where science meets humanity™

Q4 and Full Year 2022

Financial Results and Business Update

February 15, 2023

Biogen

Non-GAAP financial information

This presentation and the discussions during this conference call include 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 cash flow from operations less capital expenditures. Additional information regarding the GAAP and Non-GAAP financial measures and a reconciliation of the GAAP to Non-GAAP financial measures can be found on slides 50-54 of this presentation and in the Q4 2022 earnings release and related financial tables posted on the *Investors* section of Biogen.com. 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 other costs related to acquisitions or business development transactions; unusual gains and losses; potential future asset impairments; gains and losses from our equity security investments; and the ultimate outcome of litigation. 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.

Forward-looking statements

This presentation and the discussions during this conference call contain forward-looking statements, 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; regulatory discussions, submissions, filings, and approvals; the potential benefits, safety, and efficacy of our and our collaboration partners' products and investigational therapies; the anticipated benefits and potential of investments, optimization of the cost structure, actions to improve risk profile and productivity of R&D pipeline, collaborations, and business development activities; our future financial and operating results; 2023 financial guidance. 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.

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; the potential impact of the conflict in Ukraine; 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 technology failures or breaches; problems with our manufacturing processes; risks relating to management and personnel changes, including attracting and retaining 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; the direct and indirect impacts of the ongoing COVID-19 pandemic on our business; 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; 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; fluctuations in our effective tax rate; 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.

These statements speak only as of the date of this presentation. We do not undertake any obligation to publicly update any forward-looking statements.

Q4 and full year 2022 earnings call agenda

Introduction	**Michael Hencke** Head of Investor Relations
Opening	**Christopher A. Viehbacher** President and Chief Executive Officer
Financial Results	**Michael McDonnell** Chief Financial Officer
Business Priorities	**Christopher A. Viehbacher** President and Chief Executive Officer
R&D Update	**Priya Singhal, M.D., M.P.H.** Head of Development *Interim Head of Research & Global Safety and Regulatory Sciences*
2023 Guidance	**Michael McDonnell** Chief Financial Officer

Opening

Christopher A. Viehbacher

President and Chief Executive Officer

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Financial Results

Michael McDonnell

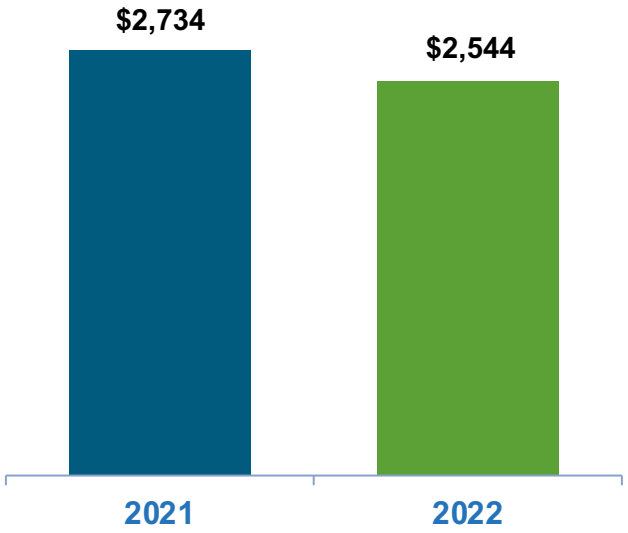
Chief Financial Officer

Q4 and full year 2022 financial results

Total Revenue ($M)

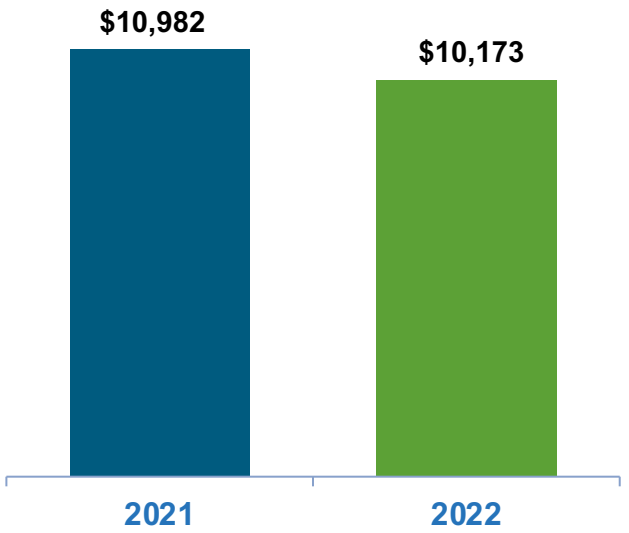
Q4

(7%) at actual currency
(4%) at constant currency



Full Year

(7%) at actual currency
(5%) at constant currency



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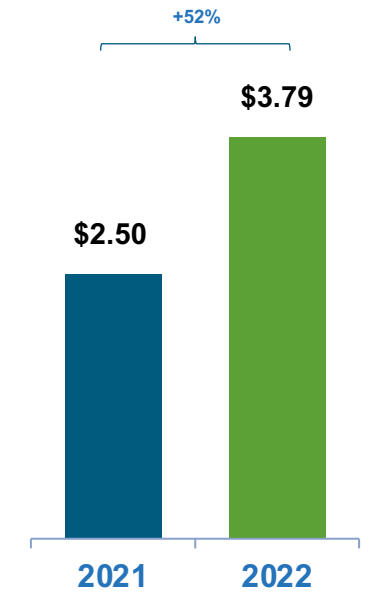
Percentage changes in revenue growth at constant currency are presented excluding the impact of changes in foreign currency exchange rates and hedging gains or losses. The current period's foreign currency revenue values are converted into U.S. dollars using the average exchange rates from the prior period.

Q4 and full year 2022 financial results

GAAP Diluted EPS ($)

Q4



Full Year

Non-GAAP Diluted EPS ($)

Q4

Full Year

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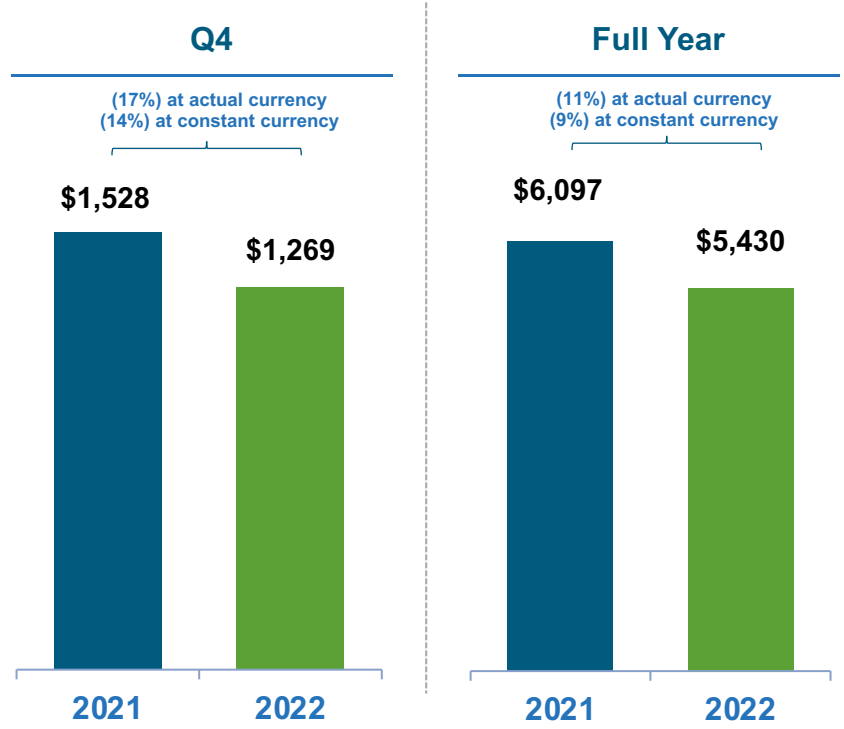
Global multiple sclerosis product revenue

MS Product Revenue ($M)



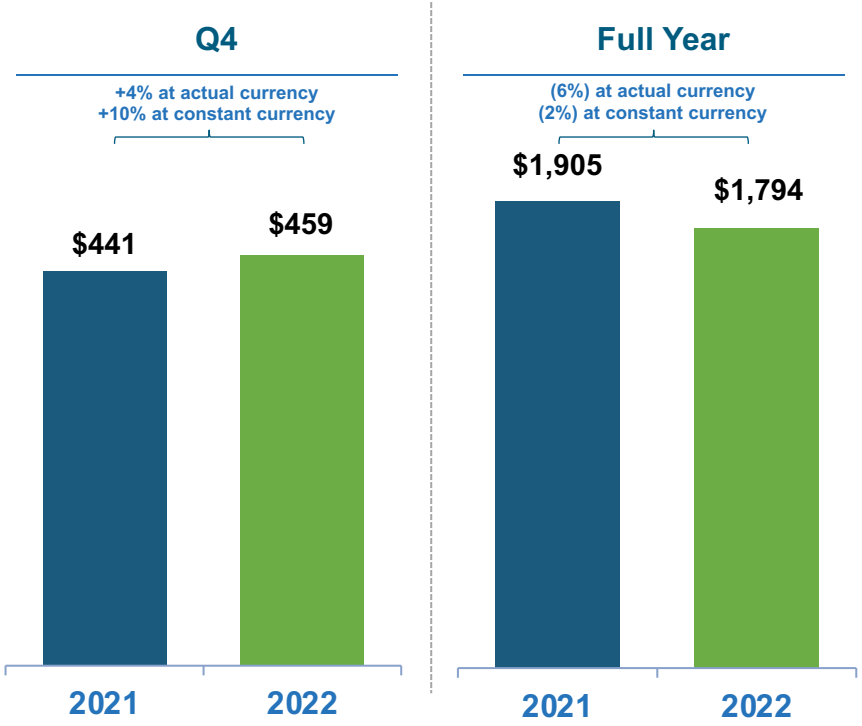
Numbers may not foot due to rounding.

Q4 2022 Highlights

- **TECFIDERA** was negatively impacted by generic competition in the U.S. and certain markets outside the U.S.
- **VUMERITY** continued to grow globally
- **TYSABRI** was negatively impacted by pricing pressure with relatively stable volume
- **Interferons** were impacted by the continued shift from injectable platforms to oral or high efficacy therapies

Global SPINRAZA revenue

SPINRAZA Revenue ($M)



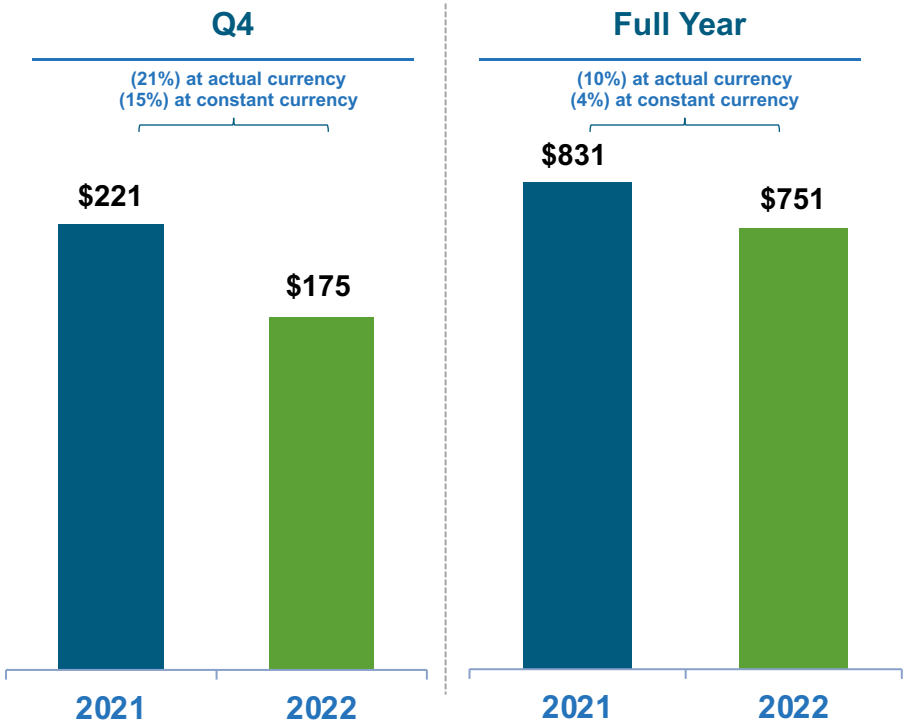
Numbers may not foot due to rounding.

Q4 2022 Highlights

- **U.S. SPINRAZA:** Continued signs of stabilization
- **ROW SPINRAZA:** Continued growth primarily in Asian markets, partially offset by competition in Europe

Biosimilars revenue

Biosimilars Revenue ($M)



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Q4 2022 Highlights

- **Biosimilars:** Continued pricing pressure
- **BYOOVIZ** (referencing LUCENTIS®) launched in the U.S. in June 2022.
- Abbreviated Biologics License Application accepted by the FDA for **BIIB800**, a biosimilar candidate referencing ACTEMRA®

BYOOVIZ is being developed with Samsung Bioepis Co., Ltd.
BIIB800 is being developed with Bio-Thera Solutions, Ltd.

Q4 and full year 2022 revenue highlights

$ in Millions	Q4 2022	Q4 2021	Δ Y/Y	Δ (CC#)	FY 2022	FY 2021	Δ FY/FY	Δ (CC#)
Multiple sclerosis product revenue+	$1,269	$1,528	(17%)	(14%)	$5,430	$6,097	(11%)	(9%)
Spinal muscular atrophy product revenue	$459	$441	4%	10%	$1,794	$1,905	(6%)	(2%)
Biosimilars product revenue	$175	$221	(21%)	(15%)	$751	$831	(10%)	(4%)
Other product revenue^	$2	$4	(42%)	(36%)	$13	$14	(7%)	(0%)
Total product revenue*	**$1,905**	**$2,194**	**(13%)**	**(10%)**	**$7,988**	**$8,847**	**(10%)**	**(7%)**
Revenue from anti-CD20 therapeutic programs	**$448**	**$414**	**8%**	**8%**	**$1,701**	**$1,659**	**3%**	**3%**
Contract manufacturing and royalty revenue	**$192**	**$126**	**52%**	**52%**	**$485**	**$476**	**2%**	**2%**
Total revenue*	**$2,544**	**$2,734**	**(7%)**	**(4%)**	**$10,173**	**$10,982**	**(7%)**	**(5%)**

Percentage changes in revenue growth at constant currency (CC) are presented excluding the impact of changes in foreign currency exchange rates and hedging gains or losses. The current period's foreign currency revenue values are converted into U.S. dollars using the average exchange rates from the prior period.
Numbers may not foot due to rounding. Percent changes represented as favorable/(unfavorable).
+ includes TECFIDERA, VUMERITY, AVONEX, PLEGRIDY, TYSABRI, and FAMPYRA
^ includes ADUHELM and FUMADERM
* Net of hedge

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Q4 and full year 2022 financial results summary

($ in Millions except EPS, Shares in Millions)	Q4 2022	Q4 2021	Δ Y/Y	FY 2022	FY 2021	Δ FY/FY
Revenue	**$2,544**	**$2,734**	**(7%)**	**$10,173**	**$10,982**	**(7%)**
GAAP and Non-GAAP Cost of Sales	$571	$660	14%	$2,278	$2,110	(8%)
% of revenue	22%	24%		22%	19%	
GAAP and Non-GAAP R&D Expense	$602	$700	14%	$2,231	$2,501	11%
GAAP SG&A Expense	$633	$788	20%	$2,404	$2,674	10%
Non-GAAP SG&A Expense	$632	$785	19%	$2,399	$2,666	10%
GAAP Amortization	$175	$68	(157%)	$366	$881	58%
Non-GAAP Amortization	$8	$8	(10%)	$31	$15	(109%)
GAAP and Non-GAAP Collaboration Profit (Loss) Sharing	$35	($67)	(152%)	($7)	$7	203%
GAAP Operating Income	**$717**	**$587**	**22%**	**$3,484**	**$2,841**	**23%**
Non-GAAP Operating Income	**$696**	**$649**	**7%**	**$3,241**	**$3,665**	**(12%)**

The above table is not an income statement. Numbers do not foot. Percent changes represented as favorable/(unfavorable).
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Q4 and full year 2022 financial results summary (continued)

($ in Millions except EPS, Shares in Millions)	Q4 2022	Q4 2021	Δ Y/Y	FY 2022	FY 2021	Δ FY/FY
GAAP Other Income (Expense)	($113)	($182)	38%	$108	($1,096)	110%
Non-GAAP Other Income (Expense)	($7)	($67)	90%	($213)	($265)	19%
GAAP Profit Before Taxes and JV Equity	**$604**	**$405**	**49%**	**$3,592**	**$1,745**	**106%**
Non-GAAP Profit Before Taxes and JV Equity	**$689**	**$582**	**18%**	**$3,028**	**$3,400**	**(11%)**
GAAP Taxes %	9%	110%		18%	3%	
Non-GAAP Taxes %	15%	17%		15%	16%	
GAAP Net Income Attributable to Biogen Inc.	**$550**	**$368**	**50%**	**$3,047**	**$1,556**	**96%**
Non-GAAP Net Income Attributable to Biogen Inc.	**$587**	**$500**	**17%**	**$2,580**	**$2,861**	**(10%)**
Weighted average diluted shares used in calculating diluted EPS	145	147	2%	146	150	2%
GAAP Diluted EPS	**$3.79**	**$2.50**	**52%**	**$20.87**	**$10.40**	**101%**
Non-GAAP Diluted EPS	**$4.05**	**$3.39**	**19%**	**$17.67**	**$19.13**	**(8%)**

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Balance sheet and cash flow

Balance Sheet
(as of December 31, 2022)

$5.60B	Cash and marketable securities
$6.28B	Debt
$0.68B	Net debt

Cash Flow
(FY 2022)

$1.38B	Cash flow from operations
$0.24B	Capital expenditures
$1.14B	Free cash flow*
$750M	Share repurchases

* Free cash flow is defined as net cash flow from operations less capital expenditures.

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Business Priorities

Christopher A. Viehbacher

President and Chief Executive Officer

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Working to establish a sustainable growth trajectory

1. *Execute on potential growth drivers in LEQEMBI and zuranolone*
2. *Capitalize on opportunities for existing products*
3. *Align Biogen's cost base with revenue*
4. *Improve the risk profile and productivity of the R&D pipeline*
5. *Evaluate external growth opportunities*

Significant potential opportunity with LEQEMBI in early AD

LEQEMBI received accelerated approval in the U.S.

LEQEMBI has the potential to be the first globally approved treatment to slow the progression of early Alzheimer's disease with elevated brain amyloid

- *Phase 3 results showed a highly statistically significant slowing of clinical decline on primary and all key secondary endpoints assessing multiple domains of Alzheimer's disease, including activities of daily living*
- *Profile of ARIA incidence was within expectations*

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Note: LEQEMBI is being developed in collaboration with Eisai Co., Ltd; See LEQEMBI USPI for full prescribing information
AD = Alzheimer's disease; ARIA = amyloid-related imaging abnormalities

Collaborating with Eisai to maximize the value of LEQEMBI

Near-term Challenges

Restrictive reimbursement in the U.S. until traditional approval

Infrastructure limitations

- Number of specialists for diagnosis
- Access to PET scans for amyloid confirmation
- Infusion capacity

Actions

Filed for traditional approval in major markets including U.S., E.U., and Japan

Initiated submission for BLA in China

Eisai engaging CMS on reimbursement

Pursuing subcutaneous formulation

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Note: LEQEMBI is being developed in collaboration with Eisai Co., Ltd; Eisai serves as the lead for lecanemab development and regulatory submissions globally
BLA = Biologics License Application; CMS = Centers for Medicare and Medicaid Services; PET = positron emission tomography

Envisioning the future of Alzheimer's disease treatment

Current State	Potential Future State
Disease modifying therapies targeting amyloid	Combination treatments targeting multiple components of AD biology
Chronic dosing paradigm	Optimized dosing paradigm including maintenance dosing regimen
In-clinic IV administration	At-home administration of subcutaneous treatment formulations
Amyloid confirmation provided by PET scans or CSF testing	Regular screening for Alzheimer's via blood-based or other biomarkers
Treatment initiation after the onset of symptoms	Treatment prior to symptom onset to delay or prevent Alzheimer's

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AD = Alzheimer's disease; CSF = cerebrospinal fluid; IV = intravenous; PET = positron emission tomography

Biogen and Eisai are committed to the long-term fight against Alzheimer's disease

Biogen and Eisai

- Advancing the AHEAD 3-45 Trial of LEQEMBI in preclinical Alzheimer's disease
- Generating additional data on maintenance dosing and long-term treatment outcomes via ongoing studies with LEQEMBI

Biogen is advancing an Alzheimer's pipeline

- Multiple programs across modalities and molecular targets, including tau
- Potential to evaluate combination approaches

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Note: LEQEMBI is being developed in collaboration with Eisai Co., Ltd

Millions of individuals are suffering from MDD and significant unmet need persists

U.S. MDD Population

Adults with a Major Depressive Episode — **~21 M**[1]

▼ 66%

Diagnosed & Treated MDD Patients — **~14 M**[1]

▼ 75%

Rx-Treated MDD Patients — **~10.5 M**[1]

▼ 62%

MDD Patients Making a Treatment Change — **~6.5 M**[2]

Current Standard of Care

- *Current SoC therapies may take 6 – 8 weeks to reach maximal efficacy*[3]
- *Median time an individual remains on new ADT is ~7 weeks before switching therapies*[4]
- *In the STAR*D study, approximately two-thirds of patients with MDD did not achieve remission after the first or second treatment step of standard ADT*[5]
- *~ 45% of patients end up discontinuing their ADT due to unwanted side effects*[6]

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1. SAMHSA: 2021 NSDUH Detailed Tables; 2. Zhu L, et al. J Manag Care Spec Pharm. 2022 Nov. 3. Major Depressive Disorder: Developing Drugs for Treatment. US Food and Drug Administration Website. URL https://www.fda.gov/regulatory-information/search-fda-guidance-documents/major-depressive-disorder-developing-drugs-treatment. Published June 2018. Accessed April 21, 2022; 4. Zhu et al. Economic burden and antidepressant treatment patterns among patients with major depressive disorder in the United States. Journal of Managed Care & Specialty Pharmacy. 2022.; 5. Rush AJ, Trivedi MH, Wisniewski SR, et al. Acute and longer-term outcomes in depressed outpatients requiring one or several treatment steps: a STAR*D report. Am J Psychiatry. 2006;163(11):1905-1917; 6. Patient Prefer Adherence. 2012; 6: 369–388
ADT = antidepressant therapy; MDD = major depressive disorder; SoC = standard of care

PPD is a serious medical condition with a clear unmet need

~1 in 8 mothers with a recent live birth in the U.S. reported experiencing symptoms of PPD[1]

Despite being a common mental health disorder postpartum[2], PPD is underdiagnosed and undertreated[1,3]

PPD symptoms are associated with negative changes in mood, affect, and impaired function[4-6]

1. Bauman BL, Ko JY, Cox S, et al. Vital signs: postpartum depressive symptoms and provider discussions about perinatal depression - United States, 2018. MMWR Morb Mortal Wkly Rep. 2020;69(19):575-581; 2. Wang Z, Liu J, Shuai H, et al. Mapping global prevalence of depression among postpartum women. Transl Psychiatry. 2021;11(1):543; 3. Cox EQ, Sowa NA, Meltzer-Brody SE, Gaynes BN. The perinatal depression treatment cascade: baby steps toward improving outcomes. J Clin Psychiatry. 2016;77(9):1189-1200; 4. American Psychiatric Association. Depressive disorders. In: Diagnostic and Statistical Manual of Mental Disorders. 5th ed., text rev. American Psychiatric Publishing Inc. 2022; 5. Thurgood S, Avery DM, L W. Postpartum depression (PPD). Am J Clin Med. 2009;6:17-22; 6. NIMH. Perinatal depression. Accessed October 18, 2022; PPD = postpartum depression

A potential important new treatment option in depression

Multiple Positive Clinical Studies

- 6 out of 7 positive randomized clinical trials in MDD / PPD that met the primary endpoint
- Sustained effects observed beyond the 14-day treatment course

Rapid Action

Statistically significant improvement in depressive symptoms observed as early as Day 3

Efficacy Observed Across Multiple Use Cases and Populations

Monotherapy, add-on to ADT, and co-initiation with ADT

Consistent Tolerability Profile

- The most common AEs were headache, somnolence, dizziness, nausea, and sedation
- Low discontinuation rate due to adverse events and without signals of observed weight gain, sexual dysfunction or increased risk of suicidal ideation

Developed as a 14-Day, Once-daily Treatment

Open-label Phase 3 SHORELINE Study* – 50 mg zuranolone cohort:

- ~80% of patients who responded to initial 14-day treatment course received only 1 or two treatment courses in total during their time in the 1-year study
- Median time to first retreatment was ~8 months

Zuranolone filing for MDD and PPD Accepted in the U.S. and granted Priority Review – PDUFA date August 5, 2023

We are working to maximize the value of zuranolone for patients and evaluating potential options for indication and geographic expansion

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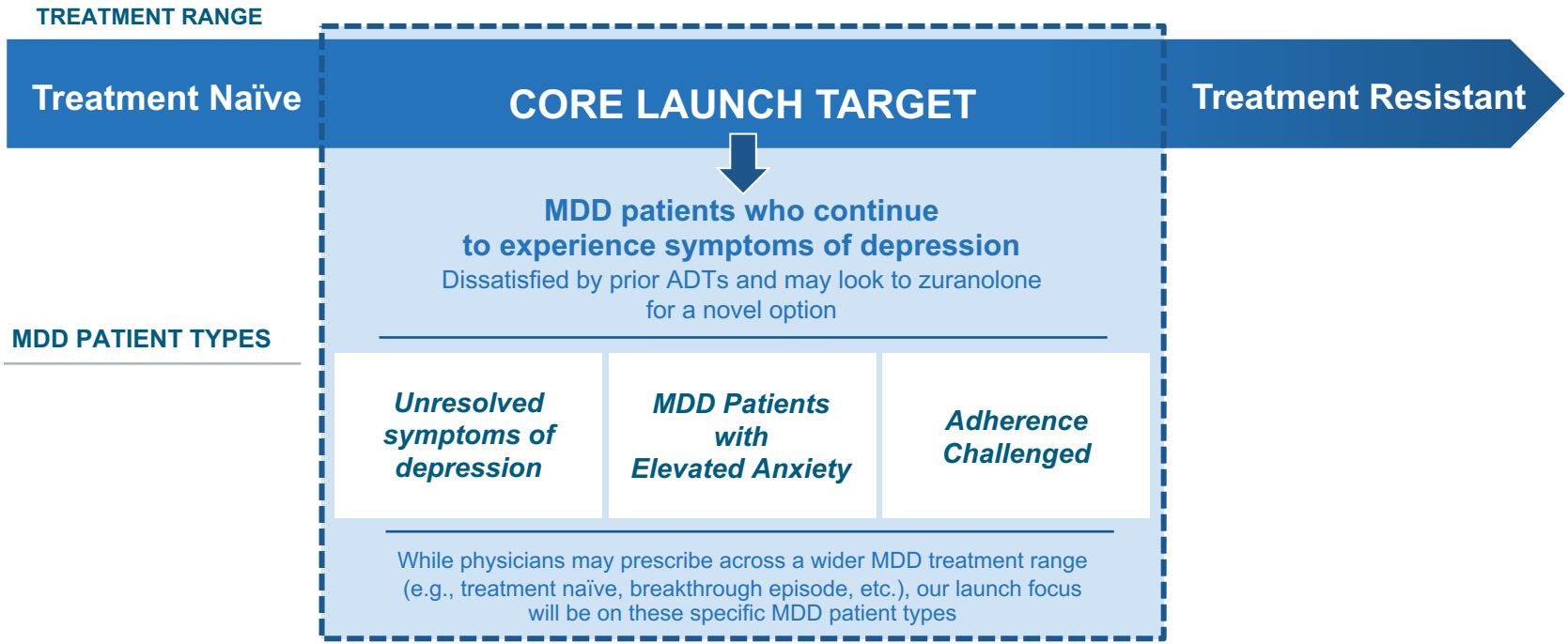
Note: zuranolone is being developed in collaboration with Sage Therapeutics, Inc.; *Only responders (≥50% reduction in HAMD-17 total score from baseline) at Day 15 of the initial treatment period can continue in the SHORELINE Study; Need for repeat treatment courses is first assessed by PHQ-9 every 2- weeks. If PHQ-9 ≥10, a HAMD-17 assessment is performed within 1 week. If HAMD-17 total score ≥20, a repeat treatment course may be initiated. There is a minimum of 8 weeks between treatment periods, to allow for a maximum of 5 treatment courses for the 1-year study period; a new repeat treatment course cannot start after Week 48;
AE = adverse event; ADT = antidepressant therapy; MDD = major depressive disorder; PPD = postpartum depression

Our MDD launch focus, if zuranolone is approved, will be on priority patient segments

Planned launch will focus on a subset of the ~6.5 million MDD patients making a treatment change



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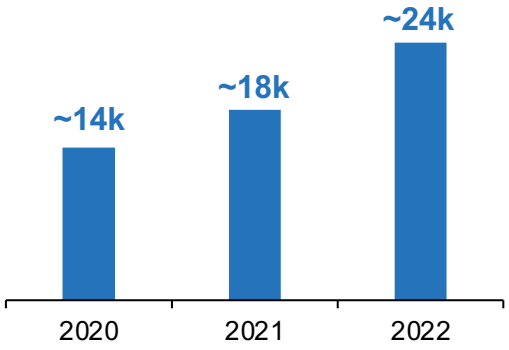
ADT = antidepressant therapy; MDD = major depressive disorder

Aiming to capitalize on growth opportunities for SPINRAZA

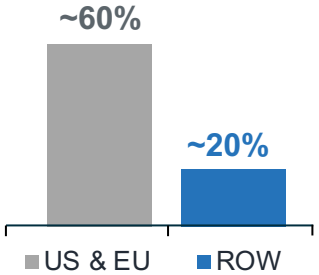
Leverage SPINRAZA's clinical profile, ongoing development initiatives and growth of broader SMA market to drive revenue growth

SMA is a growing global market: ~75% increase in treated patients in 2 years



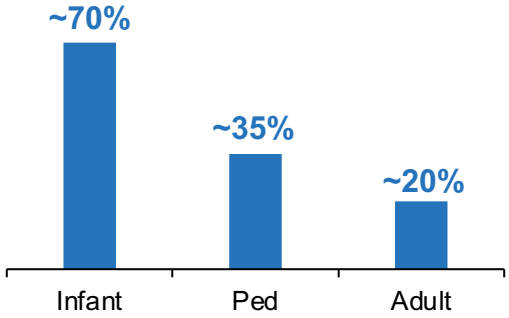
Estimated SMA patients treated with DMTs globally

Significant opportunity to grow outside of established markets



% of estimated total SMA patients treated with DMTs

Potential growth opportunity in the adult SMA population

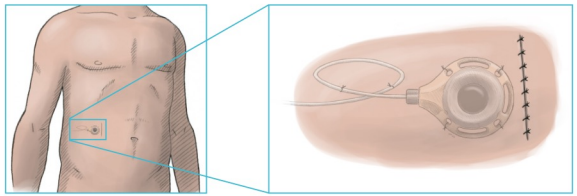


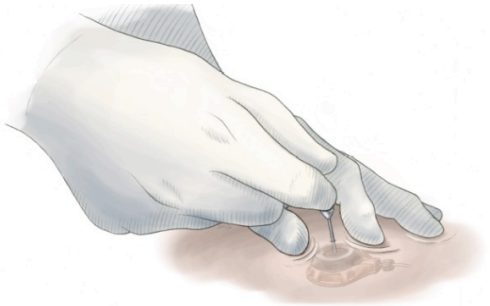
% of estimated total SMA patients treated with DMTs globally

Biogen estimates a total of ~80k SMA patients globally

Values reflect Biogen internal estimates and should be viewed as directional only. Data as of 2/1/2023. See Lally et al., 2017 for SMA epidemiology methodology. Estimates for number of patients treated with DMTs based on public disclosures for competitive products and Biogen internal estimates for SPINRAZA. Note: Regional shares are based on commercial patients only and exclude patients currently enrolled in clinical trials. Estimates include countries where Biogen commercializes or currently plans to commercialize SPINRAZA; DMT = disease modifying therapy; Ped = pediatric; ROW = rest of world; SMA = spinal muscular atrophy

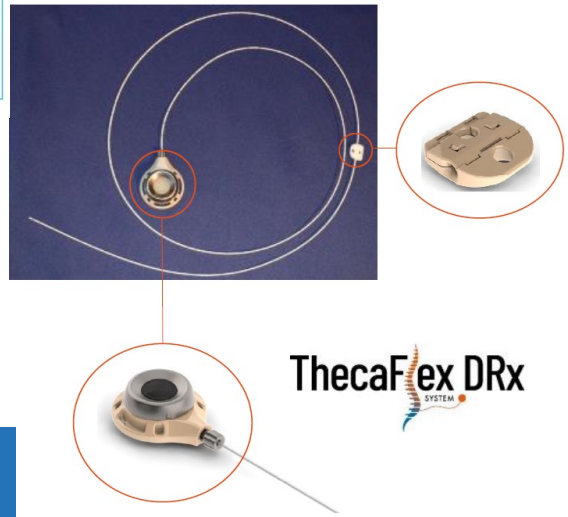
Collaborating with Alcyone Therapeutics to potentially expand treatment options for ASO drug delivery





Consists of an implantable IT catheter, catheter fixation device, and subcutaneous port system purposefully engineered from end-to-end to enable IT bolus injection of therapy

Drug administration via implanted port and catheter:



Opportunity to improve patient experience and expand access to ASO therapies to broader patient population:

- ✓ Patients with complex spines
- ✓ Patients who prefer an alternative to lumbar punctures
- ✓ Patients who do not have easy access to hospital performing lumbar punctures

Biogen ALCYONE THERAPEUTICS

ThecaFlex DRx is being developed with Alcyone Therapeutics; ASO = antisense oligonucleotide; IT = intrathecal

Focused on maximizing value while aligning costs

Maximize value of current portfolio

- ***Seeking to improve the profitability of the Multiple Sclerosis franchise***
- ***Considering strategic options for biosimilars business***

Aligning Biogen's cost base with revenue

- ***Prioritizing near-term opportunities in Alzheimer's disease and depression while optimizing cost structure***
- ***On track to achieve previously announced cost savings***

Biogen

Pursuing new internal and external growth drivers

Improve the risk profile and productivity of the R&D Pipeline

- *Appointed Head of Development; Recruiting Head of Research*
- *Prioritizing programs with the most attractive risk / reward profile*
- *Potential to further diversify beyond neurology in specialized immunology, neuropsychiatry, and rare disease*

Evaluate External Growth Opportunities

Strong financial position enabling potential business development to support growth trajectory

R&D Update

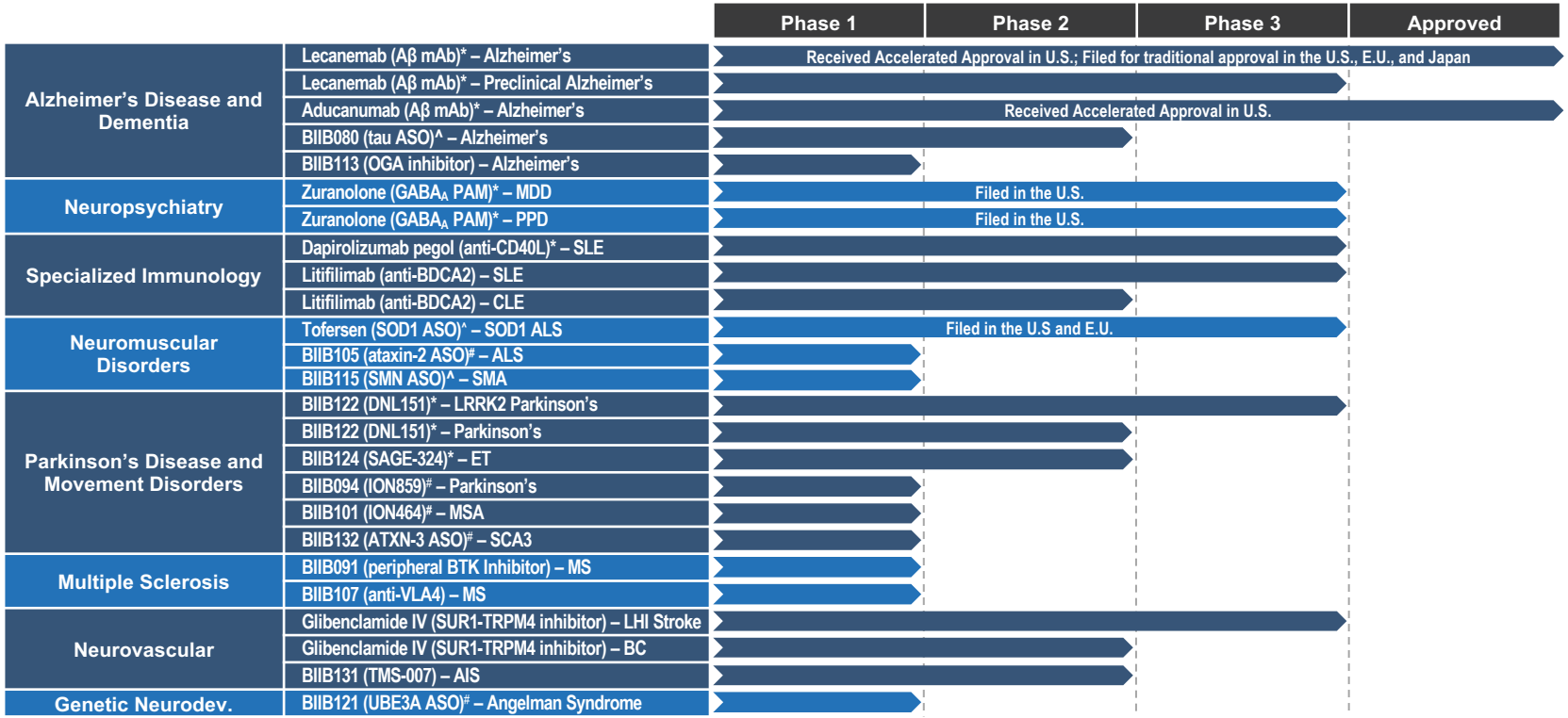
Priya Singhal, M.D., M.P.H.

Head of Development

Interim Head of Research and Global Safety and Regulatory Sciences

Biogen

Advancing key late-stage assets while reprioritizing the pipeline



* Collaboration program; # Option agreement; ^ Licensed from Ionis Pharmaceuticals, Inc.; MS = multiple sclerosis; ASO = antisense oligonucleotide; OGA = O-GlcNAcase; ALS = amyotrophic lateral sclerosis; SMA = spinal muscular atrophy; SCA3 = spinocerebellar ataxia type 3; ET = essential tremor; PD = Parkinson's disease; MSA = Multiple System Atrophy; PPD = postpartum depression; MDD = major depressive disorder; LHI = large hemispheric infarction; BC = brain contusion; AIS = acute ischemic stroke; SFN = small fiber neuropathy; Genetic Neurodev. = genetic neurodevelopmental disorders;; SLE = systemic lupus erythematosus; CLE = cutaneous lupus erythematosus; SOD1 = superoxide dismutase type 1; LRRK2 = leucine rich repeat kinase 2; PAM = positive allosteric modulator; GABA = γ-Aminobutyric acid; UBE3A = ubiquitin protein ligase E3A

BIIB080 aims to reduce all forms of tau including aggregates and other toxic species

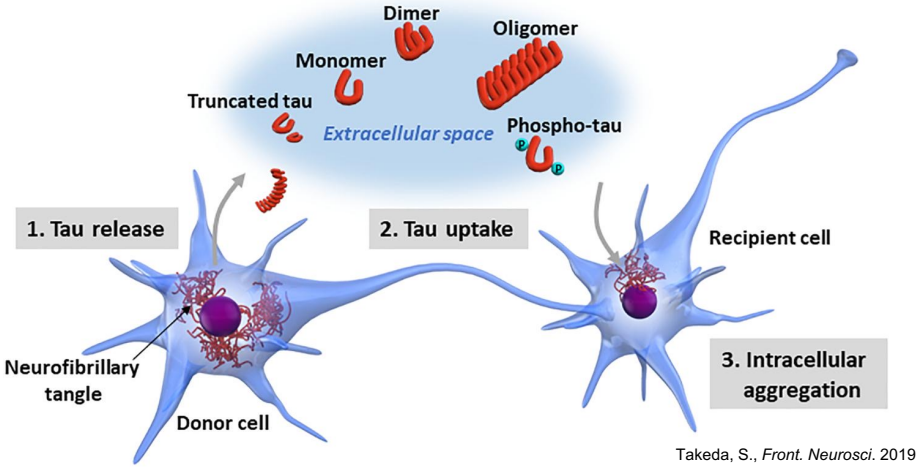
ALZHEIMER'S DISEASE

SPECIALIZED IMMUNOLOGY

NEURO-MUSCULAR

R&D PRIORITIZATION

- BIIB080 is a tau mRNA-directed ASO that suppresses *de novo* production of tau, thereby reducing all forms of tau, and is hypothesized to slow disease progression in Alzheimer's disease and other tauopathies
- In transgenic mice with pre-existing tau pathology, treatment with a tau-directed ASO has resulted in reversal of tau pathology, reduced neuronal loss, and extended survival *(DeVos S., et al. Sci. Transl. Med. 2017)*



Takeda, S., *Front. Neurosci.* 2019

ASO = antisense oligonucleotide; mRNA = messenger ribonucleic acid

BIIB080 is the first clinical demonstration of antisense-mediated suppression of CSF tau protein in patients with Alzheimer's disease

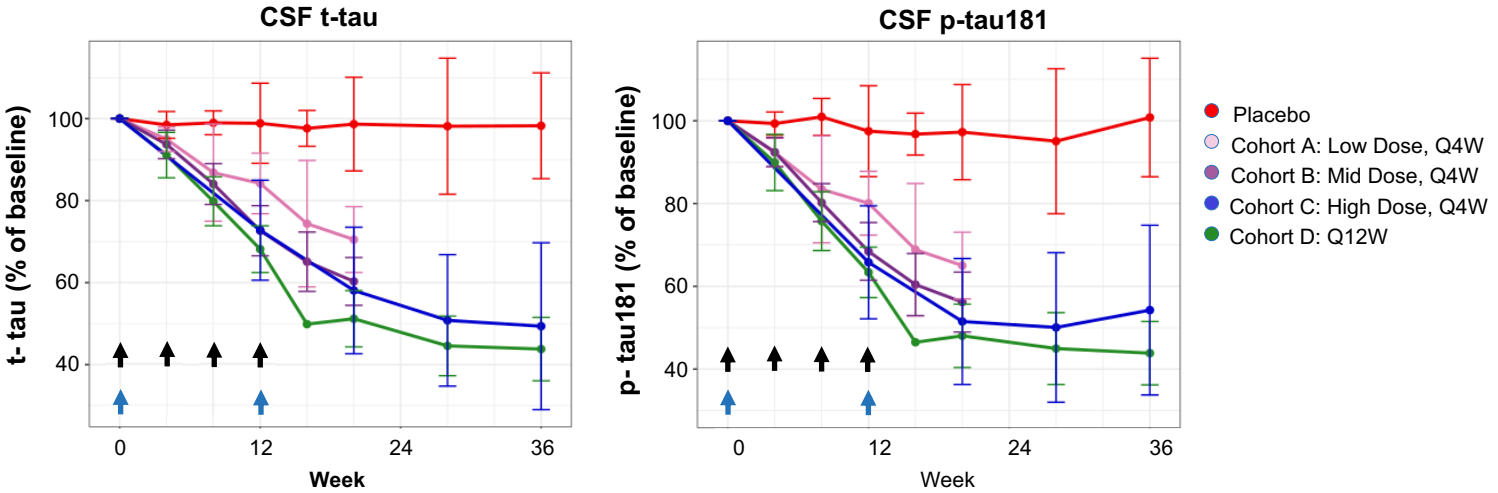
ALZHEIMER'S DISEASE

SPECIALIZED IMMUNOLOGY

NEURO-MUSCULAR

R&D PRIORITIZATION

- BIIB080 was generally well tolerated in mild AD participants – AEs were considered mild or moderate with no patients discontinuing the study due to an AE
- Total tau in the CSF continued to decline 16 weeks post-last dose in participants treated with BIIB080 (High-dose 4- and 12-week cohorts)



Arrows (black=monthly, blue=quarterly) indicate BIIB080 dosing

Total N = 46 participants

Biogen

Source: Mummery et al., AAIC 2021

AD = Alzheimer's disease; AE = adverse event; CSF = cerebrospinal fluid; Q4W = every 4-week dosing; Q12W = every 12-week dosing; t-tau = total tau; p-tau = phosphorylated tau

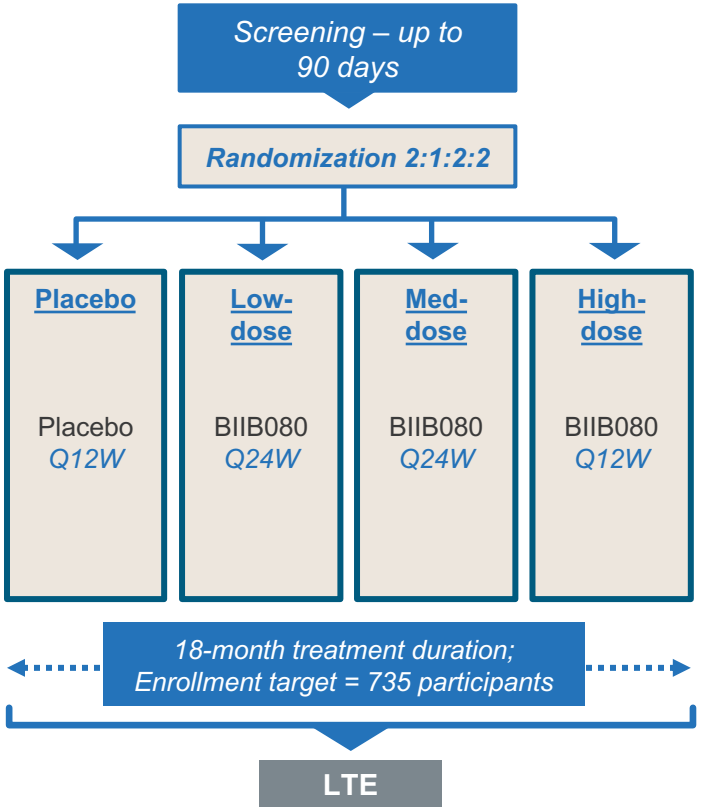
Phase 2 CELIA Study of BIIB080 is designed as a proof-of-concept for tau removal in early Alzheimer's disease

ALZHEIMER'S DISEASE

SPECIALIZED IMMUNOLOGY

NEURO-MUSCULAR

R&D PRIORITIZATION



POPULATION

- Age 50–80 years
- MCI due to AD or Mild AD
- CDR Global Score: 0.5-1
- MMSE score 22–30 (inclusive)
- Objective cognitive impairment
- Evidence of amyloid pathology (PET or CSF)

ENDPOINTS

Primary:

- CDR-SB

Secondary:

- Incidence of treatment-emergent AEs + SAEs
- ADCS-ADL-MCI
- ADAS-Cog13
- MMSE
- ADCOMS
- Modified iADRS

Exploratory:

- Tau PET

AD = Alzheimer's disease; AE = adverse event; ADAS-cog = Alzheimer's disease assessment scale – cognitive; ADCOMS = Alzheimer's disease composite score; ADCS-ADL-MCI = Alzheimer's Disease Cooperative Study activities of daily living – mild cognitive impairment; AE = adverse event; CDR-SB = clinical dementia rating scale – sum of boxes; CSF = cerebrospinal fluid; iADRS = Integrated Alzheimer's Disease Rating Scale; LTE = long-term extension; MCI = mid cognitive impairment; MMSE = mini-mental state examination; PET = positron emission tomography; Q12W = every 12 weeks; Q24W = every 24 weeks; SAE = serious adverse event

Biogen is advancing late-stage programs in both systemic and cutaneous forms of Lupus

ALZHEIMER'S DISEASE

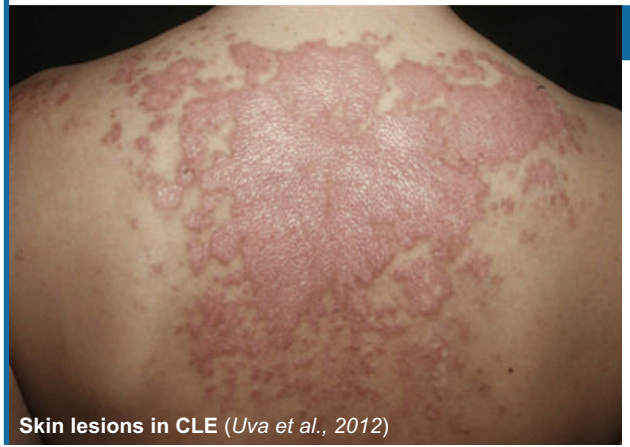
SPECIALIZED IMMUNOLOGY

NEURO-MUSCULAR

R&D PRIORITIZATION

Program	Modality	Indication	Phase 1	Phase 2	Phase 3
Dapirolizumab Pegol	Anti-CD40L mAb	SLE			
Litifilimab	Anti-BDCA2 mAb	SLE			
Litifilimab	Anti-BDCA2 mAb	CLE	Phase 2/3		

At least 5 million individuals are estimated to suffer from a form of Lupus worldwide[1]



Skin lesions in CLE (*Uva et al., 2012*)

CLE: Skin-based form of lupus

- Symptoms including photosensitivity, rash, pain, and itch[2,3]
- Skin damage, including scarring, occurs in some chronic forms[3]
- Most with CLE may not develop systemic manifestations[4]
- ***Litifilimab has the potential to be the first new treatment specifically approved for CLE in ~70 years***

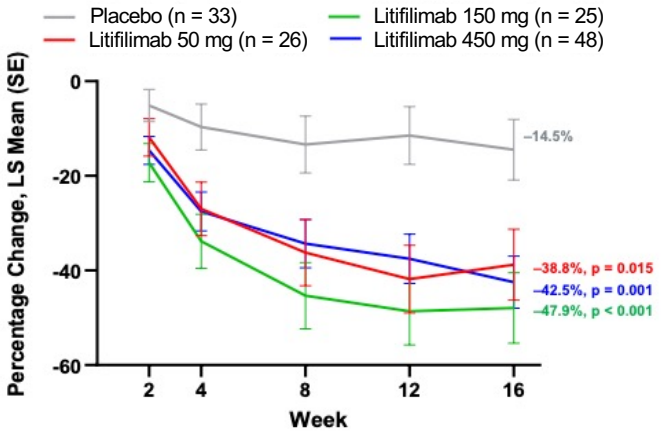
Note: Dapirolizumab Pegol is being developed in collaboration with UCB

1. Lupus Foundation of America. Lupus Facts and Statistics. https://www.lupus.org/resources/lupus-facts-and-statistics. 2016;2. Ogunsanya ME, et al. *Int J Womens Dermatol*. 2018;4(3):152-158; 3. Ribero S, et al. *Clin Rev Allergy Immunol*. 2017;53(3):291-305; 4. Tebbe B, Orfanos CE. *Lupus*. 1997;6(2):96-104

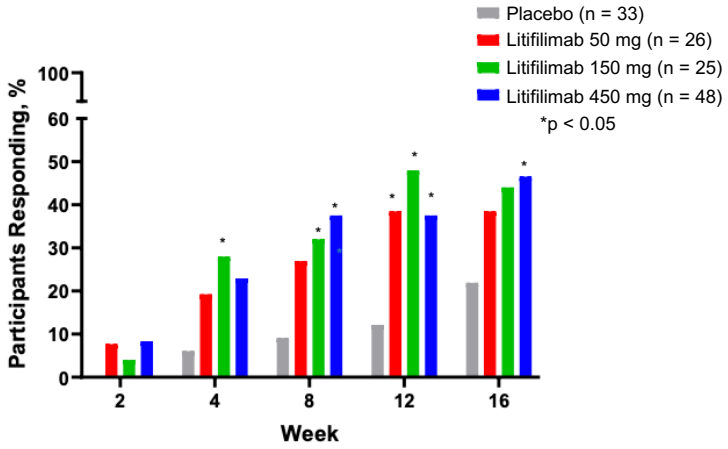
BDCA2 = blood dendritic cell antigen 2; CLE = cutaneous lupus erythematosus; mAb = monoclonal antibody; SLE = systemic lupus erythematosus

Litifilimab clinical development suggests promising efficacy in skin manifestations in Phase 2

Percent change in CLASI-A Score from baseline to week 16*



CLASI-50 Response Rate^



- ***Phase 2 LILAC Study results published in the New England Journal of Medicine***
- ***Phase 2 / 3 AMETHYST Study of Litifilimab in CLE now enrolling***
- ***Litifilimab studies use enrollment targets to potentially better represent the lupus patient population***

Source: Werth et al., ACR 2020

*Mixed effect model repeat measurement; ^CLASI-50 = ≥ 50% improvement from baseline in Cutaneous Lupus Erythematosus Disease Area and Severity Index-Activity score; Based on generalized linear regression adjusted for treatment, discoid lupus erythematosus (Yes/No), and baseline Cutaneous Lupus Erythematosus (CLE) Disease Area and Severity Index-Activity score (≤10 vs. >10), using a logit link function (logistic regression) for the odds ratios and p-values, and using an identity link function (linear probability model) for the least squares (LS) means and LS mean differences. NOTE: This endpoint was not powered for statistical significance; p-values are presented as a reference and should be interpreted in combination with the sample size.

Biogen

Continuing to advance tofersen in SOD1-ALS

ALZHEIMER'S DISEASE

SPECIALIZED IMMUNOLOGY

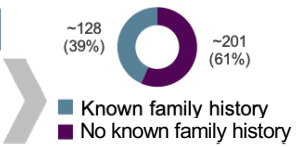
NEURO-MUSCULAR

R&D PRIORITIZATION

SOD1-ALS is an ultra-rare, genetic form of ALS

Prevalence

~330 INDIVIDUALS with SOD1-ALS in the US[1]



Prevalence

~0.1 CASES per 100,000 individuals*

Regulatory Updates

- **December 2022:** Marketing authorization application accepted for review in the E.U.
- **March 22, 2023:** FDA Advisory Committee Meeting
- **April 25, 2023:** Decision expected on accelerated approval in the U.S.

Ongoing Activities for Tofersen

- Continuing to engage with global regulators
- Continuing to support the tofersen expanded access program
- Actively recruiting for ATLAS, the tofersen presymptomatic study

Phase 3 VALOR Study and OLE of tofersen in SOD1-ALS published in the New England Journal of Medicine

Biogen

Note: tofersen is licensed from Ionis Pharmaceuticals, Inc.
ALS = amyotrophic lateral sclerosis; OLE = open-label extension; SOD1 = superoxide dismutase 1
1. Brown et al. SOD1 and C9orf72 Genetics Variant Neuroepid 2021; *Estimated using the same approach as Brown et al. SOD1 and C9orf72 Genetics Variant Neuroepid 2021

Our goal is to rebalance the R&D pipeline

ALZHEIMER'S DISEASE

SPECIALIZED IMMUNOLOGY

NEURO-MUSCULAR

R&D PRIORITIZATION

Dynamic prioritization and investment based upon an evolving assessment of probability of success to potentially de-risk the portfolio

- Prioritizing programs believed to have the most attractive risk / reward profile and allocating resources accordingly
- Working to increase probability of success with a focus on pre-proof of concept stage programs
- Enhancing translational science capabilities
- Increasing focus on pipeline value vs. operational milestones
- Expanding beyond neuroscience

2023 Guidance

Michael McDonnell

Chief Financial Officer

Biogen

Biogen full year 2023 financial guidance

	Full Year 2023
Revenue	Mid-single digit percentage decline*
Non-GAAP Diluted EPS	$15.00 to $16.00

* Versus reported revenue for full year 2022

Please see Biogen's Q4 and full year 2022 earnings release, available at the Investors section of Biogen's website at investors.biogen.com, for additional 2023 financial guidance assumptions.

Biogen may incur charges, realize gains or losses, or experience other events or circumstances in 2023 that could cause any of these assumptions to change and/or actual results to vary from this financial guidance.

Please see slide 2 of this presentation for additional information on our use of Non-GAAP measures, including forward-looking Non-GAAP financial measures.

2023 financial guidance key considerations

Assumes a favorable court decision for TECFIDERA in the E.U.

LEQEMBI and zuranolone launches

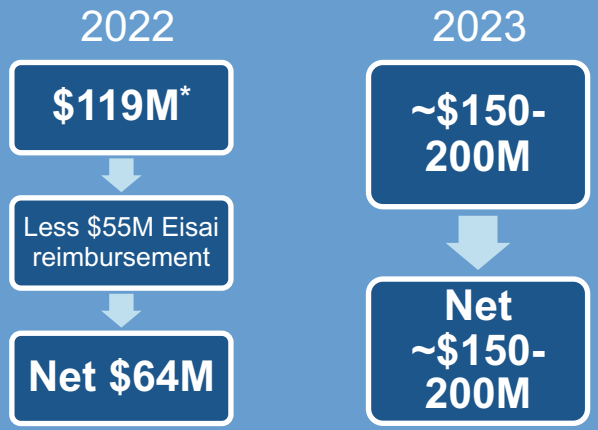
Termination of ADUHELM cost sharing agreement

On track to achieve previously announced cost savings

ADUHELM collaboration agreement – share of expenses

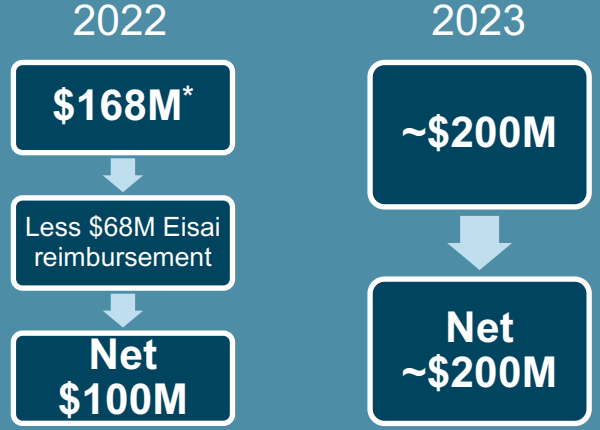
Beginning January 1, 2023, Eisai no longer reimburses Biogen for their share of costs associated with ADUHELM. This will impact Biogen's P&L in 2023.

Idle Capacity Charges



~ $100M headwind in 2023

ADUHELM-Related R&D Expense



~ $100M headwind in 2023

* Includes costs incurred by Biogen that are not shared by the collaboration and therefore not reimbursable by Eisai

LEQEMBI collaboration accounting

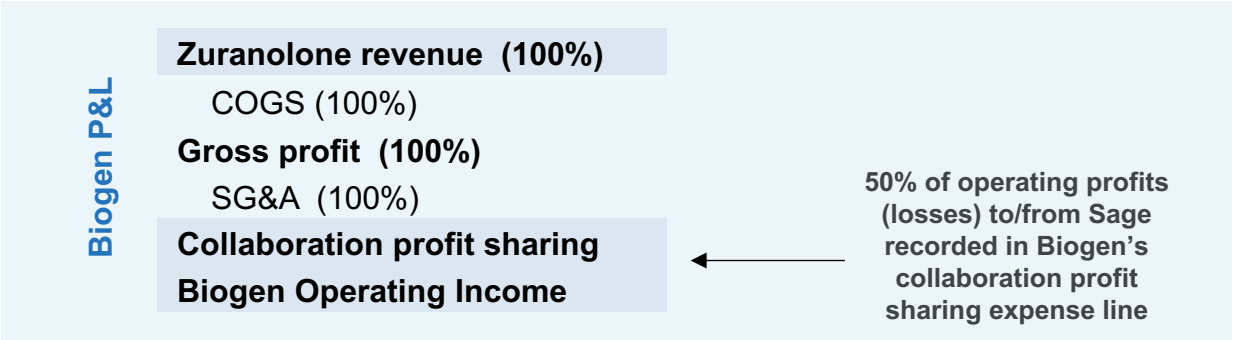
Commercial Economics	• Biogen's 50% share of U.S. revenue, COGS (including royalties), and SG&A will be reflected as a component of total revenue • Expect 2023 commercial expenses to exceed initial revenue, creating a headwind to 2023 revenue • Biogen's 50% share of ex-U.S. commercial expenses will continue to be recorded within SG&A expense until approval on a region-by-region basis
R&D	• Biogen's 50% share of global R&D expenditures will be reflected within R&D expense
Manufacturing	• Biogen will sell inventory to Eisai and recognize contract manufacturing revenue and contract manufacturing cost of goods sold at a minimal gross margin • Biogen will manufacture the LEQEMBI drug substance in its Solothurn, Switzerland facility, and capitalize inventory until it is sold to Eisai

Zuranolone collaboration accounting (U.S.)

Pre-approval

- Biogen will record R&D and SG&A net of reimbursement to or from Sage within their respective line items

Commercial Economics Post-approval



R&D pre- and post-approval

- Biogen's 50% share of R&D expenditures will be reflected within R&D expense

Questions & Answers

Appendix

Consolidated Statement of Income

(unaudited, in millions, except per share amounts)

	For the Three Months Ended December 31,		For the Twelve Months Ended December 31,	
	2022	2021	2022	2021
Revenue:				
Product, net	$ 1,904.5	$ 2,193.5	$ 7,987.8	$ 8,846.9
Revenue from anti-CD20 therapeutic programs	447.9	414.1	1,700.5	1,658.5
Other	191.6	126.2	485.1	476.3
Total revenue	2,544.0	2,733.8	10,173.4	10,981.7
Cost and expense:				
Cost of sales, excluding amortization and impairment of acquired intangible assets	570.9	660.1	2,278.3	2,109.7
Research and development	601.6	699.5	2,231.1	2,501.2
Selling, general and administrative	632.8	787.9	2,403.6	2,674.3
Amortization and impairment of acquired intangible assets	175.0	68.1	365.9	881.3
Collaboration profit (loss) sharing	35.2	(67.3)	(7.4)	7.2
(Gain) loss on fair value remeasurement of contingent consideration	(195.3)	(1.6)	(209.1)	(50.7)
Acquired in-process research and development	—	—	—	18.0
Restructuring charges	6.9	—	131.1	—
Gain on sale of building	—	—	(503.7)	—
Other (income) expense, net	113.1	182.1	(108.2)	1,095.5
Total cost and expense	1,940.2	2,328.8	6,581.6	9,236.5
Income before income tax expense and equity in loss of investee, net of tax	603.8	405.0	3,591.8	1,745.2
Income tax (benefit) expense	54.3	443.2	632.8	52.5
Equity in (income) loss of investee, net of tax	—	(17.7)	(2.6)	(34.9)
Net income	549.5	(20.5)	2,961.6	1,727.6
Net income (loss) attributable to noncontrolling interests, net of tax	(0.9)	(388.7)	(85.3)	171.5
Net income attributable to Biogen Inc.	$ 550.4	$ 368.2	$ 3,046.9	$ 1,556.1
Net income per share:				
Basic earnings per share attributable to Biogen Inc.	$ 3.82	$ 2.51	$ 20.96	$ 10.44
Diluted earnings per share attributable to Biogen Inc.	$ 3.79	$ 2.50	$ 20.87	$ 10.40
Weighted-average shares used in calculating:				
Basic earnings per share attributable to Biogen Inc.	144.1	146.9	145.3	149.1
Diluted earnings per share attributable to Biogen Inc.	145.2	147.5	146.0	149.6

Biogen

Consolidated Balance Sheets

(unaudited, in millions)

	As of December 31, 2022	As of December 31, 2021
ASSETS		
Cash and cash equivalents	$ 3,419.3	$ 2,261.4
Marketable securities	1,473.5	1,541.1
Accounts receivable, net	1,705.0	1,549.4
Due from anti-CD20 therapeutic programs, net	431.4	412.3
Inventory	1,344.4	1,351.5
Other current assets	1,417.6	740.8
Total current assets	9,791.2	7,856.5
Marketable securities	705.7	892.0
Property, plant and equipment, net	3,298.6	3,416.4
Operating lease assets	403.9	375.4
Intangible assets, net	1,850.1	2,221.3
Goodwill	5,749.0	5,761.1
Deferred tax asset	1,226.4	1,415.1
Investments and other assets	1,529.2	1,939.5
TOTAL ASSETS	$ 24,554.1	$ 23,877.3
LIABILITIES AND EQUITY		
Current portion of notes payable	$ —	$ 999.1
Taxes payable	259.9	174.7
Accounts payable	491.5	589.2
Accrued expenses and other	2,521.4	2,535.2
Total current liabilities	3,272.8	4,298.2
Notes payable	6,281.0	6,274.0
Deferred tax liability	334.7	694.5
Long-term operating lease liabilities	333.0	330.4
Other long-term liabilities	944.2	1,320.5
Equity	13,388.4	10,959.7
TOTAL LIABILITIES AND EQUITY	$ 24,554.1	$ 23,877.3

Biogen

Product Revenue (US and Rest of World) & Total Revenue

(unaudited, in millions)

	For the Three Months Ended December 31,					
	2022			2021		
	United States	Rest of World	Total	United States	Rest of World	Total
Multiple Sclerosis (MS):						
TECFIDERA®	$ 87.4	$ 209.7	$ 297.1	$ 160.5	$ 326.0	$ 486.5
VUMERITY® *	138.3	12.5	150.8	123.9	1.0	124.9
Total Fumarate	225.7	222.2	447.9	284.4	327.0	611.4
AVONEX®	155.4	74.7	230.1	193.8	91.6	285.4
PLEGRIDY®	34.2	45.3	79.5	37.7	54.6	92.3
Total Interferon	189.6	120.0	309.6	231.5	146.2	377.7
TYSABRI®	274.0	214.4	488.4	288.0	224.7	512.7
FAMPYRA®	—	22.9	22.9	—	26.4	26.4
Total MS product revenue, net	689.3	579.5	1,268.8	803.9	724.3	1,528.2
Spinal Muscular Atrophy:						
SPINRAZA	156.9	301.9	458.8	150.1	290.6	440.7
Biosimilars:						
BENEPALI™	—	100.3	100.3	—	134.4	134.4
IMRALDI™	—	52.1	52.1	—	62.5	62.5
FLIXABI™	—	19.3	19.3	—	24.0	24.0
BYOOVIZ™ **	3.1	—	3.1	—	—	—
Total biosimilars product revenue, net	3.1	171.7	174.8	—	220.9	220.9
Other:						
FUMADERM™	—	1.8	1.8	—	2.7	2.7
ADUHELM®	0.3	—	0.3	1.0	—	1.0
Total product revenue, net	$ 849.6	$ 1,054.9	$ 1,904.5	$ 955.0	$ 1,238.5	$ 2,193.5

	For the Twelve Months Ended December 31,					
	2022			2021		
	United States	Rest of World	Total	United States	Rest of World	Total
Multiple Sclerosis (MS):						
TECFIDERA®	$ 417.7	$ 1,026.2	$ 1,443.9	$ 680.6	$ 1,271.3	$ 1,951.9
VUMERITY® *	521.3	32.1	553.4	408.9	1.5	410.4
Total Fumarate	939.0	1,058.3	1,997.3	1,089.5	1,272.8	2,362.3
AVONEX®	649.2	324.3	973.5	830.2	378.5	1,208.7
PLEGRIDY®	148.4	183.5	331.9	152.9	204.5	357.4
Total Interferon	797.6	507.8	1,305.4	983.1	583.0	1,566.1
TYSABRI®	1,123.4	907.5	2,030.9	1,142.2	920.9	2,063.1
FAMPYRA®	—	96.6	96.6	—	105.2	105.2
Total MS product revenue, net	2,860.0	2,570.2	5,430.2	3,214.8	2,881.9	6,096.7
Spinal Muscular Atrophy:						
SPINRAZA	600.2	1,193.3	1,793.5	587.9	1,317.2	1,905.1
Biosimilars:						
BENEPALI™	—	441.0	441.0	—	498.3	498.3
IMRALDI™	—	224.5	224.5	—	233.4	233.4
FLIXABI™	—	81.3	81.3	—	99.4	99.4
BYOOVIZ™ **	4.3	—	4.3	—	—	—
Total biosimilars product revenue, net	4.3	746.8	751.1	—	831.1	831.1
Other:						
FUMADERM™	—	8.2	8.2	—	11.0	11.0
ADUHELM®	4.8	—	4.8	3.0	—	3.0
Total product revenue, net	$ 3,469.3	$ 4,518.5	$ 7,987.8	$ 3,805.7	$ 5,041.2	$ 8,846.9

* VUMERITY became commercially available in the E.U. during the fourth quarter of 2021.

** BYOOVIZ launched in the U.S. in June 2022 and became commercially available during the third quarter of 2022.

	For the Three Months Ended December 31,		For the Twelve Months Ended December 31,	
(In millions)	2022	2021	2022	2021
Product revenue	$ 1,904.5	$ 2,193.5	$ 7,987.8	$ 8,846.9
OCREVUS royalties	311.1	261.2	1,136.3	991.7
RITUXAN/GAZYVA® revenue	136.8	152.9	564.2	666.8
Other revenue	191.6	126.2	485.1	476.3
Total revenue	$ 2,544.0	$ 2,733.8	$ 10,173.4	$ 10,981.7

Biogen

GAAP to Non-GAAP Reconciliation

Operating Expense, Other (Income) Expense, net and Income Tax (unaudited, in millions, except per share amounts)

We supplement our GAAP consolidated financial statements and GAAP financial measures with other financial measures, such as 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 cash 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.

	For the Three Months Ended December 31,		For the Twelve Months Ended December 31,	
(In millions, except per share amounts)	2022[1]	2021[1][2]	2022[1]	2021[1][2]
Selling, General and Administrative Expense:				
Total selling, general and administrative, GAAP	$ 632.8	$ 787.9	$ 2,403.6	$ 2,674.3
Less: other	0.6	2.7	4.1	7.9
Total selling, general and administrative, Non-GAAP	$ 632.2	$ 785.2	$ 2,399.5	$ 2,666.4
Amortization and Impairment of Acquired Intangible Assets:				
Total amortization and impairment of acquired intangible assets, GAAP	$ 175.0	$ 68.1	$ 365.9	$ 881.3
Less: impairment charges [A]	119.6	—	119.6	629.3
Less: amortization of acquired intangible assets	47.1	60.5	215.2	237.1
Total amortization and impairment of acquired intangible assets, Non-GAAP	$ 8.3	$ 7.6	$ 31.1	$ 14.9
Other (Income) Expense, net:				
Total other (income) expense, net, GAAP	$ 113.1	$ 182.1	$ (108.2)	$ 1,095.5
Less: (gain) loss on equity security investments	106.5	115.4	264.6	821.3
Less: (gain) on sale of equity interest in Samsung Bioepis [B]	—	—	(1,505.3)	—
Less: litigation settlement agreement and settled fees [C]	—	—	917.0	—
Less: premium paid on debt exchange or early debt redemption [D]	—	—	2.2	9.5
Total other (income) expense, net, Non-GAAP	$ 6.6	$ 66.7	$ 213.3	$ 264.7
Income Tax (Benefit) Expense:				
Total income tax (benefit) expense, GAAP	$ 54.3	$ 443.2	$ 632.8	$ 52.5
Less: Neurimmune step-up tax basis [E]	—	395.6	83.9	(96.4)
Less: international reorganization & income tax effect related to Non-GAAP reconciling items	(48.7)	(52.7)	84.4	(384.2)
Total income tax expense, Non-GAAP	$ 103.0	$ 100.3	$ 464.5	$ 533.1
Effective Tax Rate:				
Total effective tax rate, GAAP	9.0 %	109.5 %	17.6 %	3.0 %
Less: Neurimmune step-up tax basis [E]	—	97.7	2.2	(5.5)
Less: impact of GAAP to Non-GAAP adjustments	(5.9)	(5.4)	0.1	(7.2)
Total effective tax rate, Non-GAAP	14.9 %	17.2 %	15.3 %	15.7 %

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, 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.

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 and items associated with the initial consolidation or deconsolidation of variable interest entities. These adjustments include, but are not limited to, 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 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.

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Footnotes referenced in the tables above are included at the end of this presentation.

GAAP to Non-GAAP Reconciliation

Equity (Income)/Loss of Investee, Noncontrolling Interests, Net Income & Diluted EPS
(unaudited, in millions, except per share amounts)

(In millions, except per share amounts)	For the Three Months Ended December 31, 2022[1]	For the Three Months Ended December 31, 2021[1][2]	For the Twelve Months Ended December 31, 2022[1]	For the Twelve Months Ended December 31, 2021[1][2]
Net Income Attributable to Biogen Inc.:				
Total net income attributable to Biogen Inc., GAAP	$ 550.4	$ 368.2	$ 3,046.9	$ 1,556.1
Plus: impairment charges [A]	119.6	—	119.6	629.3
Plus: amortization of acquired intangible assets	47.1	60.5	215.2	237.1
Plus: acquired in-process research and development	—	—	—	—
Plus: restructuring charges	6.9	—	131.1	—
Plus: (gain) loss on fair value remeasurement of contingent consideration [A]	(195.3)	(1.6)	(209.1)	(50.7)
Plus: (gain) loss on equity security investments	106.5	115.4	264.6	821.3
Plus: net distribution to noncontrolling interests & amortization of equity in (income) loss of investee	—	7.5	12.9	34.1
Plus: gain on sale of equity interest in Samsung Bioepis [B]	—	—	(1,505.3)	—
Plus: litigation settlement agreement and settled fees [C]	—	—	917.0	—
Plus: (gain) on sale of building [F]	—	—	(503.7)	—
Plus: premium paid on debt exchange or early debt redemption [D]	—	—	2.2	9.5
Plus: international reorganization & income tax effect related to Non-GAAP reconciling items	(48.7)	(52.7)	84.4	(384.2)
Plus: other	0.7	3.1	4.2	8.3
Total net income attributable to Biogen Inc., Non-GAAP	$ 587.2	$ 500.4	$ 2,580.0	$ 2,860.8
Diluted Earnings Per Share				
Total diluted earnings per share, GAAP	$ 3.79	$ 2.50	$ 20.87	$ 10.40
(Less) Plus: adjustments to GAAP net income attributable to Biogen Inc. (as detailed above)	0.26	0.89	(3.20)	8.73
Total diluted earnings per share, Non-GAAP	$ 4.05	$ 3.39	$ 17.67	$ 19.13

[1] 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 research and development expense and selling, general and administrative expense. Beginning in the first quarter of 2022 material payments paid on the acquisition of in-process research and development assets are no longer excluded in the determination of Non-GAAP net income. Prior period Non-GAAP results have been updated to reflect these changes.

[2] Beginning in the third quarter of 2021 amortization expense recorded in intangible assets that arose from collaboration and licensing arrangements is no longer excluded from our Non-GAAP results on a prospective basis. Non-GAAP financial results prior to the third quarter of 2021 have not been updated to reflect this change.

Biogen

Footnotes referenced in the tables above are included at the end of this presentation.

GAAP to Non-GAAP Reconciliation

Constant Currency & Free Cash Flow
(unaudited, in millions)

Revenue growth at constant currency vs. 2021

Percentage changes in revenue growth at constant currency are presented excluding the impact of changes in foreign currency exchange rates and hedging gains or losses. The current period's foreign currency revenue values are converted into U.S. dollars using the average exchange rates from the prior period.

	Q4 2022 vs. Q4 2021	YTD 2022 vs. YTD 2021
Total Revenue		
Revenue change, as reported	(6.9)%	(7.4)%
Less: impact of foreign currency translation and hedging gains / losses	(2.9)	(2.0)
Revenue change at constant currency	(4.0)%	(5.4)%
Total Product Revenue		
Revenue change, as reported	(13.2)%	(9.7)%
Less: impact of foreign currency translation and hedging gains / losses	(3.6)	(2.4)
Revenue change at constant currency	(9.6)%	(7.3)%
Total MS Product Revenue		
Revenue change, as reported	(17.0)%	(10.9)%
Less: impact of foreign currency translation and hedging gains / losses	(2.8)	(1.6)
Revenue change at constant currency	(14.2)%	(9.3)%
Total SPINRAZA Product Revenue		
Revenue change, as reported	4.1 %	(5.9)%
Less: impact of foreign currency translation and hedging gains / losses	(5.6)	(3.9)
Revenue change at constant currency	9.7 %	(2.0)%
Total Biosimilars Product Revenue		
Revenue change, as reported	(20.9)%	(9.6)%
Less: impact of foreign currency translation and hedging gains / losses	(5.6)	(5.2)
Revenue change at constant currency	(15.3)%	(4.4)%
Total Other Product Revenue		
Revenue change, as reported	(42.1)%	(7.3)%
Less: impact of foreign currency translation and hedging gains / losses	(6.4)	(7.2)
Revenue change at constant currency	(35.7)%	(0.1)%
Total Other Revenue (contract manufacturing and royalty revenue)		
Revenue change, as reported	51.9 %	1.9 %
Less: impact of foreign currency translation and hedging gains / losses	(0.3)	(0.3)
Revenue change at constant currency	52.2 %	2.2 %

Free cash flow

We define free cash flow as net cash provided by (used in) operating activities in the period less capital expenditures made in the period. The following table reconciles net cash provided by (used in) operating activities, a GAAP measure, to free cash flow, a Non-GAAP measure.

	For the Three Months Ended December 31,		For the Twelve Months Ended December 31,	
	2022	2021	2022	2021
Cash Flow:				
Net cash provided by (used in) operating activities	$ (175.0)	$ 838.3	$ 1,384.3	$ 3,639.9
Net cash provided by (used in) investing activities	(141.1)	(112.7)	1,576.6	(563.7)
Net cash provided by (used in) financing activities	(7.4)	9.8	(1,747.3)	(2,086.2)
Net increase (decrease) in cash and cash equivalents	$ (323.5)	$ 735.4	$ 1,213.6	$ 990.0
Net cash provided by (used in) operating activities	$ (175.0)	$ 838.3	$ 1,384.3	$ 3,639.9
Less: Purchases of property, plant and equipment	86.4	51.6	240.3	258.1
Free cash flow	$ (261.4)	$ 786.7	$ 1,144.0	$ 3,381.8

Biogen

Notes to GAAP to Non-GAAP Reconciliation

Operating Expense & Net Income Attributable to Biogen Inc.

[A] Amortization and impairment of acquired intangible assets for the year ended December 31, 2022, compared to 2021, decreased primarily due to higher impairment charges recognized during 2021.

For the year ended December 31, 2022, amortization and impairment of acquired intangible assets reflects the impact of a $119.6 million impairment charge related to vixotrigine (BIIB074) for the potential treatment of diabetic painful neuropathy (DPN). During the fourth quarter of 2022 we discontinued further development of vixotrigine based on regulatory, development and commercialization challenges. We also adjusted the value of our contingent consideration obligations related to this asset resulting in a pre-tax gain of approximately $209.1 million, which was recognized in (gain) loss on fair value remeasurement of contingent consideration within our consolidated statements of income.

For the year ended December 31, 2021, amortization and impairment of acquired intangible assets reflects the impact of a $365.0 million impairment charge related to BIIB111, a $220.0 million impairment charge related to BIIB112 and a $44.3 million impairment charge related to vixotrigine for the potential treatment of trigeminal neuralgia (TGN).

[B] In April 2022 we completed the sale of our 49.9% equity interest in Samsung Bioepis to Samsung BioLogics Co., Ltd (Samsung BioLogics). Under the terms of this transaction, we received approximately $1.0 billion in cash at closing and expect to receive approximately $1.3 billion in cash to be deferred over two payments of approximately $812.5 million due at the first anniversary and approximately $437.5 million due at the second anniversary of the closing of this transaction.

For the year ended December 31, 2022, we recognized a pre-tax gain of approximately $1.5 billion related to this transaction, which was recorded in other (income) expense, net in our consolidated statements of income.

[C] During the second quarter of 2022 we recorded a pre-tax charge of $900.0 million, plus settled fees and expenses, related to a litigation settlement agreement to resolve a qui tam litigation relating to conduct prior to 2015.

Notes to GAAP to Non-GAAP Reconciliation

Operating Expense & Net Income Attributable to Biogen Inc.

[D] In July 2022 we redeemed our 3.625% Senior Notes prior to their maturity and recognized a net pre-tax charge of approximately $2.4 million upon the extinguishment of these Senior Notes, which primarily reflects the payment of an early call premium as well as the write-off of remaining unamortized original debt issuance costs and discount balances. These charges were recognized as interest expense in other (income) expense, net in our consolidated statements of income for the year ended December 31, 2022.

[E] For the year ended December 31, 2022, compared to 2021, the increase in our effective tax rate, excluding the impact of the net Neurimmune deferred tax asset, as discussed below, includes the tax impacts of the litigation settlement agreement and the sale of one of our buildings. These increases were partially offset by the impact of the current year tax benefits related to an international reorganization to align with global tax developments, the impacts of the sale of our equity interest in Samsung Bioepis and the tax impacts of the decision to discontinue development of vixotrigine. Further in 2021, our effective tax rate benefited from the tax effects of the BIIB111 and BIIB112 impairment charges and the non-cash tax effects of changes in the value of our equity instruments.

During 2021 we recorded a net deferred tax asset in Switzerland of approximately $100.0 million on Neurimmune's tax basis in ADUHELM, the realization of which was dependent on future sales of ADUHELM.

During the first quarter of 2022, upon issuance of the final NCD related to ADUHELM, we recorded an additional valuation allowance of approximately $85.0 million to reduce the net value of this deferred tax asset to zero. These adjustments to our net deferred tax asset are each recorded with an equal and offsetting amount assigned to net income (loss) attributable to noncontrolling interests, net of tax in our consolidated statements of income, resulting in a zero net impact to net income attributable to Biogen Inc.

[F] In September 2022 we completed the sale of our building and land parcel located at 125 Broadway for an aggregate sales price of approximately $603.0 million, which is inclusive of a $10.8 million tenant allowance. This sale resulted in a pre-tax gain on sale of approximately $503.7 million, net of transaction costs, which is reflected within gain on sale of building in our consolidated statements of income for the year ended December 31, 2022.