AKCEA® THERAPEUTICS

Second Quarter 2019 Earnings Call

Forward-Looking Language Statement

This presentation includes forward-looking statements regarding the business of Akcea Therapeutics, Inc., and the therapeutic and commercial potential of TEGSEDI® (inotersen), WAYLIVRA© (volanesorsen), AKCEA-APO(a)-L_{Rx}, AKCEA-ANGPTL3-L_{Rx}, AKCEA-APOCIII-L_{Rx} and AKCEA-TTR-L_{Rx}. Any statement describing Akcea's goals, expectations, financial or other projections, intentions or beliefs is a forward-looking statement and should be considered an at-risk statement. Such statements are subject to certain risks and uncertainties, particularly those inherent in the process of discovering, developing and commercializing drugs that are safe and effective for use as human therapeutics, and in the endeavor of building a business around such drugs. Akcea's forward-looking statements also involve assumptions that, if they never materialize or prove correct, could cause its results to differ materially from those expressed or implied by such forward-looking statements. Although Akcea's forward-looking statements reflect the good faith judgment of its management, these statements are based only on facts and factors currently known by Akcea. As a result, you are cautioned not to rely on these forward-looking statements. These and other risks concerning Akcea's programs are described in the most recent quarterly report on Form 10-Q and in the most recent annual report on Form 10-K. Copies of these and other documents are on file with the SEC.

In this presentation, unless the context requires otherwise, "Akcea," "Company," "we," "our," and "us" refers to Akcea Therapeutics. Akcea Therapeutics®, TEGSEDI® and WAYLIVRA® are trademarks of Akcea Therapeutics, Inc.

AKCEA® THERAPEUTICS

Akcea by Year End 2019

2 Commercial Products

2 Products in Phase 3 Development

AKCEA-APO(a)-L_{Rx}

NOVARTIS

AKCEA-TTR-L_{Rx}

IONIS™

2 Products Nearing Ph 2 Data

AKCEA-APOCIII-L_{Rx}
in patients with CVD due to high triglycerides

AKCEA-ANGPTL3-L_{Rx}
in patients with NAFLD with metabolic complications

Strong cash balance supporting our execution across the business

All products were discovered and either developed by Ionis or co-developed by Ionis and Akcea
AKCEA-APO(a)-L_{Rx} was licensed by Novartis in February 2019; Novartis refers to AKCEA-APO(a)-L_{Rx} as TQJ230

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TEGSEDI

Tegsedi® (inotersen) injection 284 mg/1.5 mL

hATTR Compass
Map Your Genetic Journey

AKCEA CONNECT

>50%

Prescription Growth in predominantly naïve patients

>800

Physicians using hATTR Compass

~30

Average number of days from prescription to patient

- Continued growth in the number of patients diagnosed with hATTR
- Increased physician and patient interest in TEGSEDI
- Targeted access in the EU and Canada

TEGSEDI was discovered and developed by Ionis

AKCEA THERAPEUTICS

waylivra® (volanesorsen) injection 285 mg/1.5 mL

Approved in Europe
Launching in Germany – Q3 2019

WAYLIVRA was discovered by Ionis and co-developed by Ionis and Akcea

Only Approved Treatment for FCS Patients

- Approximately 1,000 patients eligible for treatment
- Patients at risk for potentially fatal acute pancreatitis, chronic pancreatitis and diabetes
- Major emotional and psychosocial effects
- Many unable to work, must declare bankruptcy due to repeat pancreatitis

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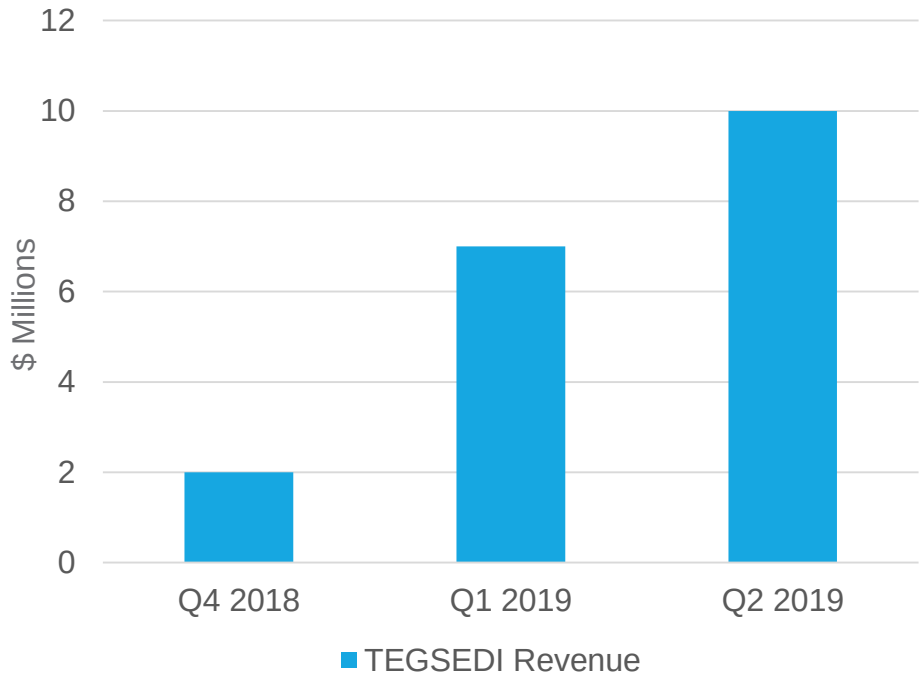
Financials

Q2 Total Revenue	**$27M**
Q2 TEGSEDI Revenue	**$10M**
Cash and short-term Investments as of June 30, 2019*	**$296M**

*Cash and short-term investments include receipt of a $6M milestone payment from PTC on the approval of WAYLIVRA



- Cash on hand is sufficient to carry out commercial activities for our products, as well as to fund progression of our current pipeline into 2021

Advancing Broad Pipeline to Commercialization*

Drug	Therapeutic Area	Preclinical	Phase 1	Phase 2	Phase 3	Pipeline Events
Cardiometabolic lipid disorders						
AKCEA-APO(a)-L_{Rx}**	High Lp(a) with Established CVD				NOVARTIS	Novartis to initiate Phase 3 CVD outcomes study
AKCEA-ANGPTL3-L_{Rx}	Rare Hyperlipidemias					Report pilot study results in Mid-2019
	NAFLD with Metabolic Complications					Report Phase 2 data 1H 2020
AKCEA-APOCIII-L_{Rx}	Hypertriglyceridemia with Established CVD				NOVARTIS	Report Phase 2 data 1H 2020
WAYLIVRA® (volanesorsen)	Familial Partial Lipodystrophy(FPL)					Achieved primary endpoint and a key secondary endpoint; assessing next steps
ATTR amyloidosis (ATTR)						
AKCEA-TTR-L_{Rx}	ATTR					Phase 1/2 Data with a goal of initiating Phase 3 - H2 2019

*All products were discovered and either developed by Ionis or co-developed by Ionis and Akcea; LICA technology allows for significantly lower doses than non-LICA drugs, more flexible dosing and favorable safety and tolerability profile

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AKCEA-APO(a)-L_{Rx} (TQJ230) Pivotal Phase 3 HORIZON Study

Evaluating Impact of Lp(a)-lowering on CV Events in Patients with Established CVD

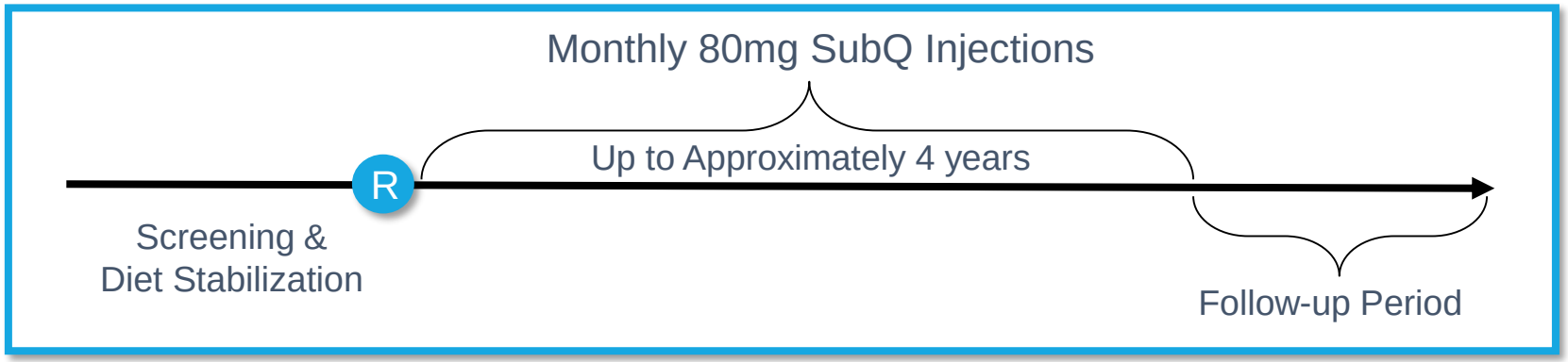
Novartis is conducting a multicenter, randomized, double-blind, placebo-controlled study in up to 7,680 patients with elevated LP(a) levels and established cardiovascular disease (CVD)

Primary objectives:

- Time to occurrence of first major adverse cardiovascular event in patients with Lp(a) levels of ≥ 70 mg/dL
- Time to occurrence of first major adverse cardiovascular event in a population of patients with Lp(a) levels of ≥ 90 mg/dL

Secondary objective:

- Evaluate the time to fatal and non-fatal major adverse cardiovascular events in patients with elevated levels of Lp(a)



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Our mission is to be the trusted patient-focused, global company delivering innovative solutions that improve the lives of those affected by serious diseases.