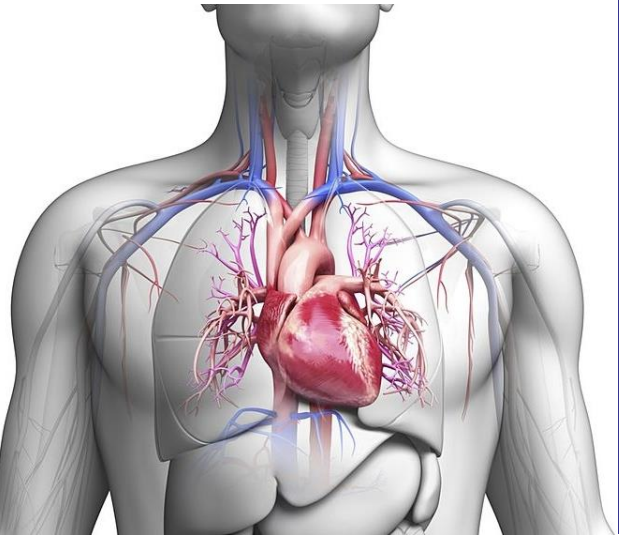
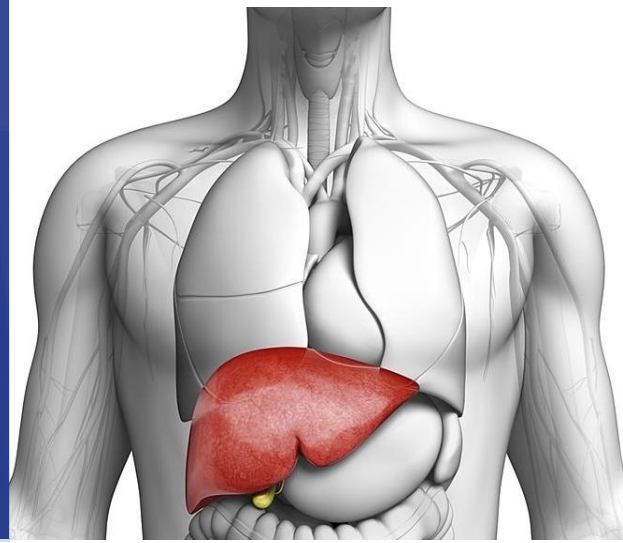
Gemphire Therapeutics



ADVANCING
CARDIOVASCULAR
AND
NASH
OPPORTUNITIES



CORPORATE PRESENTATION

May 22, 2018

Safe Harbor Statement

This presentation includes forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Except for statements of historical fact, any information contained in this presentation may be a forward-looking statement that reflects the Company's current views about future events and are subject to risks, uncertainties, assumptions and changes in circumstances that may cause events or the Company's actual activities or results to differ significantly from those expressed in any forward-looking statement. In some cases, you can identify forward-looking statements by terminology such as "may", "will", "could", "would", "should", "plan", "predict", "potential", "project", "expect," "estimate," "anticipate," "intend," "goal," "strategy," "believe," and similar expressions and variations thereof. Forward-looking statements may include statements regarding the Company's business strategy, market size, potential growth opportunities, capital requirements and use of proceeds, clinical development activities, the timing and results of clinical trials, regulatory submissions, potential regulatory approval and commercialization of the product candidate. Although the Company believes that the expectations reflected in such forward-looking statements are reasonable, the Company cannot guarantee future events, results, actions, levels of activity, performance or achievements. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including those described under the heading "Risk Factors" in our filings with the SEC. These forward-looking statements speak only as of the date of this presentation and the Company undertakes no obligation to revise or update any forward-looking statements to reflect events or circumstances after the date hereof.

This presentation also contains estimates and other statistical data made by independent parties and by us relating to market shares and other data about our industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates.

The trademarks included herein are the property of the owners thereof and are used for reference purposes only. Such use should not be construed as an endorsement of such products.

Gemphire Therapeutics

Gemphire Corporate Summary

Public Company (NASDAQ:GEMP) with Experienced Leadership

- Blue chip investors: Cormorant, Excel VM, Adage, Baron and others
- Cash balance of $34.5M at Mar 31, 2018
- Cardiovascular experience at Pfizer, Esperion, AstraZeneca, and others

Attributes of Gemcabene Seen in Prior Studies

- Observed to lower atherogenic burden and inflammation
- Observed to be safe and effective in combination with statins and other drugs
- Oral, once daily, small molecule in-licensed from Pfizer

Targeting Multiple Large Markets – 16-18M U.S. Patients

- Severe Hypertriglyceridemia (SHTG) – 3M pts
- Fatty Liver Disease (NAFLD/NASH) – 6-8M pts
- Familial Hypercholesterolemia (FH: HoFH & HeFH) – 1.3M pts
- High-risk cardiometabolic patients - 6.1M pts

Near Term Catalysts

- SHTG – Top-line data from Phase 2b trial in 2Q'18
- NASH – Two Phase 2 programs initiated; POC data 2H'18 – 1H'19

Gemphire Therapeutics

Large U.S. Market Opportunities for Gemcabene

	DYSLIPIDEMIA			NASH
ADDRESSABLE MARKET	~1M[1]	~10M[1]	~3M[1]	~8M[2]
~22M Patients	**HeFH /HoFH Patients**	**ASCVD Patients, includes ~6M Cardiometabolic Patients**	**Severe Hypertriglyceridemia Patients**	**Adult and Pediatric NASH Patients, >60M NAFLD Patients**
OVERALL MARKET SIZE ($)				
~$33B BY 2025		~$13B[3]		~$20B[4]

1. Company estimates based on DRG Market Data, NHANES and FH Foundation; 2. The National Institute of Diabetes and Digestive and Kidney Diseases, 2016; 3. Decision Resources Group 2015 report; 4. Transparency Market Research (April 2016)

Gemphire Therapeutics

Gemcabene Pipeline and Clinical Plans

Multiple Value Drivers Expected in 2018

INDICATION	PH 1	PH 2	PH 3	NDA	ANTICIPATED MILESTONES
SHTG Severe Hypertriglyceridemia					Top-line data expected in 2Q 2018; Full data set expected 2H 2018
NAFLD/ NASH Non-alcoholic Fatty Liver Disease / Non-alcoholic Steatohepatitis — Adult (FPL)					POC Programs Initiated; POC data expected 2H 2018; Full data set expected 1H 2019
NAFLD/ NASH Non-alcoholic Fatty Liver Disease / Non-alcoholic Steatohepatitis — Pediatric (NAFLD)					
HoFH Homozygous Familial Hypercholesterolemia					End of Phase 2 meeting with FDA; Plan to initiate P3 in FH 2H 2018
HeFH Heterozygous Familial Hypercholesterolemia					
ASCVD Atherosclerotic Cardiovascular Disease					

Gemphire Therapeutics

Hypertriglyceridemia Opportunity

Most Patients Untreated in U.S. Today

Large Market Opportunity

- >3M Patients with TGs ≥500 mg/dl (SHTG)
- 36M Patients with TGs 200-499 mg/dL
- Majority (80%) of SHTG patients are untreated

Gemcabene Product Profile

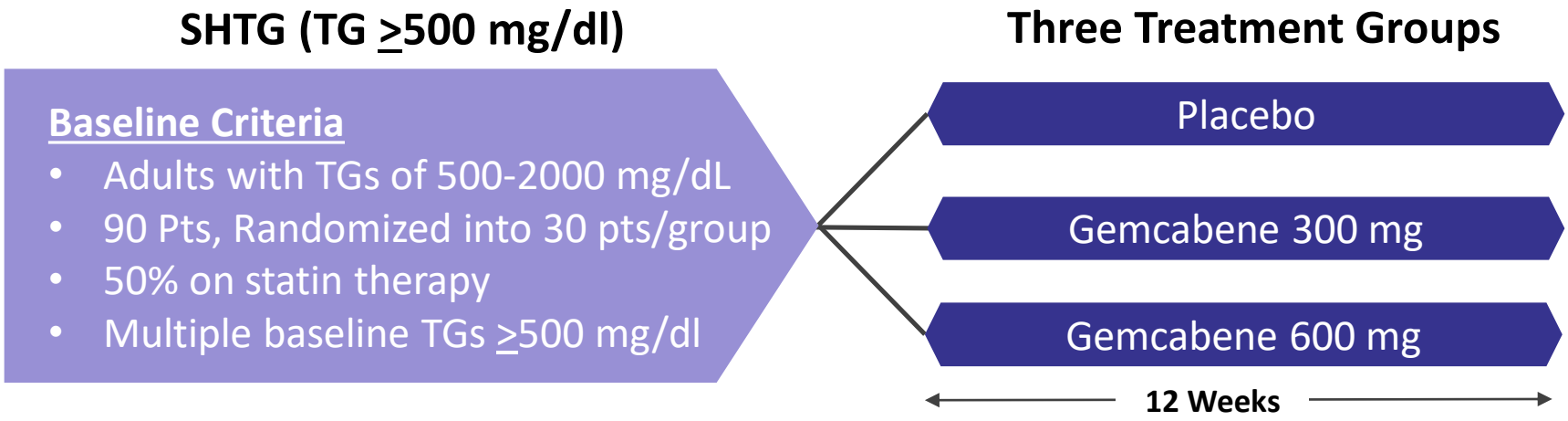
- Once-daily, small oral pill
- No food effect in prior studies
- Observed safety and tolerability in nearly 1100 subjects
- Safely combined with statins and other drugs in prior studies
- Issued method patent valid into 2032 for patients with TGs > 500 mg/dL

Sarwar N et al. Circulation. 2007;115:450-8; Christian et al. American Journal of Cardiology 2011: 107:891
CVRG

Gemphire Therapeutics

Severe Hypertriglyceridemia (SHTG) Trial

INDIGO-1: Phase 2b, Double-Blind, Placebo-Controlled



Primary Endpoint:

- % Change in serum triglycerides (TG) from baseline to 12 weeks

Secondary Endpoints:

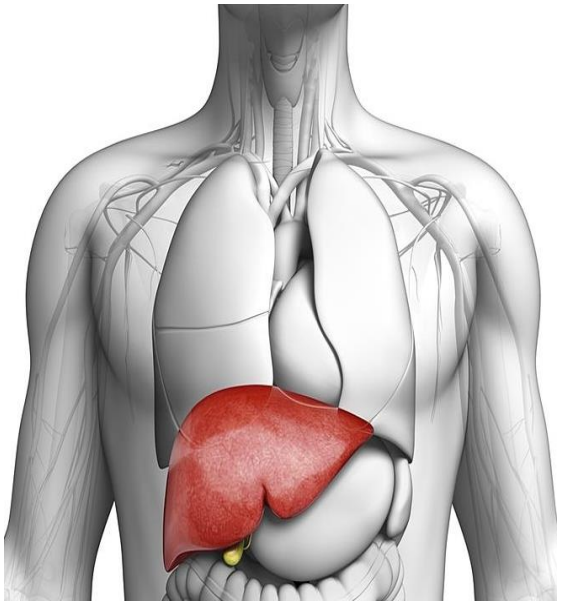
- % Change in LDL-C, apoB, non-HDL-C, VLDL-C, and TC
- % Change in hsCRP and other inflammatory markers
- % Change in TGs with and without existing statin therapy
- Safety and tolerability

Conducted in U.S. & Canada

Gemphire Therapeutics

Fatty Liver Disease (NAFLD/NASH) – Global Epidemic

Gemcabene's MOA Targets Many Underlying Pathologies



- Non-alcoholic fatty liver disease (NAFLD) is a **continuum of liver disease** progressing from isolated steatosis to non-alcoholic steatohepatitis (NASH)
- NASH is characterized by **excessive fat accumulation, inflammation, ballooning** and **fibrosis** in the liver
- **Gemcabene's** attributes in prior studies suggest it could benefit **NASH/NAFLD patients**
- **Rising prevalence of diabetes and obesity** contribute to a rapid rise in the prevalence of NAFLD (60M+ in US) and NASH (6-8M in US) in adults
- **No approved therapies** to treat NASH

The National Institute of Diabetes and Digestive and Kidney Diseases, 2016; Decision Resources Group 2015 report; Spengler EK, Loomba R. Recommendations for Diagnosis, Referral for Liver Biopsy, and Treatment of NAFLD and NASH. Mayo Clinic proceedings. 2015;90(9):1233-1246. doi:10.1016/j.mayocp.2015.06.013.

Gemphire Therapeutics

NAFLD/NASH – Two Phase 2 Studies

Two Open-label Proof-of-Concept (PoC) Studies

- **Pediatric NAFLD/NASH**
  - Large unmet need – no current therapies
  - More rapid recruitment - large patient pool available from a few medical sites
  - Safety and efficacy profile of gemcabene attractive to KOLs
  - Uniform patient population – few background medications, good compliance

- **Familial Partial Lipodystrophy (FPL)**
  - Ultra-orphan (300 patients in U.S.)
  - Highly motivated, compliant patient population
  - Constrained dietary regimens and no alcohol

Provide rapid assessment of efficacy and safety for NAFLD/NASH
Potential to move quickly into pivotal trials

Epidemic of NAFLD and NASH in Children

Obesity is the Single Greatest Risk Factor for Pediatric NAFLD

- **NAFLD** is estimated to affect **7M children** in US
- **Pediatric NASH** estimated prevalence is **2M children** in US
- **38% of obese children have NAFLD;** 20% of children ages 12-19 are obese

24M OVERWEIGHT OR OBESE CHILDREN **(AGES 2-19)**

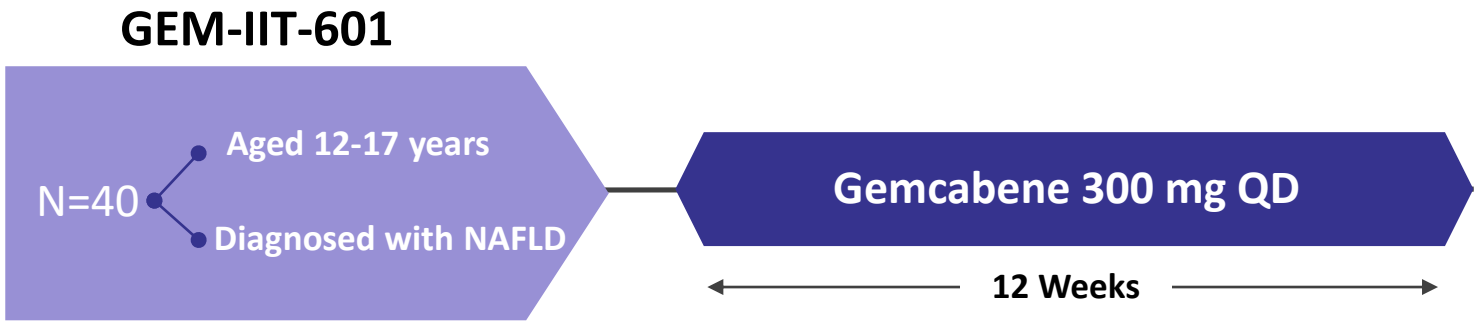
13M OBESE CHILDREN **(AGES 2-19)**

Fussilo S, Rudolph B. Nonalcoholic fatty liver disease. Pediatrics in Review. 2015;36(5):198–206; The National Institute of Diabetes and Digestive and Kidney Diseases, 2016; Data derived from Health, United States, 2011 (NCHS); Schwimmer JB, Deutsch R, Kahen T, Lavine JE, Stanley C, and Behling C. Prevalence of fatty liver in children and adolescents. Pediatrics. 2006;118(4):1388–1393; CDC National Center for Health Statistics, FactStats – Overweight Prevalence, 2016; AHA Obesity Information, 2016

Gemphire Therapeutics

Pediatric NAFLD Phase 2a Trial Design

Open-Label



Principal Investigator

- **Miriam Vos, MD, MSPH, Emory University School of Medicine & Northwestern; adding UCSD**

Primary Endpoint:

- % change in ALT from baseline to 12 weeks

Secondary Endpoints:

- Change in hepatic steatosis as measured by MRI-PDFF
- Change in liver inflammation and fibrosis (LIF) score by MRI Liver Multiscan
- Change in AST, insulin sensitivity, serum lipids (including TG), apolipoproteins, and inflammatory markers (including hsCRP)
- Safety and tolerability

Gemphire Therapeutics

American Liver Foundation KOL Webinar

"Pediatric Non-Alcoholic Fatty Liver Disease — Yes, It Absolutely Starts in Childhood"

Date: Wednesday, May 23 (tomorrow)

Time: 8:00am – 9:00am Eastern Time

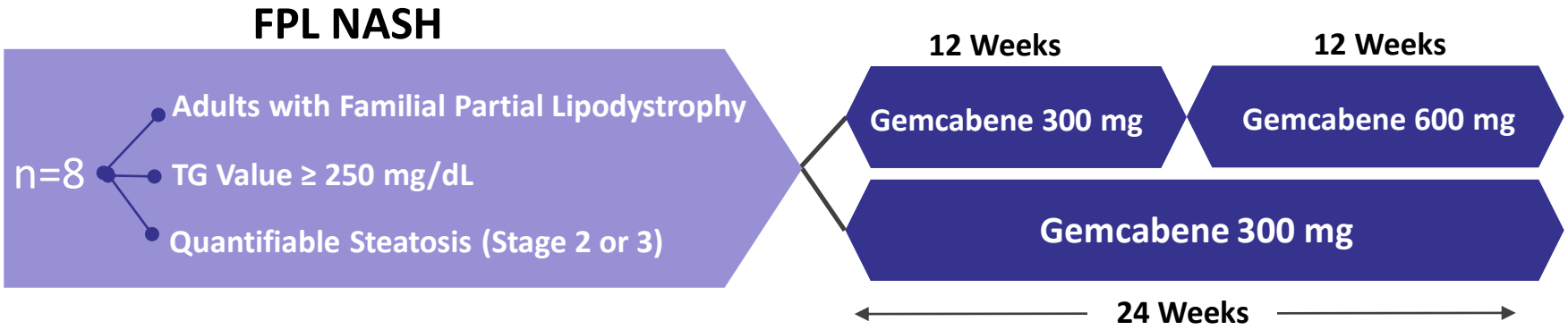
Presenters:

- Dr. Miriam Vos, Emory University School of Medicine;
- Dr. Saul Karpen, Emory University School of Medicine/ Children's Healthcare of Atlanta
- Tom Nealon, President & CEO, The American Liver Foundation

Gemphire Therapeutics

Adult FPL/NASH Phase 2a Trial Design

Familial Partial Lipodystrophy (FPL) Patients, Open-Label



Principal Investigator

- **Elif Oral, MD, University of Michigan**

Primary Endpoint:

- % Change in triglycerides (TG) from baseline to 12 weeks

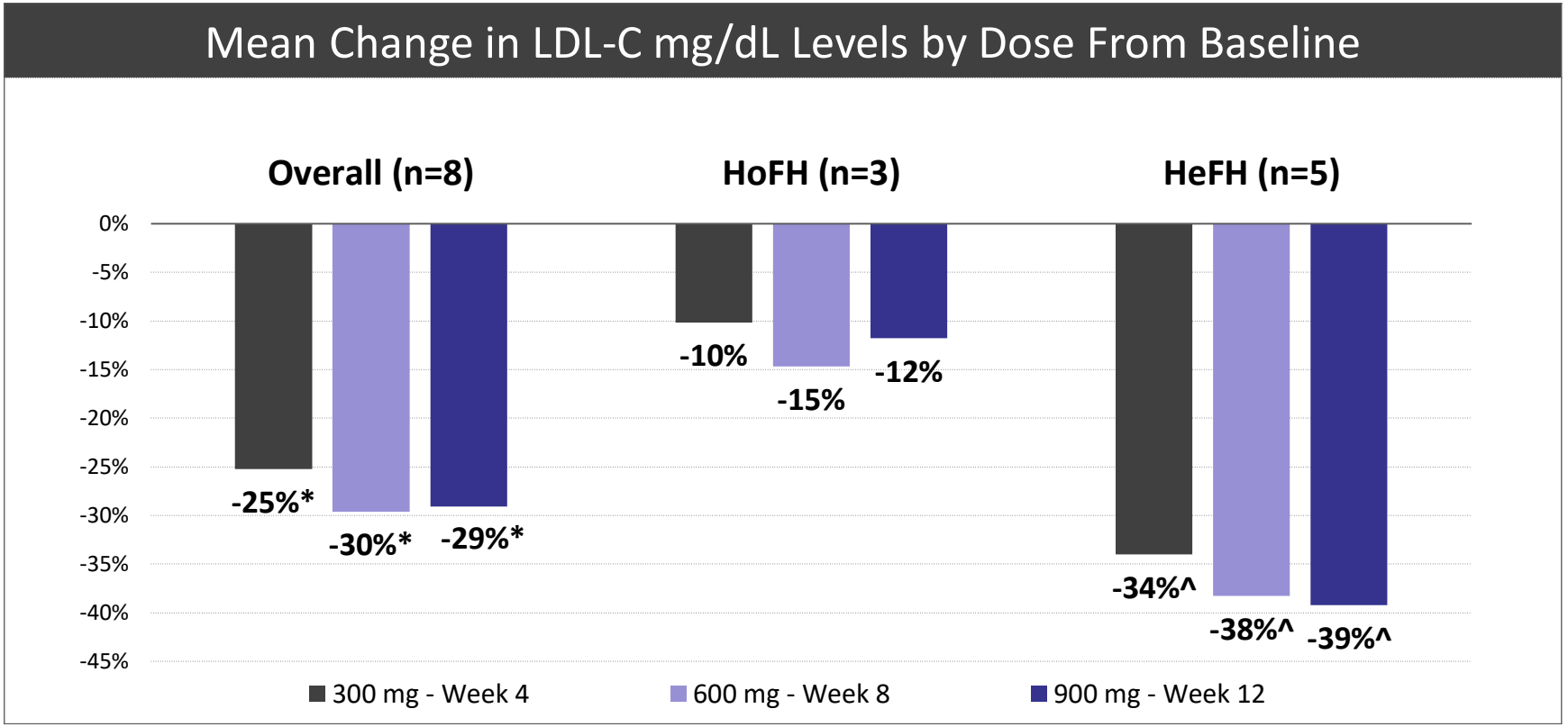
Secondary Endpoints:

- Change in hepatic steatosis as measured by MRI-PDFF at 12 and 24 weeks
- Change in NAS (histology) at 24 weeks
- Change in AST, insulin sensitivity, serum lipids (including TG), apolipoproteins, and inflammatory markers (including hsCRP)
- Safety and tolerability

Gemphire Therapeutics

Addressing Residual Risk in Familial Hyper-cholesterolemia (FH) Patients (Cobalt-1)

Gemcabene lowered LDL-C in both HoFH and HeFH on top of high dose statins



Gemcabene 600 mg: 100 mg/dL absolute reduction in LDL-C

* $p < 0.01$; ^ $p < 0.001$

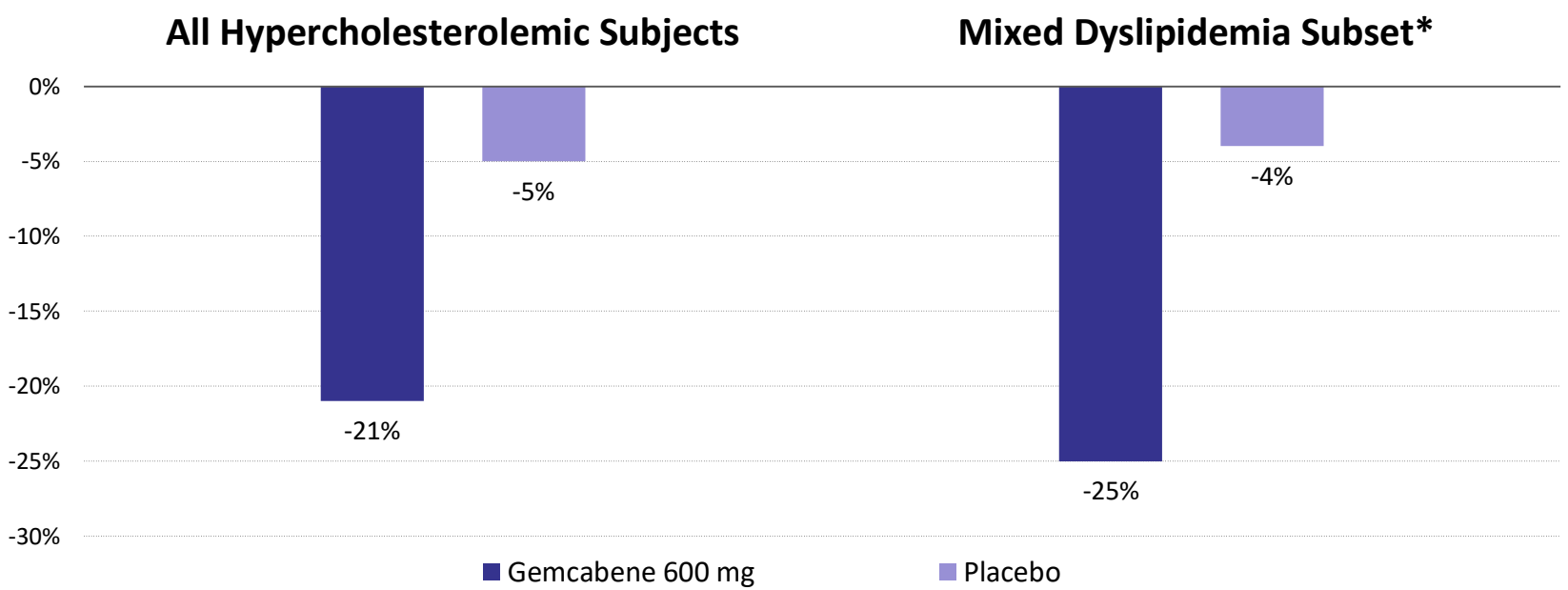
Gaudet et al., COBALT-1: A Phase 2 Open-Label, Dose-Finding Study to Assess the Efficacy, Safety, and Tolerability of Gemcabene in Patients with Homozygous Familial Hypercholesterolemia on Stable, Lipid Lowering Therapy, 2017

Gemphire Therapeutics

LDL-C Lowering in Hypercholesterolemia

Oral Gemcabene Reduced LDL-C by -21 to -25%

Integrated Analysis In Hypercholesterolemic Patients Across Completed Clinical Studies



Gemcabene 600 mg is the intended target dose for Phase 3 trials for reduction of LDL-C across the hypercholesterolemic patient population

**(Baseline LDL-C ≥100 and TGs ≥200 and <500 mg/dL)*

Gemphire Therapeutics

Gemcabene Reduces hsCRP and Inflammation

Moving beyond LDL-C to Reduce Residual CV Risk

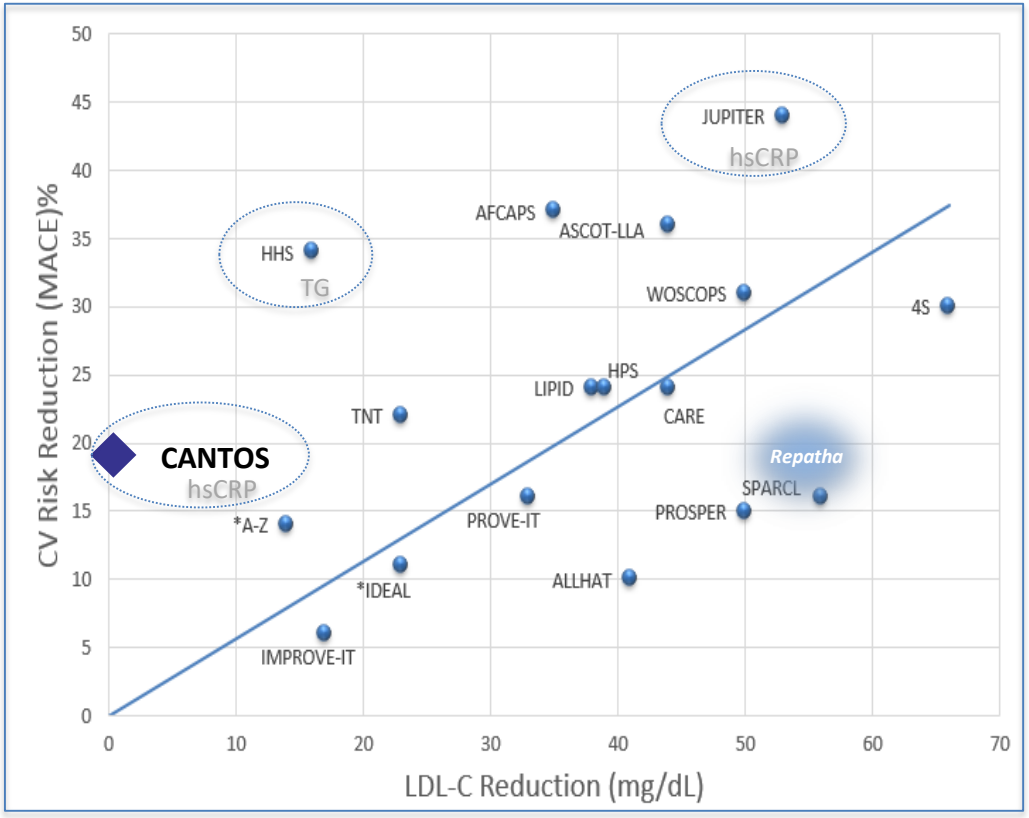
CANTOS Study

Novartis' Canakinumab demonstrated an **outcomes benefit for mortality and other modifiable risk factors for CV disease by lowering hsCRP** (median hsCRP reduction of 37% led to a 15% reduction in cardiovascular related MACE)^

Orally-Administered Gemcabene Lowers hsCRP

Gemcabene 600 mg demonstrated 40% reduction in hsCRP compared with placebo 5% reduction

CANTOS Adds a New Axis to the LDL Lowering Hypothesis



Lowering Inflammation Remains a Potentially Key Differentiator to go Beyond LDL-C in Reducing Cardiometabolic Patient Risk

LDL-C Lowering Drugs with Successful Trials:
Gemfibrozil: HHS; **Atorvastatin:** IDEAL, TNT, PROVE-IT, ASCOT-LLA, SPARCL; **Rosuvastatin:** JUPITER; **Simvastatin:** A-Z, HPS, 4S; **Pravastatin:** ALLHAT, CARE, PROSPER, LIPID, WOSCOPS; **Lovastatin:** AFCAPS; **Ezetimibe:** IMPROVE-IT

Sources: CTT Cholesterol Treatment Trialists and Study Papers for each Trial
MACE = Major Adverse Cardiovascular Events
* A-Z p=.14 and IDEAL p=.07

^ N Engl J Med. 2017 Sep 21;377(12):1119-1131.

Gemphire Therapeutics

Gemcabene's Novel Mechanisms of Action

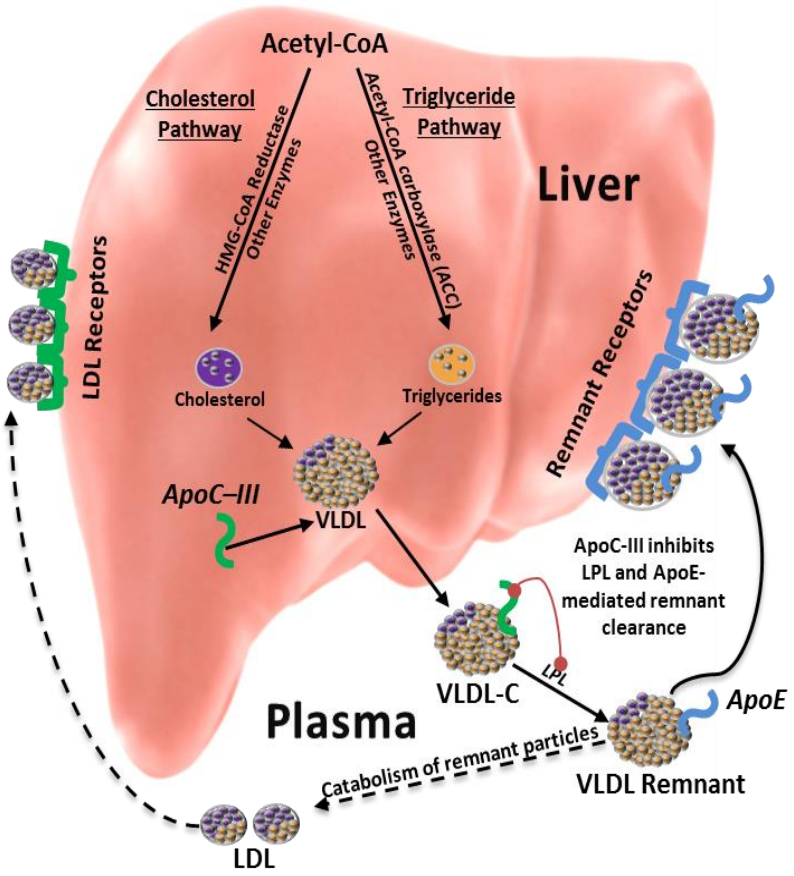
Lowers LDL-C, TGs, ApoCIII, ApoB & hsCRP; Additive to Statin MOA

IMPROVES CLEARANCE

- Reduces ApoC-III gene expression and plasma ApoC-III protein levels
- Enhances VLDL-C clearance through increased affinity for the hepatic remnant receptor

REDUCES PRODUCTION

- Inhibits *de novo* synthesis of TGs and cholesterol in the liver
- TG effects due to inhibition of acetyl CoA carboxylase 1
- ↓VLDL-C particles leaves fewer apolipoproteins for catabolism to LDL-C



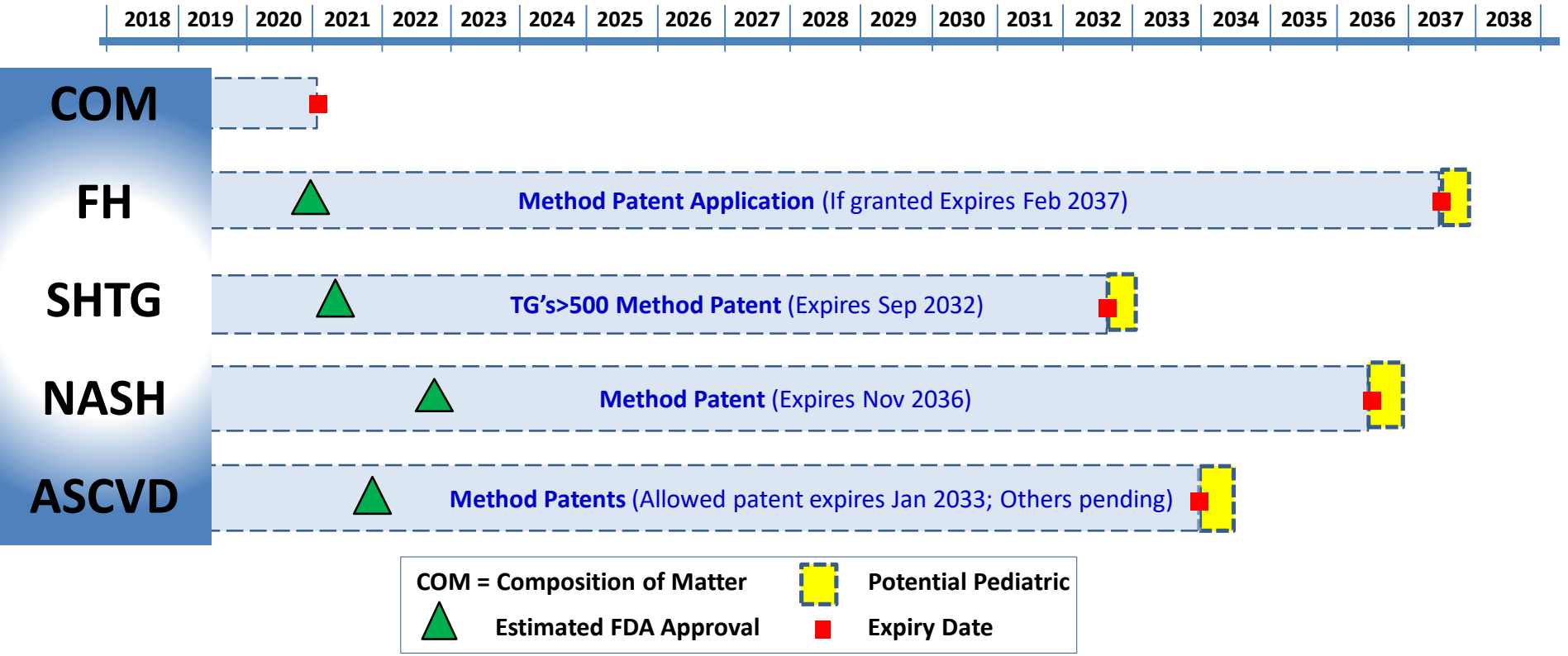
Not shown above, hsCRP is reduced via inhibition of gene transcription by blocking c/EBP-delta binding

Gemphire Therapeutics

Patent Protection for Gemcabene

Protection for Indications and Long-Term Runway for Commercialization

Protection by Year by Indication (US Market)



POTENTIAL FOR REGULATORY EXCLUSIVITY FOR A NEW CHEMICAL ENTITY (NCE)

US (5 years); US Orphan (FH) (7 years); Europe NCE or Orphan (10 years), Japan NCE (about 8 years); Japan Orphan (about 10 years); China (6 years); China Orphan (10 years)

Gemphire Therapeutics

Gemphire Capitalization and Coverage

NASDAQ GLOBAL MARKET	
Symbol	GEMP
Market Cap[1]	~$91M
Price Per Share[1]	$6.37/share
Shares Outstanding[2]	14.2M
Cash at 3/31/18	$34.5M

Institutional Ownership	Shares Held[3] *At March 31, 2018*
Cormorant Funds	1,042K shares (7%)
Excel Venture Management	930K shares (7%)
NorthPointe Capital, LLC	779K shares (5%)
Pfizer	675K shares (5%)
Baron Capital Management, Inc.	511K shares (4%)
Sphera Funds Management	481K shares (3%)
Sigma Emerging Markets	443K shares (3%)
The Vanguard Group, Inc.	377K shares (3%)

GEMP Analyst Coverage

CANACCORD GENUITY INC.
John Newman, Ph.D.

JEFFERIES LLC
Matthew J. Andrews

LAIDLAW & COMPANY
Frank Brisebois

PIPER JAFFRAY & CO
Charles Duncan, Ph.D.

LIFESCI CAPITAL
Patrick Dolezal

RAYMOND JAMES & ASSOCIATES
Laura Chico, Ph.D.

ROTH CAPITAL PARTNERS
Yasmeen Rahimi, Ph.D.

1. At May 17, 2018; 2. Fully Diluted Shares Outstanding = 18.1M; 3. Percentage Ownership Calculated on Shares Outstanding at 3/31/18.

Gemphire Therapeutics

Proven and Successful Management Team

Steve Gullans, PhD, FAHA IChief Executive Officer	EXCEL · RGen (Bridging the Translational Gap) · ClevelandHeartLab (Know your risk.) · Harvard Medical School
Charles Bisgaier, PhD Chief Scientific Officer & Cofounder	Parke-Davis (People Who Care) · Esperion Therapeutics · Pfizer · ProNAi
Jeff Mathiesen, CPA Chief Financial Officer	Sunshine Heart · Zareba · PUR · Deloitte.
Lee Golden, MD Chief Medical Officer	mesoblast · Eisai · Actelion · Pfizer
Seth Reno, MBA Chief Commercial Officer	AstraZeneca · MedImmune (A member of the AstraZeneca Group) · Wyeth Pharmaceuticals

Prior Marketed Products Experience

- CRESTOR rosuvastatin calcium
- Lipitor atorvastatin calcium
- Lopid® 600 (Gemfibrozil Tablets, USP)
- myalept (metreleptin) for injection
- Lynparza olaparib

Prior Pipeline Development Experience

- CER-001 and CER 209 (Cerenis)
- ACP-501 (AstraZeneca/AlphaCore)
- ETC-1002 and ETC-216 (Esperion)
- PNT-2258 (ProNAi)

Gemphire Therapeutics

Key Catalysts through Early 2019

1H 2018	2H 2018	1H 2019
GEMCABENE TOP-LINE DATA IN CARDIOVASCULAR AND NASH		
❑ **INDIGO-1 (SHTG) Top-Line** ☑ **Initiate Adult and Pediatric NAFLD/NASH POC Trials**	❑ **INDIGO-1 Full Data Set** ❑ **Initiate Phase 3 FH Program** ❑ **POC FPL/NASH Data**	❑ **POC Pediatric NAFLD Data** ❑ **Initiate Phase 3 SHTG Program** ❑ **POC NASH/NAFLD Full Data Sets**
Other Potential Catalysts		
❑ FDA decision on 2 year rodent carcinogenicity study	❑ Consider partnership opportunities for Phase 3 programs	
External Milestones of Interest		
☑ ODYSSEY Outcomes readout by Sanofi ❑ MDGL readouts in Phase 2 NASH and HeFH trials ❑ ESPR Study 1 data readout	❑ AMRN REDUCE-IT cardiovascular outcomes study readout for hypertriglyceridemia of 150-499 mg/dL	

Gemphire Therapeutics

Summary

Gemcabene Has Shown Benefits for Cardiometabolic Patients, in Studies to Date

- Lowers LDL-C, Triglycerides and hsCRP
- Observed to be safe and effective in 1100 subjects
- No observed DDI with statins and other drugs
- Oral, once daily, small molecule in-licensed from Pfizer
- Multidimensional MOA targets many underlying pathologies

Targeting Multiple Large Markets – 16-18M U.S. Patients

- Familial Hypercholesterolemia (FH: HoFH & HeFH) – 1.3M pts
- Severe Hypertriglyceridemia (SHTG) – 3M pts
- Fatty Liver Disease (NAFLD/NASH) – 6-8M pts
- High-risk cardiometabolic patients - 6.1M pts