AKCEA® THERAPEUTICS

Second Quarter 2020 Earnings Call

August 4, 2020

Forward-Looking Language Statement

This presentation includes forward-looking statements regarding the business of Akcea Therapeutics, Inc. Any statement describing Akcea's goals, expectations, financial or other projections, intentions or beliefs, including the commercial potential of TEGSEDI®, WAYLIVRA® and Akcea's other medicines in development 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 medicines that are safe and effective for use as human therapeutics, and in the endeavor of building a business around such medicines. 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. In particular, we caution you that our forward-looking statements are subject to the ongoing and developing circumstances related to the COVID-19 pandemic, which may have a material adverse effect on our business, operations and future financial results. 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 additional detail in Akcea's quarterly reports on Form 10-Q and annual reports on Form 10-K, which are on file with the SEC. Copies of these and other documents are available from the company.

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Second Quarter Achievements

Delivering transformative treatments to people living with serious and rare diseases

Continued revenue growth for TEGSEDI and WAYLIVRA

✓ Patients can choose to take either therapy at home

Positioned well financially

✓ $390M of cash and short-term investments to execute on strategic priorities for 2020 and beyond

Experienced executive team fully in place

Steadily advancing broad pipeline of products

✓ Presenting vupanorsen and AKCEA-APOCIII-L_{Rx} Phase 2 positive data at a medical congress in Q3

Pandemic related challenges have been anticipated and well-managed

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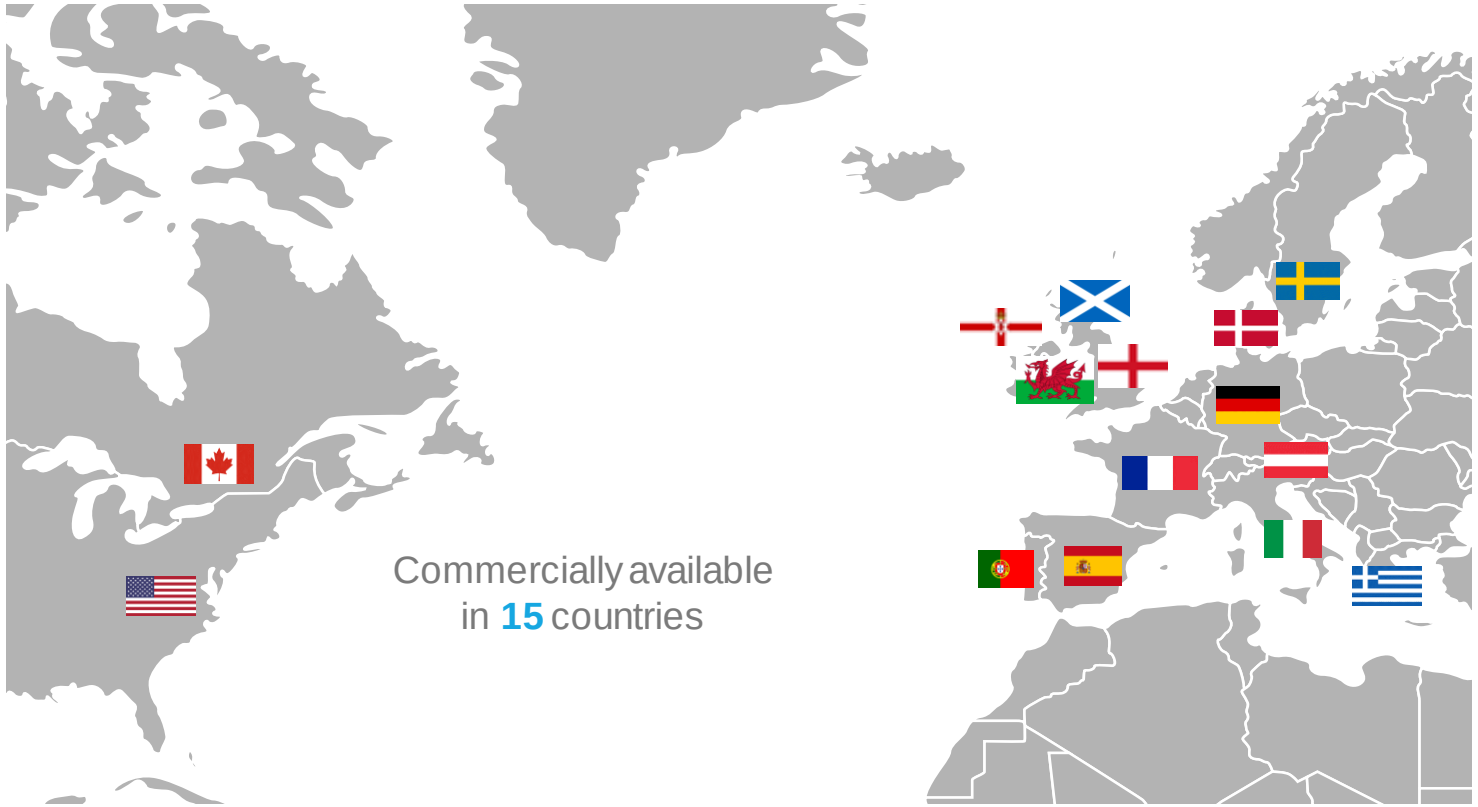
TEGSEDI



Commercially available in **15** countries

AKCEA CONNECT

Continuing without interruption to provide patients the individualized support they need

hATTR Compass

Map Your Genetic Journey

>2,000 physicians using hATTR Compass and have administered **>10,000** genetic tests

96% of commercial lives currently secured with coverage and **75%** of commercial lives secured with coverage through **2023** in the U.S.

TEGSEDI was discovered and developed by Ionis

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waylivra®
(volanesorsen) injection 285 mg/1.5 mL

- **Approved in Europe**
- **Commercially available in Germany, Austria and Greece**
- **Continued ATU enrollment in France**
- **Advancing toward pricing and reimbursement in other European markets**
- **Filed for marketing authorization in Brazil**
- **Planning to refile marketing application with the FDA**

Only Approved Treatment for FCS Patients

Approximately 1,000 patients eligible for treatment in the EU

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

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

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Advancing Broad Pipeline to Commercialization*

Drug	Therapeutic Area	Preclinical	Phase 1	Phase 2	Phase 3	Key Near-term Pipeline Events	Partner
Cardiometabolic lipid disorders							
AKCEA-APO(a)-L_{Rx}	High Lp(a) with established CVD					Phase 3 HORIZON study progressing well	NOVARTIS
vupanorsen (AKCEA-ANGPTL3-L_{Rx})	Cardiovascular and metabolic diseases					Present positive Phase 2 data at a medical congress in Q3	Pfizer
AKCEA-APOCIII-L_{Rx}	Hypertriglyceridemia with established CVD					Present positive Phase 2 data at a medical congress in Q3	AKCEA THERAPEUTICS
ATTR amyloidosis (ATTR)							
AKCEA-TTR-L_{Rx}	ATTR					Phase 3 program in cardiomyopathy and polyneuropathy progressing well	AKCEA THERAPEUTICS

*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

Future potential pipeline: Ionis granted AKCEA right of first negotiation in rare cardiometabolic and rare inherited metabolic diseases. Akcea is looking to add additional rare disease medicines to its pipeline, both from Ionis and third parties

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Advancing Broad Pipeline to Commercialization

NOVARTIS

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Pfizer

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AKCEA-APO(a)-L_{Rx}

- ✓ Granted Fast Track Designation by the U.S. FDA
- ✓ First medicine that specifically targets Lp(a) - a genetic risk factor for CVD
- ✓ Phase 3 Lp(a) Horizon study is up and running and the first patients are on treatment
- ✓ Trial readout currently expected in 2024

AKCEA-APOCIII-L_{Rx}

- ✓ Positive topline results in Phase 2 study
- ✓ 90% of patients at the highest monthly dose reached TG levels below the recognized threshold for CV risk
- ✓ On track to initiate the Phase 3 study for FCS later this year
- ✓ Present positive Phase 2 data at a medical congress in Q3

Vupanorsen[1]

- ✓ Positive topline results in Phase 2 study
- ✓ Met the primary endpoint – TG lowering as well as significant reduction in additional lipid parameters and ANGPTL3
- ✓ Advanced towards a Phase 2b dose ranging study with a focus on severe hypertriglyceridemia and CV risk reduction
- ✓ Present positive Phase 2 data at a medical congress in Q3

AKCEA-TTR-L_{Rx}

- ✓ CARDIO-TTransform and NEURO-TTransform Phase 3 studies underway
- ✓ On track for a data readout in 2023
- ✓ Potential to be an important treatment option for patients with ATTR
- ✓ Continue to build on our expertise and expand our commitment within the TTR community

[1]ANGPTL-3-L_{RX}

All medicines were discovered and either developed by Ionis or co-developed by Ionis and Akcea

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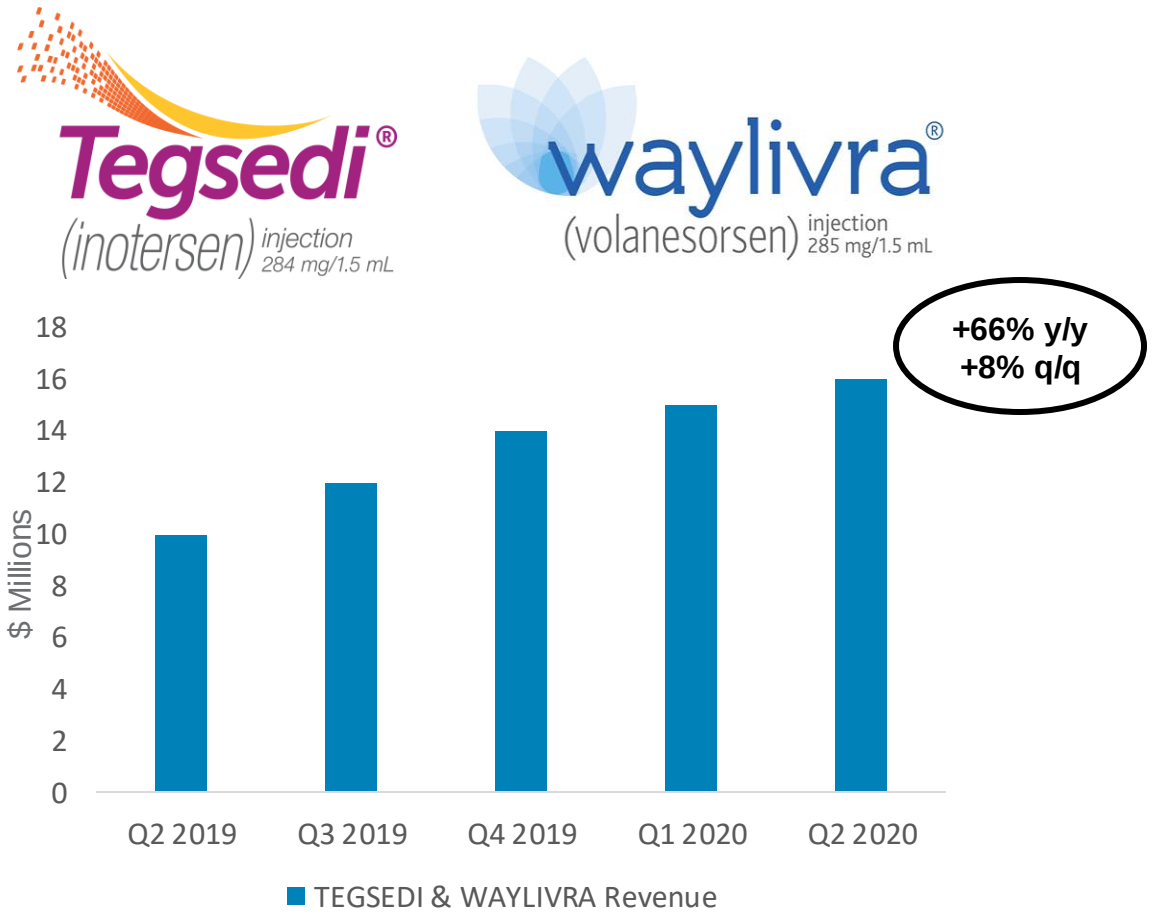
Financials

Q2 2020 Total Revenue	**$22M**
Q2 2020 Product Revenue	**$16M**
Cash and short-term Investments as of June 30, 2020	**$390M**



✓ Strong balance sheet positions Akcea well to continue to execute on the ongoing launches and broaden the pipeline

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THERAPEUTICS