# Succt

# Unlocking Epigenetic Therapeutics to Revolutionize Medicine

November 2024



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# **Company Highlights**

# Larsucosterol: Phase 3-ready, potential life-saving treatment for alcohol-associated hepatitis (AH)

- Compelling results from 307-patient placebo-controlled Phase 2b AHFIRM trial
  - o Improvement in 90-day survival and transplant-free survival
  - Well tolerated with no drug-related toxicities
- Preparing to initiate 200-patient Phase 3 trial in U.S. with 90-day survival endpoint data expected within 2 years of trial initiation
  - Type B meeting with FDA resulted in agreement on key aspects of trial design
  - Single pivotal trial required for NDA submission
- Granted Breakthrough Therapy and Fast Track designations by the FDA
  - Breakthrough Therapy designation allows for frequent interactions with FDA and rolling NDA submission
- Significant unmet need: >\$1 billion peak sales potential in U.S.<sup>1</sup>
  - 90-day mortality rate of ~30%<sup>2</sup>
  - No approved therapy for AH



# Larsucosterol Potential in Alcohol-associated Hepatitis



# Larsucosterol: Our Lead Epigenetic Modulator Program

# Phase 3-ready in AH with novel mechanism of action

## Potent DNMT Modulator

- Inhibition of DNMT-1, 3a & 3b aligns with AH biology
- Supports investigating larsucosterol for the treatment of multiple acute organ injuries and chronic liver diseases

# Positive Effects on Key Cellular Functions

- Stabilizes mitochondria
- Reduces lipotoxicity
- Regulates inflammation and stress response
- Promotes cell survival

## Demonstrated Clinical Efficacy and Safety

- Completed Phase 2b AHFIRM trial showed compelling efficacy signal in AH patients
- Well tolerated at all doses
- >500 subjects dosed in multiple completed Phase 1 and Phase 2 studies



# What is Alcohol-associated Hepatitis?

# 90-day mortality rate: ~30%1

- Life-threatening form of alcohol-associated liver disease
- Can occur in individuals who chronically misuse alcohol; frequently manifests after increased consumption
- Excessive drinking can cause significant but reversible
   liver impairment leading to hepatocyte death
- Characterized by jaundice and severe multi-system inflammation – indicative of SIRS (Systemic Inflammatory Response Syndrome)<sup>2</sup>
- SIRS may progress to multi-organ failure and ultimately death

Neutrophilic Inflammation Fat Globules



Ballooning Degeneration



# **Current Treatments for AH are Inadequate with No Approved Therapies**

#### Corticosteroids

- Used as first-line treatment despite lack of demonstrated survival benefit
- Only 25% to 45% of patients are eligible for corticosteroids due to well known complications and contraindications<sup>1,2,3,4,5,6</sup>

#### **Liver Transplant**

- Limited availability of donated organs restricts access<sup>3,7,8</sup>
  - High liver transplant costs >\$875,000
  - Requires lifetime of immunosuppression

#### Few Programs in Clinical Development

- Most advanced competitive clinical program is in Phase 2a
- No other randomized clinical trials have reduced 90-day mortality





<sup>1</sup>Crabb DW et al. 2016 *Gastroenterology*, 150:785-790; <sup>2</sup>Shipley LC and Singal AK. 2020. *Transl Gastroenterol Hepatol*, 5:26; <sup>3</sup>Singal AK et al. 2018. *Am J Gastroenterol*, 113:175-194; <sup>4</sup>Singal AK et al. 2018. *J Hepatol*, 69:534-543; <sup>5</sup>Singal AK and Mathurin P. 2021. *JAMA*, 326:165-176; <sup>6</sup>Bataller et al. 2022. *N Engl J Med*, 387:2436-2448; <sup>7</sup>Cotter TG et al. 2021. *Am J Transplant*, 21:1039-1055; <sup>8</sup>Tornai D and Szabo G. 2020. *Clin Mol Hepatol*, 26:686-696; <sup>9</sup>Thursz M et al. 2015. *NEJM*, 372: 1619-1628.



# Larsucosterol AHFIRM Trial

Phase 2b Trial in AH to Evaluate Safety and Efficacy of Larsucosterol



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# Phase 2b AHFIRM Trial Design

#### Randomized 1:1:1



Trial<br/>OverviewEnrolled 307 severe AH patients with MDF2 score ≥ 32 and MELD2 score 21-30Primary endpoint: Mortality or liver transplant at 90 daysKey secondary endpoint: 90-day mortalityGlobal trial conducted in U.S., E.U., Australia and U.K.Placebo included active steroids at investigators' discretion1

 All patients received supportive care, which for placebo patients included methylprednisolone capsules at the investigators' discretion. In order to maintain blinding, patients in the two larsucosterol arms received matching placebo capsules if the investigator prescribed steroids.
 Maddrey's Discriminant Function (MDF); Model for End-Stage Liver Disease (MELD).

# Median Baseline Characteristics by Arm – Global Population

	Placebo	Larsucosterol 30 mg	Larsucosterol 90 mg
Number of patients randomized	103	102	102
Number of patients with 90-day outcome data	102 <sup>1</sup>	99	101
MELD <sup>2</sup>	25.0	24.0	25.0
MDF	61.5	57.2	63.0
Age	47.0	44.0	43.0



<sup>1</sup> One subject in placebo group was confirmed alive at Day 90 but transplant status unknown. <sup>2</sup> Based on central lab MELD score.

# Trial Outcomes by Arm – Global Population

	<b>Placebo</b> <sup>1</sup>	Larsucosterol 30 mg	Larsucosterol 90 mg
Global:	n=102	n=99	n=101
Deaths	25 (24.5%)	15 (15.2%)	17 (16.8%)
Transplants	4 (3.9%)	6 (6.1%)	9 (8.9%)
Alive & Transplant-free	73 (71.6%)	78 (78.8%)	75 (74.3%)
All Alive	77 (75.5%)	84 (84.8%)	84 (83.2%)
U.S.:	n=77	n=73	n=77
Deaths	21 (27.3%)	8 (11.0%)	10 (13.0%)
Transplants	4 (5.2%)	5 (6.8%)	8 (10.4%)
Alive & Transplant-free	52 (67.5%)	60 (82.2%)	59 (76.6%)
All Alive	56 (72.7%)	65 (89.0%)	67 (87.0%)



<sup>1</sup>One subject in placebo group was confirmed alive at Day 90 but transplant status unknown. One patient received a liver transplant and subsequently died.

# Clinically Meaningful Trend Toward Reduced Mortality – Global (ITT)

Mortality at 90 Days 30 mg Larsucosterol vs. Placebo<sup>1</sup> Mortality at 90 Days 90 mg Larsucosterol vs. Placebo<sup>1</sup>





<sup>1</sup> Sites with enrollment <5 patients were pooled resulting in different mortality rates for placebo compared with 30 mg and 90 mg larucosterol doses. ITT includes 5 patients with missing 90-day outcome data. The analyses were adjusted by the method of multiple imputations to account for these subjects.

# Pronounced Reduction in Mortality Observed in U.S. Patients (ITT)

Mortality at 90 Days – U.S. Patients 30 mg Larsucosterol vs. Placebo<sup>1</sup>



Mortality at 90 Days – U.S. Patients 90 mg Larsucosterol vs. Placebo<sup>1</sup>



<sup>1</sup> Sites with enrollment <5 patients were pooled resulting in different mortality rates for placebo compared with 30 mg and 90 mg larucosterol doses. ITT includes 5 patients with missing 90-day outcome data. The analyses were adjusted by the method of multiple imputations to account for these subjects.

# **Larsucosterol Was Well-Tolerated**

Numerically fewer TEAEs in both 30 mg and 90 mg arms compared with placebo

No meaningful difference in serious AEs and none attributed to larsucosterol

# # of TEAEs by Arm<sup>1</sup>



# Key Learnings from AHFIRM Trial

# Phase 3 trial design incorporates important findings from AHFIRM trial

AH	FIRM Trial Factor	Key Takeaways
1.	<b>Dose</b> : Both doses of larsucosterol appeared to have similar efficacy and safety profiles	Conduct Phase 3 trial with 30 mg dose compared with placebo
2.	Inclusion of transplants in primary endpoint: Transplants are a confounding factor	Use primary endpoint of survival
5.	<b>Regional differences:</b> Treatment practices and disease definition vary by region	Conduct Phase 3 trial in U.S. only
4.	<b>Time to treatment:</b> Early treatment following hospitalization is critical	Treat patients in <10 days
5.	<b>Randomization</b> : Central randomization resulted in imbalances across arms	Randomize by site



# **Registrational Phase 3 Trial Design**

# Topline data expected within 2 years of trial initiation

#### Randomized, double-blind, placebo-controlled, multi-center design in U.S. (N=200) R — 4-Day Treatment Period -Study 30 mg\* larsucosterol Screening Design Follow-Up Period Placebo + SOC \*No more than 2 doses of assigned treatment will be administered with 72 \*<10 days between admission Day 90 Day -4 Day 180 hours between doses Day 1 Day 4 and dose 1 administration Dose 1 Dose 2 **Primary Endpoint: Survival** if still admitted

Key Inclusion Criteria

- Severe U.S. AH patients with MDF score  $\geq$  32 and MELD scores 21-30
- 200 patients randomized by site in a 1:1 ratio



# Larsucosterol Commercial Opportunity in AH



# AH Imposes High Economic Burden on U.S. Healthcare System

- ~164,000 U.S. hospitalizations in 2021<sup>1</sup>
- Incidence may result in ~300K hospitalizations by 2034<sup>2</sup> based on historical yearly growth rate of 5.5% between 2015-2019<sup>3</sup>
- Increased physician and hospital awareness of AH could result in more robust ICD-10 coding and increased recorded hospitalizations
- 88% of hospitalized AH patients are insured<sup>1</sup>



# **Larsucosterol Value Proposition Supports Blockbuster Potential**

## If approved, larsucosterol has the potential to become a >\$1B/year drug in the U.S. for the AH indication alone

#### REDUCTION IN MORTALITY

Physicians prioritize **mortality as the most important endpoint**, and nearly all found a potentially significant reduction in 90-day mortality rate clinically meaningful

#### HOSPITAL COST OFFSET ECONOMICS

Reducing costly **length and frequency of ICU stays** is key for offsetting drug costs and securing favorable hospital formulary inclusion

#### REDUCTION IN HEALTHCARE SYSTEM COST BURDEN

Hospital economics and payer stakeholders may use **reduction in 30-day readmissions** to assess impact on per-patient cost burden



# **Our Market Survey Indicates Physicians Are Enthusiastic About Larsucosterol**

## MECHANISM OF ACTION

High enthusiasm for novel, specific MOA which targets the underlying liver inflammation and degradation



Level of enthusiasm

## CLINICAL EFFICACY

Reduction in 90-day mortality viewed as an advancement, as steroids do not show an effect on mortality past 28 days



# SAFETY AND TOLERABILITY

Larsucosterol safety profile was wellreceived, with hundreds of patients dosed, viewed as compelling for use



# DOSING AND ADMINISTRATION

Physicians saw no issues with inpatient IV doses





Source: Physician reactions to larsucosterol blinded product profile (n=25) - ClearView Analysis 2023.

# Larsucosterol Intellectual Property & Regulatory Highlights

**15** PATENT FAMILIES Each include pending patent applications that, if granted, could result in protection until at least 2032 to 2044

# BREAKTHROUGH THERAPY DESIGNATION

Designation provides intensive guidance and organizational commitment from senior FDA managers



Seven patent families each include at least one granted patent that could provide protection until at least 2026, 2032, 2034, 2035, 2037, 2037, and 2037, respectively

# FAST TRACK DESIGNATION

FDA designation for larsucosterol in the U.S. indicates the EMA could grant similar regulatory recognition in the EU



# Larsucosterol – Positioned for Success in AH

#### Compelling AHFIRM Mortality Results

- Compelling outcome on key secondary endpoint of mortality reduction at 90 days
- Pronounced impact on mortality in U.S. population
- Breakthrough Therapy and Fast Track designations

#### **Clinical Safety**

- Well tolerated, no drugrelated toxicities
- Numerically fewer TEAEs in AHFIRM
- No serious AEs in AHFIRM attributed to larsucosterol
- More than 500 patients dosed in multiple Phase 1 and 2 trials

#### >\$1 Billion Peak Sales Potential for AH in U.S.<sup>1</sup>

- ~164,000 annual hospitalizations in U.S.<sup>2</sup>
- ~\$10 billion annual direct
  hospital charges in U.S.<sup>2</sup>
- No approved therapy
- Potential patent protection through at least 2044

#### Preparing to initiate Phase 3 trial with topline data expected within 2 years of initiation



<sup>1</sup> Market Research – ClearView Analysis 2023.
 <sup>2</sup> National Inpatient Sample 2021.

# **Financial Overview**

Nasdaq	DRRX
Shares O/S	31.0 MM <sup>1</sup>
Cash & Cash Equivalents	\$10.5 MM <sup>2</sup>
Debt	\$10.5 MM <sup>2</sup>

#### Cupertino, CA headquarters



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  - No approved therapy for AH

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# Appendix



# **Mechanism of Action Leverages Epigenetics to Impact Disease**



- 1 Epigenetic Dysregulation in AH Patients Aberrant DNA hypermethylation is associated with many diseases including severe AH
- **Epigenetic Regulators Modulate Gene Expression** DNA methyltransferases (DNMTs) are one such regulator that add methyl groups to certain regions of DNA, generally reducing gene expression

#### Larsucosterol Inhibits DNMTs

By inhibiting DNMTs (1, 3a, & 3b), larsucosterol reduces DNA hypermethylation, which modulates important cell signaling pathways



1. Liu et al., *Exp Mol Pathol* 2014;97(2):234-240; 2. Shen et al., *Exp Mol Pathol*. 2015;99(2):326-3293; 3. Argemi et al., *Nat Commun*. 2019;10(1):3126; 4. Niinep et al., *Front Genet*. 2021;12:750142; 5. Zheng et al., *Int J Mol Sci*. 2023;24(12):10130; 6. Wang Y, *Journal of Lipid Research*. 2021; 62: 100063

# Inhibition of DNMT-1, 3a & 3b Aligns with AH

Liver samples from patients with severe AH have increased expression of DNMT-1 & 3a





# Numerical Improvement in Transplant-free Survival (TFS) – Global (ITT)

Win Probability<sup>1,2</sup> at 90 Days 30 mg Larsucosterol vs. Placebo Win Probability<sup>1,2</sup> at 90 Days 90 mg Larsucosterol vs. Placebo



<sup>1</sup> Primary endpoint was analyzed using a hierarchical assessment of patient outcomes to calculate a win probability for each of the 30 mg and 90 mg doses of larsucosterol compared with placebo. Win probability was calculated on the hierarchy of alive and transplant-free being superior to transplant and death, and transplant being superior to death. Comparisons of the same outcome were included in the denominator as ties.



<sup>2</sup> Intent-to-treat (ITT) includes 5 patients with missing 90-day outcome data. The analyses were adjusted by the method of multiple imputations to account for these subjects.

# TFS – U.S. Patients (ITT)

Win Probability<sup>1,2</sup> at 90 Days 30 mg Larsucosterol vs. Placebo



Win Probability<sup>1,2</sup> at 90 Days

90 mg Larsucosterol vs. Placebo

<sup>1</sup> Primary endpoint was analyzed using a hierarchical assessment of patient outcomes to calculate a win probability for each of the 30 mg and 90 mg doses of larsucosterol compared with standard of care. Win probability was calculated on the hierarchy of alive and transplant-free being superior to transplant and death, and transplant being superior to death. Comparisons of the same outcome were included in the denominator as ties.



<sup>2</sup> Intent-to-treat (ITT) includes 5 patients with missing 90-day outcome data. The analyses were adjusted by the method of multiple imputations to account for these subjects.

# **AHFIRM Results by Region**

	Placebo	Larsucosterol 30 mg	Larsucosterol 90 mg
France/Belgium: Number of subjects with 90-day outcome data	7	11	8
Deaths (%)	1 (14.3%)	4 (36.4%)	4 (50.0%)
Transplants (%)	0	1 (9.1%)	1 (12.5%)
Alive & Transplant-free (%)	6 (85.7%)	6 (54.6%)	3 (37.5%)
UK: Number of subjects with 90-day outcome data	1	5	2
Deaths (%)	1 (100.0%)	0	1 (50.0%)
Transplants (%)	0	0	0
Alive & Transplant-free (%)	0	5 (100.0%)	1 (50.0%)
Australia: Number of subjects with 90-day outcome data	17	10	14
Deaths (%)	2 (11.8%)	3 (30.0%)	2 (14.3%)
Transplants (%)	0	0	0
Alive & Transplant-free (%)	15 (88.2%)	7 (70.0%)	12 (85.7%)
U.S. <sup>1</sup> : Number of subjects with 90-day outcome data	77	73	77
Deaths (%)	21 (27.3%)	8 (11.0%)	10 (13.0%)
Transplants (%)	4 (5.2%)	5 (6.8%)	8 (10.4%)
Alive & Transplant-free (%)	52 (67.5%)	60 (82.2%)	59 (76.6%)



<sup>1</sup> Excludes 5 subjects with missing 90-day outcome data.