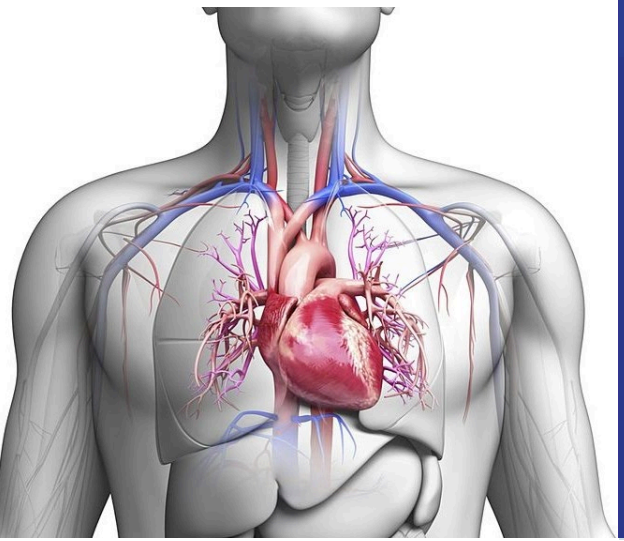
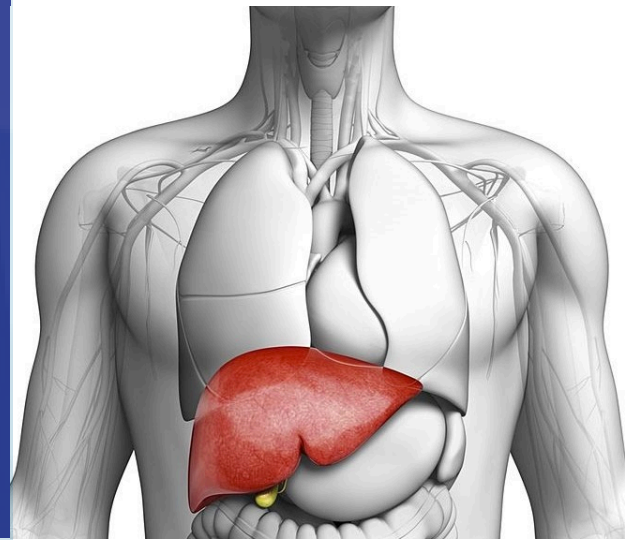
Gemphire Therapeutics



ADVANCING
CARDIOVASCULAR
AND
NASH
OPPORTUNITIES



CORPORATE PRESENTATION

January 2019

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", "promising," "expect," "estimate," "anticipate," "intend," "goal," "strategy," "believe," "milestone," 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.

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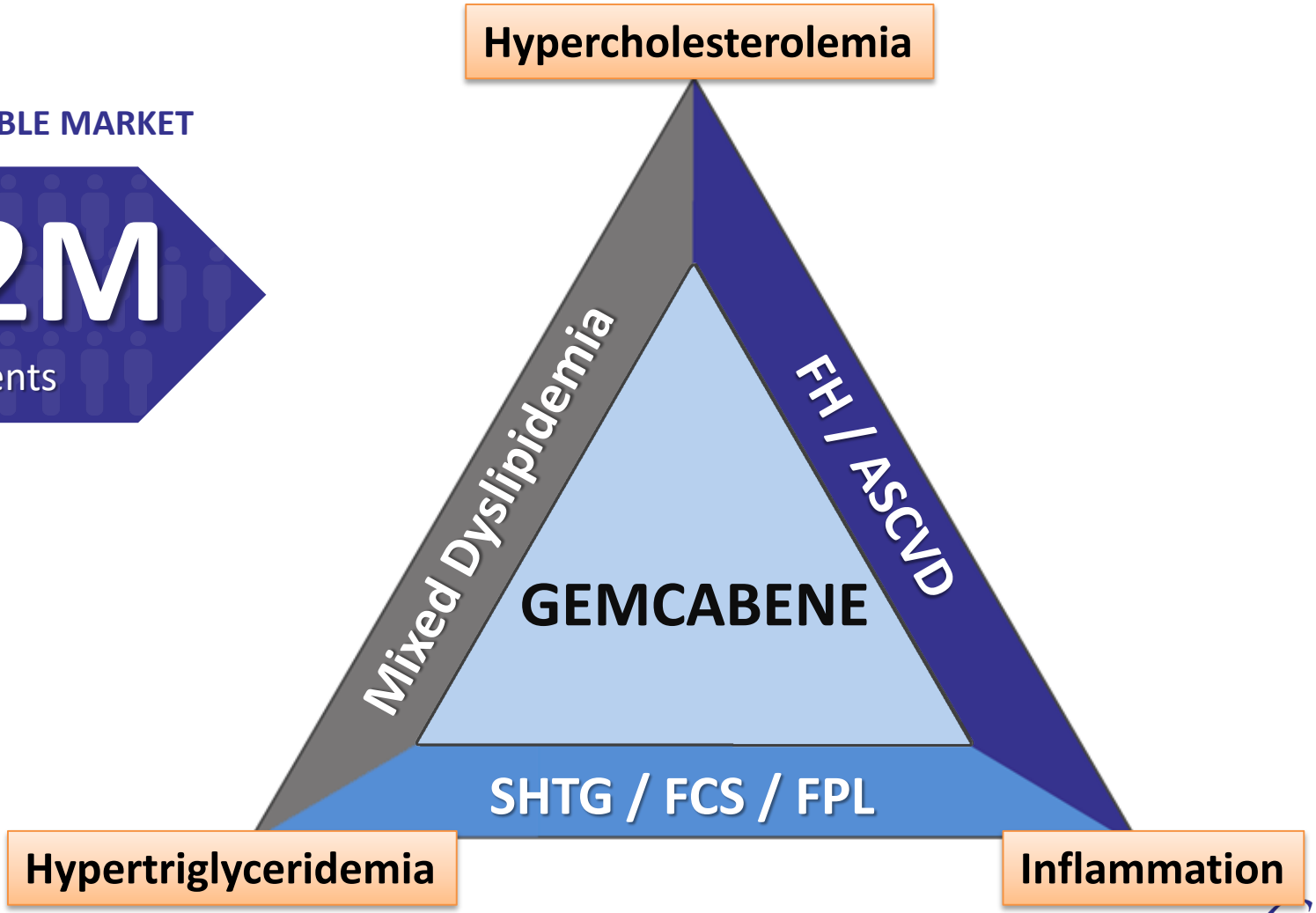
Gemphire Therapeutics

Gemcabene - Potential for Many Cardiometabolic Diseases

Once Daily Tablet Observed to be a Safe "Add-On" to Statins and Other Lipid-Lowering Therapies in Trials to Date

ADDRESSABLE MARKET

~22M
Patients



Gemphire Therapeutics

Gemcabene Differentiated Product Profile

Multiple Important Cardiometabolic Benefits to Patients Observed

Significant Efficacy

- **LDL-C ~12-40% ↓**
- **TG ~20-50% ↓**
- **hsCRP ~25-50% ↓**

Percentages (Mean and Median - LDL-C, Median - hsCRP, TG) have been demonstrated across multiple clinical studies in relevant patient populations

No Drug-Drug Interactions

- High dose atorvastatin
- High dose simvastatin
- Digoxin
- PCSK9 Inhibitors
- Ezetimibe

Extensive Clinical Program

- > 1,110 subjects treated with gemcabene
- 23 completed Ph1 and Ph2 clinical trials
- Multiple cardiometabolic indications studied, including:
  - Severe Hypertriglyceridemia
  - ASCVD
  - Hypercholesterolemia
  - Familial Partial Lipodystrophy

Promising Safety and Tolerability

- No myalgia as monotherapy
- No liver toxicities
- No significant affect on kidney function
- No QTc prolongation
- No clinically meaningful change in blood pressure
- No food effect

A decrease in CRP (an earlier clinical assay) correlates with a decrease in hsCRP (the current CV risk assay).

Gemphire Therapeutics

Addressing the FDA Partial Clinical Hold

- Completing ***ongoing clinical trials of up to 6 months*** as allowed on partial clinical hold
- Hired additional ***regulatory & toxicology consultants*** to efficiently execute our plans
- *In vitro* PPAR-α ***transactivation study*** in dog and monkey is completed, per FDA request
- Initiated CRO-related activities to conduct 13 week ***PPAR-α knockout mouse study***, requested by FDA
- ***Submission*** of request to lift partial clinical hold to the ***FDA*** expected to occur in ***Q4'19***

Gemphire Therapeutics

Major Milestones for 2019

- ***Top-line clinical results*** from Phase 2 Familial Partial Lipodystrophy (FPL)/NASH trial (expected Q2)
- Submit preclinical toxicology report to FDA to ***address partial clinical hold*** (expected Q4)
- Conducting a review of a range of ***strategic alternatives*** with ***Ladenburg Thalmann*** as the strategic financial advisor, focused on maximizing stockholder value

Gemcabene for Cardiometabolic Diseases

Staged approach to multiple markets – "Orphan-First Strategy"

Orphan Indications (>$500M Market)

- Familial Chylomicronemia Syndrome (FCS)
- Familial Partial Lipodystrophy (FPL)
- Homozygous Familial Hypercholesterolemia (HoFH)

Broader Populations (>$5B Market)

- Severe Hypertriglyceridemia (SHTG) (TG ≥ 500 mg/dL)
- Heterozygous FH (HeFH) and ASCVD
- Mixed Dyslipidemia
- NAFLD/NASH

Potential for Value Creation in Both Rare and Broad Cardiometabolic Patient Populations

Rationale for "Orphan-First" Strategy

- **Large unmet clinical need:** FCS, FPL, and HoFH are considered orphan diseases and current therapies are inadequate
- **Smaller, less expensive trials:** Historically, these trials enroll fewer patients and FDA approvals have been based on surrogate endpoints (e.g., serum LDL-C or TGs)
- **Potential rapid path to market:** If approved, pursue rapid market entry with a targeted sales force addressing the most severe segment of dyslipidemia at an appropriate price point
- **Future potential to address much larger markets:** If approved, build on gemcabene's orphan branding to seek FDA approval for broader indications, such as SHTG and potentially ASCVD and NASH

Gemphire Therapeutics

Hypertriglyceridemia Opportunity

Orphan Indications to Broad Indications

Orphan

- Familial Partial Lipodystrophy (FPL) – 300 Pts, TGs >250 with other metabolic anomalies
- Familial Chylomicronemia Syndrome (FCS)- 1K Pts, TGs ≥750 mg/dL

Broader Indications (Future)

- Severe Hypertriglyceridemia (SHTG) – 3M Pts, TGs ≥500 mg/dL
- ~60-70M Patients with highly elevated TGs ≥150 mg/dL

Orphan Opportunity	Broader Market Opportunity
Gemcabene has potential to address large unmet need for patients facing morbidity and mortality concerns	Recent trials by others suggest lowering TGs and inflammation improves outcomes (MACE)

Sarwar N et al. Circulation. 2007;115:450-8; Christian et al. American Journal of Cardiology 2011: 107:891
CVRG; Trends in Elevated Triglyceride in Adults: United States, 2001–2012, NCHS Data Brief No. 198, May 2015;
The National Organization for Rare Disease (https://rarediseases.org/); Cardiovascular Research Group (CVRG) 2018

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Recent News in Triglyceride Market

Amarin: New Vascepa Prescriptions Grow After REDUCE-IT's Topline Results

Nov. 9, 2018 12:29 PM ET

Cardiovascular Death Reduced by 20%
Fatal or Nonfatal Heart Attacks Reduced by 31%
Fatal or Nonfatal Stroke Reduced by 28%
Urgent or Emergent Coronary Revascularization Reduced by 35%
Hospitalization for Unstable Angina Reduced by 32%

Vascepa® (icosapent ethyl) 26% Reduction in Key Secondary Composite Endpoint of Cardiovascular Death, Heart Attacks and Stroke Demonstrated in REDUCE-IT™ Supports 25% Overall Reduction in Five-Point Major Adverse Cardiovascular Event Primary Composite Endpoint

November 10, 2018 15:00 ET

FDA rejects Ionis Pharma and Akcea's volanesorsen for FCS

Aug. 27, 2018 4:36 PM ET

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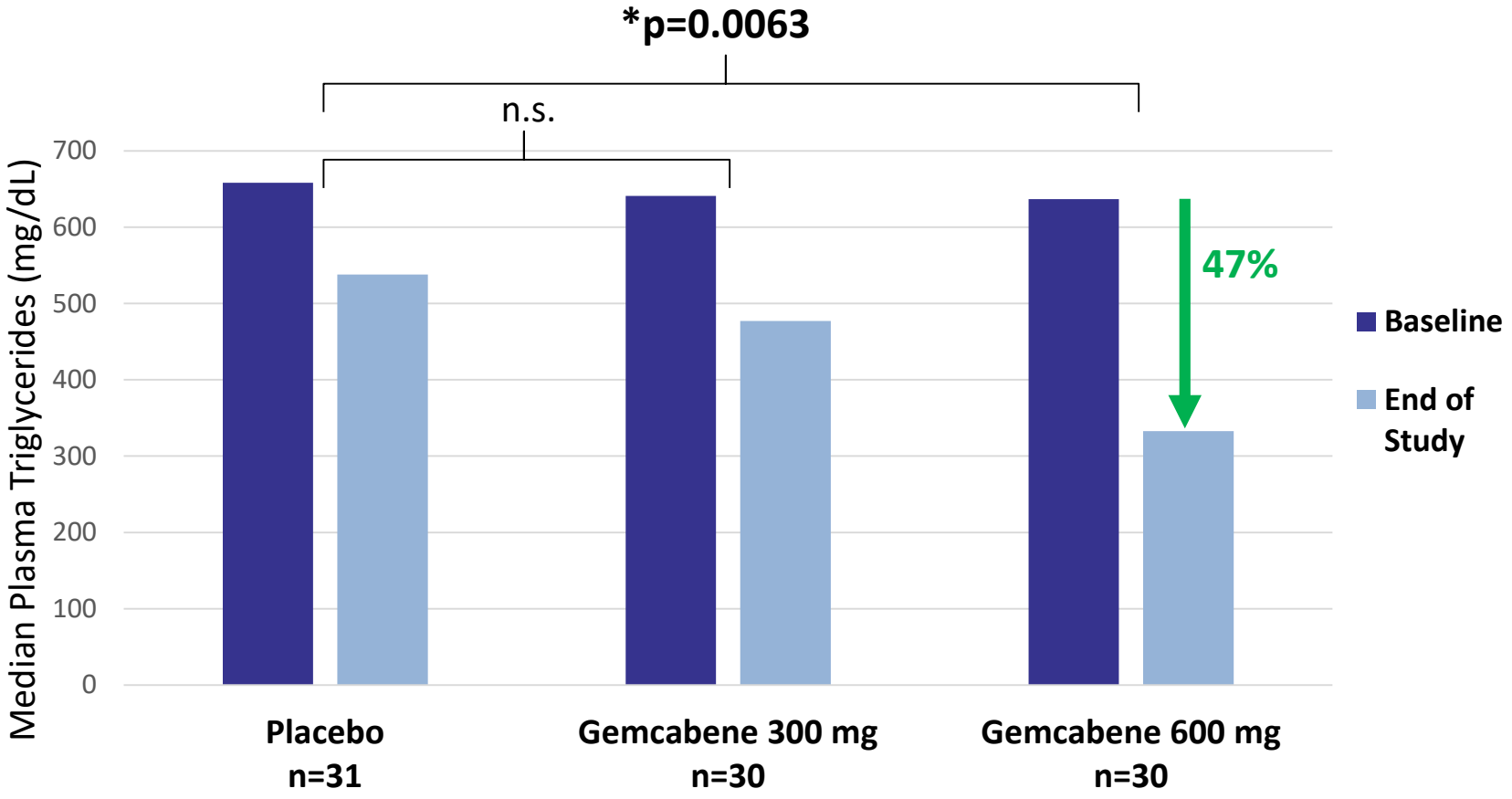
Primary Endpoint: % Change in Serum TGs

Significant Decrease in TGs Observed with Gemcabene 600 mg in INDIGO-1 Trial of Severe Hypertriglyceridemia (SHTG)



End of Study = Average of Week 10 and Week 12

*p-value based on Ranked ANCOVA

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Limitations of Current TG Therapies

Disadvantages of Fish Oils, Fibrates, Niacin

LARGE EXISTING MARKET DESPITE LIMITATIONS OF FIBRATES, FISH OILS & NIACIN

TG Lowering Agent	Treated Patients* 2017 Estimates
Fibrates	3.8M patients/year
Fish Oils (Rx)	810K patients/year
Fish Oils (OTC)	18M patients/year
Niacin	375K patients/year

**Includes all indications; 2017 estimates from DRG Market Forecast Assumptions-Dyslipidemia (2016-2026)-September 2017 and NHIS Use of Complementary Health Approaches in the U.S., 2017*

Competitor Limitations

- Food Effect & Compliance
  - **Prescription fish oil (i.e., EPA)**: 4g/day (4-8 capsules/day) taken multiple times during the day, GI discomfort
- Safety
  - **Fibrates**: Most used but product label contraindicates with statins; liver enzyme and LDL-C elevations
  - **Niacin**: Hepatotoxicity, tolerability flushing/itching/rash, may increase blood glucose level
- Lack of Efficacy
  - **OTC fish oil**
- Statin Add-on Needed
  - **Statins** are widely used but a **safe add-on** therapeutic is often needed

Familial Chylomicronemia Syndrome (FCS)

Gemcabene has potential to benefit patients with life-threatening disease

- A **rare disease** caused by genetic mutation(s) of the lipoprotein lipase (LPL) complex, leading to a **massive accumulation of chylomicrons in the blood**
- Diagnosis based on **fasting triglyceride levels ≥750 mg/dL**
- Patients often experience **recurrent abdominal pain and/or pancreatitis**
- FCS represents ~3000-5000 patients worldwide (~1000 in the US)
- There are currently **no FDA-approved treatments for FCS**
- There is a **high unmet need** for effective TG-lowering therapies for FCS patients

Gemcabene's meaningful safety, tolerability, and broad ranging efficacy in prior studies has the potential to benefit a host of cardiometabolic patients, including those with FCS

The National Pancreas Foundation (https://pancreasfoundation.org/); Cardiovascular Research Group (CVRG) 2018

Gemphire Therapeutics

Gemcabene Opportunity in FCS

Efficient clinical trial path with no approved drugs on market

- Gemcabene has shown efficacy to lower TGs in multiple Phase 2 trials, including patients with TGs ≥750 mg/dL
- Prior FCS trials had an approvable endpoint of lowering TGs – no outcome trial was needed
- KOLs express need for a drug to safely and effectively treat FCS patients for TG reduction
- Potential for Orphan Designation
- No FDA approved products on market today

Familial Partial Lipodystrophy (FPL)

Significant potential for gemcabene to demonstrate effects on established measures of FPL

- **FPL is a rare genetic disorder and orphan disease** characterized by an inability to store fat correctly, leading to a buildup of fat around all vital organs and in the blood
- FPL can lead to **loss of metabolic control** and these patients present with a variety of metabolic abnormalities, including **diabetes, hypertriglyceridemia, hypercholesterolemia, premature cardiovascular disease, hyperphagia, and NASH**
- The prevalence of FPL is estimated to be 1 in 1,000,000 in US
- Many patients are **statin intolerant** and use polypharmacy for their diabetes and lipid abnormalities with inadequate results

The National Organization for Rare Disease (https://rarediseases.org/rare-diseases/familial-partial-lipodystrophy/)

Gemcabene Opportunity in FPL

- **Enrollment completed for Phase 2 open-label, 24 week trial** in FPL patients - investigator initiated study at the Univ. of Michigan
- **Top-line Phase 2 data**, including TG reduction and MRI-PDFF, expected in **Q2'19**
- To date, **no safety signals**
- Prior Phase 3 FPL trials recruited ~ 60 patients across well established centers of excellence
- Potential for **Orphan Designation**
- Current investigational therapies have observed toxicity issues

Exploring Regional Gemcabene Opportunities - China

- Recent regulatory changes in China favor US-China partnering, offering potentially faster regulatory times and preferences for innovative medications
- China ranks among the highest in prevalence of hypercholesterolemia and hypertriglyceridemia in the world
  - China has highest prevalence of hypertriglyceridemia (>200M pts)
  - HoFH in China is an significant unmet need and a larger population compared to the US
  - Heightened sensitivity to statins in the Asian population
- Gemphire is exploring regional partnering opportunities in China and will evaluate the feasibility for clinical collaborations

Gemcabene's Novel Mechanisms of Action

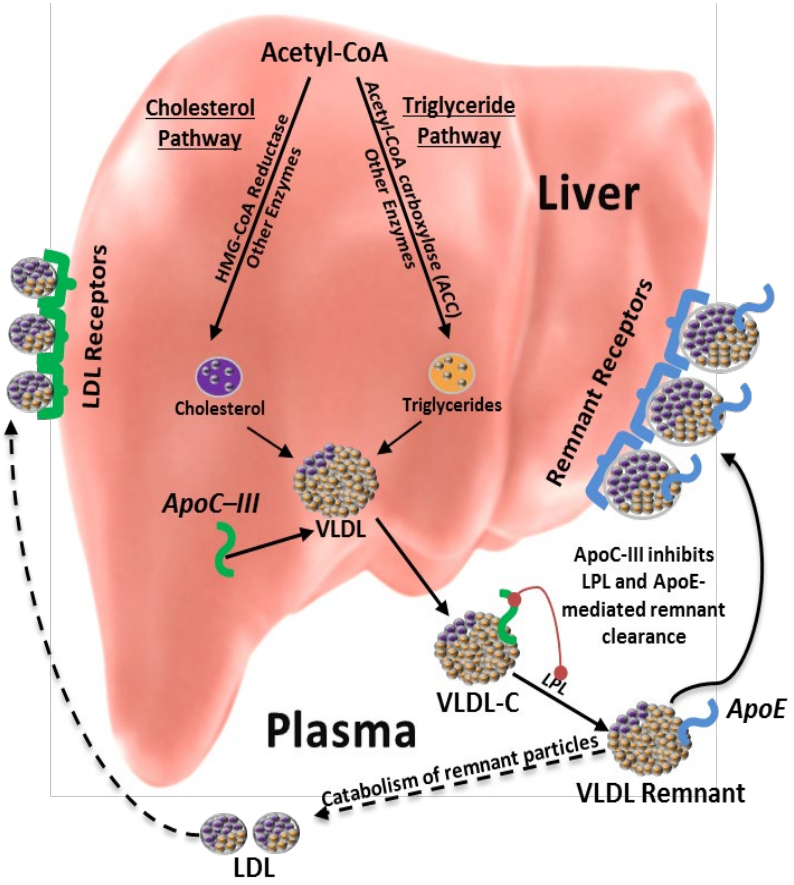
Lowered LDL-C, TGs, ApoCIII, ApoB & hsCRP in Prior Trials Additive to Statin MOA

IMPROVED CLEARANCE

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

REDUCED 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 via blocking c/EBP binding

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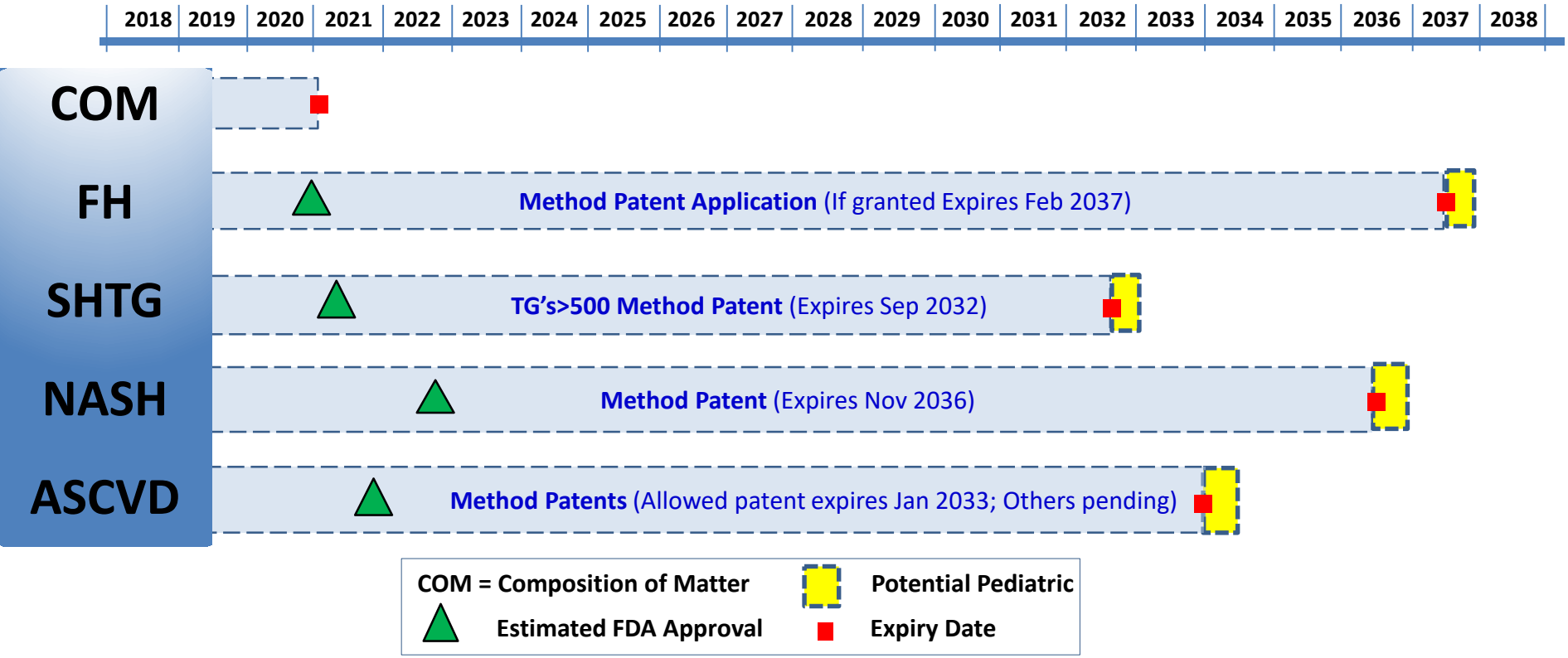
Patent Protection for Gemcabene

IP 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

Proven and Successful Management Team

Steve Gullans, PhD, FAHA Chief 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
Seth Reno, MBA Chief Commercial Officer	AstraZeneca · MedImmune (A member of the AstraZeneca Group) · Wyeth Pharmaceuticals
Rebecca Bakker-Arkema, RPh, MS, FAHA VP, Drug & Clinical Development	Parke-Davis (People Who Care) · Pfizer · alphacore pharma

Prior Marketed Products Experience

CRESTOR® rosuvastatin calcium

Lopid® 600 (Gemfibrozil Tablets, USP)

LIPITOR® atorvastatin calcium

myalept® (metreleptin) for injection

Lynparza™ olaparib

Prior Pipeline Development Experience

ETC-1002 and ETC-216 (Esperion)

ACP-501 (AstraZeneca/AlphaCore)

PNT-2258 (ProNAi)

Gemphire Therapeutics

Key Opinion Leaders Involved in Cardiometabolic Drug Development

Clinical Advisors

John Kastelein, MD, PhD Amsterdam, Netherlands	University of Amsterdam
Evan Stein, MD, PhD Illinois, USA	University of the Witwatersrand, Johannesburg; MEDPACE Reference Laboratories
Rob Hegele, MD Toronto, Canada	University of Toronto
Harold Bays, MD Kentucky, USA	
Rohit Loomba, MD California, USA	UC San Diego Health

Gemphire Therapeutics

Gemphire Capitalization and Coverage

NASDAQ GLOBAL MARKET	
Symbol	GEMP
Market Cap[1]	~$11.6M
Price Per Share[1]	$0.81/share
Shares Outstanding[2]	14.3M
Cash at 9/30/18	$23.8M

Institutional Ownership	Shares Held[3]
Venrock	1,383K shares (10%)
BlackRock	675K shares (5%)
Excel Venture Management	930K shares (7%)
NorthPointe Capital, LLC	482K shares (3%)
Pfizer	675K shares (5%)
The Vanguard Group, Inc.	382K 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 1/3/19 2. At 9/30/18, Fully Diluted Shares Outstanding = 18.1M; 3. Shares Held at 9/30/18 or most recent reported shares (Percentage Ownership Calculated on Shares Outstanding at 9/30/18)

** New coverage assignment pending*

Gemphire Therapeutics

APPENDIX

Gemphire Therapeutics

Gemcabene Opportunity in SHTG

Product Profile and Path to Market

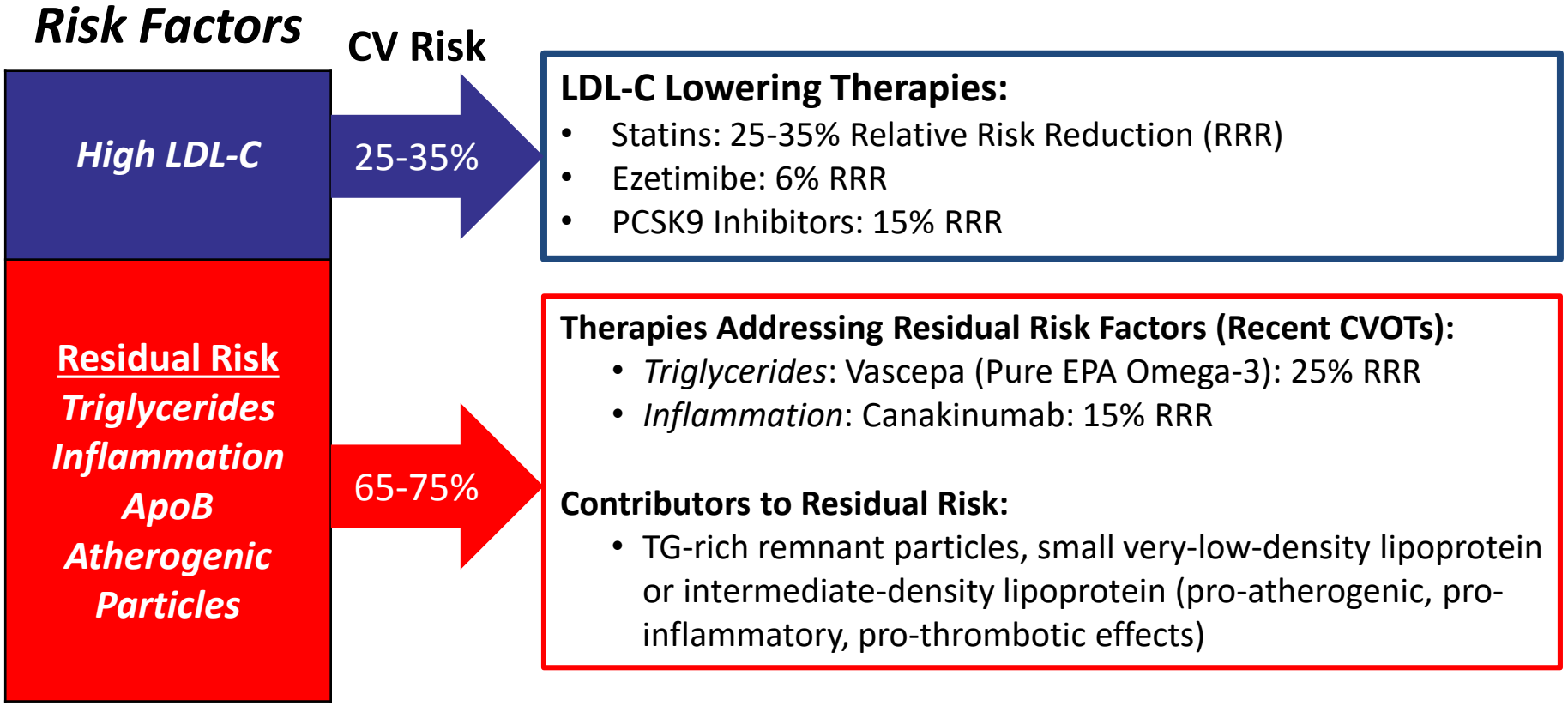
- Once-daily, oral pill
- No observed food effect, unlike fish oils
- Safety and tolerability in >1100 trial subjects
- Observed to safely combine with statins and other drugs
- Serum TG has been an FDA approvable endpoint for patients with TGs ≥500 mg/dL; with no outcome trial required; same path used for Vascepa™, gemfibrozil and fenofibrate
- Issued US and Worldwide method patents valid into 2032

Gemcabene's promising safety, tolerability, and broad ranging efficacy in prior studies has the potential to benefit a host of cardiometabolic patients, including those with SHTG

REDUCTION OF RESIDUAL RISK FACTORS

Including: Cholesterol-Rich VLDL-Remnants and Inflammation

Despite marked advances in LDL lowering, people still die from CV disease



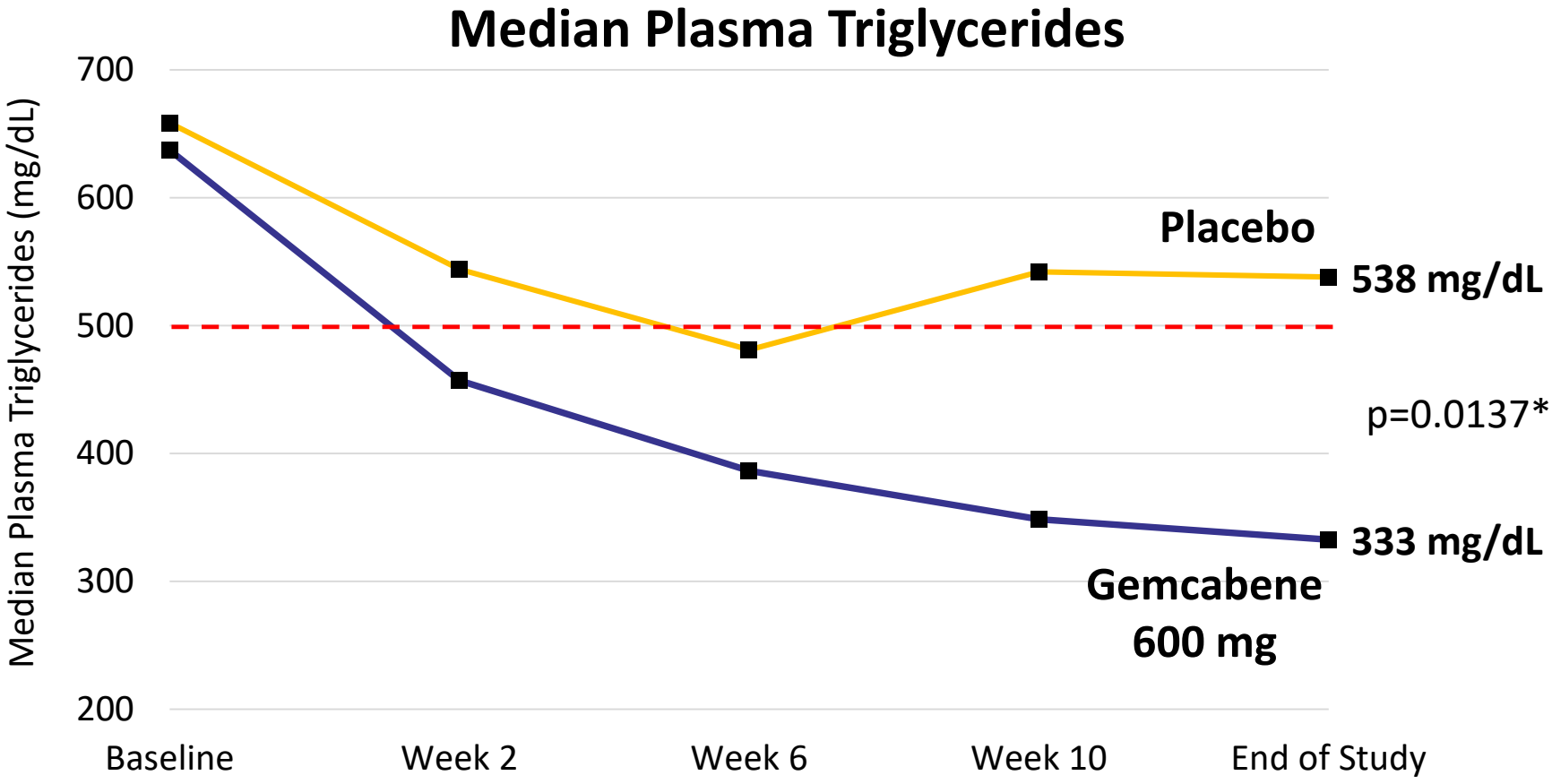
Gemcabene May Address Residual CV Risk by Lowering LDL-C, TG, and hsCRP

Ganda, O.P. et al. J Am Coll Cardiol. 2018;72(3):330–43; company presentations

Gemphire Therapeutics

Absolute Levels of TGs In INDIGO-1

Lower TG level in the 600 mg Group vs Placebo at End of Study



*Ranked ANCOVA p-value for the placebo-adjusted difference of 600 mg vs placebo

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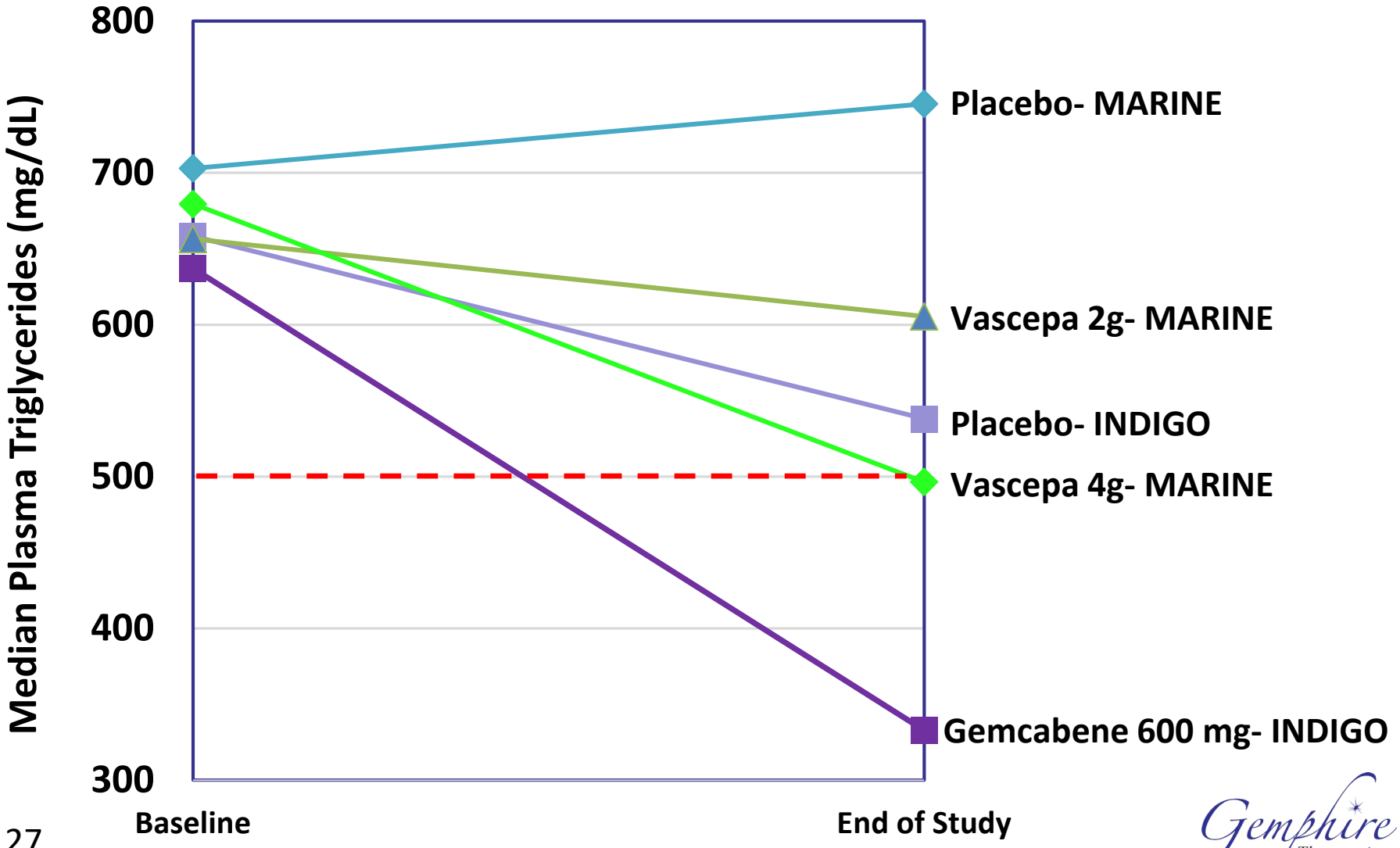
Gemcabene (Indigo) Compared to Vascepa (Marine)

Treatment Goal for SHTG is TGs <500 mg/dL

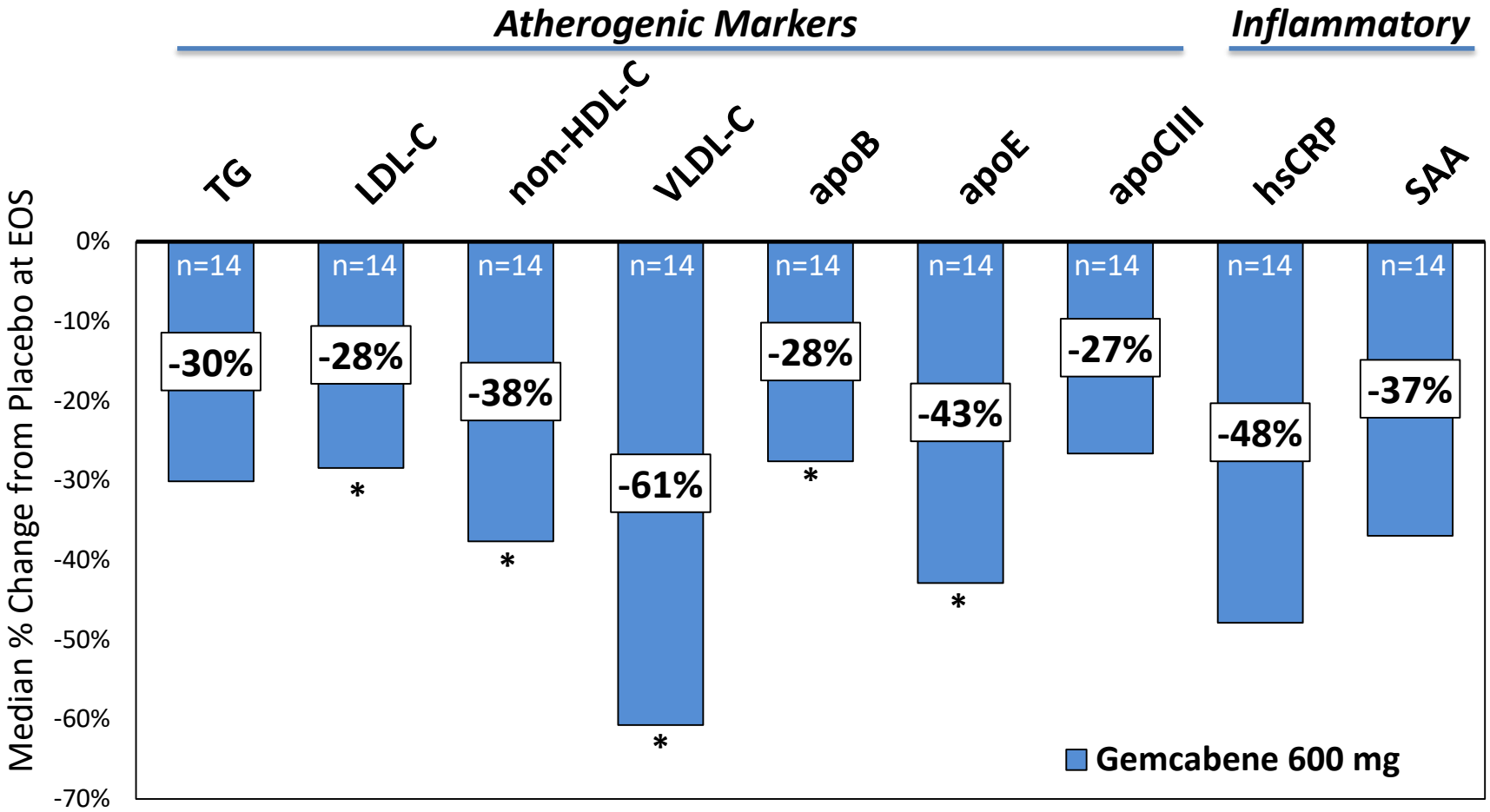


American Journal of Cardiology 2003;92:538–543; American Journal of Cardiology 2011; 108:682–690

Gemphire Therapeutics

Gemcabene Reduces Atherogenic and Inflammatory Markers that May Reduce Residual Risk in Patients^

Lipid and Inflammatory Marker Reductions Observed in INDIGO-1



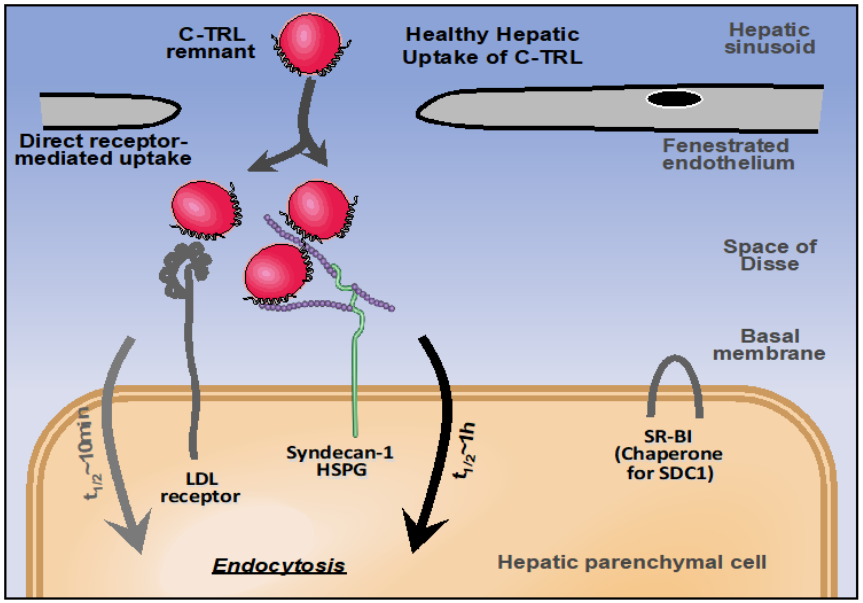
^Subset of patients from INDIGO-1 trial with LDL-C ≥100 mg/dL and TGs ≥ 200 mg/dL

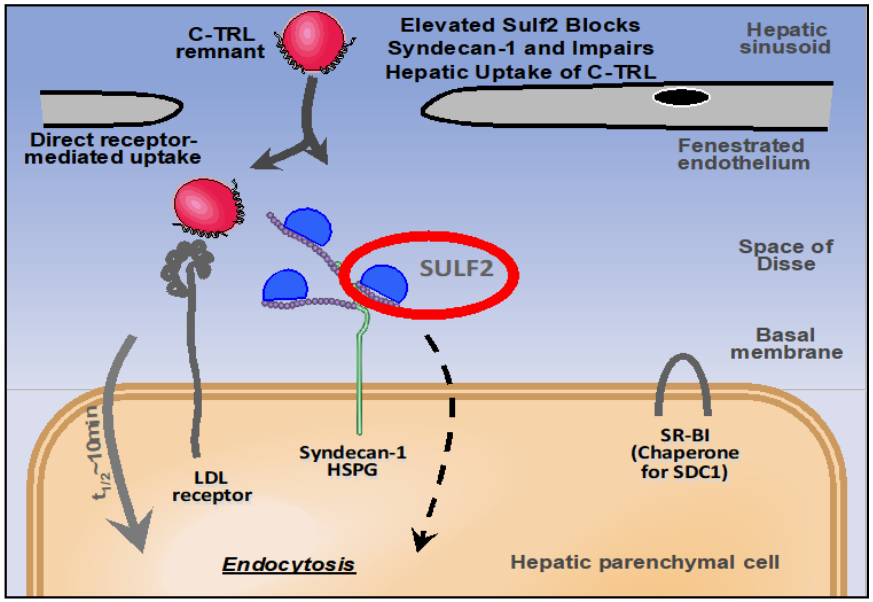
* Ranked ANCOVA p<0.05

Gemphire Therapeutics

Gemcabene Appears to Upregulate VLDL-receptor (Syndecan-1 receptor) via Inhibition of Sulfatase II

Gemcabene, which has been shown to lower plasma ApoB-lipoprotein concentrations in mice and human trials, appears to regulate remnant receptor via SULF2 in the liver





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