



January 10, 2022



Forward-looking statements

This presentation and the discussions during this conference call contain forward-looking statements, including statements made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995, relating to: our strategy and plans; potential of, and expectations for, our commercial business and pipeline programs; capital allocation and investment strategy; clinical development programs, clinical trials, and data readouts and presentations; risks and uncertainties associated with drug development and commercialization; regulatory discussions, submissions, filings, and approvals and the timing thereof; the potential benefits, safety, and efficacy of our and our collaboration partners' products and investigational therapies; the anticipated benefits and potential of investments, collaborations, and business development activities; our future financial and operating results; 2021 financial guidance; plans relating to share repurchases. These forward-looking statements may be accompanied by such words as "aim," "anticipate," "believe," "could," "estimate," "expect," "forecast," "goal," "intend," "may," "plan," "potential," "possible," "prospect," "will," "would," and other words and terms of similar meaning. Drug development and commercialization involve a high degree of risk, and only a small number of research and development programs result in commercialization of a product. Results in early-stage clinical trials may not be indicative of full results or results from later stage or larger scale clinical trials and do not ensure regulatory approval. You should not place undue reliance on these statements or the scientific data presented.

These statements involve risks and uncertainties that could cause actual results to differ materially from those reflected in such statements, including: our dependence on sales from our products; uncertainty of long-term success in developing, licensing, or acquiring other product candidates or additional indications for existing products; failure to compete effectively due to significant product competition in the markets for our products; failure to successfully execute or realize the anticipated benefits of our strategic and growth initiatives; difficulties in obtaining and maintaining adequate coverage, pricing, and reimbursement for our products; our dependence on collaborators, joint venture partners, and other third parties for the development, regulatory approval, and commercialization of products and other aspects of our business, which are outside of our full control; risks associated with current and potential future healthcare reforms; risks related to commercialization of biosimilars; failure to obtain, protect, and enforce our data, intellectual property, and other proprietary rights and the risks and uncertainties relating to intellectual property claims and challenges; the risk that positive results in a clinical trial may not be replicated in subsequent or confirmatory trials or success in early stage clinical trials may not be predictive of results in later stage or large scale clinical trials or trials in other potential indications; risks associated with clinical trials, including our ability to adequately manage clinical activities, unexpected concerns that may arise from additional data or analysis obtained during clinical trials, regulatory authorities may require additional information or further studies, or may fail to approve or may delay approval of our drug candidates; the occurrence of adverse safety events, restrictions on use with our products, or product liability claims; risks relating to the distribution and sale by third parties of counterfeit or unfit versions of our products; risks relating to the use of social media for our business; risks relating to technology failures or breaches; risks relating to management and key personnel changes, including attracting and retaining key personnel; failure to comply with legal and regulatory requirements; the risks of doing business internationally, including currency exchange rate fluctuations; risks relating to investment in our manufacturing capacity; problems with our manufacturing processes; fluctuations in our effective tax rate; the direct and indirect impacts of the ongoing COVID-19 pandemic on our business, results of operations, and financial condition; fluctuations in our operating results; risks related to investment in properties; the market, interest, and credit risks associated with our investment portfolio; risks relating to share repurchase programs; risks relating to access to capital and credit markets; risks related to indebtedness; change in control provisions in certain of our collaboration agreements; environmental risks; and any other risks and uncertainties that are described in other reports we have filed with the U.S. Securities and Exchange Commission (SEC).

These statements are based on our current beliefs and expectations and speak only as of the date of this presentation. We do not undertake any obligation to publicly update any forward-looking statements.

ADUHELM (aducanumab-avwa) indication and safety statement

ADUHELM is indicated for the treatment of Alzheimer's disease. Treatment with ADUHELM should be initiated in patients with mild cognitive impairment or mild dementia stage of disease, the population in which treatment was initiated in clinical trials. There are no safety or effectiveness data on initiating treatment at earlier or later stages of the disease than were studied. This indication is approved under accelerated approval based on reduction in amyloid beta plaques observed in patients treated with ADUHELM. Continued approval for this indication may be contingent upon verification of clinical benefit in a confirmatory trial or trials.

ADUHELM can cause serious side effects including amyloid related imaging abnormalities or ARIA. ARIA is a common side effect that does not usually cause any symptoms but can be serious. ADUHELM can cause serious allergic reactions. The most common side effects include ARIA, headache and fall.

Please see the full prescribing information and patient medication guide including warnings and precautions at ADUHELM.com.

ADUHELM Medication Guide. Cambridge, MA: Biogen



Positioned to enter two new large markets with high unmet need

ALZHEIMER'S DISEASE

30 Million

Individuals impacted by Alzheimer's disease worldwide

6th

Leading cause of death in the U.S.

DEPRESSION

280 Million

People suffering from depression worldwide

>700k

Suicides annually

Multiple Sclerosis

>1M treated patients, but no ability to completely halt or reverse disease progression

Spinal Muscular Atrophy

A leading genetic cause of infant mortality

Stroke

2nd leading cause of death worldwide

ALS

<5 years average life expectancy

Parkinson's Disease

#2 neurodegenerative disease with ~10M patients worldwide

Lupus

~4M people with SLE and ~2M with CLE worldwide; disproportionately impacts people of color

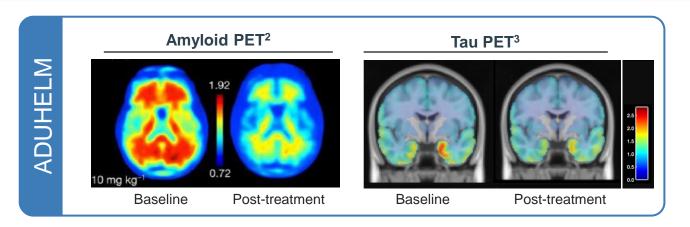
Biogen is advancing an industry leading Alzheimer's portfolio

Program	Target	Modality	Preclinical	Phase 1	Phase 2	Phase 3	Marketed
Aducanumab (ADUHELM™)*	Amyloid-β	mAb					
Lecanemab/BAN2401*	Amyloid-β	mAb				Phase 3 readout anticipated in H2 2022	
BIIB080#	Tau	ASO			Phase 2 start anticipated in mid-2022		
BIIB076##	Tau	mAb					
Undisclosed asset	Tau	Small molecule		Phase 1 start anticipated in Q1 2022			
Undisclosed asset	Amyloid-β	-					
Undisclosed assets	Amyloid-β	mAb					
ATV-Amyloid-β**	Amyloid-β	mAb					
AAV-ZFP-MAPT^	Tau	GTx					
Undisclosed assets	Genetically defined populations	mAb					
Undisclosed asset	and genetically linked targets	Small molecule					

ADUHELM is the first and only FDA-approved therapy to address a defining pathology of Alzheimer's disease¹



ADUHELM targets toxic aggregated forms of amyloid and impacts downstream tau biology in the brain



Lecanemab

ADUHELM®

Anti-amyloid

BIIB080

Anti-tau

ADUHELM efficacy and safety evaluated in over 3,000 patients

Phase 3 EMERGE Study

Study met its pre-specified primary and secondary endpoints showing a significant reduction in clinical decline.

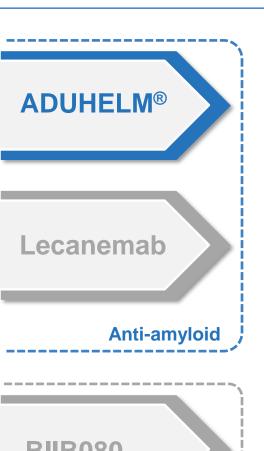
Phase 3 ENGAGE Study

Study did not meet its primary endpoint, but analyses for both EMERGE and ENGAGE demonstrated that higher exposures to ADUHELM were associated with greater reduction in clinical decline.

Phase 1b PRIME Study

Exploratory efficacy assessments were directionally aligned with the positive EMERGE study.

Continued focus on three strategic launch priorities in the U.S.



Improve the Community's Understanding of our Clinical Data

- Recent Phase 3 data at CTAD demonstrated effect on plasma phospho-tau was correlated with change in amyloid beta plaque and reduced cognitive and functional decline¹
- First patient of Phase 4 confirmatory study anticipated to be screened in May 2022 with primary completion expected ~4 years after study start
- Phase 3 primary manuscript currently under review at a top-tier scientific journal
- Phase 3 ARIA findings published in JAMA Neurology

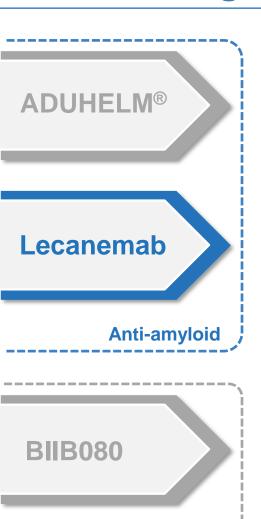
Support Development of System Infrastructure

- Approximately 220 sites now treating patients with ADUHELM
- Continued increase in utilization of Biogen's Aβ CSF testing program

Clarify Reimbursement

- Reduced price for ADUHELM to improve access for patients
- Permanent J-code now active for ADUHELM
- Final Medicare National Coverage Determination on antibodies directed against amyloid expected in April 2022 with draft decision in January 2022

Advancing leadership in Alzheimer's with lecanemab





Lecanemab is an anti-amyloid antibody that targets toxic aggregated forms of amyloid in the brain

Asset Profile and Data

- No titration period
- Phase 2 data demonstrates ~80% of patients were amyloid negative by 12 18 months of treatment1
- Incidence of ARIA-E was 9.9% for highest treatment dose group in Phase 2 core study and 8.9% for patients who transitioned from placebo to the highest treatment dose in the OLE¹

Future Milestones

- Breakthrough designation in the U.S. with a rolling submission for accelerated approval expected to complete in H1 2022*
- Phase 3 readout anticipated in H2 2022 with potential to be the first anti-amyloid antibody with full approval in Alzheimer's disease
- AHEAD 3-45 trial, designed to evaluate whether lecanemab may benefit people with early pathology of Alzheimer's and before cognitive impairment

Advancing a leading Alzheimer's portfolio with BIIB080



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Anti-amyloid

Lecanemab



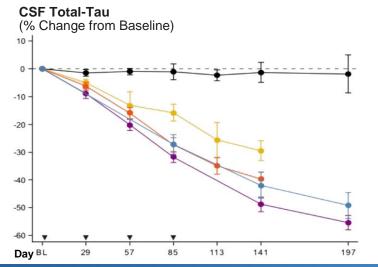
Anti-tau

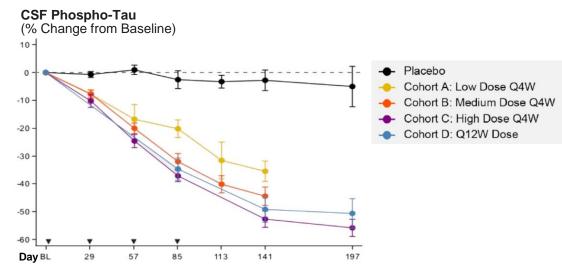


BIIB080 is an anti-sense oligonucleotide that directly targets tau mRNA and aims to reduce all forms of tau

- ► BIIB080 resulted in a time and dose-dependent reduction in the concentration of CSF total and phospho-tau¹
- Phase 2 study start for BIIB080 in Alzheimer's disease anticipated in mid-2022

Effect of BIIB080 in CSF Concentrations of Total Tau and Phospho-Tau Protein





Zuranolone clinical development program provides multiple opportunities across the depression landscape

Major Depressive Disorder

Postpartum Depression





Potential first-in-class, oral GABA_A receptor PAM with demonstrated rapid onset of action in MDD and PPD and *'as-needed'* treatment paradigm

~19 million adults affected by depression in the U.S.1

 Current standard of care must be taken chronically, is slow acting and results in unwanted side effects

Zuranolone as a monotherapy or adjunctive to stable ADT in MDD

- 3 positive clinical studies demonstrated rapid onset of action and a consistent safety profile
- Demonstrated durability of effect in the Phase 3 SHORELINE naturalistic study
- New Drug Application in MDD to the FDA planned in H2 2022, with rolling submission expected to start in early 2022

Zuranolone with simultaneous start with ADT

CORAL Phase 3 study expected to readout in early 2022

Zuranolone clinical development program provides multiple opportunities across the depression landscape

Major Depressive Disorder

Postpartum Depression





Potential first-in-class, oral GABA_A receptor PAM with demonstrated rapid onset of action in MDD and PPD and 'as-needed' treatment paradigm

Approximately 1 in 8 new mothers affected by postpartum depression in the U.S.¹ with ~500,000 cases annually²

 Potential for an effective, out-patient treatment option to become new standard of care in PPD

Positive ROBIN Phase 3 study published in JAMA Psychiatry³

SKYLARK Phase 3 study in PPD expected to read out in mid-2022 with regulatory filing anticipated in the first half of 2023

Four pillars to drive growth and long-term shareholder value



Neurology

Expanding on Biogen's leadership in neuroscience with **25 programs** across a diversified pipeline



Specialized Immunology

Two Phase 3 programs in lupus representing potential first-in-class and best-in-class therapies



Biosimilars

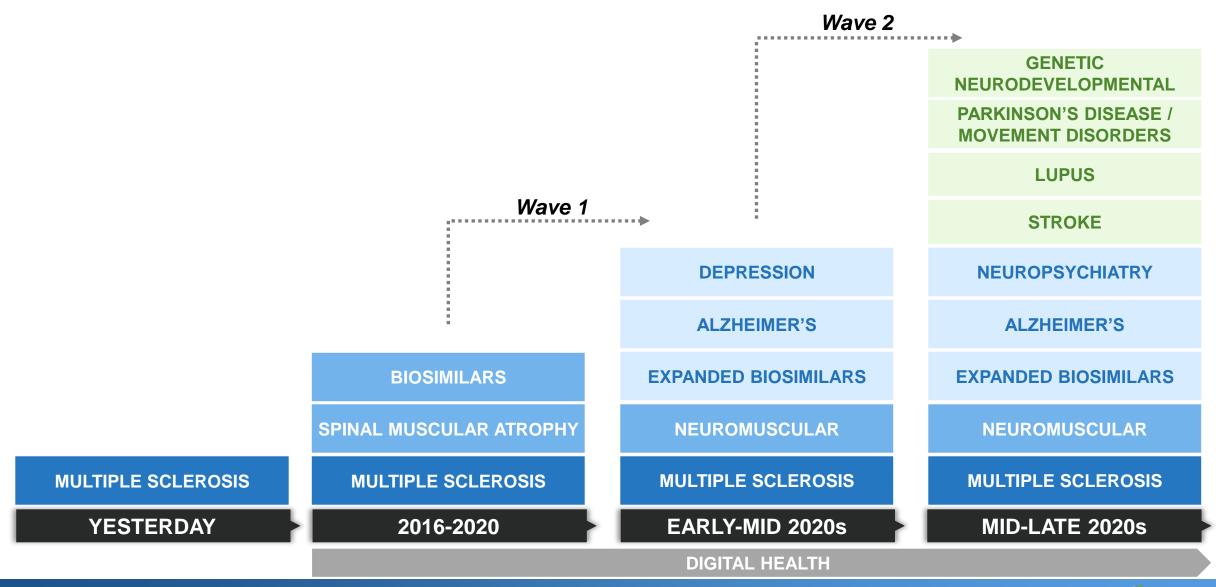
Potential expansion of our biosimilars portfolio from three assets to six



Digital Health

Accelerating efforts to build complementary digital solutions and technologies to potentially predict, measure and prevent disease

Two potential waves of growth to build a multi-franchise portfolio

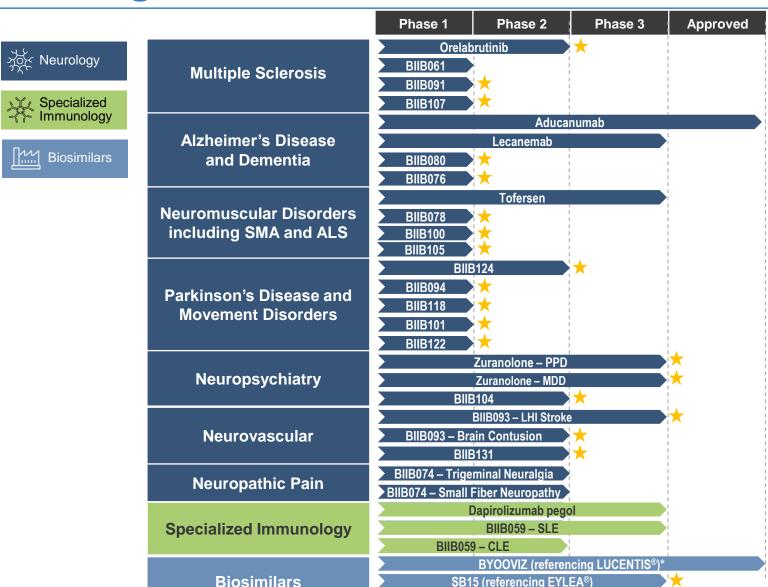


Potential breakthrough therapies to drive a second wave of growth

	Epidemiology	Unmet Need	Pipeline
KE	leading cause of mortality in the U.S. caused by AIS	Only ~27% of patients eligible to	BIIB093 – Ph 3 for LHI; complementary for use with current SoC
STROKE	of all AIS cases are LHI	receive current SoC pharmacological thrombolytics ¹	BIIB131 – Ph 2 results demonstrated positive impacts on blood vessel reopening and patient functional recovery ¹
Sn	~4M people impacted by SLE worldwide¹	Suboptimal efficacy, toxicities and/or increased risk of infection limit use of current SoC	Dapirolizumab Pegol* – Ph 3 in SLE, a potential first-in-class CD40L infusion
LUPUS	~2M people affected by CLE globally ¹	No targeted therapies	BIIB059 – Potential first-in-class anti-BDCA2 subcutaneous injection; Ph 3 in SLE ongoing with planned pivotal study start in CLE in 2022
PARKINSON'S DISEASE / MD	2nd most common neurodegenerative disease - Parkinson's disease	No disease modifying therapy	BIIB122** – Ph 1b data showed target and pathway engagement in Parkinson's patients
PARKIN	adults living with essential tremor in the U.S. ²	~50% of people treated do not respond or have sub-optimal response to SoC ³	BIIB124 / SAGE-324# – Ph 2b study currently enrolling

Leading in neuroscience with a robust and diversified portfolio

BIIB800 (referencing ACTEMRA®)



31Clinical programs today

Programs in Phase 3 or filed today

★ New clinical programs since 2017

> 30
Business development deals since 2017

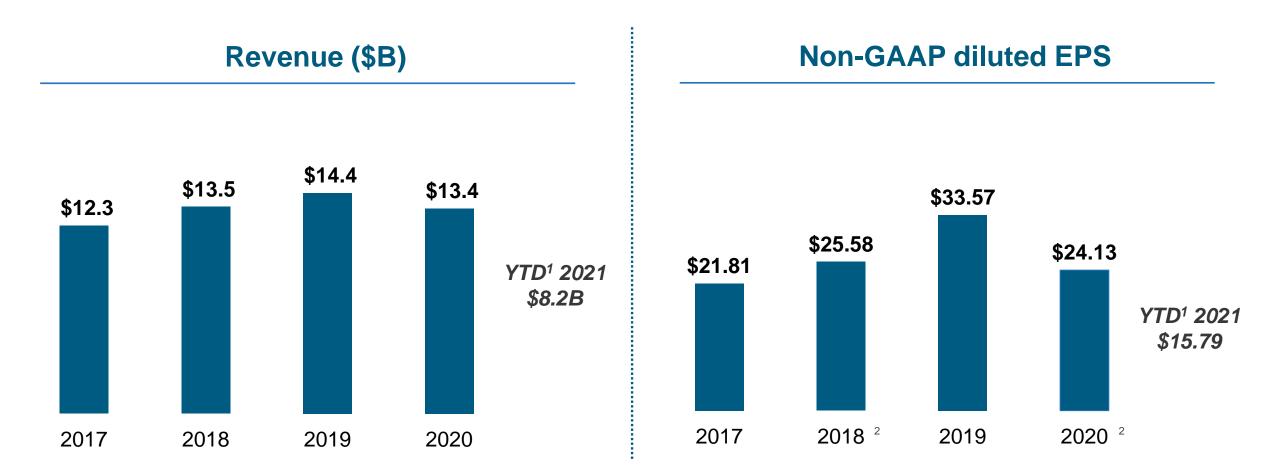
^{*}Not yet commercially available; ALS = amyotrophic lateral sclerosis; LHI = large hemispheric infarction; MDD = major depressive disorder; MS = multiple sclerosis; PPD = postpartum depression; SLE = systemic lupus erythematosus; CLE = cutaneous lupus erythematosus; SMA = spinal muscular atrophy

Strong focus on execution with key expected milestones in 2022

	2022 H1	2022 H2
Product Launches		
ADUHELM – Ongoing		
	VUMERITY – E.U. Launch (~20 Countries)	
		BYOOVIZ – U.S. Launch (mid-year)
Regulatory Filings		
Lecanemab* in Alzheimer's disease – U.S. Filing	● H1	
Zuranolone * in MDD – U.S. Filing		H2
Data Readouts		
Zuranolone* – Phase 3 in MDD#	Early	
Zuranolone* – Phase 3 in PPD		Mid-year
Lecanemab ## – Phase 3 in Alzheimer's disease		H2
BIIB104 - Phase 2 in CIAS		Mid-year
BIIB078 [^] - Phase 1 in C9Orf72 ALS	● H1	



Financial performance



Our GAAP financial measures and a reconciliation of GAAP to Non-GAAP financial results are at the end of this presentation.

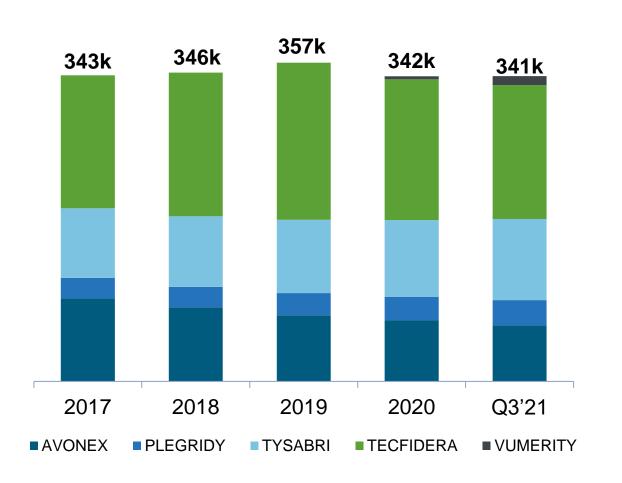
² Beginning in the second quarter of 2021 material upfront payments and premiums paid on the acquisition of common stock associated with significant collaboration and licensing arrangements along with the related transaction costs incurred are no longer excluded from Non-GAAP R&D and SG&A expenses. Prior period Non-GAAP results have been updated to reflect this change.



¹YTD = last 9 months prepared of reported amounts for the nine months ended September 30, 2021.

Continued leadership with a resilient multiple sclerosis business

MS Patients



Highlights

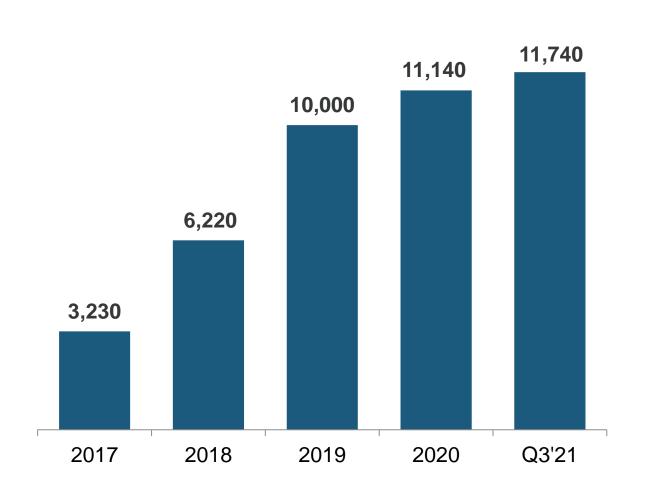
- LTM¹ revenue of \$7.1 billion
- VUMERITY (diroximel fumarate) continuing to grow
 - U.S. revenue Q4'20 \$39M, Q1'21 \$74M, Q2'21 \$91M,
 Q3'21 \$121M
 - E.U. approval obtained in Q4 2021 with planned launches across ~20 markets in 2022
- Intramuscular PLEGRIDY launched in both the U.S. and E.U.
- Subcutaneous TYSABRI launched in the E.U. in 2021
- Continuing to pursue new treatment options
 - InnoCare collaboration executed in Q2 2021

Note: Patient numbers represent estimated ending patient count as of December 31st of each year except for 2021, which represents patients as of September 30, 2021.

¹LTM = last 12 months prepared based upon the sum of reported amounts for the nine months ended September 30, 2021, and three months ended December 31, 2020. Includes royalties on the sales of OCREVUS.

Continued leadership position in SMA

SPINRAZA Patients²



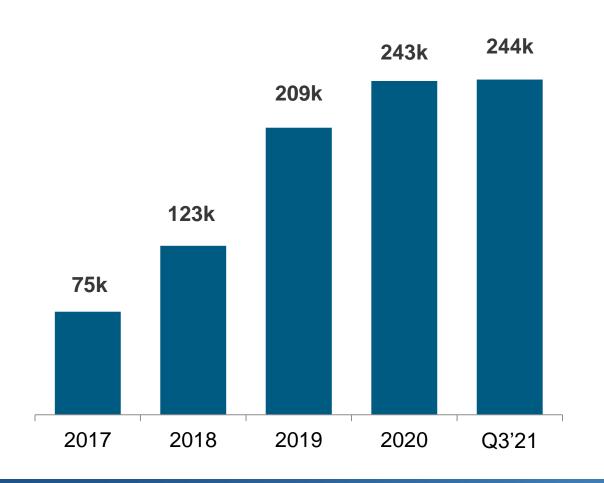
Highlights

- LTM¹ revenue of \$2.0 billion
- Over 11,000 patients on therapy²
 - Over 60,000 SMA patients in markets where Biogen expects to commercialize SPINRAZA³
- Proven efficacy across all patient types and a well characterized safety profile
- Obtained reimbursement for SPINRAZA in China
- Strengthening our competitive positioning in SMA, pursuing:
 - New ASO that may have the potential for extended dosing intervals
 - Additional analyses on real-world evidence confirming efficacy in adults
 - Higher dose for even greater efficacy
 - Potential benefit following sub-optimal response to competitor's gene therapy and oral treatments

¹LTM = last 12 months prepared based upon the sum of reported amounts for the nine months ended September 30, 2021, and three months ended December 31, 2020. ²Total patients across the post-marketing setting, the Expanded Access Program, and clinical trials. ³Biogen data on file.

Expanding our biosimilars business

Biosimilars Patients



Commercialization of anti-TNFs in Europe

- Market-leading anti-TNF* portfolio in the E.U. with LTM¹ revenue of \$808 million
- Biogen contributed > €2 billion of healthcare savings in 2021 across Europe²

Pursuing potential new biosimilars

- Biogen to commercialize potential ophthalmology biosimilars referencing LUCENTIS and EYLEA in the U.S., Canada, Europe, Japan, and Australia
 - Global market of ~\$13 billion in 2021^{1,3}
 - BYOOVIZ (LUCENTIS biosimilar) approved in U.S., E.U., and U.K. with U.S. launch planned mid-2022
- Positive Phase 3 data for BIIB800 referencing ACTEMRA
 - Global sales of ACTEMRA in 2020 were ~\$3 Billion

^{*}Source: IQVIA / MIDAS, WHO-DDD.

¹LTM = last 12 months prepared based upon the sum of reported amounts for the nine months ended September 30, 2021, and three months ended December 31, 2020. ²Biogen estimate, data on file. ³Company reported sales, EvaluatePharma. BYOOVIZ is being developed with Samsung Bioepis Co., Ltd.; BIIB800 is being developed with BioThera Solutions. Ltd.



Flexibility to allocate capital including business development



(at end of Q3 2021)

\$3.9B Cash and marketable securities

\$7.3B **Debt**

\$3.3B Net debt



\$2.8B Cash flow from operations

\$0.2B Capital expenditures

\$2.6B Free cash flow*

*Free cash flow is defined as net cash flow from operations less capital expenditures. ¹YTD = reported amounts for the nine months ended September 30, 2021.

Biogen: Where Science Meets Humanity

- 9th year as biotech leader on Dow Jones Sustainability World Index
- 2021 winner of U.S. Chamber of Commerce Foundation's Best Sustainability Program
- #11 on Newsweek's
 America's Most
 Responsible Companies list

Environment 1st Fortune 500 to commit to go fossil fuel free with Healthy Climate, Healthy Lives

- Forming Scientific Advisory Council to advance research on air pollution and brain health
- Sustained 100% renewable electricity to power operations and expanded electric vehicle fleet to 13 countries



- Strengthening diverse talent pipeline with Morehouse School of Medicine with Health Equity Summer Fellowship Program
- Working with Harvard and Americares to help under-resourced clinics manage climate risks to improve patient health outcomes



- Published Biogen's 1st DE&I Report, detailing aspirations and bolstering transparency
- Tied a portion of employees' and executive officers' compensation to advancing our ESG strategy

Significant opportunity for value creation

Building New Franchises

- ✓ Diversifying to create a multi-franchise portfolio with two potential waves of growth, initially driven by Alzheimer's and depression
 - ✓ With ADUHELM and lecanemab, Biogen has the potential to bring two of the four anti-amyloid antibodies to market and provide options to patients
 - ✓ Positive Phase 3 data for zuranolone, a potential "as-needed" therapy in depression with planned regulatory filing in 2022
- ✓ Executing on multiple near-term value creation opportunities in 2022 including global drug launches, regulatory filings and pivotal data readouts

Executing on Base Business

- ✓ Continued leadership position in MS, SMA, and E.U. anti-TNF biosimilars
- ✓ Continuing to launch VUMERITY globally and expected U.S. launch of BYOOVIZ (LUCENTIS biosimilar) mid-2022

Strong Financial Position

- ✓ Strong balance sheet
- ✓ Significant cash flow with flexibility to allocate capital



Non-GAAP financial information

This presentation includes certain financial measures that were not prepared in accordance with accounting principles generally accepted in the U.S. (GAAP), including adjusted net income, adjusted diluted earnings per share, revenue growth at constant currency, which excludes the impact of changes in foreign exchange rates and hedging gains or losses, and free cash flow, which is defined as net flow from operations less capital expenditures. We believe that these and other Non-GAAP financial measures provide additional insight into the ongoing economics of our business and reflect how we manage our business internally, set operational goals, and form the basis of our management incentive programs. Non-GAAP financial measures are in addition to, not a substitute for, or superior to, measures of financial performance prepared in accordance with GAAP.

We do not provide guidance for GAAP reported financial measures (other than revenue) or a reconciliation of forward-looking Non-GAAP financial measures to the most directly comparable GAAP reported financial measures because we are unable to predict with reasonable certainty the financial impact of items such as the transaction, integration, and certain other costs related to acquisitions or large business development transactions; unusual gains and losses; potential future asset impairments; gains and losses from our equity security investments; and the ultimate outcome of pending significant litigation without unreasonable effort. These items are uncertain, depend on various factors, and could have a material impact on GAAP reported results for the guidance period. For the same reasons, we are unable to address the significance of the unavailable information, which could be material to future results.

Note regarding trademarks: AVONEX®, PLEGRIDY®, RITUXAN®, SPINRAZA®, TECFIDERA®, TYSABRI®, and VUMERITY® are registered trademarks of Biogen. ADUHELM™, BENEPALI™, FLIXABI™, IMRALDI™, and BYOOVIZ™ are trademarks of Biogen. The following are trademarks of the respective companies listed: GAZYVA® and OCREVUS® – Genentech, Inc. Other trademarks referenced in this presentation are the property of their respective owners.

GAAP to Non-GAAP reconciliation

Diluted EPS and Net Income to Biogen Inc. (Unaudited. \$ in millions, except per share amounts)

		FY 2017		FY 2018*		FY 2019		FY 2020*	YTD 2021**	
GAAP EPS - Diluted	\$	11.92	\$	21.58	\$	31.42	\$	24.80	\$	7.90
Adjustment to net income attributable to Biogen Inc. (see below)		9.89		4.00		2.15		(0.67)		7.89
Non-GAAP EPS - Diluted	\$	21.81	\$	25.58	\$	33.57	\$	24.13	\$ 1	15.79
GAAP Net Income Attributable to Biogen Inc.	\$	2,539	\$	4,431	\$	5,889	\$	4,001	\$ 1	1,188
Amortization and impairment of acquired intangible assets A		815		747		490		465		806
Acquired in-process research and development		120		113		-		75		18
Acquisition-related transaction and integration costs		-		-		28		-		-
(Gain) loss on fair value remeasurement of contingent consideration		63		(12)		(64)		(86)		(49)
Loss on divestiture of Hillerød, Denmark manufacturing operations		-		-		55		(93)		-
(Gain) loss on equity security investments		-		(128)		(200)		(694)		706
Premium paid on early debt redemption or debt exchange		-		-		-		9		10
Net distribution to noncontrolling interests		132		44		-		-		(4)
Restructuring, business transformation and other cost saving initiatives		19		23		5		3		5
Other reconciling items		19		10		33		1		-
Income tax effect related to reconciling items		(236)		(112)		31		81		(335)
Elimination of deferred tax asset/Valuation allowance associated				11				90		
with deferred tax assets		-		- 11				90		
Swiss tax reform		-		-		(54)		-		-
U.S. tax reform		1,174		125		-		-		-
Amortization included in equity in loss of investee, net of tax		-		-		78		40		31
Non-GAAP Net Income Attributable to Biogen Inc.	\$	4,645	\$	5,250	\$	6,291	\$	3,892	\$ 2	2,375

Numbers may not foot due to rounding.

Use of Non-GAAP Financial Measures

We supplement our GAAP consolidated financial statements and GAAP financial measures with other financial measures, such as adjusted net income and adjusted diluted earnings per share. We believe that these and other Non-GAAP financial measures provide additional insight into the ongoing economics of our business and reflect how we manage our business internally, set operational goals and form the basis of our management incentive programs. Non-GAAP financial measures are in addition to, not a substitute for, or superior to, measures of financial performance prepared in accordance with GAAP.

Our "Non-GAAP net income attributable to Biogen Inc." and "Non-GAAP earnings per share - Diluted" financial measures exclude the following items from "GAAP net income attributable to Biogen Inc." and "GAAP earnings per share - Diluted":

1. Acquisitions and divestitures

We exclude transaction, integration and certain other costs related to the acquisition and divestiture of businesses, the acquisitions of assets and items associated with the initial consolidation or deconsolidation of variable interest entities. These adjustments include, but are not limited to, charges for in-process research and development and certain milestones, the amortization and impairment of intangible assets, charges or credits from the fair value remeasurement of our contingent consideration obligations and losses on assets and liabilities held for sale.

2. Restructuring, business transformation and other cost saving initiatives

We exclude costs associated with our execution of certain strategies and initiatives to streamline operations, achieve targeted cost reductions, rationalize manufacturing facilities or refocus research and development activities. These costs may include employee separation costs, retention bonuses, facility closing and exit costs, asset impairment charges or additional depreciation when the expected useful life of certain assets have been shortened due to changes in anticipated usage and other costs or credits that management believes do not have a direct correlation to our ongoing or future business operations.

3. (Gain) loss on equity security investments

We exclude unrealized and realized gains and losses and discounts or premiums on our equity security investments as we do not believe that these components of income or expense have a direct correlation to our ongoing or future business operations.

4. Other items

We evaluate other items of income and expense on an individual basis and consider both the quantitative and qualitative aspects of the item, including (i) its size and nature, (ii) whether or not it relates to our ongoing business operations and (iii) whether or not we expect it to occur as part of our normal business on a regular basis. We also include an adjustment to reflect the related tax effect of all reconciling items within our reconciliation of our GAAP to Non-GAAP net income attributable to Biogen Inc. and earnings per share - diluted.

^{*} Beginning in the second quarter of 2021 material upfront payments and premiums paid on the acquisition of common stock associated with significant collaboration and licensing arrangements along with the related transaction costs incurred are no longer excluded from Non-GAAP R&D and SG&A expenses. Prior period Non-GAAP results have been updated to reflect this change.

^{**} YTD = reported amounts for the nine months ended September 30, 2021.

GAAP to Non-GAAP reconciliation

A Amortization and impairment of acquired intangible assets for the nine months ended September 30, 2021, reflect the impact of impairment charges recorded related to BIIB111 and BIIB112, which were obtained as part of the Nightstar Therapeutics plc acquisition. During the second quarter of 2021 we announced that our Phase 3 STAR study of BIIB111 and our Phase 2/3 XIRIUS study of BIIB112 did not meet their primary endpoints. In the third quarter of 2021 we suspended further development on these programs based on the decision by management as part of its strategic review process. During the nine months ended September 30, 2021, we recorded impairment charges of \$365.0 million related to BIIB111 and \$220.0 million related to BIIB112.

