabilities of that section or Sections 11 and 12(a)(2) of the Securities Act of 1933, as amended. The information contained in this Item 7.01, including Exhibit 99.2, shall not be incorporated by reference into any filing we make with the U.S. Securities and Exchange Commission ("SEC"), whether before or after the date hereof, regardless of any general incorporation language in such filing.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits.

Exhibit No.	Description
99.1	Press release dated March 12, 2024
99.2	Corporate presentation dated March 12, 2024
104	Cover Page Interactive Data File (embedded within the Inline XBRL document)

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Longboard Pharmaceuticals, Inc.

Date: March 12, 2024

By: */s/ Kevin R. Lind*
Kevin R. Lind
President and Chief Executive Officer

Exhibit 99.1

Longboard Pharmaceuticals Reports Full Year 2023 Financial Results and Provides Corporate Updates

- *Bexicaserin (LP352) Phase 1b/2a PACIFIC Study positive topline data in participants with Developmental and Epileptic Encephalopathies (DEEs) was reported in January*
- *Announcing an update to the primary efficacy endpoint data previously reported in January, which show further improvement in seizure reductions and no change in the reported safety results – bexicaserin achieved a median seizure reduction of 59.8% in countable motor seizures compared to 17.4% in the placebo group across the DEE study population. A median seizure reduction of 74.6% in Dravet Syndrome (DS), 50.8% in Lennox-Gastaut Syndrome (LGS) and 65.5% in DEE Other was achieved*
- *PACIFIC data to be presented at medical meetings in Q2 2024*
- *Preparing for End of Phase 2 Meeting with regulators and conducting start-up activities for bexicaserin's global Phase 3 program; expect to initiate the Phase 3 program by YE 2024*
- *LP659 first-in-human Phase 1 single-ascending dose (SAD) study topline data expected Q2 2024*
- *Completed public offering of common stock with gross proceeds of $241.5 million*

LA JOLLA, Calif., March 12, 2024 – Longboard Pharmaceuticals, Inc. (Nasdaq: LBPH), a clinical-stage biopharmaceutical company focused on developing novel, transformative medicines for neurological diseases, today provided a corporate update and reported full year 2023 financial results.

"I am extremely proud of what our team has accomplished starting with the immense effort that went into the PACIFIC Study in participants with DEEs. We are impressed with the data in this study showing evidence of a potentially clinically meaningful benefit for both overall median seizure reduction and seizure reduction across all subgroups for Dravet, LGS and DEE Other. We are motivated by the enthusiasm and anticipation from the DEE community for our Phase 3 program and look forward to providing additional details later in the year. With the completion of our recent financing, we believe we are well positioned to deliver on key milestones later this year, including presenting additional topline and open-label extension data from PACIFIC, conducting our End of Phase 2 Meeting with the FDA, and initiating our global Phase 3 program. We appreciate the tremendous support from our existing and new shareholders who play an integral part in the continued success of Longboard.

“We also look forward to Phase 1 topline SAD data next quarter from our second clinical-stage asset, LP659, an oral, centrally acting, highly selective S1P receptor modulator,” stated Kevin R. Lind, Longboard’s President and Chief Executive Officer.

PACIFIC STUDY UPDATE

- In January 2024, we announced positive topline data from the Phase 1b/2a PACIFIC Study evaluating bexicaserin (LP352) in 52 participants with a broad range of DEEs, including DS (4), LGS (29) and other DEEs (19). Of the 52 participants enrolled in the study, 43 participants were randomized to bexicaserin (DS=4, LGS=24, DEE Other=15) and 9 to placebo (DS=0, LGS=5, DEE Other=4). Of note, results were on top of current standard of care; participants were typically on 3-4 other anti-seizure medications.

- Following our review of the full data set, we are announcing an update to the previously reported primary efficacy endpoint data. The updated data, which show even further improvements in seizure reductions and do not change the reported safety results, reflect corrections made by the study’s contract research organization to their statistical programming errors. The following table outlines the revisions:

	Revised			**Previously Reported**		
Median percent change from baseline in countable motor seizure frequency:						
	Bexicaserin	Placebo	Delta	Bexicaserin	Placebo	Delta
Overall	59.8%	17.4%	42.4%	53.3%	20.8%	32.5%
DS	74.6%	N/A	N/A	72.1%	N/A	N/A
LGS	50.8%	17.4%	33.4%	48.1%	20.8%	27.3%
DEE Other	65.5%	32.2%	33.3%	61.2%	32.6%	28.6%

UPCOMING MILESTONES:

Bexicaserin (LP352), an oral, centrally acting, 5-HT2C superagonist in development for the potential treatment of seizures associated with DEEs
- PACIFIC data to be presented at medical meetings in Q2 2024
- PACIFIC open-label extension (OLE) data expected in H2 2024
    - 100% of PACIFIC completers entered into the OLE study
- Preparing for our End of Phase 2 Meeting with U.S. Food and Drug Administration (FDA) and aligning with other regulatory agencies
- Planning for Phase 3 initiation before YE 2024

LP659, an oral, centrally acting, S1P receptor subtypes 1 and 5 (S1P1,5) modulator in development for rare neuroinflammatory conditions
- Phase 1 SAD topline data expected in Q2 2024

FULL YEAR 2023 FINANCIAL RESULTS:

Balance Sheet Highlights

At December 31, 2023, Longboard's cash, cash equivalents and short-term investments were approximately $48.5 million. On January 8, 2024, we completed a public offering of 11,500,000 shares of common stock and received gross proceeds of $241.5 million before deducting underwriting discounts and commissions of $14.5 million and offering expenses of $0.5 million. As of January 31, 2024, Longboard's cash, cash equivalents and short-term investments were approximately $272.4 million.

Operating Results

Research and development expenses were $43.8 million for the year ended December 31, 2023, an increase of $9.2 million or 26.3%, compared to $34.6 million for the year ended December 31, 2022. The net increase of $9.2 million is primarily related to increases of $6.0 million in preclinical and clinical trial expenses related to bexicaserin, $2.7 million in personnel-related expenses, $0.5 million in other preclinical programs and early stage research expenses and $0.2 million of other miscellaneous expenses, offset by a decrease of $0.3 million in preclinical and clinical trial expenses related to LP659.

General and administrative expenses were $13.0 million for the year ended December 31, 2023, an increase of $2.8 million or 28.0%, compared to $10.2 million for the year ended December 31, 2022. The net increase of $2.8 million is primarily related to increases of $1.7 million in personnel-related costs, $1.2 million of professional services and consulting expenses, and $0.4 million of other miscellaneous expenses, offset by a decrease of $0.5 million in insurance expense.

ABOUT LONGBOARD PHARMACEUTICALS

Longboard Pharmaceuticals, Inc. is a clinical-stage biopharmaceutical company focused on developing novel, transformative medicines for neurological diseases. Longboard is working to advance a portfolio of centrally acting product candidates designed to be highly selective for specific G protein-coupled receptors (GPCRs). Longboard's small molecule product candidates are based on more than 20 years of GPCR research. Longboard plans to advance bexicaserin (LP352), an oral, centrally acting 5-hydroxytryptamine 2C (5-HT2C) receptor superagonist, with no observed impact on 5-HT2B and 5-HT2A receptor subtypes, into a global Phase 3 program. Longboard recently reported positive topline data from a Phase 1b/2a clinical trial (the PACIFIC Study) evaluating bexicaserin in participants ages 12 to 65 years old with Developmental and Epileptic Encephalopathies (DEEs), including Lennox-Gastaut syndrome, Dravet syndrome and other DEEs. Longboard is also evaluating LP659, an oral, centrally acting, sphingosine-1-phosphate (S1P) receptor subtypes 1 and 5 modulator, which is in development for the potential treatment of rare neuroinflammatory conditions. Longboard is conducting a Phase 1 single-ascending dose (SAD) clinical trial for LP659 in healthy volunteers, with topline data expected in the second quarter of 2024.

FORWARD-LOOKING STATEMENTS

Certain statements in this press release are forward-looking statements that involve a number of risks and uncertainties. In some cases, you can identify forward-looking statements by words such as "to be",

“expect”, “focused on”, “anticipation”, “look forward”, “well positioned”, “plan”, “working to”, “designed to”, the negative, plural or other tenses of these words, references to specific future dates or time periods, or other comparable language, and they may include, without limitation, statements about the following: Longboard’s clinical and preclinical product candidates and programs, including their advancement (including plans for an End of Phase 2 Meeting and for alignment with other regulatory agencies and plans for a global Phase 3 program for bexicaserin), timing of study initiation (including for a global Phase 3 program for bexicaserin), timing of topline data (including for the PACIFIC OLE study for bexicaserin and the Phase 1 SAD study for LP659), their potential (including to be transformative, best-in-class, clinically meaningful or highly selective, the number and type of conditions they may address and their commercial opportunity), and their design and characteristics; upcoming presentations (including of additional PACIFIC topline data); Longboard’s cash position, expenses and runway to support operations; and Longboard’s focus and work. For such statements, Longboard claims the protection of the Private Securities Litigation Reform Act of 1995. Actual events or results may differ materially from Longboard’s expectations. Factors that could cause actual results to differ materially from those stated or implied by Longboard’s forward-looking statements include, but are not limited to, the following: risks related to Longboard’s limited operating history, financial position and need for additional capital; Longboard will need additional managerial and financial resources to advance all of its programs, and you and others may not agree with the manner Longboard allocates its resources; risks related to the development and commercialization of Longboard’s product candidates; Longboard’s product candidates are in the early phase of a lengthy research and development process, the timing, manner and outcome of research, development and regulatory review is uncertain, and Longboard’s product candidates may not advance in research or development or be approved for marketing; enrolling participants in Longboard’s ongoing and intended clinical trials is competitive and challenging; PACIFIC Study participants’ diagnoses are as of time of screening and are subject to change; risks related to unexpected or unfavorable new data; nonclinical and clinical data is voluminous and detailed, and regulatory agencies may interpret or weigh the importance of data differently and reach different conclusions than Longboard or others, request additional information, have additional recommendations or change their guidance or requirements before or after approval; results of clinical trials and other studies are subject to different interpretations and may not be predictive of future results; topline data may not accurately reflect the complete results of a particular study or trial; risks related to relying on licenses or collaborative arrangements; other risks related to Longboard’s dependence on third parties; competition; product liability or other litigation or disagreements with others; government and third-party payor actions, including relating to reimbursement and pricing; risks related to regulatory compliance; and risks related to Longboard’s and third parties’ intellectual property rights. Additional factors that could cause actual results to differ materially from those stated or implied by Longboard’s forward-looking statements are disclosed in Longboard’s filings with the Securities and Exchange Commission (SEC). These forward-looking statements represent Longboard’s judgment as of the time of this release. Longboard disclaims any intent or obligation to update these forward-looking statements, other than as may be required under applicable law.

CORPORATE CONTACT:

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Head of Investor Relations
IR@longboardpharma.com
858.789.9283

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Financial Tables Follow

LONGBOARD PHARMACEUTICALS, INC.
BALANCE SHEETS

(in thousands, except share and per share data)	December 31, 2023	December 31, 2022
ASSETS		
Current assets:		
Cash and cash equivalents	$ 14,331	$ 10,775
Short-term investments	34,167	56,814
Prepaid expenses and other current assets	1,723	2,249
Total current assets	50,221	69,838
Right-of-use assets	472	736
Property and equipment	4	9
Other long-term assets	—	33
Total assets	$ 50,697	$ 70,616
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable	$ 1,001	$ 1,310
Accrued research and development expenses	4,556	4,168
Accrued compensation and related expenses	3,374	2,438
Accrued other expenses	368	490
Right-of-use liabilities, current portion	475	358
Total current liabilities	9,774	8,764
Right-of-use liabilities, net of current portion	—	382
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, $0.0001 par value; authorized shares - 10,000,000 at December 31, 2023 and 2022, respectively; issued and outstanding shares - none at December 31, 2023 and 2022	—	—
Voting common stock, $0.0001 par value; authorized shares - 300,000,000 at December 31, 2023 and 2022, respectively; issued and outstanding shares - 22,096,494 and 13,585,950 at December 31, 2023 and 2022, respectively	2	1
Non-voting common stock, $0.0001 par value; authorized shares - 10,000,000 at December 31, 2023 and 2022, respectively; issued and outstanding shares - 2,420,755 and 3,629,400 at December 31, 2023 and 2022, respectively	—	—
Additional paid-in capital	181,563	148,303
Accumulated other comprehensive loss	(78)	(692)
Accumulated deficit	(140,564)	(86,142)
Total stockholders' equity	40,923	61,470
Total liabilities and stockholders' equity	$ 50,697	$ 70,616

LONGBOARD PHARMACEUTICALS, INC.
STATEMENTS OF OPERATIONS AND COMPREHENSIVE LOSS

(in thousands, except share and per share data)	Year Ended December 31, 2023	2022
Operating expenses:		
Research and development	$ 43,752	$ 34,638
General and administrative	13,007	10,160
Total operating expenses	56,759	44,798
Loss from operations	(56,759)	(44,798)
Interest income, net	2,405	837
Other income (expense)	(68)	16
Net loss	$ (54,422)	$ (43,945)
Net loss per share, basic and diluted	$ (2.39)	$ (2.56)
Weighted-average shares outstanding, basic and diluted	22,726,325	17,150,907
Comprehensive loss:		
Net loss	$ (54,422)	$ (43,945)
Unrealized gain (loss) on short-term investments	614	(528)
Comprehensive loss	$ (53,808)	$ (44,473)

Exhibit 99.2

LONGBOARD PHARMACEUTICALS

Corporate Presentation

MARCH 12, 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; anticipated milestones and timing; the prevalence of, unmet need associated with, and market opportunity for, DEEs; the potential of a broad DEE indication and a broad-spectrum ASM; the potential of bexicaserin (LP352) (including to be best-in-class, to satisfy unmet need, 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, including those associated with activity at certain receptors, to be indicated across a range of DEEs, to avoid drug-drug interactions, including through optimized dosing, to be desired or preferred by physicians, patients and caregivers, to change the DEE landscape, to provide the cornerstone to build a world-class epilepsy franchise, and to expand, broaden or capture market share); plans regarding a global Phase 3 program for bexicaserin (including the approach, characteristics and timing for such a program); the product profile sampled with HCPs and caregivers; the potential of LP659 (including to be best-in-class or a market leader, to address multiple neurological disorders, to have strong scientific rationale, to be commercially attractive, to have greater selectivity and internalization-based signaling, and to limit off-target effects); expectations and objectives regarding the Phase 1 SAD study for LP659 (including regarding the timing of topline data, the number of participants, and key study objectives); LP659 indication assessment; 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" 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: topline data may not reflect the complete or final results of a particular study or trial, and are subject to change; nonclinical and clinical data are voluminous and detailed, and regulatory agencies 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; our limited operating history; our history of incurring net losses and expectation that we will continue to incur net losses for the foreseeable future, and that we may never be profitable; our need for additional funding and related risks for our business, product development programs and future commercialization activities; the timing and success of clinical trials and preclinical studies we conduct; 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 commercialize our product candidates; 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; and other risks and factors disclosed in our filings with the U.S. Securities and Exchange Commission (the "SEC"). 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 (the "FDA") or any other regulatory authority.


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
Relevant M&A analogs
JAZZ - GW $7.2B
PFE - ARNA $6.7B
UCB - ZGNX $1.9B
Well-understood targets

Longboard's Potentially Best-in-Class Product Candidates*

Program	MOA	Therapeutic Area	Preclinical	Ph I	Ph II	Ph III	Anticipated Milestones
Bexicaserin (LP352)	5-HT2C Superagonist	DEEs and other refractory epilepsies					✓ PACIFIC Study Topline Data – Q1 2024 • PACIFIC Data at medical meetings – Q2 2024 • PACIFIC OLE Data – H2 2024 • Global Ph 3 Program Initiation – by YE 2024
LP659	S1P Receptor Modulator	Multiple neurological diseases					✓ Ph 1 Initiation – Q4 2023 • Ph 1 Single-Ascending Dose Data – Q2 2024

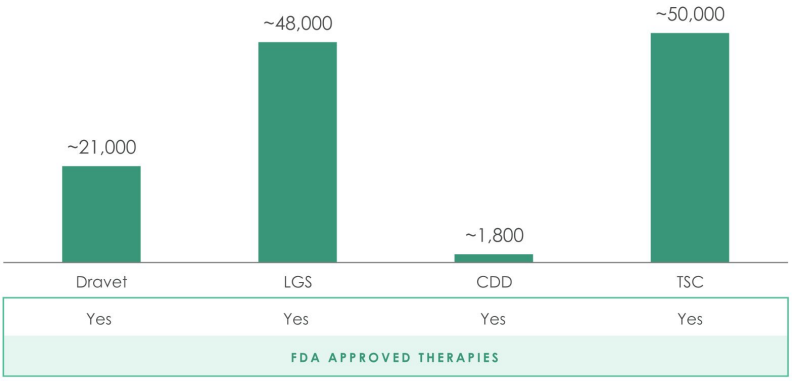
- We hold rights to other product candidates*
- We are eligible to receive royalties of 9.5% - 18.5% on sales of lorcaserin if approved for commercialization**

* Through a License Agreement with Arena
** Through a Royalty Purchase Agreement with Arena
Definitions: DEEs=developmental and epileptic encephalopathies; S1P=sphingosine 1-phosphate; PK=pharmacokinetics; PD=pharmacodynamics; EEG=electroencephalogram; OLE=Open-Label Extension

Developmental & Epileptic Encephalopathies (DEE) Landscape

4 DEE Syndromes Have Approved Therapies; 20+ Have None

"Approved 4" DEE Prevalence (US)



Other DEEs

- DUP15q Syndrome
- SCN2A-DEE
- SCN8A-DEE
- KCNQ2-DEE
- KCNQ3-DEE
- Angelman Syndrome
- Landau-Kleffner Syndrome
- Early Myoclonic Encephalopathy
- KCNT1-DEE
- SynGAP1-DEE
- Rett Syndrome
- Ohtahara Syndrome
- PCDH19
- EE w/ Continuous Spike-Wave
- West Syndrome
- Myoclonic Atonic Epilepsy
- Ring14
- Ring20
- Others

NO SPECIFICALLY APPROVED THERAPIES

The prevalence of all "Other DEEs" could exceed the total of the "Approved 4" combined

Sources: Dravet Syndrome Foundation, LGS Foundation
Definitions: LGS = Lennox-Gastaut Syndrome, CDD = CDKL5 Deficiency Disorder, TSC = Tuberous Sclerosis Complex; DEE = Developmental and Epileptic Encephalopathy

Surveyed HCPs Report a Need for More Effective and Safer Anti-Seizure Medications for Other DEEs

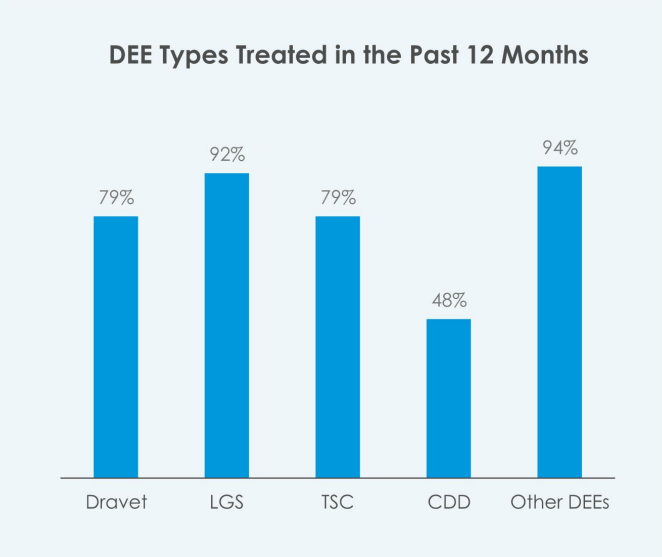
	Mean # of Seizures Per Week	Mean # of ASMs Per Patient
Dravet	12	3.4
LGS	19	3.5
TSC	6	3.0
CDD	13	2.9
Other DEEs	**13**	**3.2**

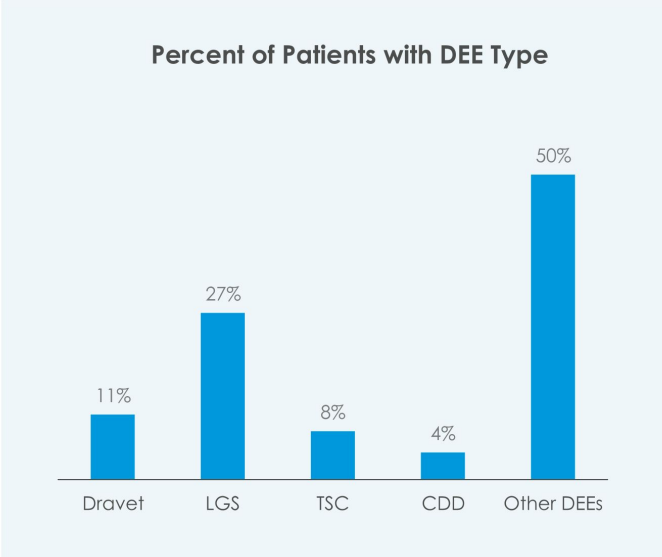
Unmet Needs for Patients with Other DEEs

Among those who treat patients with other DEEs (not "Approved 4")

Based on Longboard sponsored third-party qualitative and qualitative market research studies involving physicians specializing in neurology or epileptology. See slide 30 for more information about the studies.

Nearly All Surveyed HCPs Treat Patients with All DEE Diagnoses; Collectively, the Number of "Other DEEs" is Significant





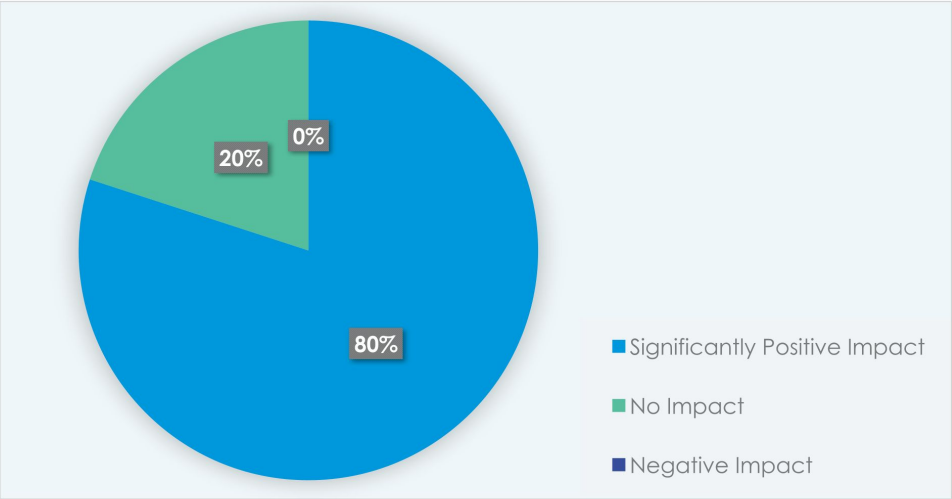
Based on Longboard sponsored third-party qualitative and qualitative market research studies involving physicians specializing in neurology or epileptology. See slide 30 for more information about the studies.

Surveyed HCPs Prefer a Highly Selective 5-HT2C Agonist* with a Broad DEE Indication, and Anticipate This Will Positively Impact DEE Patients' Treatment Options

80%

Anticipate a Broad DEE Indication will have a positive impact on treatment options for patients

0% Believe it would have a negative impact



Based on Longboard sponsored third-party qualitative and qualitative market research studies involving physicians specializing in neurology or epileptology. See slide 30 for more information about the studies.
*Survey sampled product profile for the 5-HT2C agonist that included an efficacy of 37-44% reduction in countable motor seizure frequency and generally well tolerated with BID dosing

DEE Indications Represent a **$6B** Total US + EU Market Opportunity[1]

A vast majority of the treatment options currently used are generic.

Fintepla
Peak Sales Estimate
(2027)

≥€800M

Epidiolex
Sales Estimate[4]
(2025)

>$1B

Fintepla
2023 Sales[2]

$226M

Epidiolex
2023 Sales[3]

$846M

1) Longboard and third-party research 2022 – projections for 2040 for US + EU4/UK, 2) UCB FY 2023 Earnings Release and presentation dated February 28, 2024, 3) Jazz Pharmaceuticals FY 2023 Earnings Release dated February 28, 2024, 4) Jazz Corporate Overview August 2023

Bexicaserin (LP352)

Potential Best-in-Class 5-HT2C Superagonist - Entering a Ph 3 Program with the Goal of Treating a Broad Range of DEEs

The Potential of Bexicaserin (LP352)

Greater Selectivity and Specificity

- 5-HT2 agonist designed to only bind to the 5-HT2C receptor*
- 5-HT2 agonist - no detected activity at receptors associated with significant adverse side effects: 5-HT2B (valvular heart disease and PAH) & 5-HT2A (psychiatric: insomnia, hallucinations, euphoria)

Preclinical Validation

- Reduced seizure activity in model of neuronal hyperexcitability in zebrafish
- Reduced epileptiform activity in fish and rodent models of disinhibition
- Reduced duration and number of epileptiform events in zebrafish model of Dravet Syndrome

Clinical Validation SAD/MAD in Healthy Volunteers

- In general, favorable safety & tolerability observed. AEs generally consistent with expected effects of serotonergic meds
- No observed food effect
- Potential prolactin biomarker which increased in a dose dependent and transient manner

Clinical Validation CSF/EEG ** in Healthy Volunteers

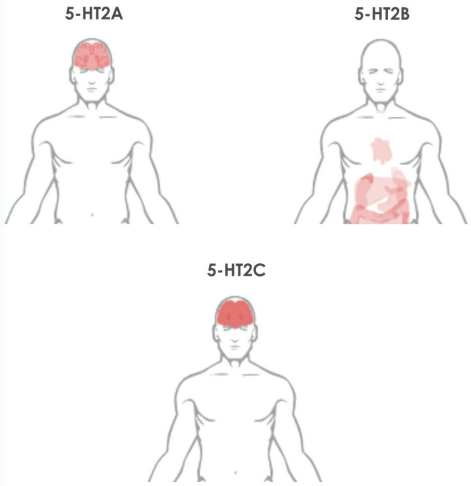
- Favorable safety & tolerability results observed, AEs generally consistent with previous studies
- Plasma & CSF PK concentration increased in a dose dependent & consistent manner
- Effects on qEEG activity within first few dose(s)
- Sustained dose-dependent effects on qEEG activity after continuous dosing, thus indicating receptor engagement

IP protection on Composition of Matter up to 2041* provides the opportunity to maximize the full potential of bexicaserin**

*Radioligand binding assays assessing >150 targets showed significant affinity only to 5-HT2C receptors
** Based on first two cohorts from the 102 study
***Composition of matter through 2036 with potential for PTE / PTA (2041)
Definitions: PAH = pulmonary arterial hypertension; AEs = adverse events; CSF = cerebrospinal fluid

Bexicaserin (LP352) Designed to be a Next-Generation 5-HT2C with Greater Selectivity and Specificity

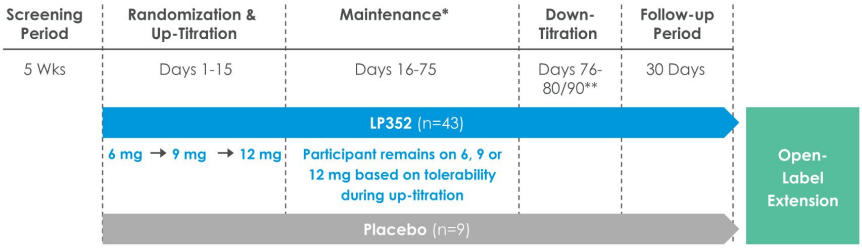
	Serotonin Receptor Subtype	EC_{50}, nM	Ki, nM	Potential Adverse Events Per Receptor Subtype
Bexicaserin (LP352) 5-HT2C Superagonist	**5-HT2C**	**~120**	**~50**	CNS, GI
	5-HT2B	Not detectable	Not detectable	n/a
	5-HT2A	Not detectable	Not detectable	n/a
Nordexfenfluramine (an active metabolite of fenfluramine) [1]	5-HT2C	72.4	10.4	CNS, GI
	5-HT2B	25.7	9.8	Cardiac, Pulmonary
	5-HT2A	1778	120.2	Psychiatric
Lorcaserin[2]	5-HT2C	39	13	CNS, GI
	5-HT2B	2380	147	n/a
	5-HT2A	553	92	Psychiatric



1 Third party study previously commissioned by Arena, 2 BELVIQ FDA approved prescribing information 06/2012; Note: The above table is for illustrative purposes only and is not a head-to-head comparison. Differences exist between in vitro study designs and methodologies, and caution should be exercised when comparing data across studies
Definitions: CNS= Central nervous system ; GI = Gastrointestinal; ASM = Anti-seizure medication
Graphic source: Human Protein Atlas

PACIFIC Study Topline Data

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

No Echocardiograms Required in PACIFIC

PACIFIC
Developmental and Epileptic Encephalopathies Study

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

* 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 Study Enrollment Summary

PACIFIC
Developmental and Epileptic Encephalopathies Study

52
Participants randomized

42 US

10 AUS

Adult/Pediatric participants
Range: 12-55
Mean: 24.3 / Median: 23.0

40 Adult (18+)

12 Peds (12-17)

Diagnosis

Dravet: 4

LGS: 29

Other DEE*: 19

*The diagnosis was at time of screening for PACIFIC and is subject to further refinement

Diagnostic Eligibility Criteria: Dravet Syndrome, Lennox-Gastaut Syndrome (LGS) and Other DEEs

PACIFIC Developmental and Epileptic Encephalopathies Study

All participants: 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

	Dravet Syndrome	LGS	DEE Other
Onset	Between 3–19 months of age	Before 8 years of age	Unprovoked seizures before 5 years of age
Seizure Type	Generalized tonic-clonic, unilateral clonic or bilateral clonic seizures	Tonic or tonic/atonic seizures & more than 1 type of generalized seizure (tonic-clonic, tonic-atonic, atonic, tonic, myoclonic or drop)	Combined focal and generalized seizure types, or multiple generalized seizure types
Developmental History	Initially normal, then delayed	Delayed	Delayed
EEG		Consistent with LGS diagnosis*	Slow or disorganized
Additional Criteria	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	More than 1 type of generalized seizure for ≥6 months before screening	No history of idiopathic generalized seizures

*Abnormal inter-ictal EEG background activity with inter-ictal slow spike-and-wave pattern ≤2.5 Hz or inter-ictal generalized paroxysmal fast activity

Bexicaserin Has the Potential to Change the DEE Landscape

In the Phase 1b/2a PACIFIC Study

59.8%

Median Reduction in Seizures*

- **74.6%** **Dravet**
- **50.8%** **LGS**
- **65.5%** **DEE Other**

- **Bexicaserin provides the cornerstone to potentially build a world-class epilepsy franchise**
- Studies to date highlight bexicaserin as potentially **best-in-class**
- **Composition of matter IP protection up to 2041**** provides the opportunity to maximize the full potential of LP352
- Moving forward into a **global Phase 3 program by YE 2024**

*Not statistically significant
**Composition of matter through 2036 with potential for PTE / PTA (2041)

Topline Participant Disposition & Safety Results Summary

Demographics, Baseline Characteristics & Concomitant Medications

Parameter n(%)	Statistics	Bexicaserin (N=43)	Placebo (N=9)	Overall (N=52)
Age (Years)	Mean	23.8	26.7	24.3
	Standard Deviation	9.62	7.73	9.31
	Median	23.0	23.0	23.0
	Min, Max	12, 55	19, 41	12, 55
Sex	Male	21 (48.8)	7 (77.8)	28 (53.8)
	Female	22 (51.2)	2 (22.2)	24 (46.2)
Weight (kg)	Median	55.20	72.76	59.36
	Min, Max	29.2, 96.0	45.8, 110.7	29.2, 110.7
BMI (kg/m^2)	Median	22.4	28.1	23.0
	Min, Max	17, 35	19, 34	17, 35
Baseline Countable Motor Seizures (Median)*	per 28-day period	40.0	24.1	38.2
Concomitant Medications**	Clobazam	21 (48.8)	2 (22.2)	23 (44.2)
	Cannabidiol	14 (32.6)	3 (33.3)	17 (32.7)
	Lamotrigine	13 (30.2)	4 (44.4)	17 (32.7)
	Levetiracetam	16 (37.2)	1 (11.1)	17 (32.7)

*Baseline seizure variability was expected and within a normal range compared to other clinical trials in the DEE space
**Represents some of the most common concomitant medications

Participant Disposition

n(%)	Overall		Dravet Syndrome		Lennox-Gastaut Syndrome (LGS)		DEE Other	
	Bexicaserin	Placebo	Bexicaserin	Placebo	Bexicaserin	Placebo	Bexicaserin	Placebo
Safety Set	43 (100)	9 (100)	4 (9.3)	0	24 (55.8)	5 (55.6)	15 (34.9)	4 (44.4)
Full Analysis Set	35 (81.4)	9 (100)	3 (7.0)	0	17 (39.5)	5 (55.6)	15 (34.9)	4 (44.4)
Participants Completed	32 (74.4)	9 (100)	3 (7.0)	0	15 (34.9)	5 (55.6)	14 (32.6)	4 (44.4)
Participants Discontinued	11 (25.6)	0	1 (2.3)	0	9 (20.9)	0	1 (2.3)	0
Adverse Event	9 (20.9)	0	1 (2.3)	0	7 (16.3)	0	1 (2.3)	0
Consent withdrawn	1 (2.3)	0	N/A	N/A	1 (2.3)	0	N/A	N/A
Lost to follow-up	1 (2.3)	0	N/A	N/A	1 (2.3)	0	N/A	N/A

Note: Percentages are based on the number of participants in the Enrolled (Safety) Set
Safety Set includes all participants who signed informed consent or those who had their legally authorized representative sign for them
Full Analysis Set includes all participants in the Safety Set who complete Part 1 (titration) and have at least 1 post-baseline seizure measurement during Part 2 (maintenance)
Efficacy analysis was on the Full Analysis Set includes all participants in the Safety Set who complete Part 1 (titration) and have at least 1 post-baseline seizure measurement during Part 2 (maintenance)

Safety Results Summary

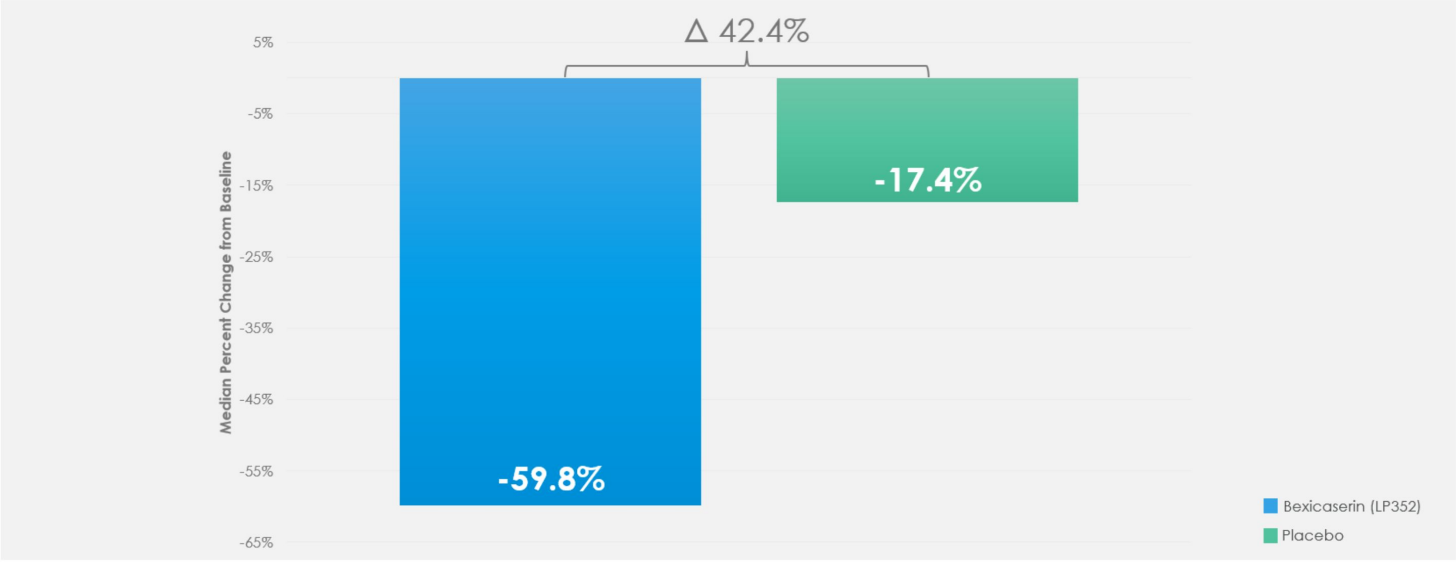
n(%)	Bexicaserin (LP352) (N=43)	Placebo (N=9)	Overall (N=52)
Participants with any TEAEs	35 (81.4)	8 (88.9)	43 (82.7)
Drug-Related TEAEs	28 (65.1)	3 (33.3)	31 (59.6)
TEAEs Leading to Discontinuation	9 (20.9)	0	9 (17.3)
TEAEs Leading to Discontinuation (Titration)	7 (16.3)	0	7 (13.5)
TEAEs Leading to 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**

Definitions: TEAE = Treatment Emergent Adverse Event; SAE = Serious Adverse Event, AE = Adverse Event

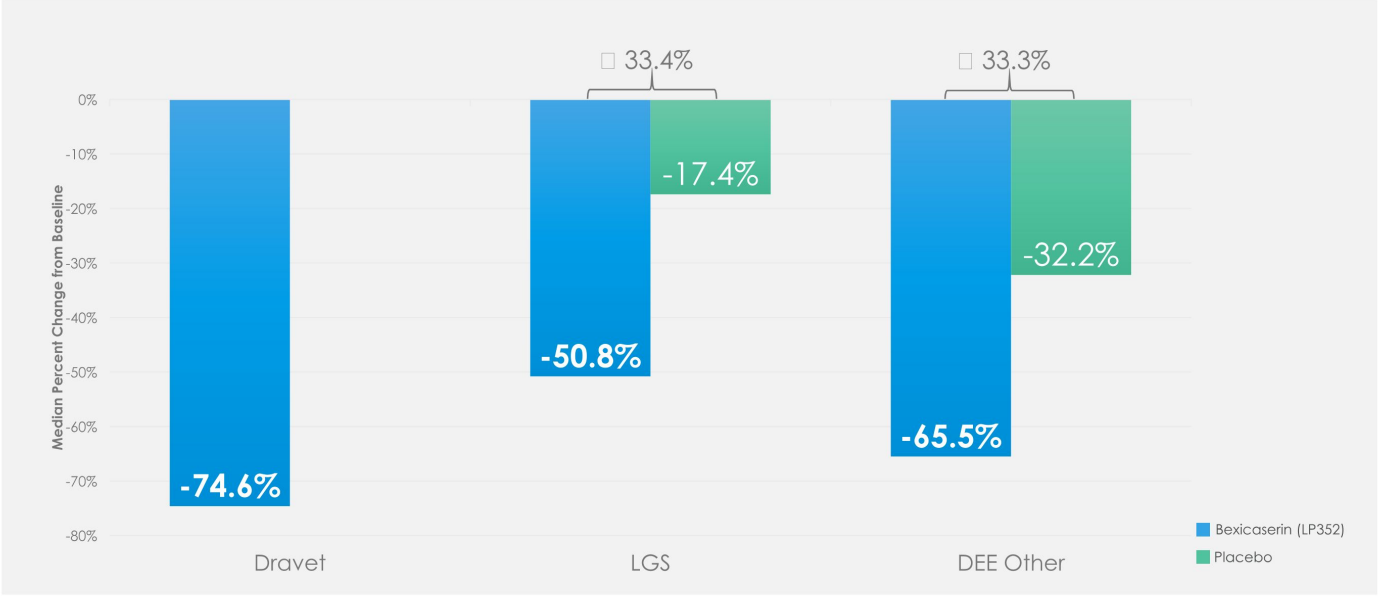
Topline Efficacy Results

Bexicaserin Achieved Median Seizure Reduction of 59.8% in Countable Motor Seizures Compared to 17.4% for Placebo Across the DEE Study Population



Bexicaserin Achieved Placebo-Adjusted Mean Seizure Reduction of 52.0% (not the primary efficacy endpoint)

Bexicaserin Achieved Median Seizure* Reduction Across Dravet, LGS, DEE Other Cohorts



*Countable Motor Seizures

PACIFIC Results Pave the Way for Global Phase 3 Program

Bexicaserin (LP352) achieved a median percent reduction from baseline in seizure frequency during the treatment period of:

- **59.8%** in broad DEE population (42.4% placebo-adjusted)
- **74.6%** in Dravet cohort
- **50.8%** in LGS cohort (33.4% placebo-adjusted)
- **65.5%** in DEE Other cohort (33.3% placebo-adjusted)

Results were shown on top of a contemporary polytherapy background with multiple ASMs including cannabidiol (**32.7% of participants were receiving cannabidiol**)

Favorable safety and tolerability results

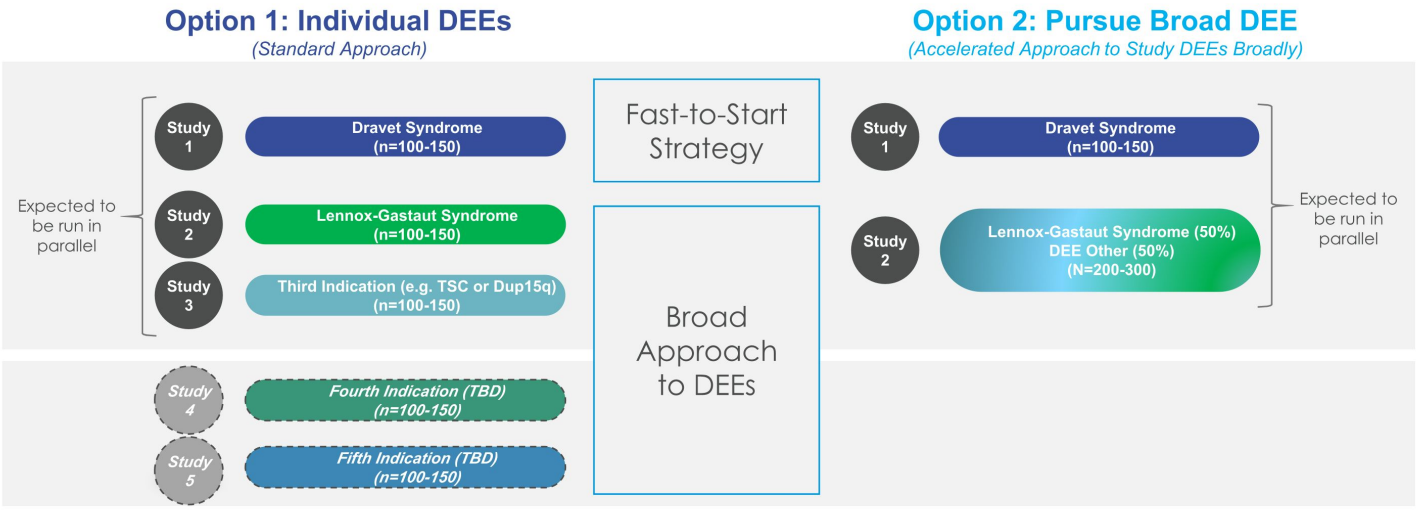
- **No echocardiograms required** in PACIFIC study
- Metabolized via UGT pathway – potentially reduces risk of Drug-Drug Interactions
- 86% of participants achieved the highest dose of 12 mg of bexicaserin in the maintenance period

100% of PACIFIC participants who completed the study **entered the Open Label Extension Study**

*Definitions: ASMs = Anti-Seizure Medications; UGT = Uridine Diphosphate Glucuronosyltransferase

Bexicaserin Phase 3 Global Program - Potential Paths Forward

Subject to Discussion with Regulatory Agencies



Planned Study Parameters:

Primary Endpoint: Reduction in Countable Motor Seizures

Ages: ≥ 2 to ≤ 65 yrs old (weight-based dosing for pts of lower weight/age)

Sites: ~80 sites across the US, AUS, EU, other potential regions

Open-Label Extension (OLE): Participants who complete any of Ph 3 studies are eligible to enter a 52-week OLE

Indicates to be determined at a later date

Commercial Opportunity for Bexicaserin (LP352)

Potential Best-in-Class Profile Provides Multiple "Ways to Win"

Validating Continued Unmet Need in DEEs and Potential Of Bexicaserin (LP352)

Background & Methodology

Quantitative HCP Research
100 Physicians

Objective: Validating Unmet Needs And LP352 Potential

Criteria:

- Board Certified HCPs specializing in **Neurology** or **Epileptology**
- Treat at least **20 patients with DEEs** in the past 12 months
- Familiar with **Fintepla** and **Epidiolex**
- **Note:** Most participants have some clinical experience with **Epidiolex** (92%) & **Fintepla** (68%)

Qualitative HCP Research
20 Physicians

Objective: Deeper Understanding Of Quantitative Findings (How & Why)

Criteria:

- Board Certified HCPs specializing in **Neurology** or **Epileptology**
- Treat at least **25 patients with DEEs** in the past 12 months
- Familiar with **Fintepla** and **Epidiolex**

Epileptologists = 5 (4 peds, 1 adult)

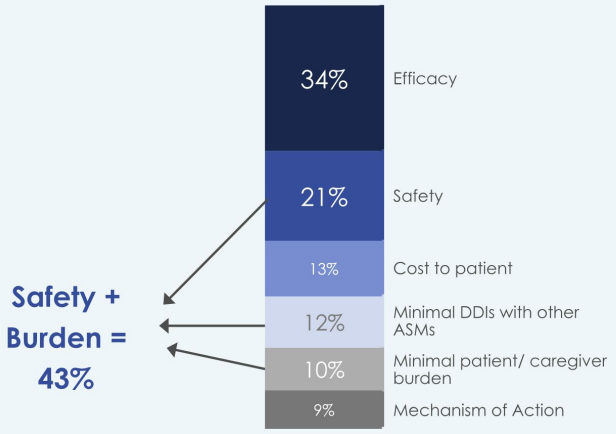
Neurologists = 15 (13 peds, 3 adult)

HCP = Health care providers
Based on Longboard sponsored third-party qualitative and qualitative market research studies involving physicians specializing in neurology or epileptology.Survey sampled product profile for LP352 case reviewed in this presentation: efficacy of 37-44% reduction in countable motor seizure frequency and generally well tolerated with BID dosing

Surveyed HCPs Evaluate ASMs by Balancing Efficacy, Safety & Burden

Influence on ASM Decisions

When allocating 100 points across factors



> If I see a patient with epilepsy and give them enough valium, **they'll be seizure free, but then they'll be sleeping all day. That's not quality of life.** So, we must find the cocktail that gives them the **best seizure control with the least amount of side effects."**
>
> *– Epileptologist, Primarily Pediatric*

Based on Longboard sponsored third-party qualitative and qualitative market research studies involving physicians specializing in neurology or epileptology. See slide 30 for more information about the studies.
*Survey sampled product profile for the 5-HT2C agonist that included an efficacy of 37-44% reduction in countable motor seizure frequency and generally well tolerated with BID dosing

LP659

Centrally Acting, Highly Selective Sphingosine-1-Phosphate (S1P) Receptor Modulator Targeting Multiple Neurological Diseases

LP659 Potential Best-in-Class S1P Receptor Modulator with Broad Applicability

STRONG SCIENTIFIC RATIONALE

- ✓ Centrally acting S1P receptor modulator
- ✓ Rapid onset & offset of action
- ✓ Highly selective to S1PR1,5
- ✓ No impact on S1PR2,3 in preclinical models
- ✓ High oral bioavailability with direct impact on CNS glial cell S1P receptors

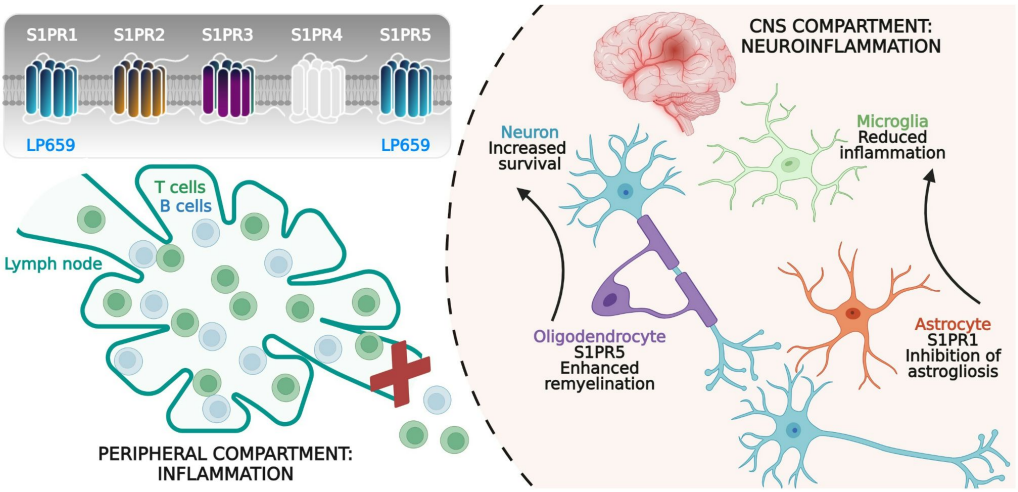
COMMERCIALLY ATTRACTIVE

- ✓ S1P receptor modulators have generated billions of dollars of revenues in CNS indications
- ✓ Designed to potentially address multiple neurological disorders
- ✓ Opportunity for market leadership in S1P receptor modulation in CNS

S1PR1 Modulation Selectively Reduces Migration of Lymphocytes From Lymph Nodes

Treatment with S1P Receptor Modulator

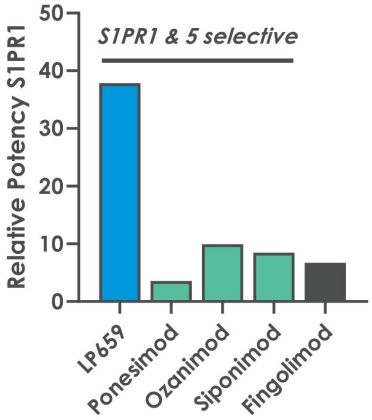
- Functionally antagonizes S1PR1 by inducing receptor internalization and degradation, disrupting normal lymphocyte subset egress
- Decreases release of inflammatory cytokines and reduce organ/tissue damage
- Maintains immune surveillance
- Functional antagonism of S1PR1 receptor in astrocytes expected to attenuate neuroinflammation



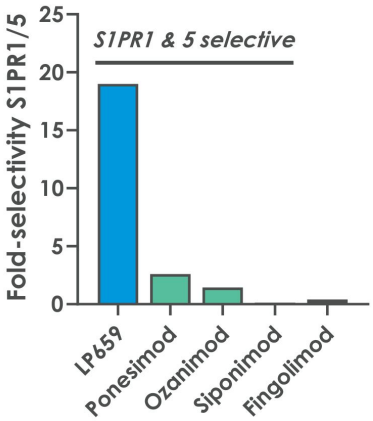
Sources: Chun, Drugs 2021 (81:207–231) https://doi.org/10.1007/s40265-020-01431-8; Appel, www.co-neurology.com Wolters Kluwer Health, Inc. 2021(Volume 34, Number 5)
Created with BioRender.com

LP659 Designed to be a Potentially Next Generation Centrally-Acting S1PR1 Agonist with Greater Selectivity and Internalization-Biased Signaling

Most potent at S1PR1 internalization



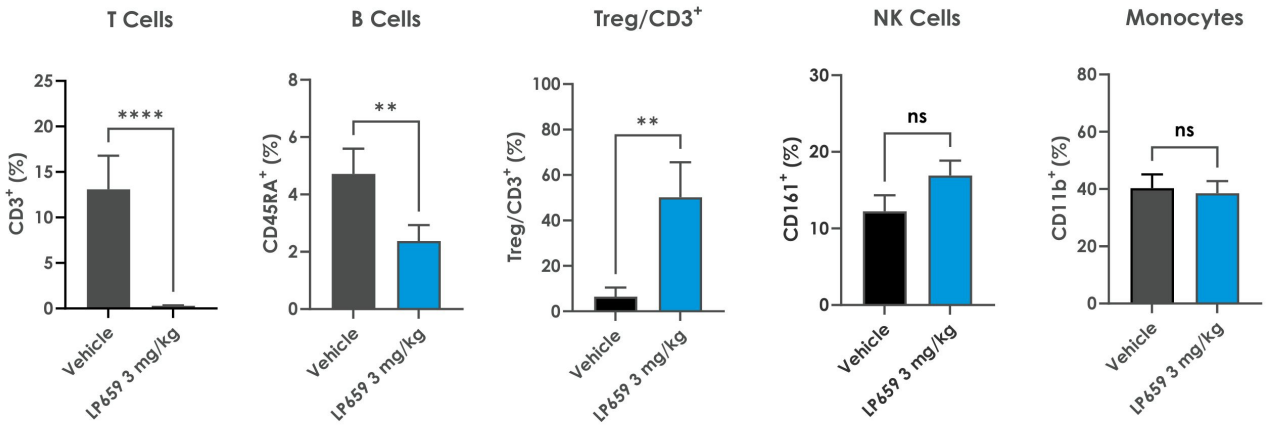
Greatest selectivity towards S1PR1 over S1PR5



LP659 selectivity may limit off-target effects associated with currently approved S1P receptor modulators

Modulation of Immune Tolerance Drives Efficacy by LP659

- LP659 potency in vivo parallels T and B cell lowering potential
- Proportion of Tregs over total $CD3^+$ cells is significantly increased by LP659
- No significant effects on NK and monocyte frequencies



LP659 Ameliorated Disease Phenotypes in Multiple Preclinical Models

Disease / MoA	Autoimmune, CNS involvement	Autoimmune, CNS involvement	Autoimmune, PNS involvement	Autoimmune, PNS involvement	Neuro Degenerative
Model	Induced	Induced	Induced	Induced	Genetic
Species	Rat	Mouse	Rat	Rat	Human iPSC
Dosing	Prophylactic	Prophylactic	Prophylactic	Therapeutic	Therapeutic
Activity	+	+	+	+	+
Results	Dose-dependent amelioration of disease severity with parallel reduction of circulating T lymphocytes	Dose-dependent amelioration of disease severity with reduction of T and B cell infiltration, inflammatory markers, and loss of myelin in the spinal cord	Dose-dependent halting of disease progression with reduction of inflammatory cell infiltration and loss of myelin in the sciatic nerve	Blunting of disease severity with corresponding reduction of inflammatory cell infiltration in the sciatic nerve	Dose-dependent rescue of hyperexcitability in control neurons co-cultured with diseased astrocytes

 Internal data on file

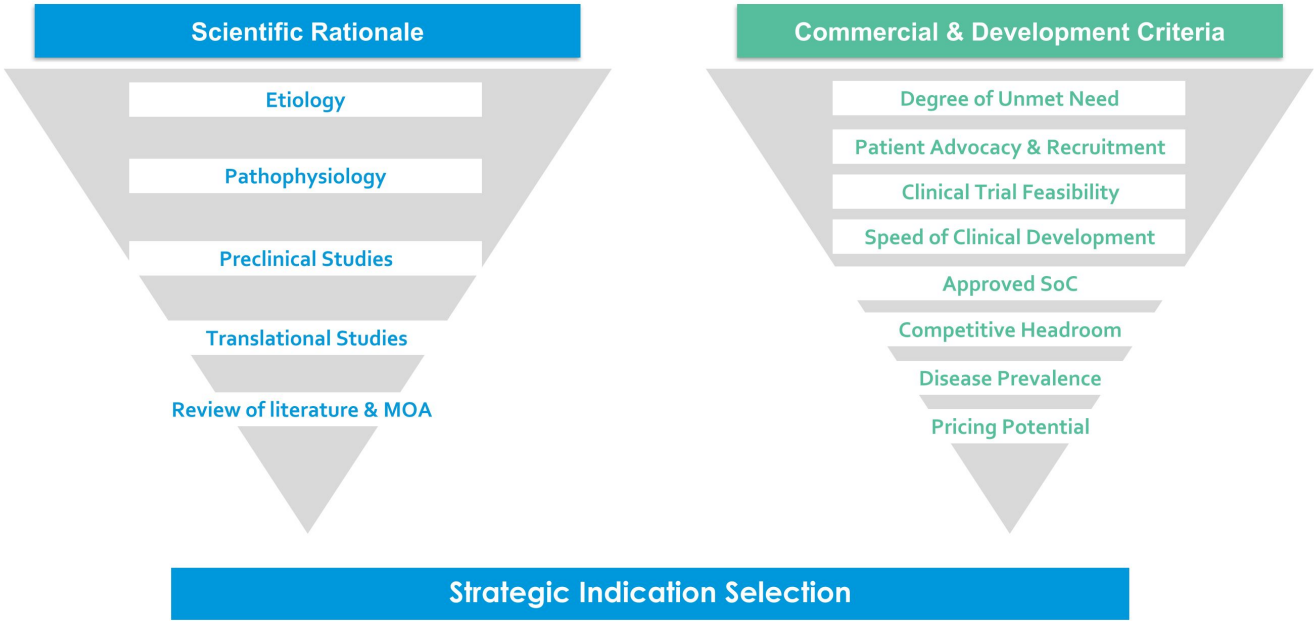
LP659: Phase 1 Single-Ascending Dose (SAD) Study Objectives

First-In-Human, Randomized, Double Blind, Placebo Controlled, SAD Study to Assess the Safety, Tolerability, Pharmacokinetics & Pharmacodynamics of LP659 in up to 48 Adult Healthy Volunteers

Key Study Objectives:

- Assess the safety and tolerability of single ascending doses of LP659
- Determine the PK profile of LP659, and its metabolite(s), in single ascending doses
- Determine PD profile of single ascending doses of LP659

Longboard Indication Assessment Process



Financial Summary & Upcoming Milestones

Cash, Cash Equivalents & Investments

$272.4 million

As of January 31,2024

Shares Outstanding

36.0 million

As of March 8, 2024

Full-Year 2023 Operating Expenses

$56.8 million

- R&D - $43.8 million
- G&A - $13.0 million

As of December 31, 2023

	Key Milestones	Anticipated Timing
Bexicaserin (LP352)	PACIFIC Ph 1b/2a Topline Data in DEE Study	✓ Q1 2024
	PACIFIC Data at medical meetings	Q2 2024
	PACIFIC Open-Label Extension Data	H2 2024
	Global Ph 3 Program Initiation	YE 2024
LP659	Ph 1 Initiation	✓ Q4 2023
	Topline SAD Data	Q2 2024

Multiple clinical and preclinical studies in process to further support the development of bexicaserin & LP659

Thank you

Nasdaq: LBPH

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