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Acquisition of Acceleron Pharma

September 30, 2021

Agenda

- **Strategic Rationale |** Rob Davis, Chief Executive Officer
- **Scientific Overview |** Dr. Dean Li, President, Merck Research Labs (MRL)
- **Clinical Profile |** Dr. Roy Baynes, SVP and Chief Medical Officer, MRL
- **Commercial Opportunities |** Frank Clyburn, President, Merck Human Health
- **Financial Overview |** Caroline Litchfield, Chief Financial Officer
- **Q&A**

Important Information About the Tender Offer

The tender offer described in this presentation has not yet commenced. This presentation is for informational purposes only and is neither an offer to purchase nor a solicitation of an offer to sell any shares of the common stock of Acceleron Pharma Inc. ("Acceleron") or any other securities, nor is it a substitute for the tender offer materials described herein. At the time the planned tender offer is commenced, a tender offer statement on Schedule TO, including an offer to purchase, a letter of transmittal and related documents, will be filed by Merck Sharp & Dohme Corp. ("Merck") and Astros Merger Sub, Inc., a wholly owned subsidiary of Merck, with the Securities and Exchange Commission (the "SEC"), and a solicitation/recommendation statement on Schedule 14D-9 will be filed by Acceleron with the SEC.

INVESTORS AND SECURITY HOLDERS ARE URGED TO READ CAREFULLY BOTH THE TENDER OFFER MATERIALS (INCLUDING AN OFFER TO PURCHASE, A RELATED LETTER OF TRANSMITTAL AND CERTAIN OTHER TENDER OFFER DOCUMENTS) AND THE SOLICITATION/RECOMMENDATION STATEMENT ON SCHEDULE 14D-9 REGARDING THE OFFER, AS THEY MAY BE AMENDED FROM TIME TO TIME, WHEN THEY BECOME AVAILABLE BECAUSE THEY WILL CONTAIN IMPORTANT INFORMATION THAT INVESTORS AND SECURITY HOLDERS SHOULD CONSIDER BEFORE MAKING ANY DECISION REGARDING TENDERING THEIR SECURITIES.

Investors and security holders may obtain a free copy of the Offer to Purchase, the related Letter of Transmittal, certain other tender offer documents and the Solicitation/Recommendation Statement (when available) and other documents filed with the SEC at the website maintained by the SEC at www.sec.gov or by directing such requests to the Information Agent for the tender offer, which will be named in the tender offer statement. In addition, Merck & Co., Inc. and Acceleron file annual, quarterly and current reports and other information with the SEC, which are available to the public from commercial document-retrieval services and at the SEC's website at www.sec.gov. Copies of the documents filed with the SEC by Merck & Co., Inc. may be obtained at no charge on Merck's internet website at www.merck.com or by contacting Merck at 2000 Galloping Hill Road, Kenilworth, N.J. 07033 or (908) 423-1000. Copies of the documents filed with the SEC by Acceleron may be obtained at no charge on Acceleron's internet website at www.acceleronpharma.com or by contacting Acceleron at 128 Sidney Street, Cambridge, MA 02139 or (617) 649-9200.

Forward-looking statement of Merck & Co., Inc., Kenilworth, N.J., USA

This presentation of Merck & Co., Inc., Kenilworth, N.J., USA (the "company") includes statements that are not statements of historical fact, or "forward-looking statements," including with respect to the company's proposed acquisition of Acceleron. Such forward-looking statements include, but are not limited to, the ability of the company and Acceleron to complete the transactions contemplated by the merger agreement, including the parties' ability to satisfy the conditions to the consummation of the offer contemplated thereby and the other conditions set forth in the merger agreement, statements about the expected timetable for completing the transaction, the company's and Acceleron's beliefs and expectations and statements about the benefits sought to be achieved in the company's proposed acquisition of Acceleron, the potential effects of the acquisition on both the company and Acceleron, the possibility of any termination of the merger agreement, as well as the expected benefits and success of Acceleron's product candidates. These statements are based upon the current beliefs and expectations of the company's management and are subject to significant risks and uncertainties. There can be no guarantees that the conditions to the closing of the proposed transaction will be satisfied on the expected timetable or at all, with respect to pipeline products that the products will receive the necessary regulatory approvals or that they will prove to be commercially successful. If underlying assumptions prove inaccurate or risks or uncertainties materialize, actual results may differ materially from those set forth in the forward-looking statements.

Risks and uncertainties include but are not limited to, uncertainties as to the timing of the offer and the subsequent merger; uncertainties as to how many of Acceleron's stockholders will tender their shares in the offer; the risk that competing offers or acquisition proposals will be made; the possibility that various conditions to the consummation of the merger and the offer contemplated thereby may not be satisfied or waived; the effects of disruption from the transactions contemplated by the merger agreement and the impact of the announcement and pendency of the transactions on Acceleron's business; the risk that stockholder litigation in connection with the offer or the merger may result in significant costs of defense, indemnification and liability; general industry conditions and competition; general economic factors, including interest rate and currency exchange rate fluctuations; the impact of the global outbreak of novel coronavirus disease (COVID-19); the impact of pharmaceutical industry regulation and health care legislation in the United States and internationally; global trends toward health care cost containment; technological advances, new products and patents attained by competitors; challenges inherent in new product development, including obtaining regulatory approval; the company's ability to accurately predict future market conditions; manufacturing difficulties or delays; financial instability of international economies and sovereign risk; dependence on the effectiveness of the company's patents and other protections for innovative products; and the exposure to litigation, including patent litigation, and/or regulatory actions.

The company undertakes no obligation to publicly update any forward-looking statement, whether as a result of new information, future events or otherwise, except to the extent required by law. Additional factors that could cause results to differ materially from those described in the forward-looking statements can be found in the company's 2020 Annual Report on Form 10-K and the company's other filings with the Securities and Exchange Commission (SEC) available at the SEC's Internet site (www.sec.gov).

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Rob Davis

Chief Executive Officer

Acceleron acquisition provides a compelling scientific innovation and potential long-term growth driver in sotatercept

- Potentially **transformational, first-in-class, late-stage asset**, in a disease area, **well known to Merck**, with **significant unmet need**
- A potentially **foundational** pulmonary arterial hypertension therapy with opportunity to expand to additional indications
- Significant **scientific synergy** with our growing cardiovascular portfolio and pipeline, building on our legacy in cardiovascular disease
- Potential **multi-billion dollar commercial opportunity** that adds **diversity to our portfolio** and an ability to drive **long-term revenue and earnings growth** well into the next decade

Significant potential to positively impact patients and create shareholder value

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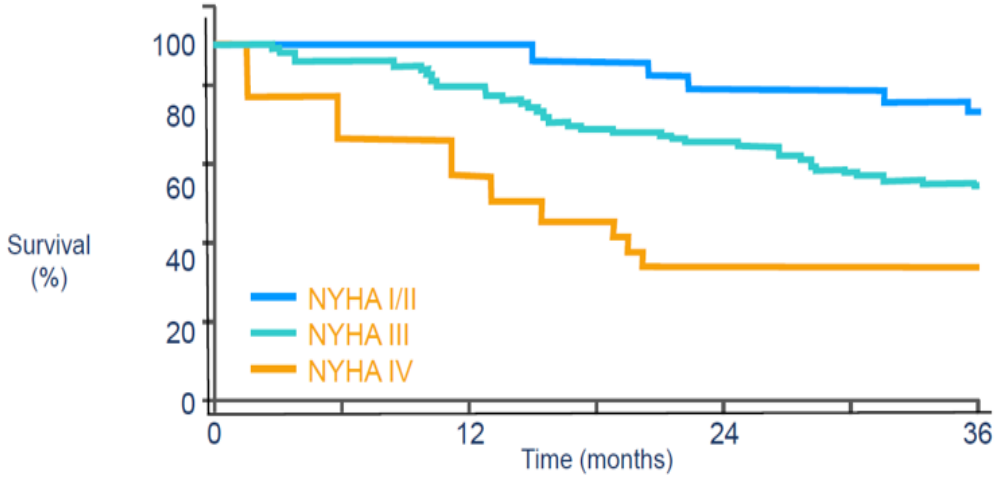
Dr. Dean Li

President, Merck Research Labs

Significant unmet need exists for PAH patients; sotatercept's novel mechanism has the potential to address the underlying disease

PAH Patient Survival By New York Heart Association (NYHA) Functional Class



Approved PAH treatments target symptoms by dilating blood vessels

- PDE5 inhibitors
- Endothelin receptor antagonists
- Soluble guanylate cyclase stimulators
- Prostacyclin agonists

Sotatercept provides a **unique approach** to addressing PAH as a potential add-on to current therapies

- ☑ Potential **foundational**, **first-in-class agent** (non-vasodilator) with **promising preclinical and clinical efficacy**
- ☑ First PAH drug to receive **Breakthrough Therapy Designation** by FDA or **PRIME** designation for priority medicines by EMA

Sotatercept has the potential to be a foundational agent across other forms of pulmonary hypertension with unmet patient need

WHO PH Group	**Group I** *Pulmonary Arterial Hypertension*	**Group II** *Left Heart Disease*
Ongoing Clinical Trials	STELLAR, HYPERION, ZENITH	CADENCE
Estimated Patient Population[1]	**~70K** patients	**>50K** patients[2]

1. Estimated addressable patient population in the US & EU; 2. Heart failure with preserved ejection fraction Cpc-PH

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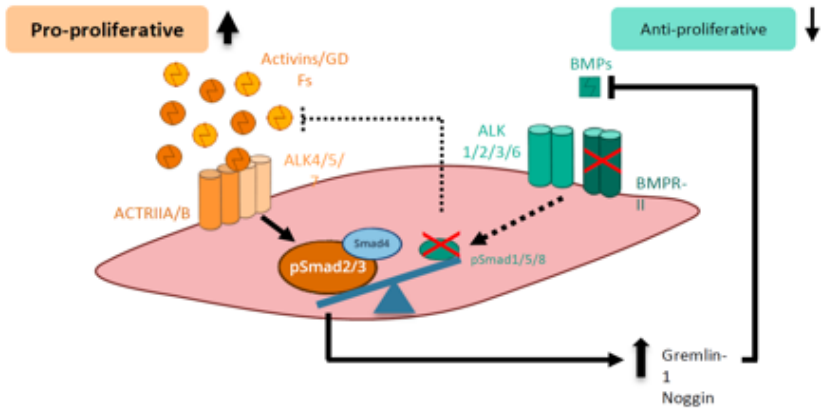
Dr. Roy Baynes

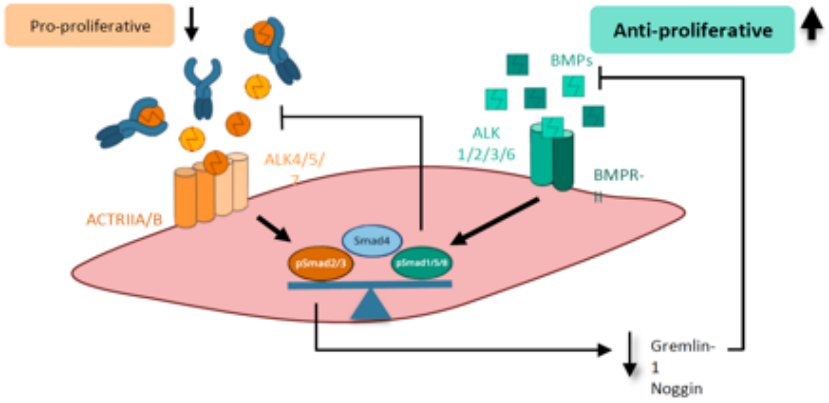
SVP and Chief Medical Officer, Merck Research Labs

Sotatercept is a potential first-in-class activin receptor type IIA fusion protein

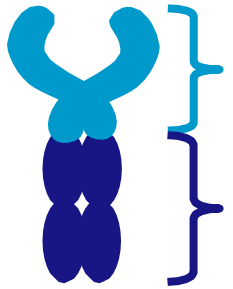
Signal imbalance leading to PAH



Sotatercept rebalancing proliferative signals



ActRIIA / IgG1 Fc recombinant fusion protein



Modified extracellular domain of ActRIIA

Human IgG1 Fc domain

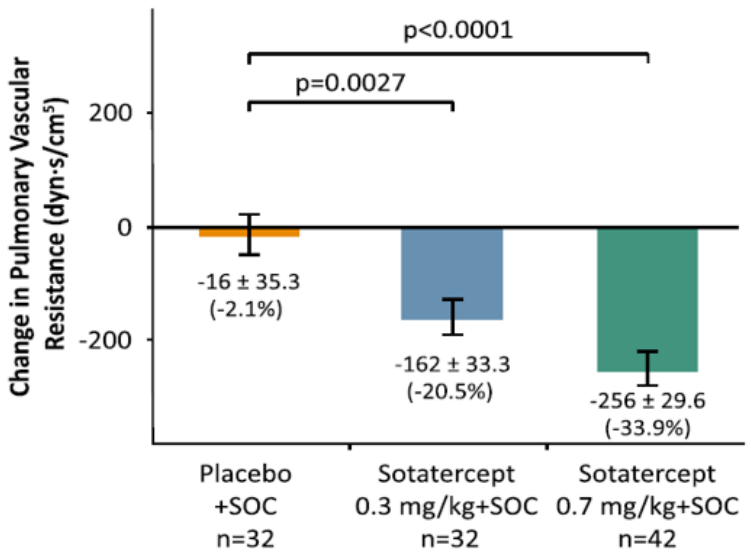
- Genetic and preclinical data suggest that PAH is the result of an imbalance of pro- and antiproliferative signals resulting in thickening of the pulmonary vessel wall that narrows the volume for blood flow

- Sotatercept is a TGFβ ligand trap that rebalances anti-(BMPR-II-mediated) and pro-(ActRIIA mediated) proliferative signaling
- In preclinical models of PAH, sotatercept reversed pulmonary arterial wall and right ventricular remodeling[1-3]

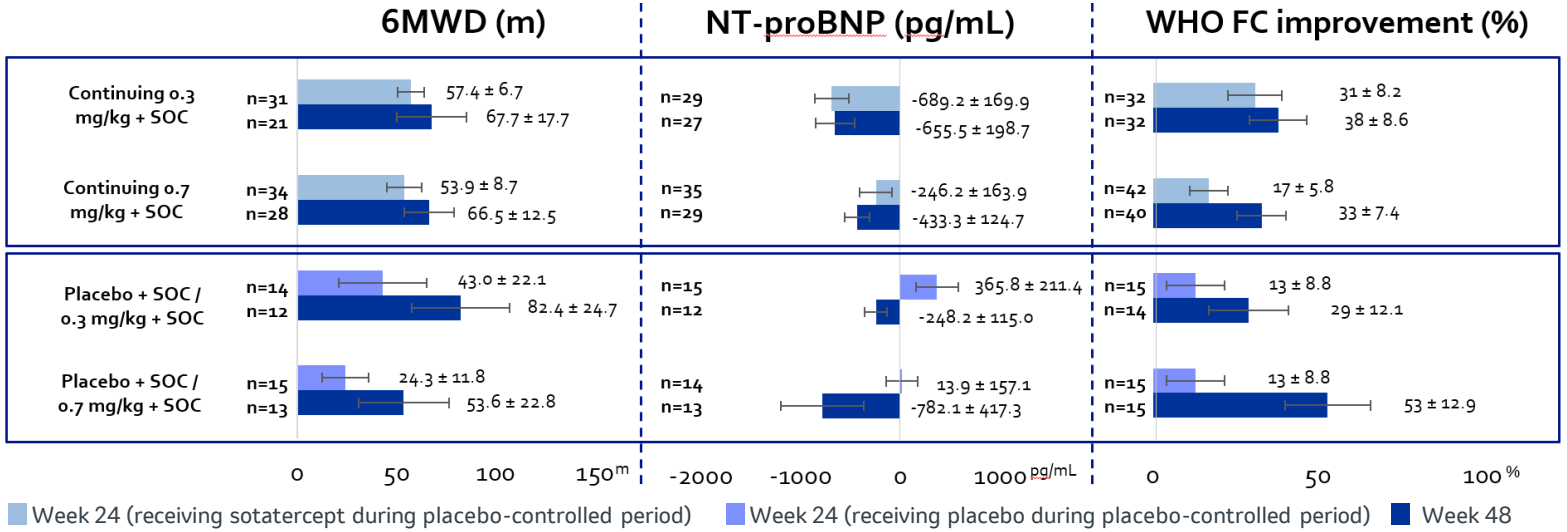
1. Humbert M , et al. N Engl J Med . 2021; 384: 1204 15; 2. Cappellini MD, et al. Haematologica. 2019; 104: 477 84; 3. Yung L M, et al. Sci Transl Med. 2020; 12: eaaz5660.

Sotatercept achieved compelling phase 2 clinical efficacy that was enhanced or maintained for up to 48 weeks

PULSAR: Phase 2 Topline Data (Jun 2020)



PULSAR Open Label Extension OLE 48 Week Interim Results* (May 2021)



** Interim extension analysis data cut-off date: 14 September 2020.*

- Statistically significant effect on primary endpoint pulmonary vascular resistance

- Clinical efficacy was enhanced or maintained through extension period
  - Clinically meaningful improvements observed across all key secondary endpoints

Robust development program with opportunities to expand patient impact as add-on to existing standard of care

	STELLAR	HYPERION	ZENITH	CADENCE
Development Stage	Enrolling Phase 3	Enrolling Phase 3	Planning Phase 3	Planning Phase 2
Intent[1]	Registration	Label Extension	Label Extension	Label Extension
Focus Area	PAH Class II or III	PAH Class II or III *(newly diagnosed intermediate/high risk)*	PAH Class III or IV *(at high risk of mortality)*	Left Heart Disease
Primary Endpoint[2]	6MWD	TTCW	Time to death or PAH related hospitalization	PVR

1. Intent based on U.S. filing strategy, ex-US timing may vary; 2. 6MWD = six-minute walking distance; TTCW = time to clinical worsening; PVR = pulmonary vascular resistance

Acquisition also includes royalties from Reblozyl and an innovative early-stage research pipeline

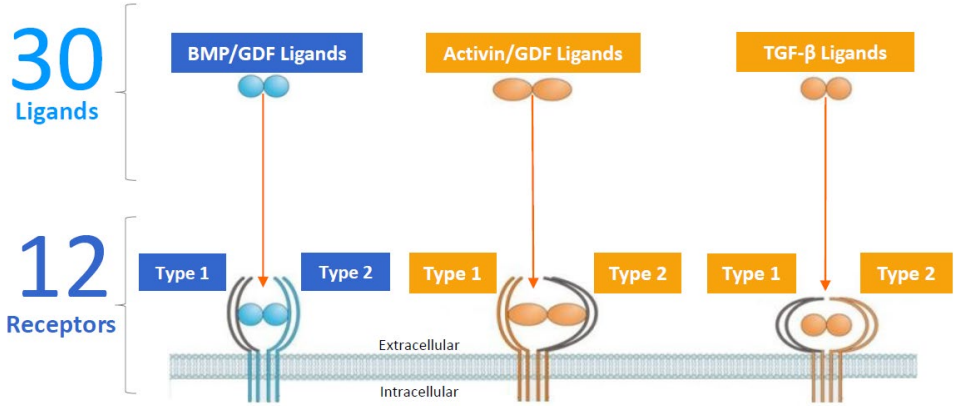
Reblozyl® (luspatercept-aamt)

- First-in-class (activin receptor type IIB) erythroid maturation agent
- Approved in the United States, Europe, and Canada for the treatment of anemia in certain blood disorders
- Ongoing Phase 3 trials are evaluating Reblozyl for the treatment of anemia in patient populations of myelodysplastic syndromes, beta-thalassemia, and myelofibrosis
- Developed and commercialized with Bristol Myers Squibb as part of a global collaboration

Early-Stage Pipeline

TGF-β Research

18+ years of extensive experience in protein engineering research targeted to the 30+ ligands and 12 receptors of the TGF-β superfamily



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Frank Clyburn

President, Merck Human Health

Significant unmet need remains in PAH

PAH is a rare, rapidly progressive and fatal disease

- In PAH, **7-year mortality is 50% despite advances in treatment** and use of combination therapy
- PAH can be a **hugely devastating disease** with adverse impacts on all aspects of life: physical, social and emotional
- Top therapy goals include delaying disease progression, managing symptoms and reducing hospitalization
- Payers and health care professionals **recognize the need for additional treatment options** within PAH

Sotatercept has the potential to be a foundational therapy in PAH

Sotatercept differentiators

First PAH drug to be granted **Breakthrough Therapy Designation** by FDA or **PRIME** Designation by EMA

Potential first non-vasodilator therapy as **add-on to standard of care** in market where patients rapidly move to double or triple therapy

Granted **Orphan Drug Designation**

Sotatercept is a novel mechanism with potential to **improve short- and long-term clinical outcomes** and **quality of life** for PAH patients

Strategic fit within Merck

Supported by a **robust clinical development program** across a broad range of PAH patients

Complementary to Merck's cardiovascular portfolio and pipeline, including potential use **together** with PAH assets

Leveraging Merck's **legacy and expertise** in cardiovascular disease research and commercialization

Sotatercept represents a potentially meaningful, durable commercial opportunity for Merck

PAH Market Opportunity

- PAH market was **~$5.7 billion in 2019** and expected to increase to **~$7.5 billion by 2026**[1]
- Potential for **market expansion** with introduction of new options that have potential to **improve short- and long-term clinical outcomes**
- Urgency to treat PAH patients given **rapid disease progression**, including with add-on therapies

Sotatercept Opportunity

- **Multi-billion dollar peak sales** potential with expected **launch in the 2024/2025 timeframe**
- **Additional growth driver** through the KEYTRUDA loss of exclusivity (LOE)
- **Exclusivity for PH through 2036/2037** in the U.S. provides meaningful opportunity well into the next decade
- Potential for **expanded indications** in PH, including PH due to HFpEF to impact additional patients and enable incremental revenue

1. Based on EvaluatePharma

Sotatercept is highly complementary to and strengthens our existing cardiovascular portfolio and pipeline

	Heart Failure	Pulmonary Hypertension			Anti-coagulants
	Verquvo (vericiguat) tablets	Adempas riociguat	**sotatercept**	MK-5475	MK-2060
Status	Approved	Approved	**Phase 3**	Phase 2/3	Phase 2
Mechanism of Action	Oral sGC stimulator	Oral sGC stimulator	**Activin receptor type IIA fusion protein**	Inhaled sGC stimulator	Factor XI
Disease Area	HFrEF	PAH, CTEPH	**PAH, LHD**	PAH	Thrombosis
WHO Group	II	I & IV	**I, II**	I	N/A

Verquvo and Adempas are part of a collaboration with Bayer

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Caroline Litchfield

Chief Financial Officer

Financial overview of the Acceleron acquisition

Financial Summary	
Transaction details	• Merck will acquire all outstanding shares of Acceleron for a purchase price of $180 per share • Total transaction value of ~$11.5 billion (~$10.9 billion net of cash), all cash • Transaction expected to close in 4Q21
Financial impact	• Minimally dilutive to non-GAAP earnings in 2022, turning accretive in 2023 and significantly accretive thereafter • Important potential growth driver in KEYTRUDA LOE period
Funding and capital allocation priorities	• Plan to fund efficiently through a mix of existing cash and debt • Commitment to Merck's strong credit rating • Retain significant capacity to pursue additional business development deals • Commitment to maintain and grow the dividend over time • Return excess cash through share repurchases
Royalty structure[1]	• Reblozyl is licensed to Bristol Myers Squibb with meaningful, low-to mid-20% royalties to Merck • 2020 total revenue of ~$275M with multi-billion dollar peak potential • Low 20% royalty on net sales of sotatercept paid to Bristol Myers Squibb

1. Royalties between Bristol Myers Squibb and Acceleron will continue until the closing of Merck's acquisition of Acceleron

Q&A

To ask a question on the operator-assisted audio line, press *1.

Note: be sure to mute your computer speakers if you are listening to the audio webcast.

Acceleron acquisition summary

Sotatercept	• Sotatercept is a potential foundational, first-in-class agent (non-vasodilator) with promising preclinical and clinical efficacy in PAH • First PAH drug to receive Breakthrough Therapy Designation by FDA or PRIME designation for priority medicines by EMA • Compelling Phase 2 data with a robust Phase 3 development program • Multi-billion dollar peak sales opportunity with the potential to drive long-term revenue and earnings growth well into the next decade
Reblozyl & Pipeline	• Reblozyl is an approved first-in-class agent for the treatment of anemia in certain blood disorders • Multi-billion dollar peak sales potential, with low-to mid-20% royalties to Merck[1] • Innovative early-stage pipeline with 18+ years of protein engineering research on the TGF-β superfamily
Transaction Details	• All cash purchase price, transaction value of ~$11.5B (~$10.9B, net of cash) • Transaction expected to close in 4Q21

1. Royalties between Bristol Myers Squibb and Acceleron will continue until the closing of Merck's acquisition of Acceleron