



# TRANSFORMING MEDICINE RESTORING WELLBEING

**DURECT Corporation**

*A Biopharmaceutical Company*

April 9, 2019

## Forward-Looking Statements

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The statements in this presentation regarding DURECT's and its collaborative partners' products in development, anticipated product benefits, anticipated product markets, clinical trial results and plans, DURECT's future business plans and projected financial results and DURECT's emergence as an innovative biopharmaceuticals company are forward-looking statements involving risks and uncertainties that can cause actual results to differ materially from those in such forward-looking statements. Potential risks and uncertainties include, but are not limited to, DURECT's (and that of its third-party collaborators', where applicable) abilities to successfully enroll and complete clinical trials, complete the design, development, and manufacturing process development of the product candidates, obtain product and manufacturing approvals from regulatory agencies and manufacture and commercialize the product candidates and marketplace acceptance of the product candidates, as well as DURECT's ability to fund its growth and operations. Further information regarding these and other risks is included in DURECT's most recent Annual or Quarterly Report on Form 10-K or 10-Q filed with the SEC under the heading "Risk Factors."

# DURECT: Four Major Potential Catalysts in 2H 2019

01

Data readout from DUR-928 Phase 2a Clinical trial in Alcoholic Hepatitis (AH)

02

Initial data from DUR-928 Phase 1b 28-day multi-dose NASH trial

03

Top line data from DUR-928 Phase 2a, 28-day proof-of-concept trial in mild to moderate plaque psoriasis

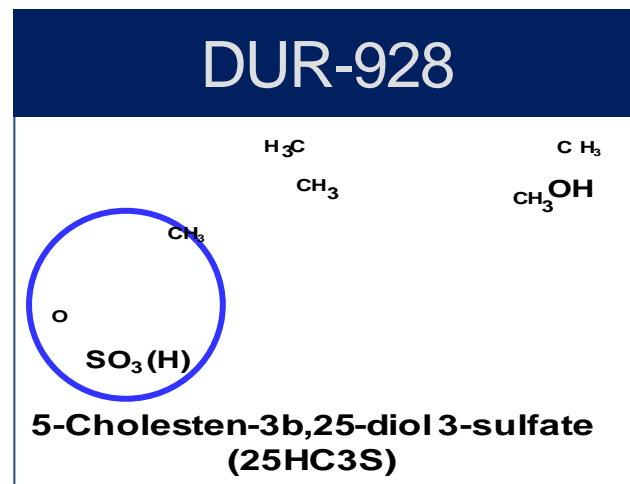
04

Potential FDA approval of POSIMIR<sup>®</sup> for post-operative pain

# DUR-928: Lead compound in DURECT's Epigenetic Regulator Program

## DUR-928:

- **Sulfated** oxysterol, a new class of therapeutics with novel MOA
- Endogenous , small molecule
  - Highly conserved across 7 mammalian animal species
- Epigenetic regulator
  - Does not change the DNA sequence, but modifies gene activity
- Broad activity
  - Regulates metabolism, inflammation & cell survival
- Safety
  - Over 150 individuals dosed to date in multiple Phase 1 trials
  - Well tolerated at all doses by either oral, IM or IV dosing
  - Minimal food effect and no accumulation with repeat dosing in Phase 1 subjects



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**DUR-928**  
Potential in Alcoholic Hepatitis (AH)

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# Alcoholic Hepatitis (AH) Overview

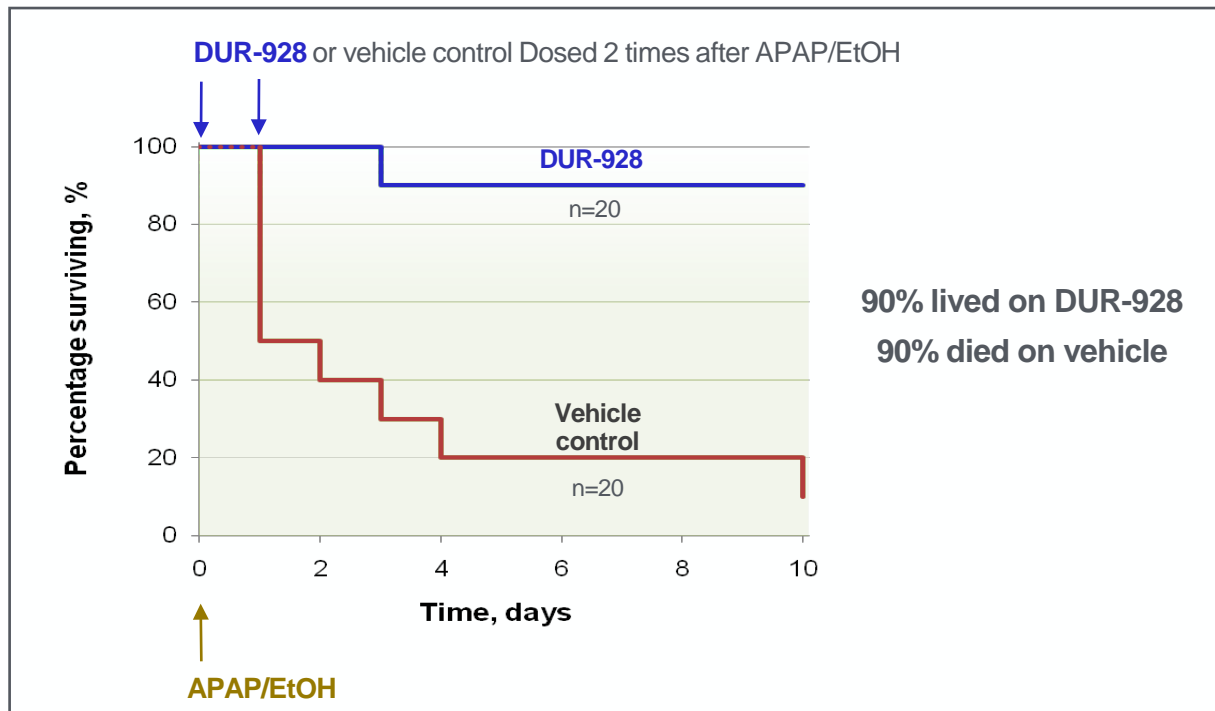


- Acute form of alcoholic liver disease (ALD)
- AH is characterized by inflammation and hepatocellular injury
- AH is believed to occur in 10-35% of heavy drinkers <sup>1</sup>
- ~ 320,000 AH-related hospitalizations in the U.S.<sup>2</sup>
  - Hospitalization cost of nearly **\$50,000 per patient**
  - Short term **mortality rate of 30%-50%** in severe cases
- 50% of all cases of cirrhosis have alcohol contribution <sup>3</sup>
- Alcohol Use Disorder (AUD) in the U.S. affects 15.1 million adults (6.2%) <sup>4</sup>
- No approved treatment
- ALD is a leading cause of liver transplants in the US <sup>5</sup>
  - The cost of a **liver transplant exceeds \$800,000** <sup>6</sup>

(1) AASLD Practice Guidelines: Alcoholic Liver Disease. Hepatology. 2010 Vol. 51, No(1) 307-328.; (2) Hospitalizations in 2010 with a primary or secondary diagnosis of AH. J Clin Gastroenterology. 2015 July; 49(6): 506-511. (2) Journal of Hepatology 2018 vol. 69 j 534–543. (3) ACG Clinical Guideline: Alcoholic Liver Disease. The American Journal of GASTROENTEROLOGY. January 2018; doi: 10.1038/ajg.2017.469. (4) <https://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/alcohol-facts-and-statistics> accessed April 2, 2019; (5) Am J Gastroenterol. 2018 Nov;113(11):1649-1659. doi: 10.1038/s41395-018-0088-6. (6) CVRG, "NAFL/NASH 2019 – 2028", March 31, 2019.

# Acute Liver Injury Animal Model: Chemical

## Effect of DUR-928 on acetaminophen/alcohol exposure mouse model



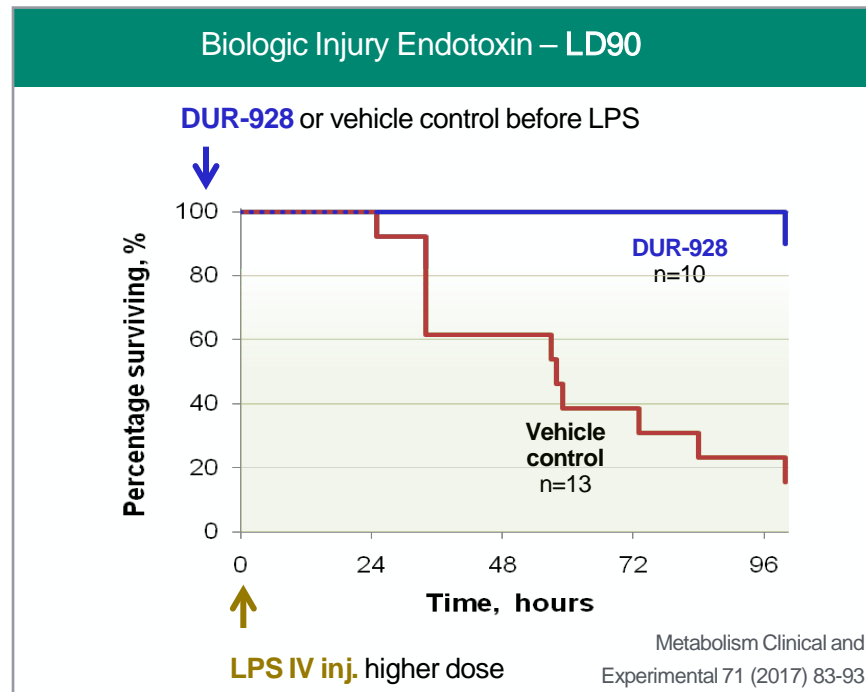
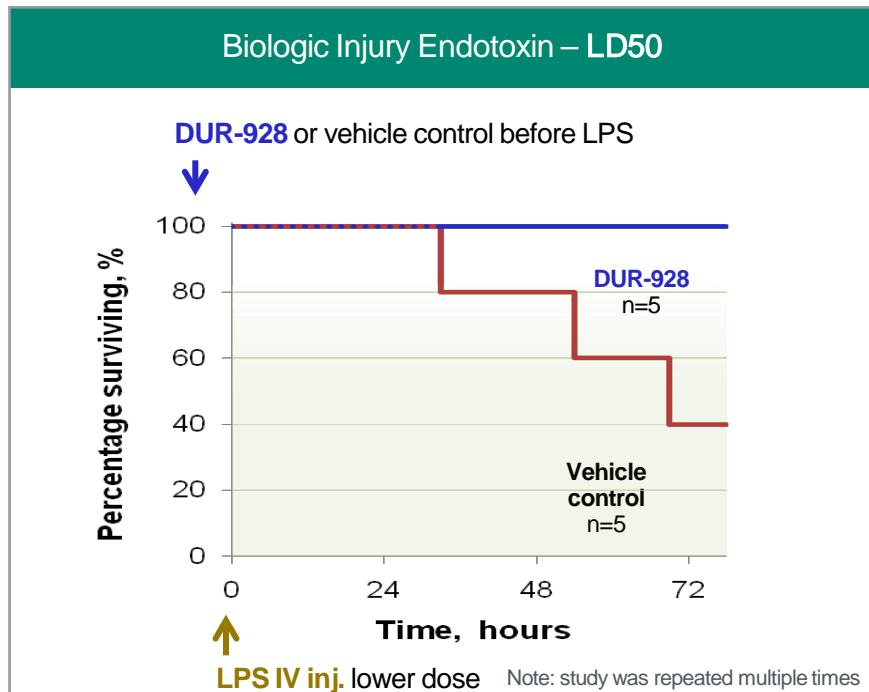
Note: study was repeated multiple times

Data on file. DURECT Corporation  
Study conducted at an academic lab

# Acute Liver Injury Animal Model: Endotoxin

## Effect of DUR-928 on bacterial endotoxin exposure mouse model

### Survival





# Alcoholic Hepatitis (AH) Phase 2a Study

## An Open-Label, Dose Escalation Study to Assess the Safety, PK, and PD Signals of DUR-928 in Patients with AH

	Cohort	1	2	3
<b>Moderate AH</b> MELD 11-20	A	30 mg	90 mg	150 mg
<b>Severe AH</b> MELD 21-30	B	30 mg	90 mg	150 mg
<b>Status</b>		Completed	Ongoing	

- Enrollment in severe patients has been much faster than in moderate patients
- N=4 per group

## Encouraging Data from Completed 30 mg Cohorts in Alcoholic Hepatitis (AH) Including:

### Lille Scores

- Composite score based on: age, albumin, serum creatinine (sCr), prothombin time, change in bilirubin from day 1 to 7
- Prognosticator of mortality
- We believe the Lille scores observed in the 30 mg cohorts in our AH trial are encouraging

### MELD (Model of End Stage Liver Disease)

- Composite score based on: sCr, bilirubin and International Normalized Ratio (INR)
- Prognostic indicator of mortality; used to help determine priority on liver transplant waiting list
- We observed encouraging reductions in MELD scores in the 30 mg cohorts in our AH trial

### Bilirubin

- High levels of bilirubin may be associated with impaired liver function
- Reductions seen in bilirubin have been observed in our NASH Phase 1b single-dose trial, Impaired kidney function Phase 1b single-dose trial and multiple animal models
- We observed encouraging reductions in serum bilirubin levels in the 30 mg cohorts in our AH trial

# Alcoholic Hepatitis (AH) Phase 2a Study Summary

01

Significant unmet need with 320,000 hospitalizations per year and no approved treatments, resulting in high mortality rates and hospitalization costs. ALD is a leading cause of liver transplants in the US, each of which costs >\$800,000.

02

Compelling survival data in multiple acute liver animal models

03

Encouraging clinical results from the 30 mg cohorts, with reductions of serum bilirubin and MELD scores as well as low Lille scores. MELD and Lille are prognostic of patient survival

04

Severe AH patients are being dosed in the 90 mg cohort

05

Data announcement expected in 2H 2019

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# DUR-928

## Potential in NASH

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# NASH

## Nonalcoholic Steatohepatitis Overview



Affects 3-5% of the US population; expected to increase ~2x by 2030



Worldwide surge in obesity fueling increasing prevalence of NAFLD and NASH



There are no treatments currently approved for NASH



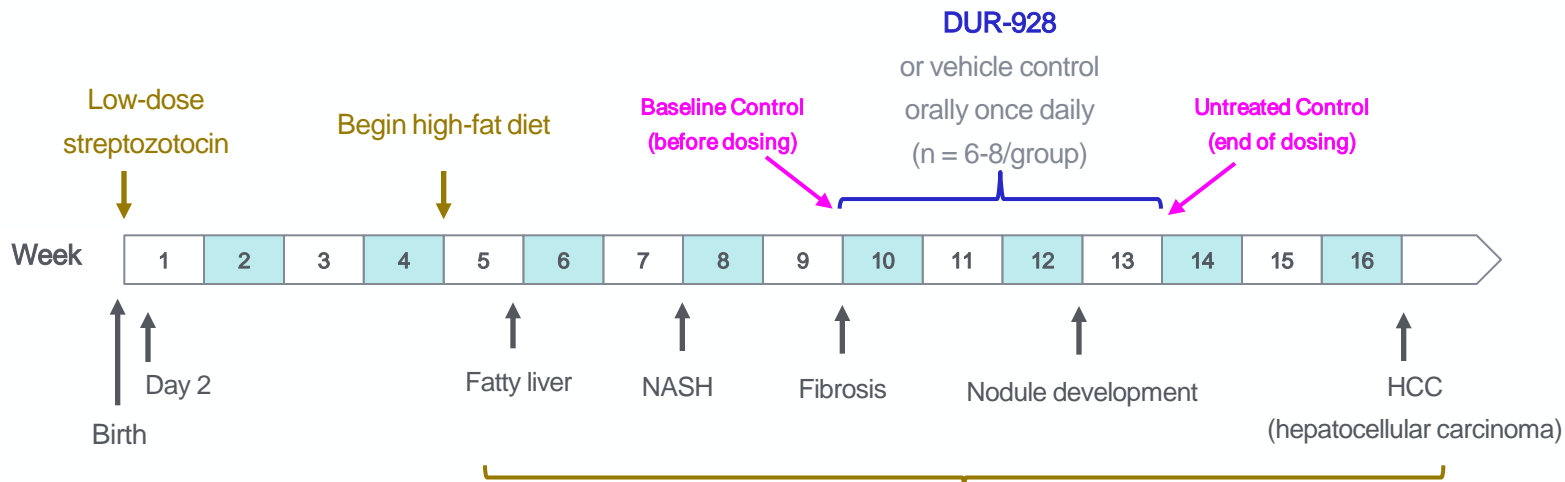
NASH and ALD are the leading causes of liver transplants in the U.S.



Total direct costs of illness for NASH will continue to be substantial with annual predicted economic burden of NASH with and without fibrosis estimated to be >\$10B in the U.S. and major European markets



# Effect of DUR-928 on advanced NASH mouse model



Female C57BL/6J mouse  
(Normal mean lifespan 200 weeks)

## Manifestations of NASH pathology

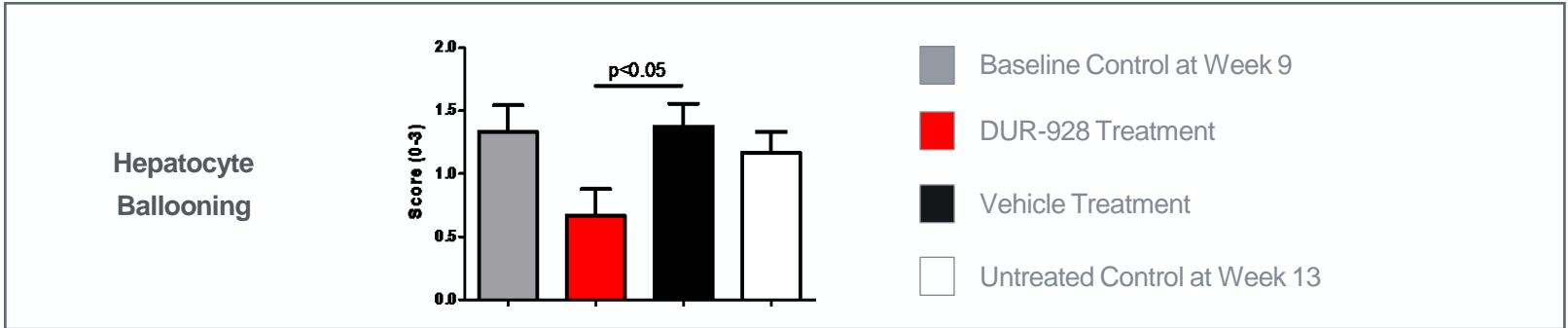
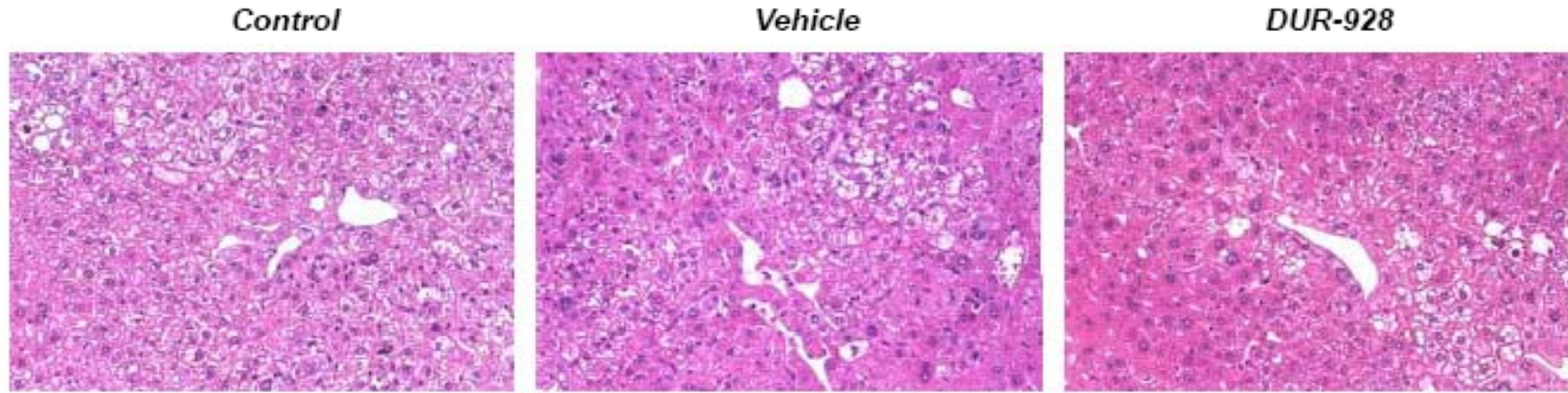


Study conducted at a CRO in Japan Data on file. DURECT Corporation

N = 6-8

# Effect of DUR-928 on advanced NASH mouse model

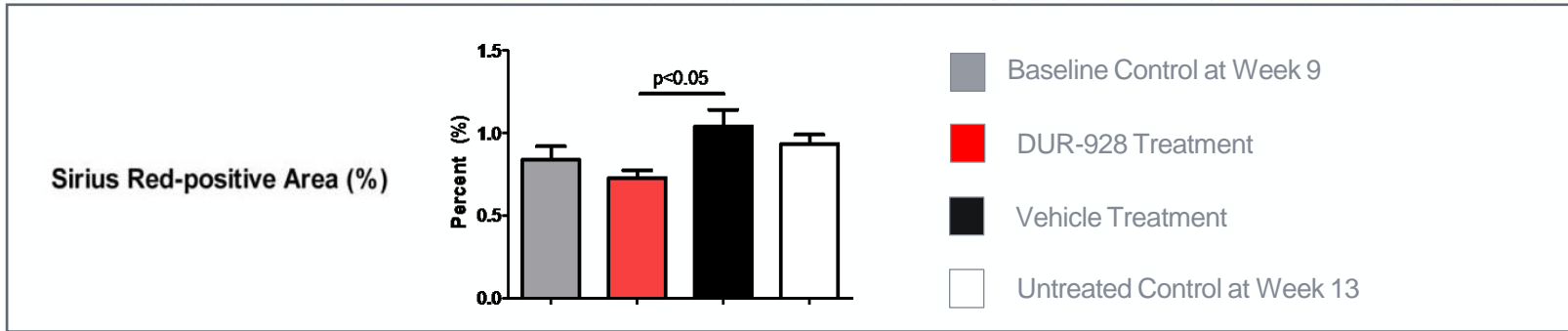
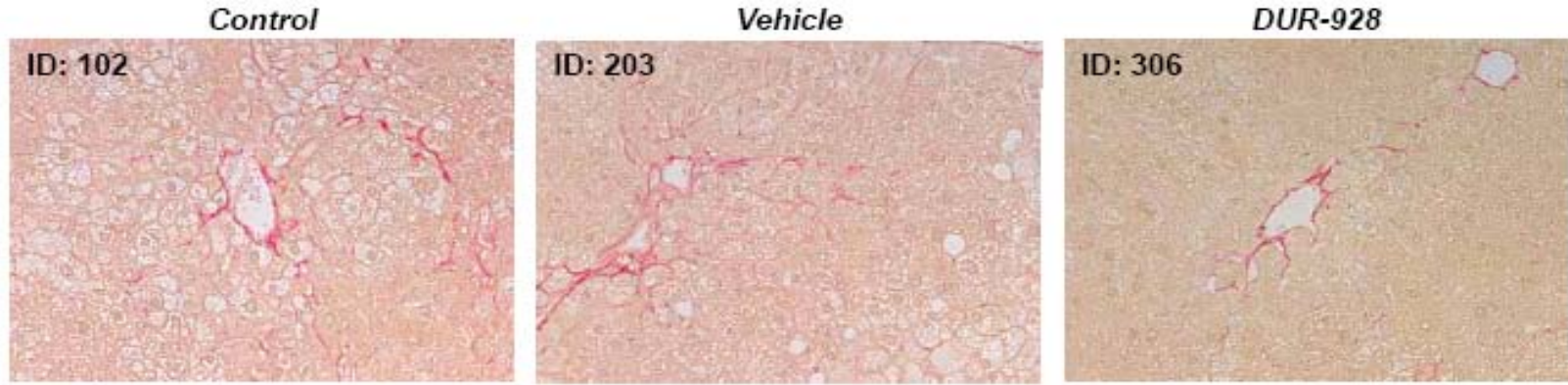
## Significant Reduction and Reversal of Hepatocyte Ballooning



Data on file. DURECT Corporation.

# Effect of DUR-928 on advanced NASH mouse model

## Anti-fibrotic Effect of DUR-928



Data on file. DURECT Corporation.



## DUR-928 *Phase 1b*

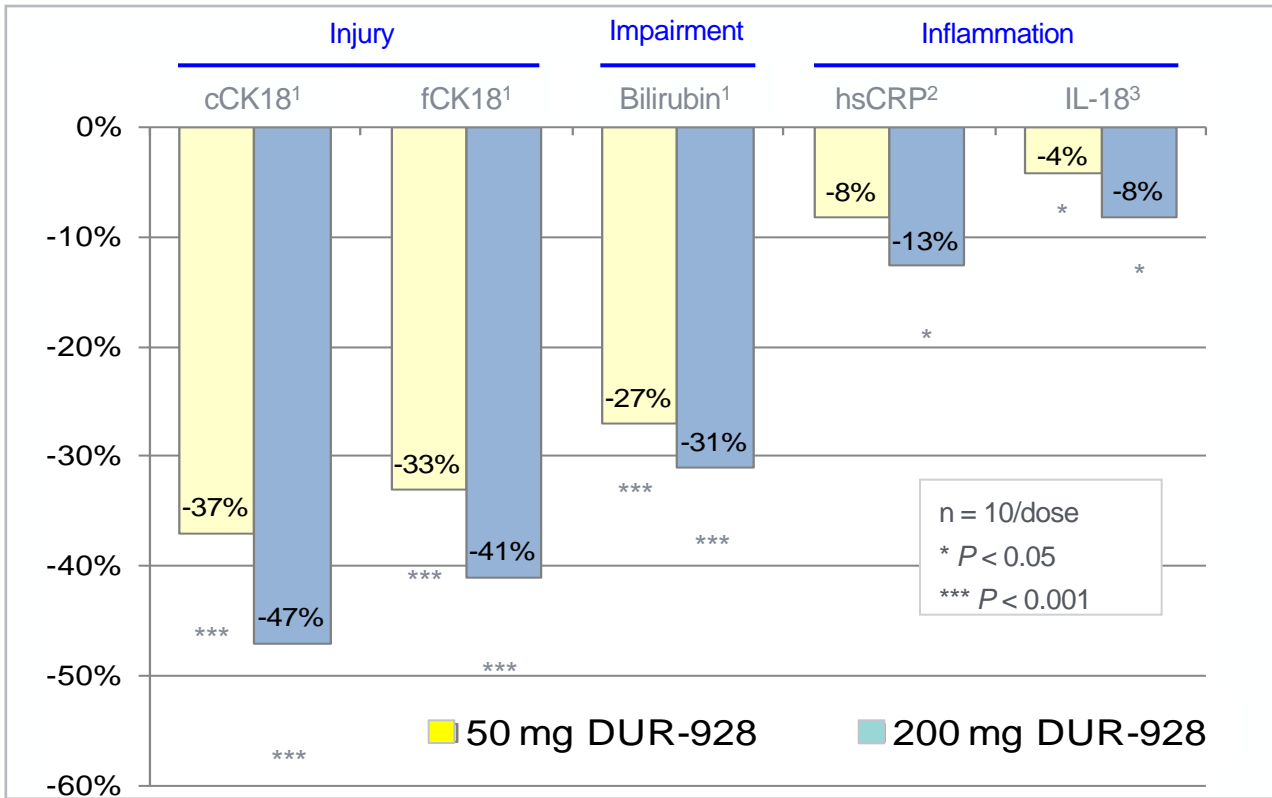
### Initial Patient Study (NASH)

- Conducted in Australia, oral formulation
- 2 successive cohorts evaluating single doses of DUR-928:
- Each cohort had 10 NASH patients and 6 matched control subjects (by age, body mass index and gender, but with normal liver function)
- Single-site, open label, dose ranging safety and PK study
- Safety and PK results:
  - Safe and well tolerated, with one possibly treatment related serious adverse event (shortness of breath)
  - PK parameters between NASH patients and matched controls comparable

Biologic activity was observed after a single dose in both cohorts

# Phase 1b: NASH Patient Study

## Biomarker Changes in NASH Patients After a Single Oral Dose of DUR-928



Single dose of 928 was able to reduce markers of cell injury, impairment and inflammation

1. The reductions of cCK-18, fCK-18, and bilirubin were the greatest at 12 hours after dosing
2. The reduction of hsCRP was more noticeable at 24 hours after dosing
3. The reduction of IL-18 was noticeable at 8 hours after dosing

# Ongoing DUR-928 NASH Trial

1. Orally-administered DUR-928 in NASH patients began enrolling patients in March 2019
2. This study is an open-label, Phase 1b trial to evaluate safety, pharmacokinetics and signals of biological activity of DUR-928 in patients with NASH
3. It is being conducted at multiple sites in the U.S.
4. 60 patients will be administered either a low, middle or high dose of DUR-928 orally for 28 consecutive days
5. We expect to announce initial data from this trial in the second half of this year

## DUR-928 NASH Summary

01

Significant unmet need with a worldwide surge in obesity fueling increasing prevalence of NAFLD and NASH and no approved treatments

02

Compelling steatosis, hepatocyte ballooning and fibrosis data in multiple NASH animal studies

03

Encouraging clinical results from single-dose Phase 1b study showing reductions in CK-18s, bilirubin and certain inflammatory biomarkers

04

28-day multi-dose, dose-ranging study ongoing

05

Initial data announcement expected in 2H 2019

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**DUR-928**  
Potential in Psoriasis & Atopic Dermatitis

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# Psoriasis

A chronic, non-infectious, inflammatory skin disorder with well defined, erythematous plaques and large adherent silvery scales

## Age Onset

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20-30y or 50-60y

## Causes unknown

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Genetic predisposition

Environmental trigger

## Psoriasis



# Psoriasis: Prevalence & Severity

Psoriasis occurs in 2% of the world's population

Estimated at 3.2% in adults 20 years or older in US (7.4 million adults) <sup>1</sup>

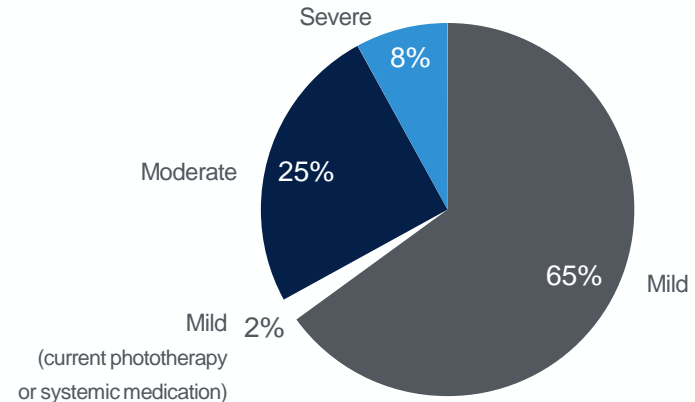
Over 90% of patients estimated to have localized disease <sup>1</sup>

23 to 49% of patients with mild and moderate psoriasis are untreated <sup>2</sup>

8 million prescriptions are written annually for potent topical steroids <sup>3</sup>

Severity	% of Body Surface	Category
Mild	Up to 3%	Localized
Moderate	3% - 10%	
Severe	> 10%	Generalized

Distribution of psoriasis severity



(1) National Psoriasis Foundation (random sample of 278 adults with psoriasis)

(2) Armstrong AW et al. *JAMA Dermatol.* 2013;149:1180-1185

(3) IQVIA NSP and TRx MAT Nov 2018

# Inflammatory Skin Condition Program

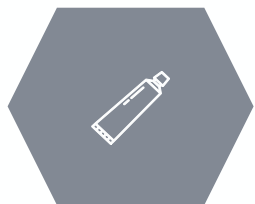
## Phase 1b: Initial Patient Study (Psoriasis)

- Conducted in Australia, intralesional injection
- Evaluating a single dose of DUR-928:
  - 9 psoriatic patients (moderate to severe)
  - Micro-plaque assay, self-control
  - 2 formulations, double-blinded, safety and efficacy study
  - Kenalog as positive control
  - Evaluated LPSI (local psoriasis severity index) scores

Supports ongoing Phase 2a proof-of-concept study with topically applied DUR-928



# DUR-928 Psoriasis Phase 2a Trial: Overview



Phase 2a proof-of-concept trial with topical DUR-928 in patients with mild to moderate plaque psoriasis

- n=20
- U.S., Multicenter, randomized, double-blind, vehicle-controlled
- DUR-928 applied topically once-daily for 4 weeks
- Patients serve as their own controls, as each patient has similar plaques on each arm
- DUR-928 is applied to one plaque and the vehicle control to the plaque on the other arm
- Primary efficacy endpoint is improvement in local psoriasis scores in the DUR-928-treated plaque compared to the vehicle-treated plaque

<https://clinicaltrials.gov/> - NCT Identifier 03837743

## DUR-928 Psoriasis Phase 2a Trial: Status

- Dosing initiated Mid-March 2019
  - 3 sites in the U.S.
  - Targeting 20 participants to yield 15 evaluable patients
- Enrollment is off to a good start...

**We expect to announce top line data from this trial in the second half of 2019**

## DUR-928 Psoriasis Summary

01

Significant unmet need with 90% of psoriasis patients having localized disease where topicals are first line therapy and up to 49% of them are untreated

02

Encouraging data from completed Phase 1b study

03

Phase 2a proof-of-concept, 28-day multi-dose, double blind, vehicle controlled trial ongoing




04

Top line data announcement expected in 2H 2019

05

Potential partnering opportunity

# Summary of 2019 DUR-928 Clinical Trials

Indication	Preclinical	Phase 1	Phase 2	Design/Timing	Patient Population
Alcoholic Hepatitis (Injectable)				Phase 2a open label, dose escalation study in moderate and severe AH patients, Data expected 2H 2019	>320,000 hospitalized in the U.S. <sup>3</sup>
Psoriasis (Topical)				Phase 2a proof-of-concept study, 28-day, multicenter, randomized, double-blind, vehicle-controlled. Enrollment began Q1, with top line data expected 2H 2019	7.5 million in the U.S. <sup>2</sup>
NASH (Oral)				28-day daily dosing, Phase 1b open-label study to evaluate safety, PK and signals of biological activity. Enrollment began Q1, with initial data expected 2H 2019	9-16 million in the U.S. <sup>1</sup>

1. Estes C, et al. Hepatology, 2018;67:123-133. 2. National Psoriasis Foundation. 3. J Clin Gastroenterology. 2015 July; 49(6): 506-511

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**POSIMIR®**  
Potential in Post-Operative Pain

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# POSIMIR<sup>®</sup>: Commercial Opportunity

**>70 million surgeries**  
per year in the U.S.

**~30 million procedures**  
as a potential available market

**Large and underserved market**

**Compelling product concept  
for surgeons, anesthesiologists,  
and payers to get behind**

- Patient quality of life
- Potentially large healthcare cost savings
- Simple administration technique
- Underlying desire for non-opioid, extended post-surgical pain relief

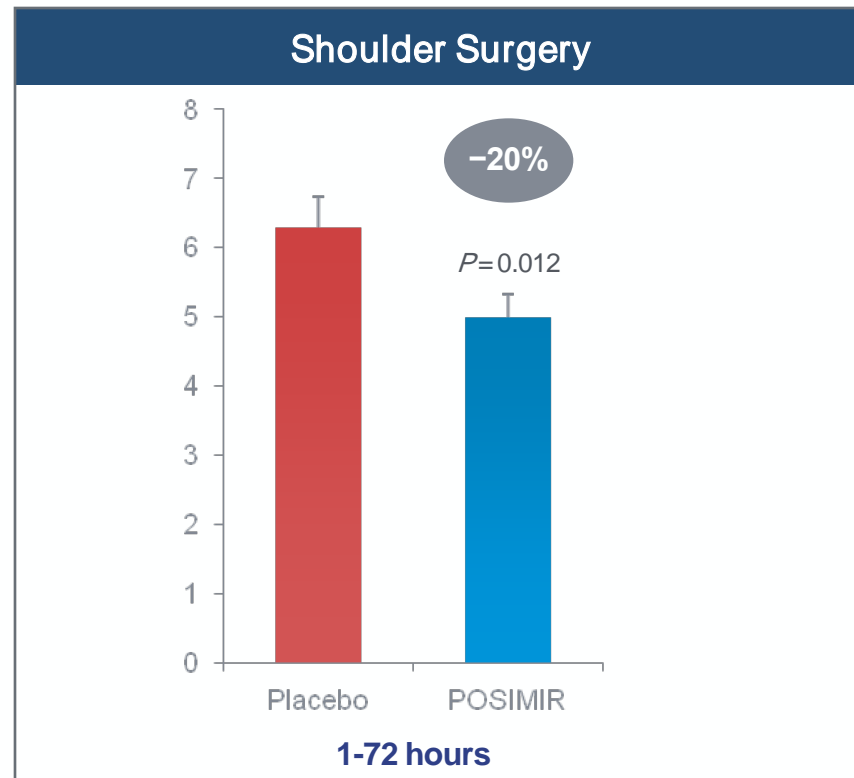
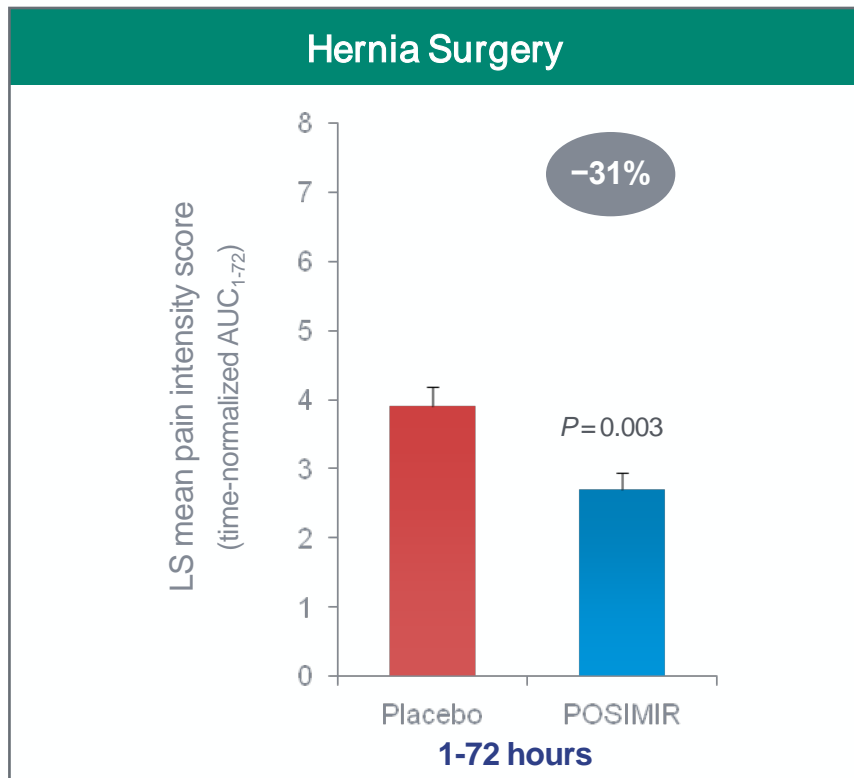


## POSIMIR<sup>®</sup> (bupivacaine extended-release solution) Post-Operative Pain Control Utilizing SABER<sup>®</sup> Technology

POSIMIR and SABER are trademarks of DURECT Corp.

- Non-Narcotic, up to 3 days of post-op pain control
- Investigational product designed for local control of post-surgical pain, plus reduced narcotic use and associated side effects and costs
- Plan to submit response to CRL in H1 2019, with potential NDA approval in 2019

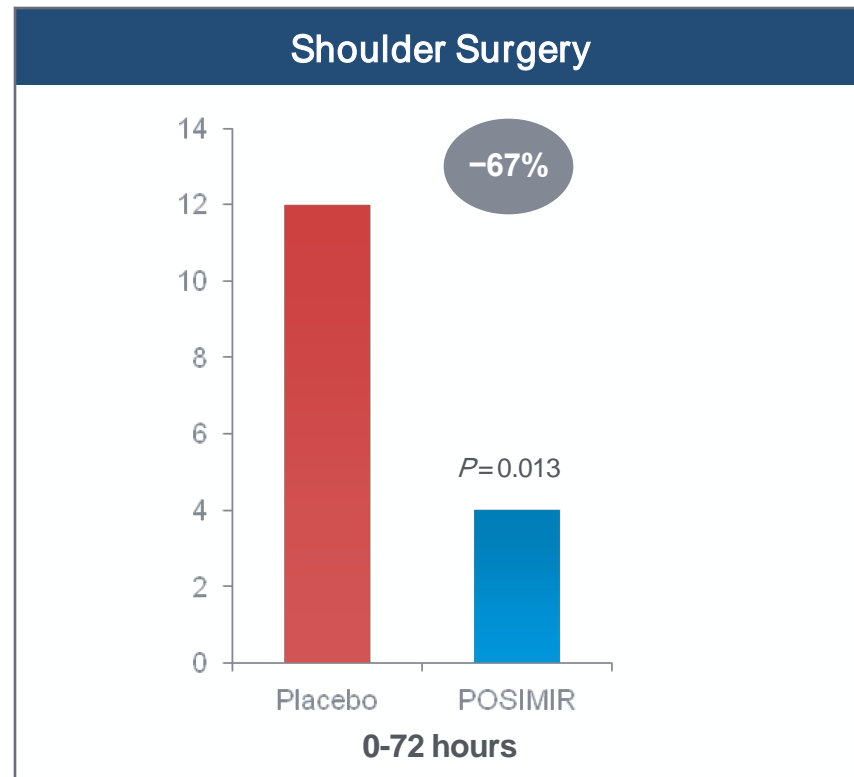
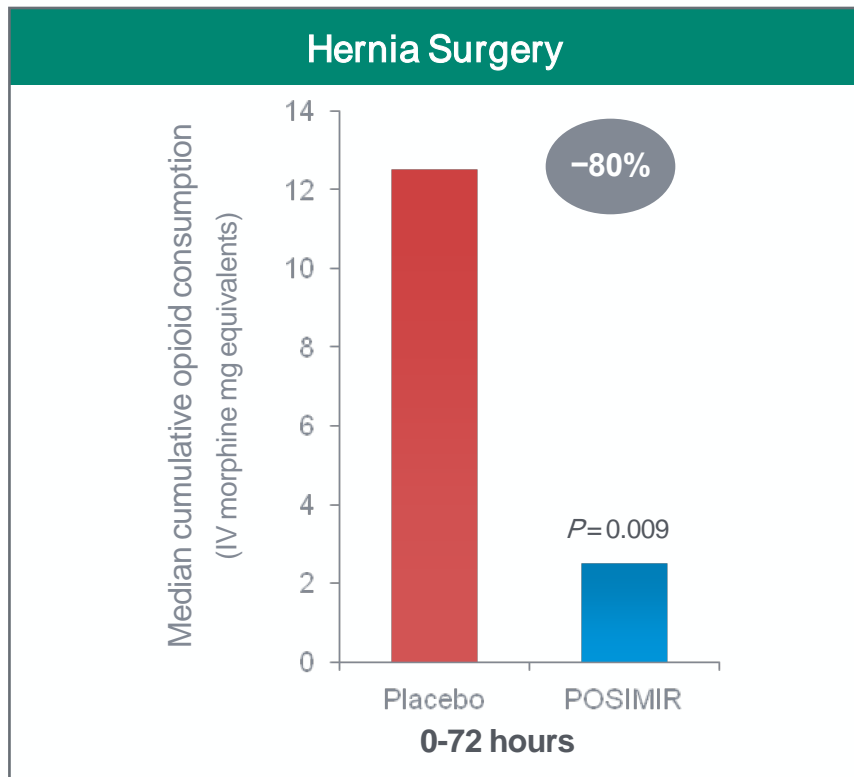
# POSIMIR®: Reduction in Pain on Movement



P-values derived from ANOVA.

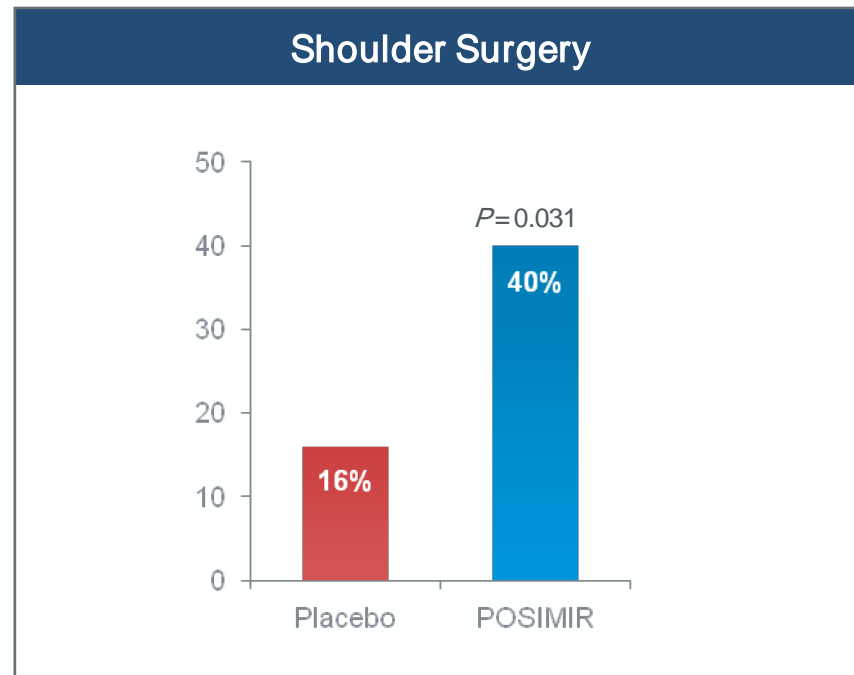
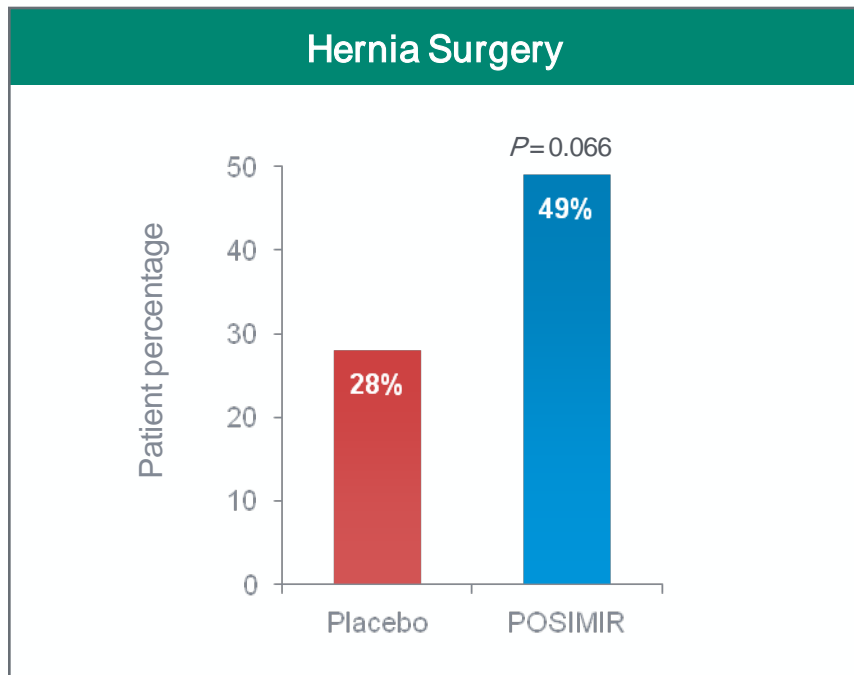


# POSIMIR®: Reduction in Opioid Use



*P*-values derived from nonparametric Wilcoxon Rank Sum test.

# POSIMIR®: Proportion of Patients NOT Taking ANY Supplemental Opioid



**% of Patients Not Taking Opioids, 0-72 hours**  
**>20% more patients did not require a single opioid**

*P*-values derived from CMH Chi-Square test adjusted by study sites.

# POSIMIR Summary

01

Significant unmet need for new long-acting non-narcotic medications for post-operative pain

02

Robust clinical data package to support FDA filing

03

Successful hernia and shoulder pivotal trials

04

Dr. Lee Simon<sup>1</sup> leading the effort to submit a response to the CRL

05

Submission to FDA of a response to the CRL planned for 1H 2019;  
potential FDA approval in 2H 2019

1. Principal at SDG, LLC, an FDA advisory firm . Served as the FDA's Division Director of Analgesic, Anti-inflammatory and Ophthalmologic Drug Products from 2001 to 2003.

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# Approved Therapeutics, Additional Programs and Cash Flow Positive Product Lines

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# Approved Therapeutics, Pipeline of Additional Development Programs and Cash Flow Positive Product Lines

Product / Indication	Phase 1-2	Phase 3	NDA filed	Approved	Commercial	Highlights
<b>PERSERIS™</b> (Schizophrenia)	[Progress bar from Phase 1-2 to Commercial]					Commercially available as of Nov. 2018 – Indivior fully launched in Feb. 2019 with 50 reps. <sup>1</sup> DURECT receives quarterly earn-out payments
<b>Methydrur</b> (ADHD - Taiwan)	[Progress bar from Phase 1-2 to Approved]					Approved in Taiwan - Orient Pharma plans 2019 launch in Taiwan <sup>1</sup>
<b>Product / Use</b>	Commercial					
<b>ALZET®</b> (Pumps for Animal Research)	[Progress bar from Phase 1-2 to Commercial]					Cash flow positive product line
<b>LACTEL®</b> (Absorbable Polymers)	[Progress bar from Phase 1-2 to Commercial]					Cash flow positive product line

(1) DURECT to receive earn-outs / royalties based on net sales by Indivior and Orient Pharma. For PERSERIS prescribing information, including BOXED WARNING and Medication Guide visit [www.perseris.com](http://www.perseris.com).

# DURECT Corporation

## Financial Overview

Nasdaq	DRRX
Recent Price	\$0.68 <sup>1</sup>
Shares O/S	162.1 MM <sup>2</sup>
Market Cap	\$111 MM <sup>1</sup>
Cash & Investments	\$34.5 MM <sup>3</sup>
Debt	\$20.5 MM <sup>3</sup>
Federal NOL's	\$348 MM <sup>3</sup>
Insider Buying	>2.5 MM shs <sup>4</sup>
Options in lieu of bonus	>\$7.3 MM <sup>4</sup>
Reduced salaries and board fees for options:	>\$2.2 MM <sup>5</sup>



Cupertino, CA headquarters

As of April 5, 2019 <sup>2</sup> As of March 7, 2018 <sup>3</sup> As of December 31, 2018 <sup>4</sup> 2012-2017 <sup>5</sup> 2011-2017

# Potential Key Drivers In 2019

## Epigenetic Regulatory Program (DUR-928)

### AH trial

- Encouraging data in completed 30 mg dosing cohorts, 90 mg dosing cohorts ongoing
- Supported by compelling NASH Phase 1b bilirubin data as well as survival data in multiple acute liver animal models
- AH data in **2H 2019**

### Psoriasis POC trial

- Initiated in Q1 2019 with top line data in **2H 2019**
- Supported by Phase 1b and pre-clinical data
- Partnering opportunity in psoriasis / atopic dermatitis

### NASH multi-dose trial

- Initiated in Q1 2019 with initial data in **2H 2019**
- Supported by Phase 1b and pre-clinical data
- Early-stage clinical data can be a meaningful valuation catalyst

## PERSERIS™ launched in Feb 2019 by Indivior

## Submission of response to CRL for POSIMIR® in H1 2019

- Potential NDA approval in **2H 2019**



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