

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
Form 10-K

(Mark One)

- ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2022
or

- TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

Commission file number 001-37702

Amgen Inc.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation or organization)

95-3540776

(I.R.S. Employer Identification No.)

**One Amgen Center Drive
Thousand Oaks**

California

(Address of principal executive offices)

91320-1799

(Zip Code)

(805) 447-1000

(Registrant's telephone number, including area code)

Securities registered pursuant to Section 12(b) of the Act:

Title of each class

Trading Symbol (s)

Name of each exchange on which registered

**Common stock, \$0.0001 par value
2.00% Senior Notes due 2026**

AMGN

The Nasdaq Stock Market LLC

AMGN26

The Nasdaq Stock Market LLC

Securities registered pursuant to Section 12(g) of the Act: **None**

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or Section 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act) Yes No

The approximate aggregate market value of voting and non-voting stock held by non-affiliates of the registrant was \$129,940,091,621 as of June 30, 2022.^(A)

(A) Excludes 818,128 shares of common stock held by directors and executive officers, and any stockholders whose ownership exceeds ten percent of the shares outstanding, at June 30, 2022. Exclusion of shares held by any person should not be construed to indicate that such person possesses the power, directly or

indirectly, to direct or cause the direction of the management or policies of the registrant, or that such person is controlled by or under common control with the registrant.

533,976,238

(Number of shares of common stock outstanding as of February 6, 2023)

DOCUMENTS INCORPORATED BY REFERENCE

Specified portions of the registrant's Proxy Statement with respect to the 2023 Annual Meeting of Stockholders to be held May 19, 2023, are incorporated by reference into Part III of this annual report.

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Defined Terms and Products

Defined terms

We use several terms in this Form 10-K, including but not limited to those that are finance, regulation and disease-state related as well as names of other companies, which are given below.

Term	Description
2017 Tax Act	Tax Cuts and Jobs Act of 2017
AbbVie	AbbVie Inc.
Amended 2009 Plan	Amended and Restated 2009 Equity Incentive Plan
ANDA	Abbreviated New Drug Application
AOCI	accumulated other comprehensive income (loss)
ASCVD	atherosclerotic cardiovascular disease
ASR	Accelerated Share Repurchase
AstraZeneca	AstraZeneca plc
BeiGene	BeiGene, Ltd.
Bergamo	Laboratorio Quimico Farmaceutico Bergamo Ltda
BiTE®	bispecific T-cell engager
BPCIA	Biologics Price Competition and Innovation Act of 2009
CCPA	California Consumer Privacy Act of 2018
Celgene	Celgene Corporation
CGRP	calcitonin gene-related peptide
ChemoCentryx	ChemoCentryx, Inc.
chemotherapy	anticancer medicines
CHMP	Committee for Medicinal Products for Human Use
CMS	Centers for Medicare & Medicaid Services
COSO	Committee of Sponsoring Organizations of the Treadway Commission
COVID-19	coronavirus disease 2019
CV	cardiovascular
DLL3	delta-like ligand 3
DOJ	U.S. Department of Justice
EC	European Commission
Eczacıbaşı	EIS Eczacıbaşı İlaç, Sınai ve Finansal Yatırımlar Sanayi ve Ticaret A.Ş.
EMA	European Medicines Agency
EPS	earnings per share
ESG	environmental, social and governance
EU	European Union
FASB	Financial Accounting Standards Board
FCPA	U.S. Foreign Corrupt Practices Act
FDA	U.S. Food and Drug Administration
FDCA	Federal Food, Drug, and Cosmetic Act
Fitch	Fitch Ratings, Inc.
Five Prime	Five Prime Therapeutics, Inc.
FTC	Federal Trade Commission
GAAP	U.S. generally accepted accounting principles
GDPR	General Data Protection Regulation
GEJ	gastroesophageal junction
Gensenta	Gensenta İlaç Sanayi ve Ticaret A.Ş.
HHS	U.S. Department of Health & Human Services
Horizon	Horizon Therapeutics plc

Term	Description
IL	interleukin
IND	Investigational New Drug Application
IPR&D	in-process research and development
IRA	Inflation Reduction Act
IRS	Internal Revenue Service
Janssen	Janssen Biotech, Inc.
K-A	Kirin-Amgen, Inc.
KKC	Kyowa Kirin Co., Ltd.
KRAS	Kirsten rat sarcoma viral oncogene
LDL-C	low-density lipoprotein cholesterol
LIBOR	London Interbank Offered Rate
Lilly	Eli Lilly and Company
Lp(a)	lipoprotein(a)
MD&A	management's discussion and analysis
Moody's	Moody's Investors Service, Inc.
MRD	minimal residual disease
Neumora	Neumora Therapeutics, Inc.
NOL	net operating loss
Novartis	Novartis Pharma AG
NSCLC	non-small cell lung cancer
OECD	Organisation for Economic Co-operation and Development
OIG	Office of Inspector General
OLE	open label extension
ORR	objective response rate
PBM	pharmacy benefit manager
PCSK9	proprotein convertase subtilisin/kexin type 9
PDE4	phosphodiesterase 4
PFS	progression-free survival
PNH	paroxysmal nocturnal hemoglobinuria
Profit Sharing Plan	Amgen Profit Sharing Plan for Employees in Ireland
R&D	research and development
RANKL	receptor activator of nuclear factor kappa-B ligand
RAR	Revenue Agent Report
REMS	risk evaluation and mitigation strategy
ROU	right-of-use
ROW	rest of world
RSUs	restricted stock units
S&P	Standard & Poor's Financial Services LLC
SEC	U.S. Securities and Exchange Commission
SG&A	selling, general and administrative
sirNA	small interfering RNA
SOFR	Secured Overnight Financing Rate
Teneobio	Teneobio, Inc.
U.S. Treasury	U.S. Department of Treasury
USPTO	U.S. Patent and Trademark Office
UTB	unrecognized tax benefit

Products

The brand names of our products, our delivery devices and certain of our product candidates and their associated generic names are given below.

Term	Description
Acapatamab	Acapatamab (formerly AMG 160)
Aimovig	Aimovig® (erenumab-aooe)
AMGEVITA	AMGEVITA™ (adalimumab)
AMJEVITA	AMJEVITA™ (adalimumab-atto)
Aranesp	Aranesp® (darbepoetin alfa)
AutoTouch	AutoTouch®
AVSOLA	AVSOLA® (infliximab-axxq)
BLINCYTO	BLINCYTO® (blinatumomab)
Corlanor	Corlanor® (ivabradine)
Efavaleukin alfa	Efavaleukin alfa (formerly AMG 592)
Emirodatamab	Emirodatamab (formerly AMG 427)
ENBREL	Enbrel® (etanercept)
ENBREL Mini	ENBREL Mini®
EPOGEN	EPOGEN® (epoetin alfa)
EVENITY	EVENITY® (romosozumab-aqqg)
IMLYGIC	IMLYGIC® (talimogene laherparepvec)
KANJINTI	KANJINTI® (trastuzumab-anns)
KYPROLIS	KYPROLIS® (carfilzomib)
LUMAKRAS/LUMYKRAS	LUMAKRAS® / LUMYKRAS™ (sotorasib)
MVASI	MVASI® (bevacizumab-awwb)
Neulasta	Neulasta® (pegfilgrastim)
NEUPOGEN	NEUPOGEN® (filgrastim)
Nplate	Nplate® (romiplostim)
Olpasiran	Olpasiran (formerly AMG 890)
Onpro	Onpro®
Ordesekimab	Ordesekimab (formerly AMG 714)
Otezla	Otezla® (apremilast)
Parsabiv	Parsabiv® (etelcalcetide)
Prolia	Prolia® (denosumab)
Repatha	Repatha® (evolocumab)
RIABNI	RIABNI® (rituximab-arrx)
Rocatinlimab	Rocatinlimab (formerly AMG 451)
Rozibafusp alfa	Rozibafusp alfa (formerly AMG 570)
Sensipar/Mimpara	Sensipar®/Mimpara™ (cinacalcet)
SureClick	SureClick®
Tarlatamab	Tarlatamab (formerly AMG 757)
TAVNEOS	TAVNEOS® (avacopan)
TEZSPIRE	TEZSPIRE® (tezepelumab-ekko)
Vectibix	Vectibix® (panitumumab)
XGEVA	XGEVA® (denosumab)

Products referenced in this report that are not included in the above list are trademarks of their respective owners. They are Avastin®, Cosentyx®, DARZALEX®, EYLEA®, Fulphila®, Herceptin®, HUMIRA®, POMALYST®/IMNOVID®, PRALUENT®, PROCRIT®, PROMACTA®/REVOLADE™, Remicade®, REVLIMID®, RINVOQ®, Rituxan®/MabThera®, Skyrizi®, SOLIRIS®, STELARA®, Taltz®, Teribone™, Tremfya®, UDENYCA®, VELCADE® and Xeljanz®.

PART I

Item 1. BUSINESS

Amgen Inc. (including its subsidiaries, referred to as “Amgen,” “the Company,” “we,” “our” or “us”) is a biotechnology company committed to unlocking the potential of biology for patients suffering from serious illnesses by discovering, developing, manufacturing and delivering innovative human therapeutics. This approach begins by using tools like advanced human genetics to unravel the complexities of disease and understand the fundamentals of human biology.

Amgen focuses on areas of high unmet medical need and leverages its expertise to strive for solutions that improve health outcomes and dramatically improve people’s lives. A biotechnology pioneer, Amgen has grown to be one of the world’s leading independent biotechnology companies, has reached millions of patients around the world and is developing a pipeline of medicines with breakaway potential.

Amgen was incorporated in California in 1980 and became a Delaware corporation in 1987. We have a presence in approximately 100 countries worldwide. Amgen operates in one business segment: human therapeutics.

Significant Developments

Following is a summary of significant developments affecting our business that have occurred and that we have reported since the filing of our Annual Report on Form 10-K for the year ended December 31, 2021.

Acquisitions

Proposed acquisition of Horizon Therapeutics plc

- On December 12, 2022, we announced that we entered into a transaction agreement under which Amgen will acquire all shares of Horizon for \$116.50 per share in cash for a transaction equity value of approximately \$27.8 billion. In connection with the proposed acquisition of Horizon, in December 2022 we entered into a bridge credit agreement and a term loan credit agreement with an aggregate principal amount of \$28.5 billion. Horizon is a global biotechnology company headquartered in Dublin, Ireland and is focused on the discovery, development and commercialization of medicines that address critical needs for people impacted by rare, autoimmune and severe inflammatory diseases. Horizon has 12 marketed medicines and a pipeline with more than 20 development programs. The closing of this transaction is contingent upon satisfaction of certain regulatory (including FTC review) and other customary closing conditions.
 - On January 30, 2023, the Company and Horizon each received a request for additional information and documentary materials (Second Request) from the FTC in connection with the FTC’s review of the Company’s proposed acquisition of Horizon. The effect of the Second Request is to extend the waiting period imposed by the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, until 30 days after the Company and Horizon have substantially complied with the Second Request, unless that period is extended voluntarily by the Company and Horizon or terminated sooner by the FTC.

ChemoCentryx, Inc.

- On October 20, 2022, we completed our acquisition of ChemoCentryx for \$52.00 per share in cash totaling approximately \$3.8 billion, net of cash acquired.

Products/Pipeline

Cardiometabolic

Repatha

- In 2022, we presented results from the Repatha FOURIER-OLE studies, two open label extension (OLE) studies (with 6,635 patients) to the Phase 3 FOURIER cardiovascular (CV) outcomes trial. FOURIER-OLE was designed to assess the long-term safety and tolerability of Repatha in adults with clinically evident atherosclerotic cardiovascular disease (ASCVD). In these studies, an exploratory analysis demonstrated that earlier initiation of Repatha resulted in a lower risk of cardiovascular outcomes as defined by the composite endpoint of cardiovascular death, myocardial infarction (MI) and stroke, and the incidence of serious adverse events did not increase over time.

Olpasiran

- In November 2022, we presented positive end-of-treatment results from the Phase 2 OCEAN(a)-DOSE study evaluating olpasiran in adult patients with lipoprotein(a), or Lp(a), levels over 150 nmol/L and a history of ASCVD. Olpasiran is a small interfering RNA (siRNA) designed to lower the body's production of apolipoprotein(a), a key component of Lp(a) that has been associated with an increased risk of CV events. In the double-blind placebo-controlled treatment period, olpasiran was administered up to 225 mg subcutaneously every 12 weeks to patients with a median baseline Lp(a) of approximately 260 nmol/L. Patients who received a 75 mg or higher dose every 12 weeks had a 95% or greater reduction in Lp(a) compared to placebo at week 36. Overall, the rates of adverse events were similar in the olpasiran and placebo arms.

Inflammation

TEZSPIRE

- In September 2022, the EC approved TEZSPIRE in the EU as an add-on therapy in patients 12 years and older with severe asthma who are inadequately controlled with high dose inhaled corticosteroids plus another medicinal product for maintenance treatment. The approval follows the recommendation by the CHMP of the EMA in July 2022.

ABP 654

- In April 2022, we announced preliminary results from a Phase 3 study evaluating the efficacy and safety of ABP 654 compared to STELARA (ustekinumab) in adult patients with moderate-to-severe plaque psoriasis. The study met the primary efficacy endpoint, demonstrating no clinically meaningful differences between ABP 654 and STELARA.

Oncology/Hematology

LUMAKRAS/LUMYKRAS

- In April 2022, we announced long-term efficacy and safety data from the CodeBreaK 100 Phase 1/2 trial in patients with KRAS G12C-mutated advanced non-small cell lung cancer (NSCLC) who received LUMAKRAS/LUMYKRAS. In 174 heavily pre-treated patients (172 with baseline measurable lesion(s)), LUMAKRAS/LUMYKRAS demonstrated a centrally confirmed objective response rate (ORR) of 40.7%, disease control rate of 83.7% and median duration of response (DOR) of 12.3 months. The results also showed median progression-free survival (PFS) of 6.3 months and overall survival of 12.5 months, with 32.5% of patients still alive at two years. No new safety signals for LUMAKRAS/LUMYKRAS were identified with the long-term follow-up.
- In September 2022, we announced results from the global Phase 3 CodeBreaK 200 trial, which showed once-daily oral LUMAKRAS/LUMYKRAS led to significantly superior PFS (primary endpoint) and a significantly higher ORR (a key secondary endpoint) in patients with KRAS G12C-mutated NSCLC, compared with intravenous chemotherapy, docetaxel. LUMAKRAS/LUMYKRAS significantly improved PFS compared to docetaxel in heavily pre-treated patients. The proportion of patients with PFS at one year was 25% for LUMAKRAS/LUMYKRAS versus 10% for docetaxel. LUMAKRAS/LUMYKRAS demonstrated a significantly higher ORR than docetaxel with double the response rates in the LUMAKRAS/LUMYKRAS arm (28% versus 13%, respectively).

ABP 959

- In August 2022, we announced positive top-line results from the DAHLIA study, a randomized, double-blind, active-controlled, two-period crossover Phase 3 study evaluating the efficacy and safety of ABP 959, a biosimilar candidate to SOLIRIS (eculizumab), compared with SOLIRIS in adult patients with paroxysmal nocturnal hemoglobinuria (PNH). The study met its primary endpoints, demonstrating no clinically meaningful differences between ABP 959 and SOLIRIS. The safety and immunogenicity profile of ABP 959 was comparable to that of SOLIRIS.

New manufacturing facility

- In March 2022, we broke ground to build a drug substance plant in North Carolina that will increase our manufacturing network capacity.

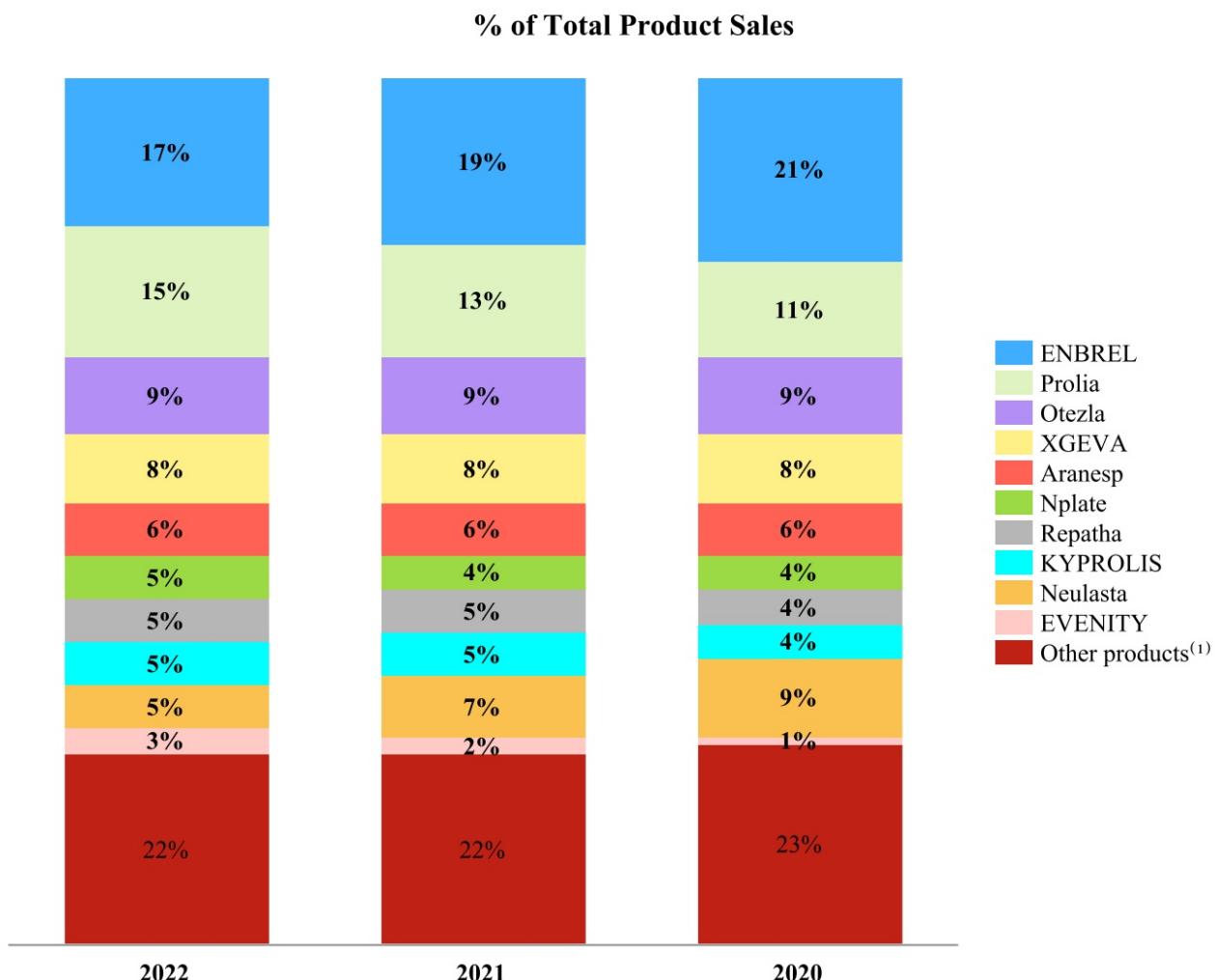
Marketing, Distribution and Selected Marketed Products

The largest concentration of our sales and marketing forces is based in the United States and Europe. In recent years, we have expanded the commercialization and marketing of our products into other geographic territories, including Japan, China and other parts of Asia; Latin America; and the Middle East. This expansion has occurred, and is expected to continue to occur, by establishing our own affiliates, by acquiring existing third-party businesses or product rights or by collaborating with third parties. See Business Relationships for our significant alliances. Whether we use our own sales and marketing forces or a third party's services varies across these markets. Such use typically depends on several factors, including the nature of entry into the new market, the size of an opportunity and operational capabilities. Together with our collaborators, we market our products to healthcare providers, including physicians or their clinics, dialysis centers, hospitals and pharmacies.

In the United States, substantially all of our sales are to pharmaceutical wholesale distributors, which are the principal means of distributing our products to healthcare providers. We also market certain products through direct-to-consumer channels, including print, television and online media. For further discussion, see Government Regulation—Regulation in the United States—Regulation of Product Marketing and Promotion. Outside the United States, we sell principally to healthcare providers and/or pharmaceutical wholesale distributors depending on the distribution practice in each country. In the Asia Pacific region, we also sell our products in partnership with other companies, including Astellas Pharma Inc., BeiGene, KKC, Takeda Pharmaceutical Company Limited and Daiichi Sankyo Co., Ltd.

Our product sales to three large wholesalers, McKesson Corporation, AmerisourceBergen Corporation and Cardinal Health, Inc., each individually accounted for more than 10% of total revenues for each of the years 2022, 2021 and 2020. On a combined basis, these wholesalers accounted for 82%, 82% and 83% of worldwide gross revenues for 2022, 2021 and 2020, respectively. We monitor the financial condition of our larger customers and limit our credit exposure by setting credit limits and, in certain circumstances, by requiring letters of credit or obtaining credit insurance.

Our products are marketed around the world, with the United States as our largest market. The following chart shows our product sales by principal product, and the table below (dollar amounts in millions) shows product sales by geography for the years 2022, 2021 and 2020.



	2022		2021		2020	
Product Sales by Geography:						
U.S.	\$ 17,743	72 %	\$ 17,286	71 %	\$ 17,985	74 %
ROW	7,058	28 %	7,011	29 %	6,255	26 %
Total	\$ 24,801	100 %	\$ 24,297	100 %	\$ 24,240	100 %

⁽¹⁾ Consists of product sales of our non-principal products, as well as our Gensenta and Bergamo subsidiaries.

ENBREL

We market ENBREL, a tumor necrosis factor blocker, in the United States and Canada. ENBREL was launched in 1998 and is used primarily in indications for the treatment of adult patients with moderately to severely active rheumatoid arthritis, patients with chronic moderate-to-severe plaque psoriasis who are candidates for systemic therapy or phototherapy and patients with active psoriatic arthritis.

Prolia

We market Prolia in many countries around the world. Prolia contains the same active ingredient as XGEVA but is approved for different indications, patient populations, dose and frequency of administration. Prolia was launched in the United States and Europe in 2010. In the United States, it is used primarily in the indication for the treatment of postmenopausal women with osteoporosis at high risk of fracture, defined as a history of osteoporotic fracture, or multiple risk factors for fracture; or in patients who have failed or are intolerant to other available osteoporosis therapy. In Europe, Prolia is used primarily for the treatment of osteoporosis in postmenopausal women at increased risk of fracture.

Otezla

We market Otezla, a small molecule that inhibits phosphodiesterase 4 (PDE4), in many countries around the world. Otezla was acquired from Bristol Myers Squibb Company in November 2019 after their acquisition of Celgene. Otezla is an oral therapy approved for the treatment of adults with plaque psoriasis across all severities (United States and Japan) and moderate-to-severe plaque psoriasis (other global markets including Europe), for adults with active psoriatic arthritis and for adults with oral ulcers associated with Behcet's disease.

XGEVA

We market XGEVA in many countries around the world. XGEVA was launched in 2010 and is used primarily in the indication for prevention of skeletal-related events (pathological fracture, radiation to bone, spinal cord compression or surgery to bone) in patients with bone metastases from solid tumors and multiple myeloma.

Aranesp

We market Aranesp primarily in the United States and Europe. Aranesp was launched in 2001 and is indicated to treat a lower-than-normal number of red blood cells (anemia) caused by chronic kidney disease (CKD) in both patients on dialysis and patients not on dialysis. Aranesp is also indicated for the treatment of anemia due to concomitant myelosuppressive chemotherapy in certain patients with nonmyeloid malignancies and when chemotherapy will be used for at least two months after starting Aranesp.

Nplate

We market Nplate in many countries around the world. Nplate was launched in 2008 and is indicated to treat thrombocytopenia in patients with chronic immune thrombocytopenia (ITP) who have had an insufficient response to corticosteroids, immunoglobulins or splenectomy.

Repatha

We market Repatha, a PCSK9 inhibitor, in many countries around the world. Repatha was launched in 2015 and is indicated to reduce the risks of myocardial infarction, stroke and coronary revascularization in adults with established CV disease. Repatha is also indicated to reduce low-density lipoprotein cholesterol (LDL-C) in adults with primary hyperlipidemia, including heterozygous familial hypercholesterolemia (HeFH).

KYPROLIS

We market KYPROLIS primarily in the United States and Europe. KYPROLIS was launched in 2012 and is indicated in combination with (i) dexamethasone, (ii) lenalidomide plus dexamethasone and (iii) DARZALEX plus dexamethasone for the treatment of patients with relapsed or refractory multiple myeloma who have received one to three prior lines of therapy. It is also approved as a single agent for patients with relapsed or refractory multiple myeloma who have received one or more previous therapies.

Neulasta

We market Neulasta, a pegylated protein based on the filgrastim molecule, primarily in the United States and Europe. Neulasta was launched in 2002 and is used primarily in the indication to help reduce the chance of infection due to a low white blood cell count in patients with certain types of cancer (nonmyeloid) who receive anticancer medicines (chemotherapy) that can cause fever and a low blood cell count. In 2015, the Neulasta Onpro kit became available in the United States. The Neulasta Onpro kit provides physicians the opportunity to initiate administration of Neulasta on the same day as chemotherapy, with drug delivery of the recommended dose of Neulasta at home the day after chemotherapy, thereby saving the patient a trip back to the doctor.

EVENITY

Together with our collaboration partners, we market EVENITY in many countries around the world. EVENITY was launched in the United States and Japan in 2019. In the United States, it is used in the indication for the treatment of osteoporosis in postmenopausal women at high risk for fracture. In Japan, EVENITY is used primarily in the indication for the treatment of osteoporosis in postmenopausal women and men at high risk of fracture.

Other Marketed Products

We also market a number of other products in various markets worldwide, including MVASI, Vectibix, BLINCYTO, EPOGEN, AMGEVITA, Aimovig, Parsabiv, KANJINTI, LUMAKRAS/LUMYKRAS, TEZSPIRE, NEUPOGEN, Sensipar/Mimpara and TAVNEOS.

Patents

The following table lists our outstanding material patents for the indicated product by territory, general subject matter and latest expiry date. Certain of the European patents are subjects of supplemental protection certificates that provide additional protection for the products in certain European countries beyond the dates listed in the table. See footnotes to the patent table below.

One or more patents with the same or earlier expiry dates may fall under the same general subject matter and are not listed separately.

Product	Territory	General subject matter	Expiration
Enbrel® (etanercept)	U.S.	Methods of treatment using aqueous formulations	6/8/2023
	U.S.	Formulations and methods of preparing formulations	10/19/2037
	U.S.	Fusion protein and pharmaceutical compositions	11/22/2028
	U.S.	DNA encoding fusion protein and methods of making fusion protein	4/24/2029
Prolia®/XGEVA® (denosumab)	U.S.	Nucleic acids encoding RANKL antibodies and methods of producing RANKL antibodies	11/30/2023
	U.S.	RANKL antibodies, including sequences	2/19/2025
	Europe	RANKL antibodies, including sequences ⁽¹⁾	6/25/2022
Otezla® (apremilast)	U.S.	Compositions and compounds	2/16/2028
	U.S.	Crystalline form	12/9/2023
	U.S.	Methods of treatment ⁽²⁾	5/29/2034
Aranesp® (darbepoetin alfa)	Europe	Compositions, compounds and methods of treatment ⁽¹⁾	3/20/2023
	U.S.	Glycosylation analogs of erythropoietin proteins	5/15/2024
Nplate® (romiplostim)	U.S.	Polynucleotides encoding fusion protein	7/25/2023
	U.S.	Formulation	2/12/2028
	Europe	Thrombopoietic compounds ⁽¹⁾	10/22/2019
	Europe	Formulation	4/20/2027
Repatha® (evolocumab)	U.S.	Antibodies ⁽³⁾	10/25/2029
	U.S.	Methods of treatment	10/8/2030
	Europe	Compositions ⁽¹⁾	8/22/2028
	Europe	Methods of treatment	5/10/2032
KYPROLIS® (carfilzomib)	Europe	Formulation	5/3/2033
	U.S.	Compositions and compounds	12/7/2027
	U.S.	Methods of treatment	4/14/2025
	U.S.	Methods of making	5/8/2033
	Europe	Compositions, compounds and methods of treatment ⁽¹⁾	12/7/2025

Product	Territory	General subject matter	Expiration
EVENITY® (romosozumab-aqqg)	U.S.	Antibodies	4/25/2026
	U.S.	Methods of treatment	4/9/2033
	U.S.	Formulation and methods of using formulation	5/11/2031
	Europe	Antibodies ⁽¹⁾	4/28/2026
	Europe	Methods of treatment	4/18/2032
	Europe	Formulation and methods of using formulation	5/11/2031
BLINCYTO® (blinatumomab)	U.S.	Pharmaceutical compositions and bifunctional polypeptides	4/6/2030
	U.S.	Method of administration	9/28/2027
	Europe	Bifunctional polypeptides ⁽¹⁾	11/26/2024
	Europe	Method of administration	11/6/2029
Aimovig® (erenumab-aooe)	U.S.	CGRP receptor antibodies	5/17/2032
	U.S.	Methods of treatment	4/22/2036
	U.S.	Compositions and pharmaceutical formulations	4/1/2039
	Europe	CGRP receptor antibodies ⁽¹⁾	12/18/2029
	Europe	Methods of treatment	8/10/2035
Parsabiv® (etelcalcetide)	U.S.	Compound and pharmaceutical composition	2/7/2031
	U.S.	Formulation	6/27/2034
	U.S.	Methods of making	8/9/2035
	Europe	Compound and pharmaceutical composition ⁽¹⁾	7/29/2030
LUMAKRAS® /LUMYKRAS™ (sotorasib)	Europe	Formulation	6/27/2034
	U.S.	Compounds and pharmaceutical compositions	5/21/2038
	U.S.	Crystalline form, pharmaceutical compositions and methods of treatment	5/20/2040
	U.S.	Methods of treatment	8/11/2040
TEZSPIRE® (tezepelumab-ekko)	Europe	Compounds, pharmaceutical compositions and methods of treatment	5/21/2038
	U.S.	Polypeptides ⁽³⁾	2/3/2029
	U.S.	Methods of treatment	8/23/2038
TAVNEOS® (avacopan)	Europe	Polypeptides	9/9/2028
	U.S.	Compounds and pharmaceutical compositions ⁽³⁾	2/3/2031

⁽¹⁾ A European patent with this subject matter may also be entitled to supplemental protection in one or more countries in Europe, and the length of any such extension will vary by country. For example, supplementary protection certificates have been issued related to the indicated products for patents in at least the following countries:

- denosumab — France, Germany, Italy, Spain and the United Kingdom, expiring in 2025
- apremilast — France, Germany, Italy, Spain and the United Kingdom expiring in 2028
- carfilzomib — France, Germany, Italy, Spain and the United Kingdom expiring in 2030
- evolocumab — France, Spain and the United Kingdom, expiring in 2030
- romiplostim — France, Germany, Italy, Spain and the United Kingdom, expiring in 2024
- romosozumab — France, Italy, Spain and the United Kingdom, expiring in 2031
- blinatumomab — France, Germany, Italy and Spain, expiring in 2029
- erenumab — France, Italy, Spain and the United Kingdom, expiring in 2033
- etelcalcetide — France, Germany, Italy, Spain and the United Kingdom, expiring in 2031

⁽²⁾ U.S. Patent No. 10,092,541 was held invalid by the New Jersey District Court. We disagree with the court's holding and we are in the process of appealing this judgment. See Part IV—Note 19, Contingencies and commitments, to the Consolidated Financial Statements, Amgen Inc. v. Sandoz Inc., et al.

⁽³⁾ A patent with this subject matter may be entitled to patent term extension in the United States.

Competition

We operate in a highly competitive environment. A number of our marketed products are indicated for disease areas in which other products or treatments are currently available or are being pursued by our competitors through R&D activities. Additionally, some competitor-marketed products target the same genetic pathways as our recently launched marketed products or are currently in development. This competition could impact the pricing and market share of our products. We continue to pursue ways of increasing the value of our medicines through innovations during their life cycles, which can include expanding the disease areas for which our products are indicated and finding new methods to make the delivery of our medicines easier and less costly. Such activities can offer important opportunities for differentiation. For example, we market the Neulasta Onpro kit, which provides physicians the opportunity to initiate administration of the recommended dose of Neulasta on the same day as chemotherapy, with drug delivery at home the day after chemotherapy, thereby saving the patient a trip back to the doctor. We plan to continue pursuing innovation efforts to strengthen our competitive position. Such position may be based on, among other things, safety, efficacy, reliability, availability, patient convenience, delivery devices, price, reimbursement, access to and timing of market entry and patent position and expiration.

Certain of the existing patents on our principal products have expired, and we face new and increasing competition, including from biosimilars and generics. A biosimilar is another version of a biological product for which marketing approval is sought or has been obtained based on a demonstration that it is “highly similar” to the original reference product. We have experienced adverse effects from biosimilar competition on our originator product sales. Companies have launched biosimilar versions of EPOGEN, NEUPOGEN and Neulasta and have approved biosimilars for ENBREL. Once multiple biosimilar versions of one of our originator products have launched, competition has intensified rapidly, resulting in greater net price declines for both reference and biosimilar products and a greater effect on product sales. See also Government Regulation—Regulation in the United States—Approval of Biosimilars. Although competitor biosimilars compete on price, we believe many patients, providers and payers will continue to place high value on the reputation, supply reliability and safety of our products. As additional biosimilar competitors come to market, we will continue to leverage our global experience to distinguish against both branded and biosimilar competition.

We also have our own biosimilar products both in the United States and outside of U.S. markets that are competing against branded and biosimilar versions of our competitors’ products. In 2019, Amgen launched MVASI, a biosimilar to Avastin, and KANJINTI, a biosimilar to Herceptin; and in 2018, Amgen launched AMGEVITA, a biosimilar to HUMIRA in markets outside the United States. We have also received FDA approval of AMJEVITA, a biosimilar to HUMIRA for the U.S. market, which launched in January 2023. In 2020, we launched AVSOLA, a biosimilar to Remicade; and in 2021 we launched RIABNI, a biosimilar to Rituxan. We expect additional biosimilar competition against both our branded and biosimilar products in the future across markets.

Although most of our products are biologics, some are small molecule products. Because the FDA approval process permits generic manufacturers to rely on the safety and efficacy data of the innovator product rather than having to conduct their own costly and time-consuming clinical trials, generic manufacturers can often develop and market their competing versions of our small molecule products at much lower prices. For example, following loss of exclusivity of patents directed to cinacalcet, the active ingredient in our small molecule calcimimetic Sensipar, we lost a significant share of the market and corresponding revenues in a very short period of time. See Part IV—Note 19, Contingencies and commitments, to the Consolidated Financial Statements.

The introduction of new products, the development of new processes or technologies by competitors or the emergence of new information about existing products may result in (i) increased competition for our marketed products, even for those protected by patents and/or (ii) reductions in the prices we receive from selling our products. In addition, the development of new treatment options or standards of care may reduce the use of our products or may limit the utility and application of ongoing clinical trials of our product candidates. (As used in this document, the term *clinical trials* may include prospective clinical trials, observational studies, registries and other studies.) See Item 1A. Risk Factors—*Our products face substantial competition and our product candidates are also likely to face substantial competition* and Item 1A. Risk Factors—*We currently face competition from biosimilars and generics and expect to face increasing competition from biosimilars and generics in the future.*

The following table reflects our significant competitors and is not exhaustive.

Product	Territory	Competitor-marketed product	Competitors
ENBREL	U.S. & Canada	HUMIRA	AbbVie
	U.S.	Xeljanz	Pfizer Inc.
	U.S. & Canada	RINVOQ	AbbVie
Prolia	U.S., Europe & Asia Pacific	Alendronate, raloxifene and zoledronate generics	Various
	U.S. & Europe	HUMIRA [†]	AbbVie
Otezla	U.S. & Europe	Cosentyx	Novartis
	U.S. & Europe	Taltz	Lilly
	U.S. & Europe	Tremfya	Janssen ⁽¹⁾
	U.S. & Europe	Skyrizi	AbbVie
	U.S. & Europe	Methotrexate generics	Various
	U.S. & Europe	Zoledronate generics	Various
Aranesp	U.S.	PROCRIT ⁽²⁾	Janssen ⁽¹⁾
	U.S. & Europe	Epoetin alfa biosimilars	Various
Nplate	U.S. & Europe	PROMACTA/REVOLADE	Novartis
Repatha	U.S., Europe & Asia Pacific	PRALUENT	Regeneron Pharmaceuticals, Inc. Sanofi
KYPROLIS	U.S.	VELCADE	Millennium Pharmaceuticals, Inc. ⁽⁴⁾
	U.S. & Europe	REVLIMID ⁽³⁾	Various
	U.S. & Europe	POMALYST/IMNOVID	Celgene ⁽⁵⁾
	U.S. & Europe	DARZALEX	Janssen ⁽¹⁾
Neulasta ⁽⁶⁾	U.S. & Europe	UDENYCA	Coherus BioSciences, Inc.
	U.S. & Europe	Fulphila	Mylan Institutional Inc.
	U.S. & Europe	Filgrastim biosimilars	Various
EVENITY	U.S.	Alendronate, raloxifene and zoledronate generics	Various
	Japan	Teribone	Asahi Kasei Pharma

[†] Approved biosimilars available in Europe and Canada.

⁽¹⁾ A subsidiary of Johnson & Johnson.

⁽²⁾ PROCRIT competes with Aranesp in supportive cancer care and predialysis settings.

⁽³⁾ REVLIMID also includes generics.

⁽⁴⁾ A subsidiary of Takeda Pharmaceutical Company Limited.

⁽⁵⁾ A subsidiary of Bristol Myers Squibb Company.

⁽⁶⁾ Other biosimilars under regulatory review in the United States and Europe.

Reimbursement

Sales of our products are dependent on the availability and extent of coverage and reimbursement from third-party payers. In many markets around the world, these payers, including government health systems, private health insurers and other organizations, remain focused on reducing the cost of healthcare; and their efforts have intensified as a result of rising healthcare costs, economic pressures and broader challenges generated by the COVID-19 pandemic. Drugs remain heavily scrutinized for cost containment. As a result, payers are becoming more restrictive regarding the use of biopharmaceutical products and are scrutinizing the prices of these products while requiring a higher level of clinical evidence to support the benefits such products bring to patients and the broader healthcare system. These pressures become intensified when our products become subject to competition, including from biosimilars.

In the United States, healthcare providers and other entities such as pharmacies and PBMs are reimbursed for covered services and products they deliver through both private-payer and government healthcare programs such as Medicare and Medicaid. We provide negotiated rebates to healthcare providers, private payers, government payers and PBMs. In addition, we are required to (i) provide rebates or discounts on our products that are reimbursed through certain government programs, including Medicare and Medicaid, and (ii) provide discounts to qualifying healthcare providers under the federal 340B Drug Pricing Program.

Both private and some government payers use formularies to manage access to and utilization of drugs. A drug's inclusion and favorable positioning on a formulary are essential to ensure patients have access to a particular drug. Even when access is available, some patients abandon their prescriptions for economic reasons. Payers continue to institute cost reduction and containment measures that lower drug utilization and/or spending altogether and/or shift a greater portion of the costs to patients. Such measures include, but are not limited to, more-limited benefit plan designs, higher patient co-pays or coinsurance obligations, limitations on patients' use of commercial manufacturer co-pay payment assistance programs (including through co-pay accumulator adjustment or maximization programs), stricter utilization management criteria before a patient may get access to a drug, higher-tier formulary placement that increases the level of patient out-of-pocket costs and formulary exclusion, which effectively encourages patients and providers to seek alternative treatments or pay 100% of the cost of a drug. The use of such measures by PBMs and insurers has continued to intensify and has thereby limited Amgen product usage and sales. Furthermore, during the past few years, many PBMs and insurers have consolidated, resulting in a smaller number of PBMs and insurers overseeing a large portion of total covered lives in the United States. As a result, PBMs and insurers have greater market power and negotiating leverage to mandate stricter utilization criteria and/or exclude drugs from their formularies in favor of competitor drugs or alternative treatments. In highly competitive treatment markets such as the markets for ENBREL, Otezla, Repatha and Aimovig, PBMs are also able to exert negotiating leverage by requiring incremental rebates from manufacturers in order for them to gain and/or maintain their formulary position.

In addition to market actions taken by private and government payers in the United States, policy makers in both of the major U.S. political parties have supported policies to lower drug costs. See Item 1A. Risk Factors—*Our sales depend on coverage and reimbursement from government and commercial third-party payers, and pricing and reimbursement pressures have affected, and are likely to continue to affect, our profitability.* In August 2022, the Inflation Reduction Act (IRA) was enacted and includes provisions requiring that (1) beginning in 2026, mandatory price setting be introduced in Medicare for certain drugs paid for under Parts B and D, whereby manufacturers must accept a price established by the government or face penalties on all U.S. sales (starting with 10 drugs in 2026, adding 15 in 2027 and 2028, and adding 20 in 2029 and subsequent years such that by 2031 approximately 100 drugs could be subject to such set prices); (2) starting in 2024, Medicare Part D be redesigned to cap beneficiary out-of-pocket costs and, beginning January 1, 2025, Federal reinsurance be reduced in the catastrophic phase (resulting in a shift and increase of such costs to Part D plans and manufacturers, including by requiring manufacturer discounts on certain drugs); and (3) beginning October 1, 2022, manufacturers now owe rebates on drugs reimbursed under Medicare Part D if price increases outpace inflation, and beginning January 1, 2023, now owe rebates on drugs reimbursed under Medicare Part B if price increases outpace inflation. Although the IRA has passed, the environment remains dynamic, and the Administration and Congress are continuing to consider drug pricing reforms.

Other potential policies cover a wide range of areas, including allowing the importation of drugs from other countries; increasing transparency in drug pricing; and using third-party value assessments to determine drug prices. The Infrastructure Investment and Jobs Act, signed into law on November 15, 2021, requires manufacturers of certain Part B-covered drugs packaged in single-use containers to give refunds to the government starting in 2023 for discarded amounts.

In many countries other than the United States, government-sponsored healthcare systems are the primary payers for drugs and biologics. With increasing budgetary constraints and/or difficulty in understanding the value of medicines, governments and payers in many countries are applying a variety of measures to exert downward price pressure. These measures can include mandatory price controls, price referencing, therapeutic-reference pricing, increases in mandates, incentives for generic substitution and biosimilar usage and government-mandated price cuts. In this regard, many countries have health technology assessment organizations that use formal economic metrics such as cost-effectiveness to determine prices, coverage and reimbursement of new therapies; and these organizations are expanding in both established and emerging markets. Many countries also limit coverage to populations narrower than those specified on our product labels or impose volume caps to limit utilization. We expect that countries will continue taking aggressive actions to seek to reduce expenditures on drugs and biologics. Similarly, fiscal constraints may also affect the extent to which countries are willing to approve new and innovative therapies and/or allow access to new technologies. The EU is currently undergoing a review and possible revision of its pharmaceutical legislation, now scheduled to end in the first half of 2023, with implementation by 2025 or 2026. It is likely that this review will lead to proposals that will reduce intellectual property protection for new products, as well as change the reimbursement and regulatory landscape in ways that are difficult to predict at this point.

The dynamics and developments discussed above create pressures on the pricing and potential usage of our products and on the industry. Given the diverse interests in play between payers, biopharmaceutical manufacturers, policy makers, healthcare providers and independent organizations, if and whether the parties involved can achieve alignment on the matters discussed above remain unclear, and the outcome of any such alignment is difficult to predict. We remain focused on pricing our products responsibly and delivering breakthrough treatments for unmet medical needs. Amgen is committed to working with the entire healthcare community to ensure continued innovation and to facilitate patient access to needed medicines. We do this by:

- investing billions of dollars annually in R&D;
- pricing our medicines to reflect the value they provide;
- developing more affordable therapeutic choices in the form of high-quality and reliably supplied biosimilars;
- partnering with payers to share risk and accountability for health outcomes;
- providing patient support and education programs;
- helping patients in financial need access our medicines; and
- working with policy makers, patients and other stakeholders to establish a sustainable healthcare system with access to affordable care and in which patients and their healthcare professionals are the primary decision makers.

See Item 1A. Risk Factors—*Our sales depend on coverage and reimbursement from government and commercial third-party payers, and pricing and reimbursement pressures have affected, and are likely to continue to affect, our profitability* and Item 1A. Risk Factors—*Guidelines and recommendations published by various organizations can reduce the use of our products.*

Manufacturing, Distribution and Raw Materials

Manufacturing

We believe we are a leader in the manufacture of biologics and that our manufacturing capabilities represent a competitive advantage. The products we manufacture consist of both biologics and small molecule drugs. The majority of our products are biologics that are produced in living cells and that are inherently complex due to naturally occurring molecular variations. Highly specialized knowledge and extensive process and product characterization are required to transform laboratory-scale processes into reproducible commercial manufacturing processes. Further, our expertise in the manufacture of biologics positions us well for leadership in the global biosimilars market. For additional information regarding manufacturing facilities, see Item 2. Properties.

We have been innovating our manufacturing facilities designed to extend our manufacturing advantage by optimizing our manufacturing network and/or by mitigating risks while continuing to ensure adequate supply of our products. For example, our licensed next-generation biomanufacturing plants operating in Singapore and West Greenwich, Rhode Island, incorporate multiple innovative technologies into a single facility. Next-generation biomanufacturing plants require smaller manufacturing footprints and offer greater environmental benefits, including reduced consumption of water and energy and lower levels of carbon emissions. Within such plants, the equipment is portable and smaller, which provides greater flexibility and speed in the manufacture of different medicines simultaneously. This enables Amgen to respond to changing demands for its medicines with increased agility. The Singapore site also has a plant that has been approved by several agencies, including the FDA and EMA, to produce small molecule drugs for commercial manufacturing.

Our internal manufacturing network has commercial production capabilities for bulk manufacturing, formulation, fill, finish, tabletting and device assembly. These activities are performed within the United States and its territory in our Puerto Rico, Rhode Island and California facilities as well as internationally in our Ireland, Netherlands and Singapore facilities. In addition, we use third-party contract manufacturers to supplement the capacity or capability of our commercial manufacturing network.

To support our clinical trials, we manufacture product candidates primarily at our California facilities. We also use third-party contract manufacturers to supplement the capacity or capability of our overall clinical manufacturing network.

See Item 1A. Risk Factors for a discussion of the factors that could adversely impact our manufacturing operations and the global supply of our products.

Distribution

We operate distribution centers in Puerto Rico, Kentucky, California and the Netherlands for worldwide distribution of the majority of our commercial and clinical products. We also use third-party distributors to supplement distribution of our products worldwide.

Other

In addition to the manufacturing and distribution activities noted above, each of our manufacturing locations includes key manufacturing support functions such as quality control, process development, engineering, procurement, production scheduling and warehousing. Certain of those manufacturing and distribution activities are highly regulated by the FDA as well as international regulatory agencies. See Government Regulation—Regulation in the United States—Regulation of Manufacturing Standards.

Manufacturing Initiatives

As discussed above, we have been expanding capacity and advancing new innovations with multiple ongoing projects.

Our next-generation biomanufacturing plant at our West Greenwich, Rhode Island, campus, the first of its kind in the United States, has been approved by the FDA and EMA. This plant expands our capacity to manufacture certain products for U.S. and global markets, as we receive regulatory approval in those markets.

In November 2021, we broke ground for our newest biomanufacturing plant located in New Albany, Ohio. This final product assembly and packaging plant will support the growing demand for Amgen's medicines in the United States and will use state-of-the-art technologies.

In March 2022, we broke ground for our new multi-product drug substance manufacturing facility in Holly Springs, North Carolina. The new plant will support both traditional stainless steel-fed batch manufacturing and next-generation single-use technologies, allowing flexibility in the production of multiple products in one plant.

Amgen continues to embed environmental sustainability into the upfront design, development and execution of our new facilities. The new facilities under construction in North Carolina and Ohio contain many examples of environmental advances, including on-site photovoltaic renewable energy generation at both sites. We expect our North Carolina facility's carbon, waste and water footprints to be substantially lower than those at a traditional drug substance manufacturing plant, and we expect lower footprints per unit produced as well at our Ohio facility compared with existing similar facilities.

See Item 1A. Risk Factors—*Manufacturing difficulties, disruptions or delays could limit supply of our products and limit our product sales.*

Raw Materials and Medical Devices

Certain raw materials, medical devices (including companion diagnostics) and components necessary for the commercial and/or clinical manufacturing of our products are provided by and are the proprietary products of unaffiliated third-party suppliers, certain of which may be our only sources for such materials. We currently attempt to manage the risk associated with such suppliers by means of inventory management, relationship management and evaluation of alternative sources when feasible. We also monitor the financial condition of certain suppliers and their ability to supply our needs. See Item 1A. Risk Factors—*We rely on third-party suppliers for certain of our raw materials, medical devices and components.*

We perform various procedures to help authenticate the sources of raw materials, including intermediary materials used in the manufacture of our products; the procedures include verification of country of origin and are incorporated into the manufacturing processes we and our third-party contract manufacturers perform.

To better ensure supply, Amgen has a risk mitigation strategy that uses a combination of methods, including multiple sources or backup inventory of critical raw materials. In response to the COVID-19 pandemic and as part of our ongoing business continuity efforts, we continue to closely monitor our inventory levels and have taken additional measures to mitigate against raw material supply interruption. See Item 1A. Risk Factors for a discussion of the factors that could adversely impact our manufacturing operations and the global supply of our products.

Government Regulation

Regulation by government authorities in the United States and other countries is a significant factor in the production and marketing of our products and our ongoing R&D activities. To clinically test, manufacture and market products for therapeutic use, we must satisfy mandatory procedures and safety and effectiveness standards established by various regulatory bodies. Compliance with these standards is complex, and failure to comply with any of these standards can result in significant implications. See Item 1A. Risk Factors for a discussion of factors, including global regulatory implications, that can adversely impact our development and marketing of commercial products.

Regulation in the United States

In the United States, the Public Health Service Act; the FDCA; and the regulations promulgated thereunder as well as other federal and state statutes and regulations govern, among other things, the production, research, development, testing, manufacture, quality control, labeling, storage, record keeping, approval, advertising, promotion and distribution of our products in addition to the reporting of certain payments and other transfers of value to healthcare professionals and teaching hospitals.

Clinical Development and Product Approval. Drug development in our industry is complex, challenging and risky, and failure rates are high. Product development cycles are typically very long—approximately 10 to 15 years from discovery to market. A potential new medicine must undergo many years of preclinical and clinical testing to establish its safety and efficacy for use in humans at appropriate dosing levels and with an acceptable risk–benefit profile. We continue to work toward reducing cycle times by applying our expertise in human genetics and innovation in technology, clinical trials and real-world evidence.

After laboratory analysis and preclinical testing in animals, we file an IND with the FDA to begin human testing. Typically, we undertake an FDA-designated three-phase human clinical testing program.

- In phase 1, we conduct small clinical trials to investigate the safety and proper dose ranges of our product candidates in a small number of human subjects.
- In phase 2, we conduct clinical trials to investigate side-effect profiles and the efficacy of our product candidates in a patient population larger than phase 1 but still relatively small, who have the disease or condition under study.
- In phase 3, we conduct clinical trials to investigate the short- and long-term safety and efficacy of our product candidates, compared to commonly used treatments, in a large number of patients who have the disease or condition under study.

The FDA monitors the progress of each trial conducted under an IND and may, at its discretion, reevaluate, alter, suspend or terminate the testing based on data accumulated to that point and the FDA's risk–benefit assessment with regard to the patients enrolled in the trial. The results of preclinical and clinical trials are submitted to the FDA in the form of either a Biologics License Application for biologic products or a New Drug Application for small molecule products. We are not permitted to market or promote a new product until the FDA has approved our marketing application.

Approval of Biosimilars. The Affordable Care Act authorized the FDA to approve biosimilars via a separate, abbreviated pathway. The pathway allows sponsors of a biosimilar to seek and obtain regulatory approval based in part on the nonclinical-trial and clinical-trial data of an originator product to which the biosimilar has been demonstrated to be “highly similar” and to have no clinically meaningful differences with regard to safety, purity and potency. The relevance of demonstrating “similarity” is that in many cases, biosimilars can be brought to market without conducting the full suite of clinical trials typically required of originators, because risk–benefit has previously been established. To preserve incentives for future innovation, the law establishes a period of exclusivity for originators’ products, which in general prohibits biosimilars from gaining FDA approval based in part on reliance on or reference to the originator’s data in their application to the FDA for 12 years after initial FDA approval of the originator product. The law does not change the duration of patents granted on biologic products. As part of the implementation of the abbreviated approval pathway for biosimilars, the FDA released a number of guidance documents, some of which remain in draft form. See Item 1A. Risk Factors—*We currently face competition from biosimilars and generics and expect to face increasing competition from biosimilars and generics in the future.*

Regulation of Product Marketing and Promotion. The FDA regulates the marketing and promotion of drug products. Our product promotions for approved product indications must comply with the statutory standards of the FDCA and the FDA's implemented regulations and guidance. The FDA's review of marketing and promotional activities encompasses but is not limited to direct-to-consumer advertising, healthcare-provider-directed advertising and promotion, sales representative communications to healthcare professionals, promotional programming and promotional activities involving electronic media. The FDA may also review industry-sponsored scientific and educational activities that make representations regarding product safety or efficacy in a promotional context. The FDA may take enforcement action against a company for promoting unapproved uses of a product or for other violations of the FDA's advertising and labeling laws and regulations. Enforcement action may include product seizures, injunctions, civil or criminal penalties or regulatory letters, which may require corrective advertising or other corrective communications to healthcare professionals. Failure to comply with the FDA's regulations also can result in adverse publicity or increased scrutiny of company activities by the U.S. Congress or other legislators. Additionally, as described below, such failure may lead to additional liability under U.S. healthcare fraud and abuse laws.

Regulation of Manufacturing Standards. The FDA regulates and inspects the equipment, facilities, laboratories and processes used in the manufacturing and testing of products prior to granting approval to market products. If after receiving approval from the FDA we make a material change in manufacturing equipment, location or process, additional regulatory review may be required. We also must adhere to current Good Manufacturing Practice regulations and product-specific regulations enforced by the FDA through its facilities inspection program. The FDA conducts regular, periodic visits to reinspect our equipment, facilities, laboratories and processes following an initial approval.

Regulation of Combination Products. Combination products are defined by the FDA as products composed of two or more regulated components (e.g., a biologic and/or drug and a device). Biologics/drugs and devices each have their own regulatory requirements, and combination products may have additional requirements. A number of our marketed products meet this definition and are regulated under this framework, and we expect that a number of our pipeline product candidates will be evaluated for regulatory approval under this framework as well.

Regulation outside the United States

In EU countries as well as in the United Kingdom, Switzerland, Canada, Australia and Japan, regulatory requirements and approval processes are similar in principle to those in the United States.

In the EU, there are currently two potential tracks for seeking marketing approval for a product not authorized in any EU member state: a decentralized procedure and a centralized procedure. In the *decentralized procedure*, identical applications for marketing authorization are submitted simultaneously to the national regulatory agencies. Regulatory review is led by one member state (the reference-member state), and its assessment—based on safety, quality and efficacy—is reviewed and approved (assuming there are no concerns that the product poses a serious risk to public health) by the other member states from which the applicant is seeking approval (the concerned-member states). The decentralized procedure leads to a series of single national approvals in all relevant countries. In the *centralized procedure*, which is required of all products derived from biotechnology, a company submits a single Marketing Authorisation Application to the EMA, which conducts an evaluation of the dossier, drawing upon its scientific resources across Europe. If the drug product is proven to fulfill requirements for quality, safety and efficacy, the EMA's CHMP adopts a positive opinion, which is transmitted to the EC for final decision on granting of the marketing authorization. Even though the EC generally follows the CHMP's opinion, it is not bound to do so. Subsequent commercialization is enabled by country-by-country reimbursement approval.

In the EU, biosimilars are approved under a specialized pathway of the centralized procedure. As with the U.S. pathway, an applicant seeks and obtains regulatory approval for a biosimilar once the data exclusivity period for the original reference product has expired, relying in part on the data submitted for the originator product together with data evidencing that the biosimilar is “highly similar” with regard to quality, safety and efficacy to the original reference product authorized in the European Economic Area. See Item 1A. Risk Factors—*We currently face competition from biosimilars and generics and expect to face increasing competition from biosimilars and generics in the future.*

Other countries such as those in Latin America and the Middle East have review processes and data requirements similar to those of the EU and in some cases can rely on prior marketing approval from U.S. or EU regulatory authorities. The regulatory process in these countries may include manufacturing/testing facility inspections, testing of drug product upon importation and other domestic requirements.

In Asia Pacific, a number of countries such as China, Japan, South Korea and Taiwan may require local clinical-trial data for bridging purposes as part of the drug registration process in addition to global clinical trials, which can add to overall drug development and registration timelines. In most of the Asian markets, registration timelines depend on marketing approval in the United States or the EU. In some markets in Asia, such as China, Indonesia and Thailand, regulatory timelines can be less predictable. The regulatory process may also include manufacturing/testing facility inspections, testing of drug product upon importation and other domestic requirements. Countries such as Australia and Japan have more-mature systems that would allow for submissions under more-competitive time frames. With regard to biosimilars, several of these countries have pathways to register biosimilars (e.g., Australia, India, Singapore, South Korea and Taiwan), and biosimilar products are already present on the markets (e.g., Australia and South Korea).

In some countries, such as Japan and those in the EU, medical devices may be subject to regulatory regimes whereby manufacturers must establish that their medical devices conform to essential requirements set out in the law for the particular device category. For example, in the EU, with limited exceptions, medical devices placed on the market must bear the Conformité Européenne marking to indicate their conformity with legal requirements.

Postapproval Phase

After approval, we continue to monitor adverse events and product complaints reported following the use of our products through routine postmarketing surveillance and studies when applicable. We report such events to the appropriate regulatory agencies as required by local regulations for individual cases and aggregate reports. We proactively monitor (according to good pharmacovigilance practices) and ensure the implementation of signal detection, assessment and the communication of adverse events that may be associated with the use of our products. We also proactively monitor product complaints through our quality systems, which includes assessing our drug delivery devices for device complaints, adverse events and malfunctions. We may also be required by regulatory agencies to conduct further clinical trials on our marketed products as a condition of their approval or to provide additional information on safety and efficacy. Health regulators, including the FDA, have authority to mandate labeling changes to products at any point in a product's life cycle based on new safety information or as part of an evolving label change to a particular class of products.

Health regulators, including the FDA, also have authority both before and after approval to require that a company implement a risk management program for a product to ensure that the benefits of the drug outweigh the risks. Each risk management program is unique and varies depending on the specific factors required. In the United States, such a risk management program is known as a REMS, and we currently have REMSSs for Prolia, Nplate and BLINCYTO.

Other Regulation

We are also subject to various laws pertaining to healthcare fraud and abuse, including antikickback laws and false-claims laws. Antikickback laws make it illegal to solicit, offer, receive or pay any remuneration in exchange for or to induce the referral of business, including the purchase or prescribing of a particular drug that is reimbursed by a state or federal program. False-claims laws prohibit knowingly and willingly presenting or causing to be presented for payment to third-party payers (including Medicare and Medicaid) any claims for reimbursed drugs or services that are false or fraudulent, claims for items or services not provided as claimed or claims for medically unnecessary items or services. Violations of fraud and abuse laws may be punishable by criminal and/or civil sanctions, including fines and civil monetary penalties, as well as by the possibility of exclusion from federal healthcare programs (including Medicare and Medicaid). Liability under false-claims laws may also arise when violation of certain laws or regulations related to the underlying product (e.g., a violation regarding improper promotional activity or unlawful payments) contributes to the submission of a false claim.

On April 25, 2019, we entered into a settlement agreement with the DOJ and the OIG of the HHS to settle certain allegations related to our support of independent charitable organizations that provide patients with financial assistance to access medicines. Additionally, we entered into a corporate integrity agreement that requires us to both maintain a corporate compliance program and undertake a set of defined corporate integrity obligations for a period of five years. Due to the breadth of the statutory provisions and the absence of guidance in the form of regulations or court decisions addressing some of our practices, it is possible that in the future, our practices might be further challenged under antikickback or similar laws.

The FCPA prohibits U.S. corporations and their representatives from offering, promising, authorizing or making payments to any foreign government official, government staff member, political party or political candidate in an attempt to obtain or retain business abroad. The scope of the FCPA arguably includes interactions with certain healthcare professionals in many countries. Other countries have enacted similar anticorruption laws and/or regulations. Failure by our employees, agents, contractors, vendors, licensees, partners or collaborators to comply with the FCPA and other anticorruption laws and/or regulations could result in significant civil or criminal penalties.

We are subject to various laws and regulations globally with regard to privacy and data protection. These laws and regulations involve the collection, storage, handling, use, disclosure, transfer and security of personal data. The legislative and regulatory environments regarding privacy and data protection are continually evolving and developing because these issues are subjects of increasing amounts of attention in countries globally. For example, we are subject to the EU's GDPR, which became effective on May 25, 2018; the CCPA, which became effective on January 1, 2020; the California Privacy Rights Act of 2020, which amended the CCPA and became effective on January 1, 2023; and China's Personal Information Protection Law, which became effective on November 1, 2021. Other jurisdictions where we operate have enacted or proposed similar legislation and/or regulations. For example, Virginia, Colorado, Utah and Connecticut have all subsequently passed similar consumer privacy laws, which went into effect in Virginia as of January 1, 2023, and will go into effect in Colorado, Utah and Connecticut later in 2023. Failure to comply with these laws could result in significant penalties.

Our business has been and will continue to be subject to various other U.S. and foreign laws, rules and regulations, including provisions of the IRA. See Reimbursement section above.

Research and Development and Selected Product Candidates

We focus our R&D on novel human therapeutics for the treatment of serious illness. We capitalize on our strengths in human genetics, novel biology and protein engineering. We leverage our biologic expertise and seek to choose the optimal modality for a drug target and disease. And we use cutting-edge science and technology to study subtle biological mechanisms in search of therapies that will improve the lives of those who suffer from diseases.

Our discovery research programs may therefore yield targets that lead to the development of human therapeutics delivered as large molecules, small molecules, other combination modalities or new modalities. We have reshaped our portfolio and have increasingly focused our efforts on human genetics when possible to enhance the likelihood of success.

Since early 2021, efforts have been under way to control the COVID-19 pandemic. However, uncertainty remains as to the efficacy of these activities with respect to the ongoing trajectory of the pandemic. Challenges to vaccination efforts, new variants and other causes of virus spread may require governments to change restrictions and/or shutdown requirements in various geographies. As a result, we expect to see continued volatility for at least the duration of the pandemic as governments respond to current local conditions. With regard to our clinical trial activities, we are continuously monitoring COVID-19 infection rates, including changes from new variants; we are working to mitigate effects on future study enrollment in our clinical trials; and we are evaluating the impact in all relevant countries. We remain focused on supporting our active clinical sites in their providing care for patients and in our providing investigational drug supply.

For the years ended December 31, 2022, 2021 and 2020, our R&D expenses were \$4.4 billion, \$4.8 billion and \$4.2 billion, respectively.

We have major R&D centers in Thousand Oaks and San Francisco, California; Iceland; and the United Kingdom, as well as smaller research centers and development facilities globally. See Item 2. Properties.

Our clinical trial activities are conducted by both our internal staff and third-party contract clinical trial service providers. To increase the number and diversity of patients available for enrollment in our clinical trials, we have opened clinical sites and will continue opening clinical sites and enrolling patients in a number of geographic locations. See Government Regulation—Regulation in the United States—Clinical Development and Product Approval for a discussion of government regulation over clinical development. Also see Item 1A. Risk Factors—*We must conduct clinical trials in humans before we commercialize and sell any of our product candidates or existing products for new indications.*

Some of our competitors are actively engaged in R&D in areas in which we have products or in which we are developing product candidates or new indications for existing products. For example, we compete with other clinical trials for eligible patients, which may limit the number of available patients who meet the criteria for certain clinical trials. The competitive marketplace for our product candidates is greatly dependent on the timing of entry into the market. Early entry may have important advantages in gaining product acceptance, thereby contributing to a product's eventual success and profitability. Accordingly, we expect that in some cases, the relative speed with which we can develop products, complete clinical testing, receive regulatory approval and supply commercial quantities of a product to the market will be important to our competitive position.

In addition to product candidates and marketed products generated from our internal R&D efforts, we acquire companies, acquire and license certain product and R&D technology rights and establish R&D arrangements with third parties to enhance our strategic position within our industry by strengthening and diversifying our R&D capabilities, product pipeline and marketed product base. In pursuing these R&D arrangements and licensing or acquisition activities, we face competition from other pharmaceutical and biotechnology companies that also seek to license or acquire technologies, product candidates or marketed products from those entities performing the R&D.

The following table shows a selection of certain of our product candidates by phase of development in our therapeutic areas of focus as of January 31, 2023, unless otherwise indicated. Additional product candidate information can be found on our website at www.amgen.com. (The website address is not intended to function as a hyperlink, and the information contained on our website is not intended to be a part of this filing.) The information in this section does not include other, nonregistrational clinical trials that we may conduct for purposes other than for submission to regulatory agencies for their approval of a new product indication.

We may conduct nonregistrational clinical trials for various reasons, including to evaluate real-world outcomes or to collect additional safety information with regard to the use of products.

Molecule	Investigational indication
Phase 3 programs	
AMJEVITA	Interchangeability
Bemarituzumab	GEJ adenocarcinoma
BLINCYTO	Ph-negative B-cell precursor acute lymphoblastic leukemia
EVENITY	Male osteoporosis
KYPROLIS	Weekly dosing for relapsed multiple myeloma
LUMAKRAS/LUMYKRAS	Advanced colorectal cancer
Nplate	Chemotherapy-induced thrombocytopenia
Olpasiran	Cardiovascular disease
Otezla	Genital psoriasis; Palmoplantar pustulosis
Repatha	Cardiovascular disease
Rocatitinib	Atopic dermatitis
TEZSPIRE	Chronic rhinosinusitis with nasal polyps; Eosinophilic esophagitis; Severe asthma
ABP 654	Investigational biosimilar to STELARA (ustekinumab)
ABP 938	Investigational biosimilar to EYLEA (afibercept)
ABP 959	Investigational biosimilar to SOLIRIS (eculizumab)
Phase 2 programs	
Efavaleukin alfa	Systemic lupus erythematosus; Ulcerative colitis
LUMAKRAS/LUMYKRAS	NSCLC monotherapy; Other solid tumors with KRAS G12C mutations
Ordesekimab	Celiac disease
Rozibafusp alfa	Systemic lupus erythematosus
Tarlatamab	Small cell lung cancer
TEZSPIRE	Chronic obstructive pulmonary disease; Chronic spontaneous urticaria
AMG 133	Obesity
Phase 1 programs	
Acapamatab	Prostate cancer
Bemarituzumab	NSCLC and other tumors
Emirodatamab	Acute myeloid leukemia
Latikafusp	Solid tumors
Tarlatamab	Neuroendocrine prostate cancer
AMG 104	Asthma
AMG 119	Small-cell lung cancer
AMG 176	Hematologic malignancies
AMG 193	Solid tumors
AMG 199	Solid tumors
AMG 340	Prostate cancer
AMG 404	Solid tumors
AMG 509	Prostate cancer
AMG 609	Nonalcoholic steatohepatitis
AMG 650	Solid tumors
AMG 651	Colorectal cancer
AMG 786	Obesity
AMG 794	Solid tumors
AMG 994	Solid tumors

- Phase 3** Clinical trials investigate the short- and long-term safety and efficacy of our product candidates, compared to commonly used treatments, in a large number of patients who have the disease or condition under study.
- Phase 2** Clinical trials investigate side-effect profiles and efficacy of product candidates in a larger patient population than phase 1, but still relatively small, who have the disease or condition under study.
- Phase 1** Clinical trials investigate the safety and proper dose ranges of product candidates in a small number of human subjects.

Phase 3 Product Candidate Program Changes

As of February 8, 2022, we had 13 phase 3 programs. As of January 31, 2023, we have 18 phase 3 programs, as five programs initiated phase 3 studies. These changes are set forth in the following table.

Molecule	Investigational indication	Program change
LUMAKRAS/LUMYKRAS	Advanced colorectal cancer	Initiated phase 3 study
Olpasiran	Cardiovascular disease	Initiated phase 3 study
Otezla	Palmoplantar pustulosis	Initiated phase 3 study
Rocatinlimab	Atopic dermatitis	Initiated phase 3 study
TEZSPIRE	Eosinophilic esophagitis	Initiated phase 3 study

Phase 3 Product Candidate Patent Information

The following table describes our composition-of-matter patents that have been issued thus far for our product candidates in phase 3 development that have yet to be approved for any indication in the United States or the EU. Patents for products already approved for one or more indications in the United States or the EU but that are currently undergoing phase 3 clinical trials for additional indications have been previously described. See Marketing, Distribution and Selected Marketed Products—Patents.

Molecule	Territory	General subject matter	Estimated expiration*
Bemarituzumab	U.S.	Polypeptides	2029
	Europe	Polypeptides	2029
Olpasiran	U.S.	Compounds	2036
	Europe	Compounds	2036
Rocatinlimab	U.S.	Polypeptides	2027
	Europe	Polypeptides	2026

* Patent expiration estimates are based on issued patents, which may be challenged, invalidated or circumvented by competitors. The estimates do not include any term adjustments, extensions or supplemental protection certificates that may be obtained in the future and thereby extend these dates. Corresponding patent applications are pending in other jurisdictions. Additional patents may be filed or issued and may provide additional exclusivity for the product candidate or its use.

Phases 3 and 2 Program Descriptions

The following provides additional information about selected product candidates that have advanced into human clinical trials.

AMJEVITA

AMJEVITA is a biosimilar to HUMIRA, which is a monoclonal antibody that inhibits binding of tumor necrosis factor (TNF) alpha to cell surface TNF receptor / TNF-alpha.

Bemarituzumab

Bemarituzumab is a monoclonal antibody that inhibits fibroblast growth factor receptor 2b (FGFR2b). It is being investigated for the treatment of advanced gastroesophageal junction (GEJ) adenocarcinoma.

BLINCYTO

BLINCYTO is an anti-CD19 x anti-CD3 BiTE® molecule. It is being investigated in newly diagnosed adults aged 40 and older with Ph negative B-Cell precursor acute lymphoblastic leukemia (ALL).

Efavaleukin alfa

Efavaleukin alfa is an interleukin (IL)-2 mutein Fc fusion protein. It is being investigated for the treatment of systemic lupus erythematosus and ulcerative colitis.

EVENITY

EVENITY is a monoclonal antibody that inhibits the action of sclerostin. It is being evaluated as a treatment for male osteoporosis. EVENITY is being developed in collaboration with UCB.

KYPROLIS

KYPROLIS is a small molecule proteasome inhibitor. It is being investigated for weekly dosing in combinations with lenalidomide and dexamethasone for relapsed multiple myeloma.

LUMAKRAS/LUMYKRAS

LUMAKRAS/LUMYKRAS is a KRAS^{G12C} small molecule inhibitor. It is being investigated as treatment for a variety of solid tumors, including NSCLC, colorectal cancer and other solid tumor cancers.

In February 2022, we announced the presentation of efficacy and safety data from the CodeBreaK 100 Phase 1/2 trial in patients with KRAS G12C-mutated advanced pancreatic cancer who received LUMAKRAS/LUMYKRAS.

In April 2022, we announced the presentation of long-term efficacy and safety data from the CodeBreaK 100 Phase 1/2 trial in patients with KRAS G12C-mutated advanced NSCLC who received LUMAKRAS/LUMYKRAS.

In August 2022, we announced that the global Phase 3 CodeBreaK 200 trial evaluating once daily oral LUMAKRAS/LUMYKRAS met its primary endpoint of PFS, demonstrating statistical significance and superiority over standard-of-care chemotherapy, intravenous docetaxel. The first randomized clinical trial for a KRAS^{G12C} inhibitor assessed the efficacy and safety of LUMAKRAS/LUMYKRAS in 345 previously treated patients with KRAS G12C-mutated NSCLC who had received at minimum, prior platinum-based doublet chemotherapy and checkpoint inhibitor therapy.

In September 2022, we announced detailed results from the global Phase 3 CodeBreaK 200 trial, which showed once-daily oral LUMAKRAS/LUMYKRAS led to significantly superior PFS (primary endpoint) and a significantly higher ORR (a key secondary endpoint) in patients with KRAS G12C-mutated NSCLC, compared with intravenous chemotherapy, docetaxel. We also announced updated data from its Phase 1b CodeBreaK 101 study, one of the most comprehensive global clinical development programs in patients with KRAS G12C-mutated colorectal cancer. These data show that combining LUMAKRAS/LUMYKRAS with Vectibix, Amgen's monoclonal anti-epidermal growth factor receptor (anti-EGFR) antibody, demonstrated encouraging efficacy and safety.

Nplate

Nplate is a thrombopoietin receptor agonist (TPO-RA). It is being investigated for the treatment of chemotherapy-induced thrombocytopenia (CIT).

Olpasiran

Olpasiran is an siRNA that lowers Lp(a). It is being investigated in phase 3 for the treatment of ASCVD.

In November 2022, we announced positive end-of-treatment data from the Phase 2 OCEAN(a)-DOSE study evaluating olpasiran in adult patients with Lp(a) levels over 150 nmol/L and a history of ASCVD. The study was designed to assess safety, tolerability and optimal dose of olpasiran in adults with established ASCVD to reduce Lp(a).

Ordesekimab

Ordesekimab is a monoclonal antibody that inhibits the action of IL-15. It is being investigated for the treatment of celiac disease and is being developed in collaboration with Provention Bio, Inc.

Otezla

Otezla is a small molecule that inhibits PDE4. It is being investigated in phase 3 studies for the treatment of patients with moderate-to-severe genital psoriasis. It is also being investigated in a phase 2 study for treatment of palmoplantar pustulosis.

In September 2022, we announced results from two significant Phase 3 clinical studies of oral Otezla, demonstrating efficacy in pediatric patients with moderate-to-severe plaque psoriasis and in adults with moderate-to-severe genital psoriasis.

Repatha

Repatha is a human monoclonal antibody that inhibits PCSK9. It is being investigated as a treatment for ASCVD in high-risk patients with high LDL-C without prior heart attack or stroke.

In 2022, we presented results from the Repatha OLE studies to the Phase 3 FOURIER CV outcomes trial. The studies were designed to assess the long-term safety and tolerability of Repatha in adults with clinically evident ASCVD.

Rocatinlimab

Rocatinlimab is a monoclonal antibody that inhibits OX-40. It is being investigated for the treatment of moderate-to-severe atopic dermatitis. Rocatinlimab is being developed in collaboration with KKC.

Rozibafusp alfa

Rozibafusp alfa is a novel antibody-peptide conjugate that simultaneously blocks the B-cell activating factor (BAFF) and inducible costimulatory ligand (ICOSL) activity. It is being investigated as a treatment for systemic lupus erythematosus.

Tarlatamab

Tarlatamab is a half-life extended (HLE) anti- DLL3 x anti-CD3 BiTE® molecule. It is being investigated for the treatment of small cell lung cancer.

TEZSPIRE

TEZSPIRE is a human monoclonal antibody that inhibits the action of thymic stromal lymphopoietin. It is being evaluated in phase 3 studies as a treatment for severe asthma and chronic rhinosinusitis with nasal polyps. It is also being investigated in phase 2 studies as a treatment for chronic obstructive pulmonary disease and chronic spontaneous urticaria. TEZSPIRE is being developed jointly in collaboration with AstraZeneca.

In February 2022, we announced results from a pooled post hoc analysis of the pivotal NAVIGATOR Phase 3 and PATHWAY Phase 2b trials that showed TEZSPIRE demonstrated reductions in the annualized asthma exacerbation rate (AAER) across biomarker subgroups of patients with severe asthma.

A Phase 3 study of TEZSPIRE in patients with eosinophilic esophagitis has started.

AMG 133

AMG 133 is a gastric inhibitory polypeptide receptor (GIPR) antagonist and glucagon-like peptide 1 (GLP-1) receptor agonist. It is being investigated for the treatment of obesity.

ABP 654

ABP 654, a biosimilar candidate to STELARA, is a monoclonal antibody that inhibits IL-12 and IL-23. It is being investigated in a phase 3 study for biosimilarity to STELARA. The reference-product primary conditions are psoriasis, psoriatic arthritis and Crohn's disease.

In April 2022, we announced preliminary results from a Phase 3 study evaluating the efficacy and safety of ABP 654 compared to STELARA in adult patients with moderate-to-severe plaque psoriasis. The study met the primary efficacy endpoint, demonstrating no clinically meaningful differences between ABP 654 and STELARA.

ABP 938

ABP 938, a biosimilar candidate to EYLEA, is a vascular endothelial growth factor receptor (VEGFR) Fc fusion protein. It is being investigated in a phase 3 study for biosimilarity to EYLEA. The reference-product primary conditions are wet age-related macular degeneration (AMD), macular edema following retinal vein occlusion, diabetic macular edema and diabetic retinopathy.

ABP 959

ABP 959, a biosimilar candidate to SOLIRIS, is a monoclonal antibody that specifically binds to the complement protein C5. It is being investigated in a phase 3 study for biosimilarity to SOLIRIS. The reference-product primary conditions are PNH and atypical hemolytic uremic syndrome (aHUS).

In August 2022, we announced positive top-line results from the DAHLIA study, a randomized, double-blind, active-controlled, two-period crossover Phase 3 study evaluating the efficacy and safety of ABP 959, a biosimilar candidate to SOLIRIS, compared with SOLIRIS in adult patients with PNH.

Business Relationships

From time to time, we enter into business relationships, including joint ventures and collaborative arrangements, for the R&D, manufacture and/or commercialization of products and/or product candidates. In addition, we acquire product and R&D technology rights and establish R&D collaborations with third parties to enhance our strategic position within our industry by strengthening and diversifying our R&D capabilities, product pipeline and marketed-product base. These arrangements generally provide for nonrefundable upfront license fees, development and commercial-performance milestone payments, cost sharing, royalties and/or profit sharing. The activities under these collaboration agreements are performed with no guarantee of either technological or commercial success, and each is unique in nature.

Trade secret protection for our unpatented confidential and proprietary information is important to us. To protect our trade secrets, we generally require counterparties to execute confidentiality agreements upon commencement of a business relationship with us. However, others could either develop independently the same or similar information or unlawfully obtain access to our information.

BeiGene, Ltd.

In January 2020, we acquired an equity stake in BeiGene for approximately \$2.8 billion in cash as part of a collaboration to expand our oncology presence in China. For additional information regarding our equity investment in BeiGene, see Part IV—Note 9, Investments, to the Consolidated Financial Statements. Under the collaboration, BeiGene began selling XGEVA in 2020, BLINCYTO in 2021 and KYPROLIS in 2022 in China, and Amgen shares profits and losses equally during the initial product-specific commercialization periods; thereafter, product rights may revert to Amgen, and Amgen will pay royalties to BeiGene on sales in China of such products for a specified period. Amgen manufactures and supplies the collaboration products to BeiGene.

In addition, we jointly develop a portion of our oncology portfolio with BeiGene, which shares in global R&D costs by providing cash and development services of up to \$1.25 billion. Upon regulatory approval, BeiGene will assume commercialization rights in China for a specified period, and Amgen and BeiGene will share profits equally until certain of these product rights revert to Amgen. Upon return of the product rights, Amgen will pay royalties to BeiGene on sales in China for a specified period. For product sales outside China, Amgen will also pay royalties to BeiGene.

AstraZeneca plc

We are in a collaboration with AstraZeneca for the development and commercialization of TEZSPIRE. Under our collaboration, both companies share global costs, profits and losses equally after payment by AstraZeneca of a mid-single-digit royalty to Amgen. AstraZeneca leads global development, and both Amgen and AstraZeneca jointly commercialize TEZSPIRE in North America. In North America, Amgen, as the principal, recognizes product sales of TEZSPIRE in the United States, and AstraZeneca, as the principal, recognizes product sales of TEZSPIRE in Canada. AstraZeneca leads commercialization for TEZSPIRE outside North America. Amgen manufactures and supplies TEZSPIRE worldwide.

UCB

We are in a collaboration with UCB for the development and commercialization of EVENITY. Under our collaboration, UCB has rights to lead commercialization for EVENITY in most countries in Europe and China (excluding Hong Kong). Amgen, as the principal, leads commercialization for EVENITY and recognizes product sales in all other territories, including the United States. Global development costs and commercialization profits and losses related to the collaboration are shared equally. Amgen manufactures and supplies EVENITY worldwide.

For financial information about our significant collaborative arrangements, see Part IV—Note 8, Collaborations, to the Consolidated Financial Statements.

Human Capital Resources

Overview

Amgen's approach to human capital resource management starts with our mission to serve patients. We strive to serve patients by transforming the promise of science and biotechnology into therapies that have the power to restore health or save lives. The way we approach our business is guided by our Amgen Values:

Amgen Values			
Be Science-Based	Compete Intensely and Win	Create Value for Patients, Staff and Stockholders	Be Ethical
Trust and Respect Each Other	Ensure Quality	Work in Teams	Collaborate, Communicate and Be Accountable

Our staff are also guided by the Company's Code of Conduct, which is designed to help every person who does business on our behalf worldwide (including all staff, management, consultants, contract workers and temporary workers) to understand what is expected of them.

Our industry exists in a complex regulatory and reimbursement environment. The unique demands of our industry, together with the challenges of running an enterprise focused on the discovery, development, manufacture and commercialization of innovative medicines, requires a highly engaged and committed workforce.

As of December 31, 2022, Amgen had approximately 25,200 staff members in over 50 countries, and we have had relatively low global turnover rates compared to available industry information. We also supplement our workforce with independent contractors, contingent workers and temporary workers, as needed. Outside of the United States, some of our employees are represented by unions or works councils. We consider our staff relations to be good, supported by regular assessments of staff engagement surveys on a wide range of topics (including flexible work environments, diversity, inclusion and belonging, and maintaining a culture of compliance). We discuss the results of these surveys with our workforce and our Board of Directors. Reflecting our staff members' desire to retain flexibility to work virtually as COVID-19 related restrictions eased and sites became more accessible, we implemented a flexible workspace initiative that enables many employees to work together with their manager to determine the location that best enables their work at hand, supporting virtual work as well as coming on site.

Compensation, Benefits and Development

Our approach to employee compensation and benefits is designed to deliver cash, equity and benefit programs that are competitive with those offered by leading companies in the biotechnology and pharmaceutical industries, and to attract, motivate and retain talent with a focus on encouraging performance, promoting accountability and adherence to Company values and alignment with the interests of the Company's shareholders.

Our base pay program aims to compensate staff members relative to the value of the contributions of their role, which takes into account the skills, knowledge and abilities required to perform each position, as well as the experience brought to the job. We also provide annual incentive programs to reward our staff in alignment with achievement of Company-wide goals that are established annually and designed to drive aspects of our strategic priorities that support and advance our strategy across our Company. The majority of our staff members are also eligible for the grant of equity awards under our long-term incentive program that are designed to align the interests of our staff members with those of our shareholders. For senior level staff, a significant proportion of equity award value is based on company performance.

All staff also participate in a regular performance measurement process through which staff receive performance and development feedback, and pay is aligned to performance. The Amgen Values and leadership behaviors are an integral part of the performance assessments of our staff members, and these evaluations serve as an important information tool and basis for compensation decisions.

To support the development of our staff, we provide a variety of programs, including leadership development programs, classroom-based and virtual instructor-led courses, and self-paced learning options as well as mentoring, networking and coaching opportunities.

Our benefit programs are also generally broad-based, promote health and overall well-being and emphasize saving for retirement. All regular U.S. staff members are eligible to participate in the same core health and welfare and retirement savings plans. Other U.S. employee benefits include medical plans, dental plans, adoption assistance, paid parental leave programs, access to childcare, employee assistance programs, employee stock purchase plan, flexible spending accounts, life, long-term care and business travel accident insurance, short and long-term disability benefits, wellness benefits and work-life resources and referrals. Comparable programs and benefits are available globally, with the same health and well-being intent, consistent with statutory requirements.

Our Compensation and Management Development Committee provides oversight of our compensation plans, policies and programs.

Safety and Wellness and Our Response to the Evolving COVID-19 Pandemic

Creating a safe and healthy workplace for our staff is an important priority at Amgen. Our goal is to have a world class safety record through safety leadership, risk management practices and integrating safety throughout our business processes. To foster our safety culture, we implement a comprehensive safety program and reinforce desired safety behaviors, driving to understand and mitigate the root cause of safety incidents and manage and control variability. We use leading indicators to assess the effectiveness of our safety programs and make course corrections as needed. Additionally, we perform formal executive management review of functional safety performance for Operations, Global Commercial Operations and R&D on a quarterly basis with a focus on identifying early signals and taking action to drive continuous improvement.

In 2022, in response to the evolving requirements of the COVID-19 pandemic, to continue to maintain staff safety while enabling greater flexibility for Amgen sites and enhance efficiencies, we began shifting to a decentralized model for COVID-19 decision-making, empowering our local teams to adjust COVID-19 safety guidance for their individual sites or regions (such as the use of masks and other personal protective equipment, occupancy limits, and temperature check and testing, based on local regulations and risk assessments of local epidemiology criteria). We will continue to learn and adapt this approach as needed for the future.

Our Corporate Responsibility and Compliance Committee provides general oversight of our safety programs and initiatives, while our Board of Directors, as a whole, has overseen our specific responses to the COVID-19 pandemic.

Diversity, Inclusion and Belonging

We believe that a diverse and inclusive culture fosters innovation, which supports our ability to serve patients. Further, we also believe our global presence is strengthened by having a workforce that reflects the diversity of the patients we serve. It is with these beliefs in mind that we have continued to strengthen and grow our culture of diversity, inclusion and belonging. Our Diversity, Inclusion and Belonging Council is led by our executive leadership and is responsible for overseeing our strategy to further a diverse and inclusive workplace. We offer a variety of diversity, inclusion and belonging training and learning programs and have continued to launch enhanced tools and resources that guide staff on the role they play in creating diversity, inclusion and belonging throughout the organization. Further, we continue to incorporate diversity, inclusion and belonging considerations into our business operations, including clinical trial design, procurement and site selection.

Each of Amgen's Employee Resource Groups is sponsored by senior executive leadership. Our Employee Resource Groups promote leadership, development and belonging for members while also working to impact our business by leading business initiatives and providing diverse perspectives and experience. In 2022, Amgen launched its newest global Employee Resource Group called Recognition of Indigenous Peoples, Values and Environmental Resources, or RIVER, to share and continue the traditions, values and culture of Indigenous people.

Global Employee Resource Groups	
Amgen Asian Association (AAA)	Amgen Black Employee Network (ABEN)
Ability Bettered through Leadership and Education (ABLE), a resource group for those with disabilities, visible and invisible, including those conditions also experienced by the patients that Amgen serves	
Amgen Early Career Professionals (AECP)	Amgen International Network (AIN)
Amgen Latin Employee Network (ALEN)	Amgen LGBTQ and Allies Network (PRIDE)
Amgen South Asian Network (ASAN)	Amgen Veterans Employees Network (AVEN)
Recognition of Indigenous Peoples, Values and Environmental Resources (RIVER)	
Women Empowered to be Exceptional (WE2)	Women in STEM Enrichment (WISE)

Building on the successful adoption of our 2021 ESG goal under our annual incentive plan, we are driving leadership ownership and accountability for diversity, inclusion and belonging deeper in the organization with an enhanced ESG goal for 2022 designed to advance our progress on key ESG initiatives, including by expanding the number of leaders accountable for establishing, documenting and executing on diversity, inclusion and belonging action plans.

As of December 31, 2022, women comprised over 52% of our global workforce, and ethnic minorities accounted for approximately 52% of our U.S. and Puerto Rico-based workforce. In areas of underrepresentation, we develop plans with a goal of bringing our representation in line with availability. We engage in outreach efforts to attract, retain and advance more women and minorities in our workforce. For example, we have worked to enhance our diverse candidate recruiting pool by developing relationships with organizations that can serve as a source of diverse candidates, such as the National Black MBA Association and Society of Women in Engineering, as well as historically black colleges and universities. In 2021, a fellowship program between Amgen and Howard University was established to expand the talent pool and diversify ranks in research and development.

Additionally, we are a founding member of OneTen, a coalition of the world's largest, best-known companies, that aims to hire one million Black Americans (with a specific focus on those without four-year college degrees) into good-paying, family-sustaining jobs over the next ten years. Amgen is taking a leadership role in the greater Los Angeles region, where the company is headquartered, to help expand the coalition of OneTen organizations that share our desire to offer opportunities to diverse talent, and we developed an in-house apprenticeship program in support of our OneTen commitment. Other examples of actions that we are taking in this area include increased investment and participation in the Healthcare Businesswomen's Association (a global organization focused on development and business networking for women in healthcare) and the UCLA Anderson School of Management leadership advancement programs for women and underrepresented talent.

Our 2021 Consolidated EEO-1 Report can be viewed on our website at www.amgen.com (the website address is not intended to function as a hyperlink, and the information contained in our website is not intended to be a part of this filing).

For 2022, our Compensation and Management Development Committee oversaw our labor and employment policies, programs and initiatives, including those relating to diversity, inclusion and belonging.

Information about Our Executive Officers

The executive officers of the Company as of February 9, 2023, are set forth below.

Mr. Robert A. Bradway, age 60, has served as a director of the Company since 2011 and Chairman of the Board of Directors since 2013. Mr. Bradway has been the Company's President since 2010 and Chief Executive Officer since 2012. From 2010 to 2012, Mr. Bradway served as the Company's President and Chief Operating Officer. Mr. Bradway joined the Company in 2006 as Vice President, Operations Strategy, and served as Executive Vice President and Chief Financial Officer from 2007 to 2010. Prior to joining the Company, Mr. Bradway was a Managing Director at Morgan Stanley in London, where, beginning in 2001, he had responsibility for the firm's banking department and corporate finance activities in Europe. Mr. Bradway has been a director of The Boeing Company, an aerospace company and manufacturer of commercial airplanes, defense, space and securities systems, since 2016. He has served on the board of trustees of the University of Southern California since 2014. From 2011 to 2017, Mr. Bradway was a director of Norfolk Southern Corporation, a transportation company.

Mr. Murdo Gordon, age 56, became Executive Vice President, Global Commercial Operations, in 2018. Prior to joining the Company, Mr. Gordon was Chief Commercial Officer at Bristol Myers Squibb Company (BMS), a pharmaceutical company, from 2016 to 2018. Mr. Gordon served as Head of Worldwide Markets at BMS from 2015 to 2016. Prior to this, Mr. Gordon served in a variety of leadership roles at BMS for more than 25 years.

Mr. Jonathan P. Graham, age 62, became Executive Vice President, General Counsel and Secretary in 2019. Mr. Graham joined the Company in 2015. From 2015 to 2019, Mr. Graham was Senior Vice President, General Counsel and Secretary. Prior to joining Amgen, from 2006 to 2015, Mr. Graham was Senior Vice President and General Counsel at Danaher Corporation. From 2004 to 2006, Mr. Graham was Vice President, Litigation and Legal Policy, at General Electric Company (GE). Prior to GE, Mr. Graham was a partner at Williams & Connolly LLP.

Mr. Peter H. Griffith, age 64, became Executive Vice President and Chief Financial Officer in 2020. Mr. Griffith joined the Company in 2019 as Executive Vice President, Finance. Prior to joining Amgen, Mr. Griffith was President of Sherwood Canyon Group, LLC, a private equity firm. From 1997 to 2019, Mr. Griffith was a partner at EY, an accounting and professional services firm, and served in a variety of senior leadership roles, with his last position being Global Vice Chair, Corporate Development. Prior to EY, Mr. Griffith was a Managing Director and head of the investment banking division of Wedbush Securities Inc.

Ms. Nancy A. Grygiel, age 55, became Senior Vice President and Chief Compliance Officer in 2020. Ms. Grygiel joined the Company in 2015. From 2016 to 2020, Ms. Grygiel was Vice President, Compliance. Prior to joining Amgen, from 2011 to 2015, Ms. Grygiel served as Vice President, Compliance, Corporate & International, at Allergan, Inc. (Allergan). Prior to Allergan, Ms. Grygiel held several management positions at Mylan Pharmaceuticals, Inc.

Ms. Rachna Khosla, age 50, became Senior Vice President, Business Development, in 2021. Ms. Khosla joined the Company in 2013 as Corporate Development Director. From 2018 to 2021, Ms. Khosla was Vice President, Business Development, and from 2016 to 2018, was Executive Director, Business Development. Prior to joining the Company, Ms. Khosla was a Director at Lazard Ltd. (Lazard) responsible for healthcare mergers and acquisitions. Prior to Lazard, Ms. Khosla had various roles at Credit Suisse Group AG, Sanofi Aventis, Aventis Capital, J.P. Morgan Chase & Co., and Salomon Brothers, Inc.

Mr. Derek Miller, age 50, became Senior Vice President, Human Resources, in 2022. Mr. Miller joined the Company in 2003 and has held human resources leadership roles supporting each of the Company's major business functions. From 2020 to 2022, Mr. Miller was Vice President, Global Total Rewards, and from 2018 to 2020, was Vice President, Human Resources. From 2015 to 2018, Mr. Miller was an Executive Director, Human Resources. Prior to 2015, Mr. Miller served as a Senior Manager in the Human Resources organization, before his promotion to Director, Human Resources, and then to Strategy Director.

Dr. David M. Reese, age 60, became Executive Vice President, R&D, in 2018. Dr. Reese joined the Company in 2005 and has held leadership roles in development, medical sciences and discovery research. Dr. Reese was Senior Vice President, Translational Sciences and Oncology, from 2017 to 2018 and Senior Vice President, Translational Sciences, from 2015 to 2017. Prior to joining Amgen, Dr. Reese was director of Clinical Research at the Breast Cancer International Research Group from 2001 to 2003 and a cofounder, president and chief medical officer of Translational Oncology Research International, a not-for-profit academic clinical research organization, from 2003 to 2005. Dr. Reese previously served on the faculty at the University of California, Los Angeles and the University of California, San Francisco.

Mr. Esteban Santos, age 55, became Executive Vice President, Operations, in 2016. Mr. Santos joined the Company in 2007 as Executive Director, Manufacturing Technologies. From 2013 to 2016, Mr. Santos was Senior Vice President, Manufacturing. From 2008 to 2013, Mr. Santos held a number of Vice President roles at the Company in engineering, manufacturing, site operations and drug product. Prior to joining the Company, Mr. Santos served as Site General Manager of Johnson & Johnson's (J&J) Cordis operation in Puerto Rico. Prior to J&J, Mr. Santos held several management positions in GE's industrial and transportation businesses.

Geographic Area Financial Information

For financial information concerning the geographic areas in which we operate, see Part IV—Note 3, Revenues, and Note 11, Property, plant and equipment, to the Consolidated Financial Statements.

Investor Information

Financial and other information about us is available on our website at www.amgen.com. We make available on our website, free of charge, copies of our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, current reports on Form 8-K and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after we electronically file such material with or furnish it to the U.S. Securities and Exchange Commission (SEC). In addition, we have previously filed registration statements and other documents with the SEC. Any document we file may be inspected without charge at the SEC's website at www.sec.gov. (These website addresses are not intended to function as hyperlinks, and the information contained in our website and in the SEC's website is not intended to be a part of this filing.)

Item 1A. RISK FACTORS

This report and other documents we file with the SEC contain forward-looking statements that are based on current expectations, estimates, forecasts and projections about us, our future performance, our business, our beliefs and our management's assumptions. These statements are not guarantees of future performance and involve certain risks, uncertainties and assumptions that are difficult to predict. You should carefully consider the risks and uncertainties our business faces. The risks described below are not the only ones we face. Our business is also subject to the risks that affect many other companies, such as employment relations, general economic conditions, geopolitical events and international operations. Further, additional risks not currently known to us or that we currently believe are immaterial may in the future materially and adversely affect our business, operations, liquidity and stock price.

SUMMARY

Risks Related to Economic Conditions and Operating a Global Business, Including During the COVID-19 Pandemic

- The COVID-19 pandemic, and the public and governmental effort to mitigate against the spread of the disease, have had, and are expected to continue to have, an adverse effect, and may have a material adverse effect, on our clinical trials, operations, manufacturing, supply chains, distribution systems, product development, product sales, business and results of operations.
- A breakdown of our information technology systems, cyberattack or information security breach could compromise the confidentiality, integrity and availability of our information technology systems, network-connected control systems and/or our data, interrupt the operation of our business and/or affect our reputation.
- Our sales and operations are subject to the risks of doing business internationally, including in emerging markets.

Risks Related to Government Regulations and Third-Party Policies

- Our sales depend on coverage and reimbursement from government and commercial third-party payers, and pricing and reimbursement pressures have affected, and are likely to continue to affect, our profitability.
- Guidelines and recommendations published by various organizations can reduce the use of our products.
- The adoption and interpretation of new tax legislation or exposure to additional tax liabilities could affect our profitability.
- Our business may be affected by litigation and government investigations.

Risks Related to Competition

- Our products face substantial competition and our product candidates are also likely to face substantial competition.

- Our intellectual property positions may be challenged, invalidated or circumvented, or we may fail to prevail in current and future intellectual property litigation.
- We currently face competition from biosimilars and generics and expect to face increasing competition from biosimilars and generics in the future.
- Concentration of sales at certain of our wholesaler distributors and consolidation of private payers may negatively affect our business.

Risks Related to Research and Development

- We may not be able to develop commercial products despite significant investments in R&D.
- We must conduct clinical trials in humans before we commercialize and sell any of our product candidates or existing products for new indications.
- Our current products and products in development cannot be sold without regulatory approval.
- Some of our products are used with drug delivery or companion diagnostic devices that have their own regulatory, manufacturing and other risks.
- Some of our pharmaceutical pipeline and our commercial product sales rely on collaborations with third parties, which may adversely affect the development and sales of our products.
- Our efforts to collaborate with or acquire other companies, products, or technology, and to integrate the operations of companies or to support the products or technology we have acquired, may not be successful, and may result in unanticipated costs, delays or failures to realize the benefits of the transactions.

Risks Related to Operations

- We perform a substantial majority of our commercial manufacturing activities at our facility in the U.S. territory of Puerto Rico and a substantial majority of our clinical manufacturing activities at our facility in Thousand Oaks, California; significant disruptions or production failures at these facilities could significantly impair our ability to supply our products or continue our clinical trials.
- We rely on third-party suppliers for certain of our raw materials, medical devices and components.
- Manufacturing difficulties, disruptions or delays could limit supply of our products and limit our product sales.
- Our business and operations may be negatively affected by the failure, or perceived failure, of achieving our environmental, social and governance objectives.
- The effects of global climate change and related natural disasters could negatively affect our business and operations.

General Risk Factors

- Global economic conditions may negatively affect us and may magnify certain risks that affect our business.
- Our stock price is volatile.
- We may not be able to access the capital and credit markets on terms that are favorable to us, or at all.

RISKS RELATED TO ECONOMIC CONDITIONS AND OPERATING A GLOBAL BUSINESS, INCLUDING DURING THE COVID-19 PANDEMIC

The COVID-19 pandemic, and the public and governmental effort to mitigate against the spread of the disease, have had, and are expected to continue to have, an adverse effect, and may have a material adverse effect, on our clinical trials, operations, manufacturing, supply chains, distribution systems, product development, product sales, business and results of operations.

The novel coronavirus identified in late 2019, SARS-CoV-2, which causes the disease known as COVID-19, is an ongoing global pandemic that has resulted in public and governmental efforts to contain or slow the spread of the disease, including widespread shelter-in-place orders, social distancing interventions, quarantines, travel restrictions and various forms of operational shutdowns. The COVID-19 pandemic and the resulting measures implemented in response to the pandemic are adversely affecting, and are expected to continue to adversely affect, our business (including our R&D, clinical trials, operations, manufacturing, supply chains, distribution systems, product development and sales activities), the business activities

of our suppliers, customers, third-party payers and our patients. See *Our current products and products in development cannot be sold without regulatory approval*; see also *We must conduct clinical trials in humans before we commercialize and sell any of our product candidates or existing products for new indications*. Due to the pandemic and these measures and their effects, we have experienced, and expect to continue to experience, unpredictable reductions in demand for certain of our products, exacerbated by COVID-19 surges resulting in repeated shutdowns and/or disruptions in certain geographies.

Federal, state and local, and international governmental policies and initiatives designed to reduce the transmission of COVID-19 also have resulted in the cancellation or delay of diagnostic, elective, specialty and other procedures and appointments to avoid non-essential patient exposure to medical environments and potential infection with COVID-19 and to focus limited resources and personnel capacity toward the treatment of COVID-19. For example, an NPR/Harvard poll in 2021 found that, with hospitals crowded from COVID-19, one in five U.S. households had to delay care for serious illnesses. These measures and challenges will likely continue to varying degrees and have significantly reduced patient access to, and administration of, certain of our drugs. For example, Prolia requires administration by a healthcare provider in doctors' offices or other healthcare settings that are affected by COVID-19. The U.S. label for Prolia instructs healthcare professionals who discontinue Prolia to transition the patient to an alternative antiresorptive, including oral treatments that do not require administration by a healthcare provider. Further, as a result of COVID-19, oncology patients, in consultation with their doctors, may be selecting therapies that are less immunosuppressive or therapies that do not require administration in a hospital setting, potentially adversely affecting sales of certain of our products. Also, new patients have been, and are expected to continue to be, less likely to be diagnosed and/or to start therapeutics during the pandemic, and these effects, together with the lower treatment rates during the pandemic, have had, and are expected to continue to have, a cumulative negative effect on the commercial performance of our business. The decrease in diagnoses over the course of the pandemic has suppressed the volume of new patients starting treatment, which we expect to continue to impact our business. As COVID-19 infection rates ebb and flow, we anticipate there could be periodic backlogs of patients seeking appointments with physicians relating to a variety of medical conditions, and as a result, patients seeking treatment with certain of our products may have to navigate lower provider capacity, and this lower provider capacity could have a continued adverse effect on our sales. Further, the effects of the COVID-19 pandemic may result in long-term shifts in preferences among healthcare professionals and patients toward treatments that do not require administration by healthcare professionals or visits to medical facilities.

As the pandemic continues, and if conditions worsen or if the duration of the pandemic extends significantly, we expect to experience additional adverse effects on our development, operational and commercial activities, customer purchases and our collections of accounts receivable. It remains uncertain the degree to which these adverse effects would impact our future operational and commercial activities, customer purchases and our collections as conditions begin to improve. There was a resurgence in COVID-19 infections in numerous jurisdictions in 2022, resulting in the reinstatement of stricter restrictions and shutdowns in a number of jurisdictions, including in the United States, Europe and Asia Pacific regions. It is expected that the pandemic will continue to ebb and flow, with different jurisdictions having higher levels of infections than others over the course of the pandemic. New variants of the SARS-CoV-2 virus have emerged, including the delta and omicron variants and its subvariants, and have been shown to be present in many geographies and appear to spread more easily and quickly than other variants. Further, although some studies suggest that antibodies generated with currently authorized vaccines may be effective against these variants, it remains uncertain whether currently available vaccines will retain their efficacy against future variants of the virus. Further, even while vaccine booster shots are available for certain patients, persistent vaccine hesitancy may result in under-vaccinated populations which may prolong the duration of the COVID-19 pandemic and continue to disrupt the availability of healthcare services to the patients we serve. Jurisdictions may implement, continue or reinstate border closures, impose or reimpose prolonged quarantines and further restrict travel and business activity. These measures could significantly affect our ability to support our operations and customers and the ability of our employees to get to their workplaces to discover, study, develop and produce our product candidates and products, disrupt the movement of our products through the supply chain, and further prevent or discourage patients from participating in our clinical trials, seeking healthcare services and the administration of certain of our products. The increased availability of remote working arrangements in response to the COVID-19 pandemic has expanded the pool of companies that can compete for our employees and employment candidates. Further, in connection with the global outbreak and spread of COVID-19 and in an effort to increase the wider availability of needed medical products, we or our suppliers may elect to, or governments may require us or our suppliers to, allocate manufacturing capacity (for example pursuant to the U.S. Defense Production Act) in a way that adversely affects our regular operations, customer relationships and financial results. In the United States, on January 21, 2021, President Biden issued an Executive Order instructing federal agencies to use all available legal authorities, including the Defense Production Act, to improve current and future pandemic response and biological threat preparedness. The rapid reallocation of resources for the treatment and prevention of COVID-19 (including the production of COVID-19 vaccines or related therapies, such as our agreement to contribute to the production of COVID-19 antibody therapies for Lilly) and/or disruptions and shortages in the global supply chain caused by the pandemic, could also result in increased competition for, or reduced availability of, materials or components used in the development, manufacturing, distribution or administration of our products. For example, during the second quarter of 2021, an industry-wide shortage of certain lab kit supplies necessary for some activities that support our

clinical trials has developed that we are actively monitoring and managing. We have also experienced challenges in obtaining certain COVID-19-related supplies, including COVID-19 antigen rapid test kits for our staff, as a result of high demand and limited supplies during the omicron variant surge. In addition, unpredictable increases in demand for certain of our products could exceed our capacity to meet such demand, which could adversely affect our financial results and customer relationships.

The COVID-19 pandemic and the volatile global economic conditions stemming from it may precipitate or amplify the other risks described in this “Risk Factors” section, which could materially adversely affect our business, operations and financial condition and results. For example, if a natural disaster or other potentially disruptive event occurs concurrently with the COVID-19 pandemic, such disaster or event could deplete our inventory levels and we could experience a disruption to our manufacturing or ability to supply our products.

The rapid development and fluidity of the pandemic precludes any prediction as to the ultimate effect of COVID-19 on us. The duration of the measures being taken by the authorities to mitigate against the spread of COVID-19 (including the distribution and/or availability of vaccines and boosters), and the extent to which such measures are effective, if at all, remain highly uncertain. The magnitude and degree of COVID-19’s adverse effect on our business (including our product development, product sales, operating results and resulting cash flows) and financial condition will be driven by the severity and duration of the pandemic, the pandemic’s effect on the United States and global economies and the timing, scope and effectiveness of federal, state, local and international governmental responses to the pandemic. If mitigation of the pandemic continues to require further shelter-in-place and shutdown orders and/or restrictions on individual and/or group conduct, any adverse effects of the COVID-19 pandemic will likely grow and could be enduring, and our business and financial position could be materially adversely affected.

A breakdown of our information technology systems, cyberattack or information security breach could compromise the confidentiality, integrity and availability of our information technology systems, network-connected control systems and/or our data, interrupt the operation of our business and/or affect our reputation.

To achieve our business objectives, we rely on sophisticated information technology systems, including software, mobile applications, cloud services and network-connected control systems, some of which are managed, hosted, provided or serviced by third parties. Internal or external events that compromise the confidentiality, integrity and availability of our systems and data may significantly interrupt the operation of our business, result in significant costs and/or adversely affect our reputation.

Our information technology systems are highly integrated into our business, including our R&D efforts, our clinical and commercial manufacturing processes and our product sales and distribution processes. Further, as the majority of our employees work remotely for some portion of their jobs in our hybrid work environment, our reliance on our and third-party information technology systems has increased substantially and is expected to continue to increase. The complexity and interconnected nature of our systems makes them potentially vulnerable to breakdown or other service interruptions. Upgrades or changes to our systems or the software that we use may result in the introduction of new cybersecurity vulnerabilities and risks. In 2022 we identified a number of security vulnerabilities introduced into our information systems as a result of flaws that we subsequently identified in software that we purchased and installed, and these flaws required that we apply emergency patches to certain of our systems. While we did not experience any significant adverse effects as a result of these vulnerabilities, there can be no assurance that we will timely identify and address any future vulnerabilities. Our systems are also subject to frequent perimeter network reconnaissance and scanning, phishing and other cyberattacks. As the cyber-threat landscape evolves, these attacks are growing in frequency, sophistication and intensity, and are becoming increasingly difficult to detect. Such attacks could include the use of harmful and virulent malware, including ransomware or other denials of service, that can be deployed through various means, including the software supply chain, e-mail, malicious websites and/or the use of social engineering. We have also experienced denial of service attacks against our network, and although such attacks did not succeed, there can be no assurance that our efforts to guard against the wide and growing variety of potential attack techniques will be successful in the future. Attacks such as those experienced by governmental entities (including those that approve and/or regulate our products, such as the EMA) and other multi-national companies, including some of our peers, could leave us unable to utilize key business systems or access or protect important data and could have a material adverse effect on our ability to operate our business, including developing, gaining regulatory approval for, manufacturing, selling and/or distributing our products. For example, in 2017, a pharmaceutical company experienced a cyberattack involving virulent malware that significantly disrupted its operations, including its research and sales operations and the production of some of its medicines and vaccines. As a result of the cyberattack, its orders and sales for certain products in certain markets were negatively affected. In late 2020, SolarWinds Corporation, a leading provider of software for monitoring and managing information technology infrastructure, disclosed that it had suffered a cybersecurity incident whereby attackers had inserted malicious code into legitimate software updates for its products that were installed by myriad private and government customers, enabling the attackers to access a backdoor to such systems. In 2022, Okta, Inc., a provider of software that helps companies manage user authentication, disclosed that several hundred of its corporate customers were vulnerable to a security breach that allowed

attackers to access Okta's internal network. Although this breach did not have a significant effect on our business, there can be no assurance that a similar future breach would not result in a material adverse effect on our business or results of operations.

Our systems also contain and utilize a high volume of sensitive data, including intellectual property, trade secrets, financial information, regulatory information, strategic plans, sales trends and forecasts, litigation materials and/or personal information belonging to us, our staff, our patients, customers and/or other parties. In some cases, we utilize third-party service providers to process, store, manage or transmit such data, which may increase our risk. Intentional or inadvertent data privacy or security breaches (including cyberattacks) resulting from attacks or lapses by employees, service providers (including providers of information technology-specific services), business partners, nation states (including groups associated with or supported by foreign intelligence agencies), organized crime organizations, "hacktivists" or others, create risks that our sensitive data may be exposed to unauthorized persons, our competitors or the public. System vulnerabilities and/or cybersecurity breaches experienced by our third-party service providers have constituted a substantial share of the information security risks that have affected us. For example, in the first half of 2021, a supplier experienced a data breach in which an unauthorized third party acquired access to certain information provided to the supplier in the course of its provision of services to us, including business documents and certain personally identifiable patient information (not including social security or other financial or health insurance information). As required, we promptly notified the applicable state attorneys general and the individuals whose personally identifiable information was affected of this data breach at the supplier. In the third quarter of 2022, another service provider experienced a similar cybersecurity breach in which an attacker exfiltrated certain data (including non-significant Amgen data) from the service provider's systems. Although these supplier data breaches have not resulted in material adverse effects on our business, there can be no assurance that a similar future cybersecurity incident would not result in a material adverse effect on our business or results of operations. Further, the timeliness of our awareness of a cybersecurity incident affects our ability to respond to and work to mitigate the severity of such events. For example, in 2020 and 2022, two of our vendors experienced cyberattacks and each initially reported to us that neither event involved our data. However, upon further investigation, they each subsequently informed us that the attackers had accessed limited, non-significant Amgen information. Although neither of these breaches had a significant adverse effect on our business, in the future we may again not receive timely reporting of cybersecurity events and such events could have a material adverse effect on our business.

Cyberattackers are also increasingly exploiting vulnerabilities in commercially available software from shared or open-source code. We rely on third party commercial software that may have such vulnerabilities, but as use of open-source code is frequently not disclosed, our ability to fully assess this risk to our systems is limited. For example, in December 2021, a remote code execution vulnerability was discovered in a widely used software library that is used in a variety of commercially available software and services. Although this vulnerability has not resulted in any significant adverse effects on us, there can be no assurances that a similar future vulnerability in the software and services that we use would not result in a material adverse effect on our business or results of operations.

Domestic and global government regulators, our business partners, suppliers with whom we do business, companies that provide us or our partners with business services and companies we have acquired or may acquire face similar risks, and security breaches of their systems or service outages could adversely affect our security, leave us without access to important systems, products, raw materials, components, services or information or expose our confidential data or sensitive personal information. For example, in 2019, two vendors that perform testing and analytical services that we use in developing and manufacturing our products experienced cyberattacks, and in April and September of 2020, vendors that provide us with information technology services and clinical data services, respectively, each experienced ransomware attacks. Although there was no breach of our systems, each of these incidents required us to disconnect our systems from those vendors' systems. While we were able to reconnect our systems following restoration of these vendors' capabilities without significantly affecting product availability, a more extended service outage affecting these or other vendors, particularly where such vendor is the single source from which we obtain the services, could have a material adverse effect on our business or results of operations. In addition, we distribute our products in the United States primarily through three pharmaceutical wholesalers, and a security breach that impairs the distribution operations of our wholesalers could significantly impair our ability to deliver our products to healthcare providers and patients.

Although we have experienced system breakdowns, attacks and information security breaches, we do not believe such breakdowns, attacks and breaches have had a material adverse effect on our business or results of operations. We continue to invest in the monitoring, protection and resilience of our critical and/or sensitive data and systems. However, there can be no assurances that our efforts will detect, prevent or fully recover systems or data from all breakdowns, service interruptions, attacks and/or breaches of our systems that could adversely affect our business and operations and/or result in the loss or exposure of critical, proprietary, private, confidential or otherwise sensitive data, which could result in material financial, legal, business or reputational harm to us or negatively affect our stock price. While we maintain cyber-liability insurance, our insurance is not sufficient to cover us against all losses that could potentially result from a service interruption, breach of our systems or loss of our critical or sensitive data.

We are also subject to various laws and regulations globally regarding privacy and data protection, including laws and regulations relating to the collection, storage, handling, use, disclosure, transfer and security of personal data. The legislative and regulatory environment regarding privacy and data protection is continuously evolving and developing and the subject of significant attention globally. For example, we are subject to the EU's GDPR, which became effective in May 2018, and the CCPA, which became effective in January 2020, both of which provide for substantial penalties for noncompliance. The CCPA was amended in late 2020, to create the California Privacy Rights Act to create opt in requirements for the use of sensitive personal data and the formation of a new dedicated agency for the enforcement of the law, the California Privacy Protection Agency. Virginia, Colorado, Utah and Connecticut have all subsequently passed similar consumer privacy laws, which went into effect in Virginia as of January 1, 2023, and will go into effect in Colorado, Utah and Connecticut later in 2023. Other jurisdictions where we operate have passed, or continue to propose, similar legislation and/or regulations. For example, in China, the Personal Information Protection Law and the Data Security Law, which regulate data processing activities associated with personal and nonpersonal data, are in effect and build upon the existing Cybersecurity Law. Failure to comply with these current and future laws could result in significant penalties and reputational harm and could have a material adverse effect on our business and results of operations.

Our sales and operations are subject to the risks of doing business internationally, including in emerging markets.

As we continue our expansion efforts in emerging markets around the world, through acquisitions and licensing transactions as well as through the development and introduction, both independently and through collaborations such as our collaboration with BeiGene, of our products in new markets, we face numerous risks to our business. There is no guarantee that our efforts and strategies to expand sales in emerging markets will succeed. Our international business, including in China and emerging market countries, may be especially vulnerable to periods of global and local political, legal, regulatory and financial instability, including issues of geopolitical relations, the imposition of international sanctions in response to certain state actions and/or sovereign debt issues. Further, in 2022 and continuing through early 2023, the Asia Pacific region also experienced a surge of COVID-19 infections. While one country in the region initially responded to the surge by activating strict containment measures, in late 2022 that country abruptly reversed those measures, resulting in a significant COVID-19 outbreak, causing issues such as lack of capacity at hospitals that could lead to a local health emergencies. If relations between the United States and other governments deteriorate, our business and investments in such markets may also be adversely affected. We may also be required to increase our reliance on third-party agents and unfamiliar operations and arrangements including those previously utilized by companies we partner with or acquire in emerging markets. See *We must conduct clinical trials in humans before we commercialize and sell any of our product candidates or existing products for new indications.* Our expansion efforts in China and emerging markets around the world are dependent upon the establishment of an environment that is predictable, navigable and supportive of biopharmaceutical innovation, sustained access for our products and predictable pricing controls. For example, China continues to strengthen regulations on the collection, use and transmission of Chinese human genetic resources, and has expanded regulations on the conduct of biotechnology R&D activities in China. Between 2020 and 2022, we experienced delays in our applications to the Human Genetic Resources Administration of China that sought approval to conduct clinical trials in China. Our international operations and business may also be subject to less protective intellectual property or other applicable laws, diverse data privacy and protection requirements, changing tax laws and tariffs, trade restrictions or other barriers designed to protect industry in the home country against foreign competition, far-reaching antibribery and anticorruption laws and regulations and/or evolving legal and regulatory environments.

In response to the ongoing armed conflict in Ukraine, the U.S. government, numerous state governments, the EU and other countries in which we conduct business have imposed a wide range of economic sanctions that restrict commerce and business dealings with Russia, certain regions of Ukraine and certain entities and individuals. This conflict may also precipitate or amplify the other risks described herein, including risks relating to cybersecurity, global economic conditions, clinical trials and supply chains, which could adversely affect our business, operations and financial condition and results.

As we expand internationally, we are subject to fluctuations in foreign currency exchange rates relative to the U.S. dollar. While we have a program in place that is designed to reduce our exposure to foreign currency exchange rate fluctuations through foreign currency hedging arrangements, our hedging efforts do not completely offset the effect of these fluctuations on our revenues and earnings. Overall, the legal and operational challenges of our international business operations, along with government controls, the challenges of attracting and retaining qualified personnel and obtaining and/or maintaining necessary regulatory or pricing approvals of our products, may result in material adverse effects on our international product sales, business and results of operations.

RISKS RELATED TO GOVERNMENT REGULATIONS AND THIRD-PARTY POLICIES

Our sales depend on coverage and reimbursement from government and commercial third-party payers, and pricing and reimbursement pressures have affected, and are likely to continue to affect, our profitability.

Sales of our products depend on the availability and extent of coverage and reimbursement from third-party payers, including government healthcare programs and private insurance plans. Governments and private payers continue to pursue initiatives to manage drug utilization and contain costs. Further, pressures on healthcare budgets from the pandemic, the economic downturn and inflation continue and are likely to increase across the markets we serve. Payers are increasingly focused on costs, which have resulted, and are expected to continue to result, in lower reimbursement rates for our products or narrower populations for which payers will reimburse. Continued intense public scrutiny of the price of drugs and other healthcare costs, together with payer dynamics, have limited, and are likely to continue to limit, our ability to set or adjust the price of our products based on their value, which can have a material adverse effect on our business. In the United States, particularly over the past few years, a number of legislative and regulatory proposals have been introduced and/or signed into law that attempt to lower drug prices. These include legislation promulgated by the IRA that enables the U.S. government to set prices for certain drugs in Medicare, redesigns Medicare Part D benefits to shift a greater portion of the costs to manufacturers and enables the U.S. government to impose penalties if drug prices are increased at a rate faster than inflation. Additional proposals focused on drug pricing continue to be debated, and additional executive orders focused on drug pricing and competition are likely to be adopted and implemented in some form. Government actions or ballot initiatives at the state level also represent a highly active area of policymaking and experimentation, including pursuit of proposals that limit drug reimbursement under state run Medicaid programs based on reference prices or permitting importation of drugs from Canada. Such state policies may also eventually be adopted at the federal level.

We are unable to predict which or how many policy, regulatory, administrative or legislative changes may ultimately be, or effectively estimate the consequences to our business if, enacted and implemented. However, to the extent that payer actions further decrease or modify the coverage or reimbursement available for our products, require that we pay increased rebates or shift other costs to us, limit or affect our decisions regarding the pricing of or otherwise reduce the use of our products, such actions could have a material adverse effect on our business and results of operations.

—Changing U.S. federal coverage and reimbursement policies and practices have affected and are likely to continue to affect access to, pricing of and sales of our products

A substantial portion of our U.S. business relies on reimbursement from federal government healthcare programs and commercial insurance plans regulated by federal and state governments. See Part I, Item 1. Business—Reimbursement. Our business has been and will continue to be affected by legislative actions changing U.S. federal reimbursement policy. For example, in August 2022, the IRA was enacted and includes provisions requiring that: (1) beginning in 2026, mandatory price setting be introduced in Medicare for certain drugs paid for under Parts B and D, whereby manufacturers must accept a price established by the government or face penalties on all U.S. sales (starting with 10 drugs in 2026, adding 15 in 2027 and 2028, and adding 20 in 2029 and subsequent years such that by 2031 approximately 100 drugs could be subject to such set prices); (2) starting in 2024, Medicare Part D be redesigned to cap beneficiary out-of-pocket costs and, beginning January 1, 2025, Federal reinsurance be reduced in the catastrophic phase (resulting in a shift and increase of such costs to Part D plans and manufacturers, including by requiring manufacturer discounts on certain drugs); and (3) beginning October 1, 2022, manufacturers will owe rebates on drugs reimbursed under Medicare Part D if price increases outpace inflation, and beginning January 1, 2023, will owe rebates on drugs reimbursed under Medicare Part B if price increases outpace inflation. The IRA's drug pricing controls and Medicare redesign is likely to have a material adverse effect on our sales (particularly for our products that are more substantially reliant on Medicare reimbursement), our business and our results of operations. However, as the degree of impact from this legislation on our business depends on a number of implementation decisions, the extent of the IRA's impact on our sales and, in turn, our business remains unclear. Further, following the passage of the IRA, the environment remains dynamic, and in October 2022, the Administration issued an Executive Order on Lowering Prescription Drug Costs for Americans that calls for the HHS to issue a report within 90 days on Innovation Center models that would lower drug costs and promote access to innovative drug therapies for Medicare and Medicaid beneficiaries. This Executive Order follows a 2021 Executive Order that included a timeline designed to increase competition in the healthcare sector, including by calling for the FDA to develop prescription drug importation programs and the FTC to apply greater scrutiny of anticompetitive activity. Responses to this order, including by the HHS, which released a report with drug pricing proposals that seek to promote competition, and by the USPTO, which has taken steps to strengthen coordination with the FDA to address impediments to generic drug and biosimilar competition. CMS policy changes and demonstration projects to test new care, delivery and payment models can also significantly affect how drugs, including our products, are covered and reimbursed. In September 2021, HHS released a plan to address drug pricing that included potential future mandatory models that link payment for prescription drugs and biologics to certain factors, including the overall cost of care.

We also face risks related to the reporting of pricing data that affects reimbursement of and discounts provided for our products. U.S. government price reporting regulations are complex and may require biopharmaceutical manufacturers to update certain previously submitted data. If our submitted pricing data are incorrect, we may become subject to substantial fines and penalties or other government enforcement actions, which could have a material adverse effect on our business and results of operations. In addition, as a result of restating previously reported price data, we may be required to pay additional rebates and provide additional discounts.

—Changing reimbursement and pricing actions in various states have negatively affected and may continue to negatively affect access to and have affected and may continue to affect sales of our products

At the state level, government actions or ballot initiatives can also affect how our products are covered and reimbursed and/or create additional pressure on our pricing decisions. Existing and proposed state pricing laws have added complexity to the pricing of drugs and may already be affecting industry pricing decisions. A number of states have adopted, and many other states are considering, drug importation programs or other pricing actions, including proposals designed to require biopharmaceutical manufacturers to report to the state proprietary pricing information or provide advance notice of certain price increases. For example, a California law requires biopharmaceutical manufacturers to notify health insurers and government health plans at least 60 days before scheduled prescription drug price increases that exceed certain thresholds. Similar laws exist in Oregon and Washington. Additional proposals directed at Medicaid seek to penalize manufacturers for pricing drugs above a certain threshold or limit spending on biopharmaceutical products. States are also seeking to change the way they pay for drugs for patients covered by state programs. New York has established a Medicaid drug spending cap, and Massachusetts implemented a new review and supplemental rebate negotiation process. Six states (Colorado, Maine, New Hampshire, Maryland, Oregon and Washington) have enacted laws that establish Prescription Drug Affordability Boards (PDABs) to study drug prices and identify drugs that pose affordability challenges, and in three states (Colorado, Maryland and Washington) include authority for the state PDAB to set upper payment limits on certain drugs in state regulated plans. Other states may consider implementing similar policies and laws. Additionally, Colorado, Florida, Maine, New Hampshire, New Mexico and Vermont have enacted laws, and several other states have proposed bills, to implement importation of drugs from Canada. The FDA has met with representatives from Colorado, Florida, Maine and New Mexico to discuss those states' proposed importation programs, and the FDA may be working towards approving such plans. Other states could adopt similar approaches or could pursue different policy changes in a continuing effort to reduce their costs. Ultimately, as with U.S. federal government actions, existing or future state government actions or ballot initiatives may also have a material adverse effect on our product sales, business and results of operations.

—U.S. commercial payer actions have affected and may continue to affect access to and sales of our products

Payers, including healthcare insurers, PBMs, integrated healthcare delivery systems (vertically-integrated organizations built from consolidations of healthcare insurers and PBMs) and group purchasing organizations, increasingly seek ways to reduce their costs. With increasing frequency, payers are adopting benefit plan changes that shift a greater proportion of drug costs to patients. Such measures include more limited benefit plan designs, high deductible plans, higher patient co-pay or coinsurance obligations and more significant limitations on patients' use of manufacturer commercial co-pay assistance programs. Further, government regulation of payers may affect these trends. For example, CMS finalized a policy for plan years starting on or after January 1, 2021 that has caused commercial payers to more widely adopt co-pay accumulator adjustment programs. Payers, including PBMs, have sought, and continue to seek, price discounts or rebates in connection with the placement of our products on their formularies or those they manage, and to also impose restrictions on access to or usage of our products (such as Step Therapy), require that patients receive the payer's prior authorization before covering the product, and/or chosen to exclude certain indications for which our products are approved. For example, some payers require physicians to demonstrate or document that the patients for whom Repatha has been prescribed meet their utilization criteria, and these requirements have served to limit and may continue to limit patient access to Repatha treatment. In an effort to reduce barriers to access, we reduced the net price of Repatha by providing greater discounts and rebates to payers (including PBMs that administer Medicare Part D prescription drug plans), and in response to a very high percentage of Medicare patients abandoning their Repatha prescriptions rather than paying their co-pay, we introduced a set of new National Drug Codes to make Repatha available at a lower list price. However, affordability of patient out-of-pocket co-pay cost has limited and may continue to limit patient use. Further, despite these net and list price reductions, some payers have restricted, and may continue to restrict, patient access and may seek further discounts or rebates or take other actions, such as changing formulary coverage for Repatha, that could reduce our sales of Repatha. These factors have limited, and may continue to limit, patient affordability and use, negatively affecting Repatha sales.

Further, significant consolidation in the health insurance industry has resulted in a few large insurers and PBMs, which places greater pressure on pricing and usage negotiations with biopharmaceutical manufacturers, significantly increasing discount and rebate requirements and limiting patient access and usage. For example, in the United States, as of the beginning of 2023, the top five integrated health plans and PBMs controlled about 92% of all pharmacy prescriptions. This high degree of

consolidation among insurers and PBMs and other payers, including through integrated healthcare delivery systems and/or with specialty or mail-order pharmacies and pharmacy retailers, has increased the negotiating leverage such entities have over us and other biopharmaceutical manufacturers and has resulted in greater price discounts, rebates and service fees realized by those payers from our business. Each of CVS, Express Scripts and United Health Group (among the top five integrated health plans and PBMs), each have Rebate Management Organizations that further increase their leverage to negotiate deeper discounts. Ultimately, additional discounts, rebates, fees, coverage changes, plan changes, restrictions or exclusions imposed by these commercial payers could have a material adverse effect on our product sales, business and results of operations. Policy reforms advanced by Congress or the Administration that refine the role of PBMs in the U.S. marketplace could have downstream implications or consequences for our business and how we interact with these entities. For example, on June 7, 2022, the FTC launched an inquiry into the business practices of PBMs, and the results of such inquiry could have an effect on manufacturer interactions with PBMs, resulting in changes to access for certain medicines. See our —*Concentration of sales at certain of our wholesaler distributors and consolidation of private payers may negatively affect our business.*

Our business is also affected by policies implemented by private healthcare entities that process Medicare claims, including Medicare Administrative Contractors. For example, in the second quarter of 2022, several Medicare Administrative Contractors issued notice, in contravention of TEZSPIRE's FDA approved labeling, that TEZSPIRE would be added to their "self-administered drug" exclusion lists. Although the Medicare Administrative Contractors subsequently removed TEZSPIRE from their exclusion lists, these exclusions, if reintroduced and/or implemented, would result in Medicare beneficiaries with severe asthma losing access to TEZSPIRE coverage under Medicare Part B and potentially also under Medicare Advantage.

—Government and commercial payer actions outside the United States have affected and will continue to affect access to and sales of our products

Outside the United States, we expect countries will also continue to take actions to reduce their drug expenditures. See Part I, Item 1. Business—Reimbursement. Pressures to decrease drug expenditures may further intensify as the COVID-19 pandemic has strained government budgets and as economic conditions continue to worsen in certain regions, including in Europe where high inflation and the energy crisis relating to the Russia–Ukraine conflict are challenging the economies in that region. International reference pricing has been widely used by many countries outside the United States to control costs based on an external benchmark of a product's price in other countries. International reference pricing policies can change quickly and frequently and may not reflect differences in the burden of disease, indications, market structures or affordability differences across countries or regions. Other expenditure control practices, including but not limited to the use of revenue clawbacks, rebates and percentage caps on price increases, are used in various foreign jurisdictions as well. In addition, countries may refuse to reimburse or may restrict the reimbursed population for a product when their national health technology assessments do not consider a medicine to demonstrate sufficient clinical benefit beyond existing therapies or to meet certain cost effectiveness thresholds. For example, despite the EMA's approval of Repatha for the treatment of patients with established atherosclerotic disease, prior to 2020, the reimbursement of Repatha in France was limited to a narrower patient population (such as those with homozygous familial hypercholesterolemia (HoFH)) following a national health technology assessment. Many countries decide on reimbursement between potentially competing products through national or regional tenders that often result in one product receiving most or all of the sales in that country or region. Failure to obtain coverage and reimbursement for our products, a deterioration in their existing coverage and reimbursement or a decline in the timeliness or certainty of payment by payers to physicians and other providers has negatively affected, and may further negatively affect, the ability or willingness of healthcare providers to prescribe our products for their patients and otherwise negatively affect the use of our products or the prices we realize for them. Such changes have had, and could in the future have, a material adverse effect on our product sales, business and results of operations.

Guidelines and recommendations published by various organizations can reduce the use of our products.

Government agencies promulgate regulations and guidelines directly applicable to us and to our products. Professional societies, practice management groups, insurance carriers, physicians' groups, private health and science foundations and organizations involved in various diseases also publish guidelines and recommendations to healthcare providers, administrators and payers, as well as patient communities. Recommendations by government agencies or other groups and organizations may relate to such matters as usage, dosage, route of administration and use of related therapies. In addition, a growing number of organizations are providing assessments of the value and pricing of biopharmaceutical products, and even organizations whose guidelines have historically been focused on clinical matters have begun to incorporate analyses of the cost effectiveness of various treatments into their treatment guidelines and recommendations. Value assessments may come from private organizations that publish their findings and offer recommendations relating to the products' reimbursement by government and private payers. Some companies and payers have announced pricing and payment decisions based in part on the assessments of private organizations. In addition, government health technology assessment organizations in many countries make reimbursement recommendations to payers in their jurisdictions based on the clinical effectiveness, cost-effectiveness and service effects of new, emerging and existing medicines and treatments. Such health technology assessment organizations have

recommended, and may in the future recommend, reimbursement for certain of our products for a narrower indication than was approved by applicable regulatory agencies or may recommend against reimbursement entirely. See *Our sales depend on coverage and reimbursement from government and commercial third-party payers, and pricing and reimbursement pressures have affected, and are likely to continue to affect, our profitability.* Such recommendations or guidelines may affect our reputation, and any recommendations or guidelines that result in decreased use, dosage or reimbursement of our products could have a material adverse effect on our product sales, business and results of operations. In addition, the perception by the investment community or stockholders that such recommendations or guidelines will result in decreased use and dosage of our products could adversely affect the market price of our common stock.

The adoption and interpretation of new tax legislation or exposure to additional tax liabilities could affect our profitability.

We are subject to income and other taxes in the United States and other jurisdictions in which we do business. As a result, our provision for income taxes is derived from a combination of applicable tax rates in the various places we operate. Significant judgment is required for determining our provision for income tax.

One or more of our legal entities file income tax returns in the U.S. federal jurisdiction, various U.S. state jurisdictions and certain foreign jurisdictions. Our income tax returns are routinely examined by tax authorities in those jurisdictions. Significant disputes can and have arisen with tax authorities involving issues regarding the timing and amount of deductions, the use of tax credits and allocations of income and expenses among various tax jurisdictions because of differing interpretations of tax laws, regulations and relevant facts, and such tax authorities (including the IRS) are becoming more aggressive in their audits and are particularly focused on such matters. In 2017, we received an RAR and a modified RAR from the IRS for the years 2010–2012, proposing significant adjustments that primarily relate to the allocation of profits between certain of our entities in the United States and the U.S. territory of Puerto Rico. We disagreed with the proposed adjustments and calculations and pursued resolution with the IRS administrative appeals office but were unable to reach resolution. In July 2021, we filed a petition in the U.S. Tax Court to contest two duplicate Statutory Notices of Deficiency (Notices) for the years 2010–2012 that we received in May and July 2021 which seek to increase our U.S. taxable income for the years 2010–2012.

In 2020, we received an RAR and a modified RAR from the IRS for the years 2013–2015, also proposing significant adjustments that primarily relate to the allocation of profits between certain of our entities in the United States and the U.S. territory of Puerto Rico similar to those proposed for the years 2010–2012. We disagreed with the proposed adjustments and calculations and pursued resolution with the IRS appeals office but were unable to reach resolution. In July 2022, we filed a petition in the U.S. Tax Court to contest a Notice for the years 2013–2015 that we previously reported receiving in April 2022 that seeks to increase our U.S. taxable income for the years 2013–2015 and asserts penalties.

We firmly believe that the IRS positions set forth in the 2010–2012 and 2013–2015 Notices are without merit. We are contesting the 2010–2012 and 2013–2015 Notices through the judicial process. The cases were consolidated on December 19, 2022.

We are currently also under examination by the IRS for the years 2016–2018 with respect to issues similar to those for the 2010 through 2015 period. In addition, we are under examination by a number of state and foreign tax jurisdictions.

Final resolution of these complex tax matters is not likely within the next 12 months. We continue to believe our accrual for income tax liabilities is appropriate based on past experience, interpretations of tax law, application of the tax law to our facts and judgments about potential actions by tax authorities; however, due to the complexity of the provision for income taxes and uncertain resolution of these matters, the ultimate outcome of any tax matters may result in payments substantially greater than amounts accrued and could have a material adverse effect on the results of our operations.

See Part II, Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations, Income Taxes, and Part IV—Note 6, Income taxes, to the Consolidated Financial Statements.

Our provision for income taxes and results of operations in the future could be adversely affected by changes to our operating structure, changes in the mix of income and expenses in countries with differing tax rates, changes in the valuation of deferred tax assets and liabilities and changes in applicable tax laws, regulations or administrative interpretations thereof. The 2017 Tax Act is complex and a large volume of regulations and guidance has been issued and could be subject to different interpretations. We could face audit challenges to our application of the 2017 Tax Act. In addition, there are several upcoming provisions in the 2017 Tax Act, including increases in the tax rates on foreign earnings and export income scheduled to take effect at the end of 2025, that could result in an increase in our effective tax rate.

The Administration and Congress continue to discuss changes to existing tax law that could substantially increase the taxes we pay in the United States. Further, the OECD reached an agreement to align countries on a minimum corporate tax rate and an expansion of the taxing rights of market countries. Some individual countries, including those in the EU, have proposed

legislation to implement the global minimum tax agreement. In other countries such as the United States, however, the implementation of the OECD agreement remains highly uncertain. If enacted, either by all OECD participants or unilaterally by individual countries, the agreement could result in tax increases or double taxation that could affect our United States or foreign tax liabilities. Changes to existing tax law in the United States, the U.S. territory of Puerto Rico or other jurisdictions, including the changes and potential changes discussed above, could result in tax increases where we do business and could have a material adverse effect on the results of our operations.

Our business may be affected by litigation and government investigations.

We and certain of our subsidiaries are involved in legal proceedings. See Part IV—Note 19, Contingencies and commitments, to the Consolidated Financial Statements. Civil and criminal litigation is inherently unpredictable, and the outcome can result in costly verdicts, fines and penalties, exclusion from federal healthcare programs and/or injunctive relief that affect how we operate our business. Defense of litigation claims can be expensive, time consuming and distracting, and it is possible that we could incur judgments or enter into settlements of claims for monetary damages or change the way we operate our business, which could have a material adverse effect on our product sales, business and results of operations. In addition, product liability is a major risk in testing and marketing biotechnology and pharmaceutical products. We may face substantial product liability exposure in human clinical trials and for products we sell after regulatory approval. Product liability claims, regardless of their merits, could be costly and divert management's attention and could adversely affect our reputation and the demand for our products. We and certain of our subsidiaries have previously been named as defendants in product liability actions for certain of our products.

We are also involved in government investigations that arise in the ordinary course of our business. In recent years, there has been a trend of increasing government investigations and litigations against companies operating in our industry, both in the United States and around the world. See *Our sales depend on coverage and reimbursement from government and commercial third-party payers, and pricing and reimbursement pressures have affected, and are likely to continue to affect, our profitability*. Our business activities outside of the United States are subject to the FCPA and similar antibribery or anticorruption laws, regulations or rules of other countries in which we operate, including the U.K. Bribery Act. We cannot ensure that all our employees, agents, contractors, vendors, licensees, partners or collaborators will comply with all applicable laws and regulations. On April 25, 2019, we entered into a settlement agreement with the DOJ and the OIG of the HHS to settle certain allegations relating to our support of independent charitable organizations that provide patients with financial assistance to access their medicines. As a result, we entered into a corporate integrity agreement with the OIG that requires us to maintain a corporate compliance program and to undertake a set of defined corporate integrity obligations for a period of five years. While we expect to fully comply with all of our obligations under the corporate integrity agreement, failure to do so could result in substantial penalties and potential exclusion from government healthcare programs. We may also see new government investigations of or actions against us citing novel theories of recovery. For example, prosecutors are placing greater scrutiny on patient support programs, including commercial copay assistance programs, and further enforcement actions and investigations regarding such programs could limit our ability to provide co-pay assistance to commercial patients. Greater scrutiny has also been placed on sponsorships, speaker programs and other arrangements where healthcare professionals receive remuneration, travel or other value to participate in certain events, and further enforcement actions could limit our ability to participate in such arrangements. Any of these results could have a material adverse effect on our business and results of operations.

RISKS RELATED TO COMPETITION

Our products face substantial competition and our product candidates are also likely to face substantial competition.

We operate in a highly competitive environment. See Item 1. Business—Marketing, Distribution and Selected Marketed Products—Competition. We expect that our products and product candidates will compete with existing drugs, new drugs currently in development, drugs currently approved for other indications that may later be approved for the same indications as those of our products and drugs approved for other indications that are used off-label. Large pharmaceutical companies and generics manufacturers of pharmaceutical products have expanded into, and are expected to continue expanding into, the biotechnology field, and some pharmaceutical companies and generics manufacturers have formed partnerships to pursue biosimilars. With the proliferation of companies pursuing biopharmaceuticals, several of our biosimilar products have entered, and a number of our product candidates may enter, markets with one or more competitors or with competitors soon to arrive. In addition, some of our competitors may have technical, competitive or other advantages over us for the development of technologies and processes or greater experience in particular therapeutic areas, and consolidation among pharmaceutical and biotechnology companies can enhance such advantages. These advantages may make it difficult for us to compete with them successfully to discover, develop and market new products and for our current products to compete with new products or new product indications they may bring to market. As a result, our products have been competing and may continue to compete, and our product candidates may compete, against products or product candidates that offer higher rebates or discounts, lower prices, equivalent or superior efficacy, better safety profiles, easier administration, earlier market availability or other competitive

features. If we are unable to compete effectively, this could reduce our sales, which could have a material adverse effect on our business and results of operations.

Our intellectual property positions may be challenged, invalidated or circumvented, or we may fail to prevail in current and future intellectual property litigation.

Our success depends in part on our ability to obtain and defend patent rights and other intellectual property rights that are important to the commercialization of our products and product candidates. The patent positions of pharmaceutical and biotechnology companies can be highly uncertain and often involve complex legal, scientific and factual questions. Driven by cost pressures, efforts to limit or weaken patent protection for our industry are increasing. For example, the COVID-19 pandemic has resulted in increased interest in compulsory licenses, march-in rights or other governmental interventions, both in the United States and internationally, related to the procurement of drugs, and the World Trade Organization has agreed to a waiver of COVID-19 vaccine intellectual property protections through the Trade-Related Aspects of Intellectual Property Rights waiver process. See *The COVID-19 pandemic, and the public and governmental effort to mitigate against the spread of the disease, have had, and are expected to continue to have, an adverse effect, and may have a material adverse effect, on our clinical trials, operations, manufacturing, supply chains, distribution systems, product development, product sales, business and results of operations*. Third parties have challenged and may continue to challenge, invalidate or circumvent our patents and patent applications relating to our products, product candidates and technologies. Challenges to patents may come from potential competitors or from parties other than those who seek to market a potentially-infringing product. In addition, our patent positions might not protect us against competitors with similar products or technologies because competing products or technologies may not infringe our patents. For certain of our product candidates, there are third parties who have patents or pending patent applications that they may claim necessitate payment of a royalty or prevent us from commercializing these product candidates in certain territories. Patent disputes are frequent, costly and can preclude, delay or increase the cost of commercialization of products. We have been in the past, are currently and expect to be in the future, involved in patent litigation. These matters have included, and may in the future include, litigation with manufacturers of products that purport to be biosimilars of certain of our products for patent infringement and for failure to comply with certain provisions of the BPCIA. A determination made by a court, agency or tribunal concerning infringement, validity, enforceability, injunctive or economic remedy, or the right to patent protection, for example, are typically subject to appellate or administrative review. Upon review, such initial determinations may be afforded little or no deference by the reviewing tribunal and may be affirmed, reversed or made the subject of reconsideration through further proceedings. A patent dispute or litigation has not discouraged, and may not in the future discourage, a potential violator from bringing the allegedly infringing product to market prior to a final resolution of the dispute or litigation. The period from inception until resolution of a patent dispute or litigation is subject to the availability and schedule of the court, agency or tribunal before which the dispute or litigation is pending. We have been, and may in the future be, subject to competition during this period and may not be able to recover fully from the losses, damages and harms we incur from infringement by the competitor product even if we prevail. Moreover, if we lose or settle current or future litigations at certain stages or entirely, we could be subject to competition and/or significant liabilities, be required to enter into third-party licenses for the infringed product or technology or be required to cease using the technology or product in dispute. In addition, we cannot guarantee that such licenses will be available on terms acceptable to us, or at all.

Further, under the Hatch–Waxman Act, our products approved by the FDA under the FDCA have been, and may in the future be, the subject of patent litigation with generics competitors before expiry of the five-year period of data exclusivity provided for under the Hatch–Waxman Act and prior to the expiration of the patents listed for the product. Likewise, our innovative biologic products have been, and may in the future be, the subject of patent litigation prior to the expiration of our patents and, with respect to competitors seeking approval as a biosimilar or interchangeable version of our products, prior to the 12-year exclusivity period provided under the BPCIA. In addition, we have faced, and may in the future face, patent litigation involving claims that the biosimilar product candidates we are working to develop infringe the patents of other companies, including those that manufacture, market or sell the applicable reference products or who are developing or have developed other biosimilar versions of such products. Alternatively, patents held by other entities have contributed, and may in the future contribute, to a decision by us to not pursue all of the same labeled indications as are held by these companies. While we have attempted, and expect to continue to attempt, to challenge the patents held by other companies, our efforts may be unsuccessful. For examples of and information related to our patent litigation, see Part IV—Note 19, Contingencies and commitments, to the Consolidated Financial Statements.

Certain of the existing patents on our products have expired or will soon expire. See Item 1. Business—Marketing, Distribution and Selected Marketed Products—Patents. As our patents expire, competitors are able to legally produce and market similar products or technologies, including biosimilars, which has had, and may continue to have, a material adverse effect on our product sales, business and results of operations. In addition, competitors have been, and may continue to be, able to invalidate, design around or otherwise circumvent our patents and sell competing products.

We currently face competition from biosimilars and generics and expect to face increasing competition from biosimilars and generics in the future.

We currently face competition from biosimilars and generics in most of the territories in which we operate, including the United States and Europe, and we expect to face increasing biosimilar and/or generics competition this year and beyond. Expiration or successful challenge of applicable patent rights or expiration of an applicable exclusivity period has accelerated such competition, and we expect to face more litigation regarding the validity and/or scope of our patents. Our products have also experienced greater competition from lower cost biosimilars or generics that come to market when branded products that compete with our products lose their own patent protection. To the extent that governments adopt more permissive regulatory approval standards and competitors are able to obtain broader or expedited marketing approval for biosimilars and generics, the rate of increased competition for our products could accelerate.

In the EU, biosimilars are evaluated for marketing authorization pursuant to a set of general and product class-specific guidelines. In addition, in an effort to spur biosimilar utilization and/or increase potential healthcare savings, some EU countries and some Canadian provinces have adopted, or are considering the adoption of, biosimilar uptake measures such as physician prescribing quotas or automatic pharmacy substitution of biosimilars for the corresponding reference products. Some EU countries impose automatic price reductions upon market entry of one or more biosimilar competitors. In September 2022, the EMA and the EU Heads of Medicines' Agencies (HMA) issued a joint statement providing that biosimilar medicines approved in the EU are "interchangeable" with their reference products and other biosimilars of the same reference product. This EMA-HMA statement could further contribute to the prescribing of biosimilars and to greater competition in Europe. While the degree of competitive effects of biosimilar competition differs between EU countries and between products, in the EU the overall use of biosimilars and the rate at which product sales of innovative products are being affected by biosimilar competition is increasing.

In the United States, the BPCIA authorizes the FDA to approve biosimilars via a separate, abbreviated pathway. See Item 1. Business—Government Regulation—Regulation in the United States—Approval of Biosimilars. In the United States, the FDA has approved numerous biosimilars, including biosimilar versions of Neulasta, EPOGEN and ENBREL, and a growing number of companies have announced that they are also developing biosimilar versions of our products. For example, six biosimilar versions of Neulasta are now approved in the United States, and we expect that other biosimilar versions of Neulasta may be marketed or receive approval in the future. Impact to our Neulasta sales has accelerated as additional competitors have launched. See Item 1. Business—Marketing, Distribution and Selected Marketed Products—Competition. Manufacturers of biosimilars have attempted, and may in the future attempt, to compete with our products by offering lower list prices, greater discounts or rebates, or contracts that offer longer-term pricing or a broader portfolio of other products. Companies pursuing development of biosimilar versions of our products have challenged and may continue to challenge our patents well in advance of the expiration of our material patents. For examples of and information related to our biosimilars and generics patent litigation, see Part IV—Note 19, Contingencies and commitments, to the Consolidated Financial Statements. See *Our intellectual property positions may be challenged, invalidated or circumvented, or we may fail to prevail in current and future intellectual property litigation.*

The U.S. biosimilar pathway includes the option for biosimilar products that meet certain criteria to be approved as interchangeable with their reference products. Some companies currently developing or already marketing biosimilars may seek to obtain interchangeable status from the FDA, which could potentially allow pharmacists to substitute those biosimilars for our reference products without prior approval from the prescriber in most states under state law. The FDA approved the first interchangeable biosimilar in 2021 and has subsequently granted interchangeability designations to three additional biosimilars. In 2019, the FDA issued draft guidance that provides that comparative immunogenicity studies will not generally be expected for biosimilar and interchangeable insulin products. This has opened the door for other product-specific guidance development and the removal of the expectation for certain studies, which may contribute to increased biosimilar competition for our innovative products. For example, in August 2022, the FDA designated a monoclonal antibody biosimilar as interchangeable without requiring a switching study to support the interchangeability determination. Further, in September 2022, the FDA indicated that while comparative clinical trials will continue to be a requirement for many biosimilar development programs, the agency is focused on reducing the need for them in the future through a range of statistical, analytical and pharmacologic approaches.

In addition, critics of the 12-year exclusivity period in the biosimilar pathway law will likely continue to seek to shorten the data exclusivity period and/or to encourage the FDA to interpret narrowly the law's provisions regarding which new products receive data exclusivity. In 2019, the Administration agreed to remove from the United States-Mexico-Canada Agreement a requirement for at least 10 years of data exclusivity for biologic products. Also, the FDA is considering whether subsequent changes to a licensed biologic would be protected by the remainder of the reference product's original 12-year exclusivity period (a concept known in the generic drug context as "umbrella exclusivity"). If the FDA were to decide that umbrella exclusivity does not apply to biological reference products or were to make other changes to the exclusivity period,

this could expose us to biosimilar competition at an earlier time. There also have been, and may continue to be, legislative and regulatory efforts to promote competition through policies enabling easier generic and biosimilar approval and commercialization, including efforts to lower standards for demonstrating biosimilarity or interchangeability, limit patents that may be litigated and/or patent settlements, implement preferential reimbursement policies for biosimilars and pass new laws requiring more disclosure in the FDA's Orange and Purple Books. For example, in 2021 the FDA sent a letter to the USPTO describing ways to strengthen coordination between the two agencies, offered training to help identify prior art, and seeking USPTO's views on practices that extend market exclusivities, whether pharmaceutical patent examiners need additional resources, and the effect of post-grant challenges at the Patent Trial and Appeal Board on drug patents. The USPTO responded in July 2022 with a letter to the FDA stating that it is prepared to create formal mechanisms to collaborate with the FDA on patent issues that may affect the timing of generic and biosimilar entry. In January 2023, the USPTO held a joint listening session with the FDA on USPTO-FDA collaboration efforts.

Upon the expiration or loss of patent protection and/or applicable exclusivity for one of our products, we can lose the majority of revenues for that product in a very short period of time. See Item 1. Business—Marketing, Distribution and Selected Marketed Products—Competition. Additionally, if one of our products is the subject of an FDA Written Request for pediatric studies and we are unable to adequately complete these studies, we may not obtain the pediatric exclusivity award that extends unexpired regulatory exclusivity for the product (and existing patents for a small molecule product) by an additional six months.

While we are unable to predict the precise effects of biosimilars and generics on our products, we are currently facing and expect to face greater competition in the United States, Europe and elsewhere as a result of biosimilar and generic competition and, in turn, downward pressure on our product prices and sales. This competition has had, and could increasingly have, a material adverse effect on our product sales, business and results of operations. State laws may also have an impact on our business. For example, California is the first state to have passed legislation, effective on January 1, 2020, against “pay for delay” settlements of patent infringement claims filed by manufacturers of generics or biosimilars where anything of value is given in exchange for settlement. Under this law, such settlement agreements are presumptively anticompetitive. The law may result in prolonged litigation and fewer settlements. Other states, including Connecticut, New York, Illinois and Minnesota, may adopt similar laws or a similar law could be adopted at the federal level.

Concentration of sales at certain of our wholesaler distributors and consolidation of private payers may negatively affect our business.

Certain of our distributors, customers and payers have substantial purchasing leverage, due to the volume of our products they purchase or the number of patient lives for which they provide coverage. The substantial majority of our U.S. product sales is made to three pharmaceutical product wholesaler distributors: McKesson Corporation, AmerisourceBergen Corporation and Cardinal Health, Inc. These distributors, in turn, sell our products to their customers, which include physicians or their clinics, dialysis centers, hospitals and pharmacies. Similarly, as discussed above, there has been significant consolidation in the health insurance industry, including that a small number of PBMs now oversee a substantial percentage of total covered lives in the United States. See *Our sales depend on coverage and reimbursement from government and commercial third-party payers, and pricing and reimbursement pressures have affected, and are likely to continue to affect, our profitability.* The three largest PBMs in the United States are now part of major health insurance providers. The growing concentration of purchasing and negotiating power by these entities has, and may continue to, put pressure on our pricing due to their ability to extract price discounts on our products, fees for other services or rebates, negatively affecting our bargaining position, sales and/or profit margins. In addition, decisions by these entities to purchase or cover less or none of our products in favor of competing products could have a material adverse effect on our product sales, business and results of operations due to their purchasing volume. Further, if one of our significant wholesale distributors encounters financial or other difficulties and becomes unable or unwilling to pay us all amounts that such distributor owes us on a timely basis, or at all, it could negatively affect our business and results of operations. In addition, if one of our significant wholesale distributors becomes insolvent or otherwise unable to continue its commercial relationship with us in its present form, it could significantly disrupt our business and adversely affect our product sales, our business and results of operations unless suitable alternatives are timely found or lost sales are absorbed by another distributor.

RISKS RELATED TO RESEARCH AND DEVELOPMENT

We may not be able to develop commercial products despite significant investments in R&D.

Amgen invests heavily in R&D. Successful product development in the biotechnology industry is highly uncertain, and very few R&D projects yield approved and commercially viable products. Product candidates, including biosimilar product candidates, or new indications for existing products (collectively, product candidates) that appear promising in the early phases of development have failed to reach the market for a number of reasons, such as:

- the product candidate did not demonstrate acceptable clinical trial results even though it achieved its primary endpoints and/or demonstrated positive preclinical or early clinical trial results, for reasons that could include changes in the standard of care of medicine or expectations of health authorities;
- the product candidate was not effective or not more effective than currently available or potentially competitive therapies in treating a specified condition or illness;
- the product candidate was not cost effective in light of existing or potentially competitive therapeutics;
- the product candidate had harmful side effects in animals or humans;
- the necessary regulatory bodies, such as the FDA or EMA, did not approve the product candidate for an intended use;
- reimbursement for the product candidate is limited despite regulatory approval;
- the product candidate was not economical for us to manufacture and commercialize;
- other parties had or may have had proprietary rights relating to our product candidate, such as patent rights, and did not let us sell it on reasonable terms, or at all;
- we and certain of our licensees, partners, contracted organizations or independent investigators failed to effectively conduct clinical development or clinical manufacturing activities;
- the pathway to regulatory approval or reimbursement for product candidates was uncertain or not well-defined;
- the biosimilar product candidate failed to demonstrate the requisite biosimilarity to the applicable reference product, or was otherwise determined by a regulatory authority to not meet applicable standards for approval; and
- a companion diagnostic device that is required with the use of a product candidate is not approved by the necessary regulatory authority.

We have spent considerable time, energy and resources developing our expertise in human genetics and acquiring access to libraries of genetic information with the belief that genetics could meaningfully aid our search for new medicines and help guide our R&D decisions and investments. We have focused our R&D strategy on drug targets validated by genetic or other compelling human evidence. However, product candidates based on genetically validated targets remain subject to the uncertainties of the drug development process and may not reach the market for a number of reasons, including the factors listed above.

We must conduct clinical trials in humans before we commercialize and sell any of our product candidates or existing products for new indications.

Before a product may be sold, we must conduct clinical trials to demonstrate that our product candidates are safe and effective for use in humans. The results of those clinical trials are used as the basis to obtain approval from regulatory authorities such as the FDA and EMA. See *Our current products and products in development cannot be sold without regulatory approval*. We are required to conduct clinical trials using an appropriate number of trial sites and patients to support the product label claims. The length of time, number of trial sites and number of patients required for clinical trials vary substantially, and we may spend several years and incur substantial expense in completing certain clinical trials. In addition, we may have difficulty finding a sufficient number of clinical trial sites and/or patients to participate in our clinical trials, particularly if competitors are conducting clinical trials in similar patient populations. See *The COVID-19 pandemic, and the public and governmental effort to mitigate against the spread of the disease, have had, and are expected to continue to have, an adverse effect, and may have a material adverse effect, on our clinical trials, operations, supply chains, distribution systems, product development, product sales, business and results of operations*. Patients may withdraw from clinical trials at any time, and privacy laws and/or other restrictions in certain countries may restrict the ability of clinical trial investigators to conduct further follow-up on such patients, which may adversely affect the interpretation of study results. Delays and complications in

planned clinical trials can result in increased development costs, associated delays in regulatory approvals and in product candidates reaching the market and revisions to existing product labels.

Further, to increase the number of patients available for enrollment in our clinical trials, we have opened, and will continue to open, clinical sites and enroll patients in a number of locations where our experience conducting clinical trials is more limited, including India, China, South Korea, the Philippines, Singapore and some Central and South American countries, either through utilization of third-party contract clinical trial providers entirely or in combination with local staff. Conducting clinical trials in locations where we have limited experience requires substantial time and resources to understand the unique regulatory environments of individual countries. For other examples of the risks of conducting clinical trials in China, see also *Our sales and operations are subject to the risks of doing business internationally, including in emerging markets*. Further, we must ensure the timely production, distribution and delivery of the clinical supply of our product candidates to numerous and varied clinical trial sites. Additionally, regional disruptions, including natural and man-made disasters, health emergencies (such as novel viruses or pandemics such as the one we are currently experiencing with COVID-19), or geopolitical conflicts (such as the ongoing armed conflict in Ukraine) have significantly disrupted the timing of clinical trials, and in the future could disrupt the timing, execution and outcome of clinical trials. If we fail to adequately manage the design, execution and diverse regulatory aspects of our clinical trials or to manage the production or distribution of our clinical supply, or such sites experience disruptions as a result of a natural/man-made disaster, health emergency or geopolitical conflict, corresponding regulatory approvals may be delayed or we may fail to gain approval for our product candidates or could lose our ability to market existing products in certain therapeutic areas or altogether. For example, our clinical trials have been adversely affected by the COVID-19 pandemic. See *The COVID-19 pandemic, and the public and governmental effort to mitigate against the spread of the disease, have had, and are expected to continue to have, an adverse effect, and may have a material adverse effect, on our clinical trials, operations, supply chains, distribution systems, product development, product sales, business and results of operations*. If we are unable to market and sell our products or product candidates or to obtain approvals in the timeframe needed to execute our product strategies, our business and results of operations could be materially and adversely affected.

We rely on independent third-party clinical investigators to recruit patients and conduct clinical trials on our behalf in accordance with applicable study protocols, laws and regulations. Further, we rely on unaffiliated third-party vendors to perform certain aspects of our clinical trial operations. In some circumstances, we enter into co-development arrangements with other pharmaceutical and medical devices companies that provide for the other company to conduct certain clinical trials for the product we are co-developing or to develop a diagnostic test used in screening or monitoring patients in our clinical trials. See *Some of our pharmaceutical pipeline and our commercial product sales rely on collaborations with third parties, which may adversely affect the development and sales of our products*. We also may acquire companies that have past or ongoing clinical trials or rights to products or product candidates for which clinical trials have been or are being conducted. These trials may not have been conducted to the same standards as ours; however, once an acquisition has been completed we assume responsibility for the conduct of these trials, including any potential risks and liabilities associated with the past and prospective conduct of those trials. If regulatory authorities determine that we or others, including our licensees or co-development partners, or the independent investigators or vendors selected by us, our co-development partners or by a company we have acquired or from which we have acquired rights to a product or product candidate, have not complied with regulations applicable to the clinical trials, those authorities may refuse or reject some or all of the clinical trial data or take other actions that could delay or otherwise negatively affect our ability to obtain or maintain marketing approval of the product or indication. In addition, delays or failures to develop diagnostic tests for our clinical trials can affect the timely enrollment of such trials and lead to delays or inability to obtain marketing approval. If we were unable to market and sell our products or product candidates, our business and results of operations could be materially and adversely affected.

In addition, some of our clinical trials utilize drugs manufactured and marketed by other pharmaceutical companies. These drugs may be administered in clinical trials in combination with one of our products or product candidates or in a head-to-head study comparing the products' or product candidates' relative efficacy and safety. In the event that any of these vendors or pharmaceutical companies have unforeseen issues that negatively affect the quality of their work product or create a shortage of supply, or if we are otherwise unable to obtain an adequate supply of these other drugs, our ability to complete our applicable clinical trials and/or evaluate clinical results may also be negatively affected. As a result, such quality or supply problems could adversely affect our ability to timely file for, gain or maintain regulatory approvals worldwide.

Clinical trials must generally be designed based on the current standard of medical care. However, in certain diseases, such as cancer, the standard of care is evolving rapidly. In some cases, we may design a clinical trial based on the standard of care we anticipate will exist at the time our study is completed. The duration of time needed to complete certain clinical trials may result in the design of such clinical trials being based on standards of medical care that are no longer or that have not become the current standards by the time such trials are completed, limiting the utility and application of such trials. Additionally, the views of regulatory agencies relating to the requirements for accelerated approval may change over time, and trial designs that were sufficient to support accelerated approvals for some oncology products may not be considered sufficient.

for later candidates. We may not obtain favorable clinical trial results and therefore may not be able to obtain regulatory approval for new product candidates or new indications for existing products and/or maintain our current product labels. Participants in clinical trials of our products and product candidates may also suffer adverse medical events or side effects that could, among other factors, delay or terminate clinical trial programs and/or require additional or longer trials to gain approval.

Even after a product is on the market, safety concerns may require additional or more extensive clinical trials as part of a risk management plan for our product or for approval of a new indication. Additional clinical trials we initiate, including those required by the FDA, could result in substantial additional expense, and the outcomes could result in further label restrictions or the loss of regulatory approval for an approved indication, each of which could have a material adverse effect on our product sales, business and results of operations. Additionally, any negative results from such trials could materially affect the extent of approvals, the use, reimbursement and sales of our products, our business and results of operations.

Our current products and products in development cannot be sold without regulatory approval.

Our business is subject to extensive regulation by numerous state and federal government authorities in the United States, including the FDA, and by foreign regulatory authorities, including the EMA. We are required in the United States and in the other regions and countries in which we, or our partners and affiliates, sell to obtain approval from regulatory authorities before we manufacture, market and sell our products. Once our products are approved, the FDA and other U.S. and ex-U.S. regulatory agencies have substantial authority to require additional testing and reporting, perform inspections, change product labeling or mandate withdrawals of our products. Failure to comply with applicable regulatory requirements may subject us to administrative and/or judicially imposed sanctions or monetary penalties as well as reputational and other harms. The sanctions could include the FDA's or ex-U.S. regulatory authorities' refusals to approve pending applications, delays in obtaining or withdrawals of approvals, delays or suspensions of clinical trials, warning letters, product recalls or seizures, total or partial suspensions of our operations, injunctions, fines, civil penalties and/or criminal prosecutions.

Obtaining and maintaining regulatory approvals have been, and will continue to be, increasingly difficult, time-consuming and costly. Legislative bodies or regulatory agencies could enact new laws or regulations, change existing laws or regulations or change their interpretations of laws or regulations at any time, which could affect our ability to obtain or maintain approval of our products or product candidates. The rate and degree of change in existing laws and regulations and regulatory expectations have accelerated in established markets, and regulatory expectations continue to evolve in emerging markets. We are unable to predict whether and when any further changes to laws or regulatory policies affecting our business could occur, such as changes to laws or regulations governing manufacturer communications concerning drug products and drug product candidates and whether such changes could have a material adverse effect on our product sales, business and results of operations. Further, we are reliant on regulators having the resources necessary to evaluate and approve our products. In the United States, a partial federal government shutdown halted the work of many federal agencies and their employees from late December 2018 through late January 2019. A subsequent extended shutdown could result in reductions or delays of FDA's activities, including with respect to our ongoing clinical programs, our manufacturing of our products and product candidates and our product approvals.

Regulatory authorities have questioned, and may in the future question, the sufficiency for approval of the endpoints we select for our clinical trials. A number of our products and product candidates have been evaluated in clinical trials using surrogate endpoints that measure an effect that is known to correlate with an ultimate clinical benefit. For example, a therapeutic oncology product candidate may be evaluated for its ability to reduce or eliminate minimal residual disease (MRD), or to extend the length of time during and after the treatment that a patient lives without the disease worsening, measured by PFS. Demonstrating that the product candidate induces MRD-negative responses or produces a statistically significant improvement in PFS does not necessarily mean that the product candidate will show a statistically significant improvement in overall survival or the time that the patients remain alive. In the CV setting, a heart disease therapeutic candidate may be evaluated for its ability to reduce LDL-C levels, as an elevated LDL-C level has been a surrogate endpoint for CV events such as death, heart attack and stroke. The use of surrogate endpoints such as PFS and LDL-C reduction, in the absence of other measures of clinical benefit, may not be sufficient for broad usage or approval even when such results are statistically significant. Regulatory authorities could also add new requirements, such as the completion of enrollment in a confirmatory study or the completion of an outcomes study or a meaningful portion of an outcomes study, as conditions for obtaining approval or obtaining an indication. For example, despite demonstrating that Repatha reduced LDL-C levels in a broad patient population, only after our large phase 3 outcomes study evaluating the ability of Repatha to prevent CV events met certain of its primary composite endpoint and key secondary composite endpoint did the FDA grant a broader approval of Repatha to reduce the risk of certain CV events. There may also be situations in which demonstrating the efficacy and safety of a product candidate may not be sufficient to gain regulatory approval unless superiority to other existing treatment options can be shown. The imposition of additional requirements or our inability to meet them in a timely fashion, or at all, has delayed, and may in the future delay, our clinical development and regulatory filing efforts, delay or prevent us from obtaining regulatory approval for new product candidates or new indications for existing products, or prevent us from maintaining our current product labels.

Some of our products have been approved by U.S. and ex-U.S. regulatory authorities on an accelerated or conditional basis with full approval conditioned upon fulfilling the requirements of regulators. For example, in May 2021, we announced that the FDA approved LUMAKRAS under accelerated approval for the treatment of adult patients with KRAS G12C-mutated local advanced or metastatic NSCLC, as determined by an FDA-approved test, who have received at least one prior systemic therapy. Continued approval for this indication is contingent upon verification and description of clinical benefit in confirmatory trials, including a requirement by the FDA that we complete a post-marketing trial to investigate whether a lower dose will have a similar clinical effect to the results demonstrated in our pre-marketing trial. We have since received the data from such post-marketing trial and intend to submit it to the FDA, as required. Regulatory authorities are placing greater focus on monitoring products originally approved on an accelerated or conditional basis and on whether the sponsors of such products have met the conditions of the accelerated or conditional approvals. If we are unable to fulfill the regulators' requirements that were conditions of a product's accelerated or conditional approval and/or if regulators reevaluate the data or risk-benefit profile of our product, the conditional approval may not result in full approval or may be revoked or not renewed. Alternatively, we may be required to change the product's labeled indications or even withdraw the product from the market.

Regulatory authorities can also impose post-marketing pediatric study requirements. Failure to fulfill such requirements may result in regulatory or enforcement action, including financial penalties or the invalidation of a product's marketing authorization.

Safety problems or signals can arise as our products and product candidates are evaluated in clinical trials, including investigator sponsored studies, or as our marketed products are used in clinical practice. We are required continuously to collect and assess adverse events reported to us and to communicate to regulatory agencies these adverse events and safety signals regarding our products. Regulatory agencies periodically perform inspections of our pharmacovigilance processes, including our adverse event reporting. In the United States, for our products with approved REMS (see Item 1. Business—Government Regulation—Postapproval Phase), we are required to submit periodic assessment reports to the FDA to demonstrate that the goals of the REMS are being met. REMS and other risk management programs are designed to help ensure that a drug's benefits outweigh the risks and vary in the elements they contain. If the FDA is not satisfied with the results of the periodic assessment reports we submit for any of our REMS, the FDA may also modify our REMS or take other regulatory actions, such as implementing revised or restrictive labeling. The drug delivery devices approved for use in combination with our products are also subject to regulatory oversight and review for safety and malfunctions. See *Some of our products are used with drug delivery or companion diagnostic devices that have their own regulatory, manufacturing and other risks*. If regulatory agencies determine that we or other parties (including our clinical trial investigators, those operating our patient support programs or licensees of our products) have not complied with the applicable reporting, other pharmacovigilance or other safety or quality assessment requirements, we may become subject to additional inspections, warning letters or other enforcement actions, including fines, marketing authorization withdrawal and other penalties. Our product candidates and marketed products can also be affected by safety problems or signals occurring with respect to products that are similar to ours or that implicate an entire class of products. Further, as a result of clinical trials, including sub-analyses or meta-analyses of earlier clinical trials (a meta-analysis involves the use of various statistical methods to combine results from previous separate but related studies) performed by us or others, concerns may arise about the sufficiency of the data or studies underlying a product's approved label. Such actual or perceived safety problems or concerns can lead to:

- revised or restrictive labeling for our products, or the potential for restrictive labeling that has resulted, and may in the future result, in our decision not to commercialize a product candidate;
- requirement of risk management or minimization activities or other regulatory agency compliance actions related to the promotion and sale of our products;
- post-marketing commitments, mandated post-marketing requirements or pharmacovigilance programs for our approved products;
- product recalls of our approved products;
- required changes to the processes used in the manufacture of our products, which could increase our manufacturing costs and affect the availability of contract manufacturers we may utilize to assist in such manufacturing;
- revocation of approval for our products from the market completely, or within particular therapeutic areas or patient types;
- increased timelines or delays in being approved by the FDA or other regulatory bodies; and/or
- treatments or product candidates not being approved by regulatory bodies.

For example, after an imbalance in positively adjudicated CV serious adverse events was observed in one of the phase 3 clinical trials for EVENITY but not in another, larger phase 3 study, in April 2019 the FDA approved EVENITY for the

treatment of osteoporosis in postmenopausal women at high risk for fracture, along with a post-marketing requirement. The requirement includes a five-year observational feasibility study that could be followed by a comparative safety study or trial.

In addition to our innovative products, we are working to develop and commercialize biosimilar versions of a number of products currently manufactured, marketed and sold by other pharmaceutical companies. In some markets, there is not yet a legislative or regulatory pathway for the approval of biosimilars. In the United States, the BPCIA provided for such a pathway. Discussions within the FDA and other regulatory authorities, and between regulatory authorities and sponsors, continue as to the evidence needed to demonstrate biosimilarity or interchangeability for specific products. See *We currently face competition from biosimilars and generics and expect to face increasing competition from biosimilars and generics in the future*. Delays or uncertainties in the development or implementation of such pathways, or changes in existing regulatory pathways, including degradation of regulatory standards, could result in delays or difficulties in getting our biosimilar products approved by regulatory authorities, subject us to unanticipated development costs or otherwise reduce the value of the investments we have made in the biosimilars area. Further, we cannot predict the extent to which any potential legislative or policy initiatives would affect the biosimilar pathway or have a material adverse effect on our development of biosimilars or on our marketed biosimilars. In addition, if we are unable to bring our biosimilar products to market on a timely basis and secure “first-to-market” or other advantageous positions, our future biosimilar sales, business and results of operations could be materially and adversely affected.

Some of our products are used with drug delivery or companion diagnostic devices that have their own regulatory, manufacturing and other risks.

Many of our products and product candidates may be used in combination with a drug delivery device, such as an injector or other delivery system. For example, Neulasta is available as part of the Neulasta Onpro kit, and our AutoTouch reusable autoinjector is used with ENBREL Mini single-dose prefilled cartridges. In addition, some of our products or product candidates, including many of our oncology product candidates and products, including LUMAKRAS/LUMYKRAS and bemarituzumab, may also require the use of a companion or other diagnostic device such as a device that determines whether the patient is eligible to use our drug or that helps ensure its safe and effective use. In some regions, including the United States, regulatory authorities may require contemporaneous approval of the companion diagnostic device and the therapeutic product; in others the regulatory authorities may require a separate study of the companion diagnostic device. Our product candidates or expanded indications of our products used with such devices may not be approved or may be substantially delayed in receiving regulatory approval if development or approval of such devices is delayed, such devices do not also gain or maintain regulatory approval or clearance, or if such devices do not remain commercially available. When approval of the product and device is sought under a single marketing drug application, the increased complexity of the review process may delay receipt of regulatory approval. In addition, some of these devices may be provided by single-source unaffiliated third-party companies. We are dependent on the sustained cooperation and effort of those third-party companies to supply and/or market the devices and, in some cases, to conduct the studies required for approval or clearance by the applicable regulatory agencies. We are also dependent on those third-party companies continuing to meet applicable regulatory or other requirements. Failure to successfully develop, modify, or supply the devices, delays in or failures of the Amgen or third-party studies, or failure of us or the third-party companies to obtain or maintain regulatory approval or clearance of the devices could result in increased development costs; delays in, or failure to obtain or maintain, regulatory approval; and/or associated delays in a product candidate reaching the market or in the addition of new indications for existing products. We are also required to collect and assess user complaints, adverse events and malfunctions regarding our devices, and actual or perceived safety problems or concerns with a device used with our product can lead to regulatory actions and adverse effects on our products. See *Our current products and products in development cannot be sold without regulatory approval*. Additionally, regulatory agencies conduct routine monitoring and inspections to identify and evaluate potential issues with our devices. For example, in 2017, the FDA reported on its adverse event reporting system that it was evaluating our Neulasta Onpro kit. Subsequently, we implemented device and labeling enhancements to address product complaints received on this device. We continuously monitor complaints and adverse events and implement additional enhancements as needed. Loss of regulatory approval or clearance of a device that is used with our product may also result in the removal of our product from the market. Further, failure to successfully develop, supply, or gain or maintain approval for these devices could adversely affect sales of the related approved products.

Some of our pharmaceutical pipeline and our commercial product sales rely on collaborations with third parties, which may adversely affect the development and sales of our products.

We depend on alliances with other companies, including pharmaceutical and biotechnology companies, vendors and service providers, for the development of a portion of the products in our pharmaceutical pipeline and for the commercialization and sales of certain of our commercial products. For example, we have collaborations with third parties under which we share development rights, obligations and costs and/or commercial rights and obligations. See Item 1. Business—Business Relationships.

Failures by these parties to meet their contractual, regulatory, or other obligations to us or any disruption in the relationships between us and these third parties, could have a material adverse effect on our pharmaceutical pipeline and business. In addition, our collaborative relationships for R&D and/or commercialization and sales often extend for many years and have given, and may in the future give, rise to disputes regarding the relative rights, obligations and revenues of us and our collaboration partners, including the ownership or prosecution of intellectual property and associated rights and obligations. This could result in the loss of intellectual property rights or protection, delay the development and sale of potential pharmaceutical products, affect the sale and delivery of our commercialized products and lead to lengthy and expensive litigation, administrative proceedings or arbitration.

Our efforts to collaborate with or acquire other companies, products, or technology, and to integrate the operations of companies or to support the products or technology we have acquired, may not be successful, and may result in unanticipated costs, delays or failures to realize the benefits of the transactions.

We seek innovation through significant investment in both internal R&D and external transactions, including collaborations, partnerships, alliances, licenses, joint ventures, mergers and acquisitions (collectively, acquisition activity). Acquisition activities may be subject to regulatory approvals or other requirements that are not within our control. There can be no assurance that such regulatory or other approvals will be obtained or that all closing conditions required in connection with our acquisition activities will be satisfied or waived, which could result in us being unable to complete the planned acquisition activities. In addition, antitrust scrutiny by regulatory agencies and changes to regulatory approval process in the U.S. and foreign jurisdictions may cause approvals to take longer than anticipated to obtain, not be obtained at all, or contain burdensome conditions, which may jeopardize, delay or reduce the anticipated benefits of acquisitions to us and could impede the execution of our business strategy.

Acquisition activities are complex, time consuming and expensive and may result in unanticipated costs, delays or other operational or financial problems related to integrating the acquired company and business with our company, which may divert our management's attention from other business issues and opportunities and restrict the full realization of the anticipated benefits of such transactions within the expected timeframe or at all. We may pay substantial amounts of cash, incur debt or issue equity securities to pay for acquisition activities, which could adversely affect our liquidity or result in dilution to our stockholders, respectively. Further, failures or difficulties in integrating or retaining new personnel or in integrating the operations of the businesses, products or assets we acquire (including related technology, commercial operations, compliance programs, manufacturing, distribution and general business operations and procedures and ESG activities) may affect our ability to realize the benefits of the transaction and grow our business and may result in us incurring asset impairment or restructuring charges. These and other challenges may arise in connection with our acquisitions of Otezla, Five Prime, Teneobio, ChemoCentryx, Horizon and/or our collaborations with BeiGene and KKC, or with other acquisition activities, which could have a material adverse effect on our business, results of operations and stock price.

RISKS RELATED TO OPERATIONS

We perform a substantial majority of our commercial manufacturing activities at our facility in the U.S. territory of Puerto Rico and a substantial majority of our clinical manufacturing activities at our facility in Thousand Oaks, California; significant disruptions or production failures at these facilities could significantly impair our ability to supply our products or continue our clinical trials.

The global supply of our products and product candidates for commercial sales and for use in our clinical trials is significantly dependent on the uninterrupted and efficient operation of our manufacturing facilities, in particular those in the U.S. territory of Puerto Rico and Thousand Oaks, California. See *Manufacturing difficulties, disruptions or delays could limit supply of our products and limit our product sales.*

We currently perform a substantial majority of our clinical manufacturing that supports our product candidates at our facility in Thousand Oaks, California. A substantial disruption in our ability to operate our Thousand Oaks manufacturing facility could materially and adversely affect our ability to supply our product candidates for use in our clinical trials, leading to delays in development of our product candidates.

In addition, we currently perform a substantial majority of our commercial manufacturing activities at our facility in the U.S. territory of Puerto Rico. In recent years, Puerto Rico has been affected by a number of natural disasters, including Hurricane Maria (2017), earthquakes (2020) and Hurricane Fiona (2022). These natural disasters have affected, and may continue to affect, public and private properties and Puerto Rico's electric grid and communications networks. While the critical manufacturing areas of our commercial manufacturing facility were not significantly affected by these natural disasters, the restoration of electrical service on the island after Hurricane Maria was a slow process, and our facility relied on backup diesel powered generators for some time. We also operated on backup generators for a few weeks after the early 2020 earthquakes in Puerto Rico. In 2021, the baseload power generation units of the Puerto Rico Electric Power Authority malfunctioned due to the

lack of adequate maintenance for over a decade, leading to selective outages across the island. In September 2022, Hurricane Fiona caused further damage to the island's utility infrastructure which again resulted in widespread power outages and water supply issues. Although these events did not directly have a material effect on our business, they have resulted in disruptions to our third-party suppliers on the island. Further instability of the electric grid could require us to increase our use of our generators or to use them exclusively. In addition, future storms, earthquakes or other natural or man-made disasters or events (including political unrest or labor shortages) could have a more significant effect on our manufacturing operations. The COVID-19 pandemic has also resulted in disruptions to activities on the island. In March 2020, the Governor of Puerto Rico issued Executive Orders requiring the lockdown of businesses and government facilities, imposing restrictions on business operations and a curfew on residents in response to COVID-19. Additionally, during the summer of 2021, a labor dispute arose between the maritime terminal operation company and its employees, represented by the International Longshoremen's Association (ILA), which resulted in a strike that delayed cargo movement from the San Juan Port Zone for several days. Hurricanes Maria and Fiona, the 2020 earthquakes, the COVID-19 pandemic and the ILA strike have also placed greater stress on the island's already challenged economy. Beginning in 2016, the government of Puerto Rico defaulted on its roughly \$72 billion of debt. In response, the U.S. Congress passed the Puerto Rico Oversight, Management, and Economic Stability Act, which established a financial oversight board for Puerto Rico. After years of negotiations with bondholders and other creditors, this financial oversight board reached an agreement with the same, which was confirmed by the U.S. District Court for the District of Puerto Rico effective March 2022. Although our ability to manufacture and supply our products has not, to date, been significantly affected by natural disasters, unreliable electric utility services, strikes, pandemic lockdowns or the island's economic challenges, these, or a combination of these challenges, or other issues that create a substantial disruption to our ability to operate our Puerto Rico manufacturing facility or get supplies and manufactured products transported to and from that location, could make it more expensive or difficult for us to operate in Puerto Rico, and could materially and adversely affect our ability to supply our products and affect our product sales. See *Manufacturing difficulties, disruptions or delays could limit supply of our products and limit our product sales.*

We rely on third-party suppliers for certain of our raw materials, medical devices and components.

We rely on unaffiliated third-party suppliers for certain raw materials, medical devices and components necessary for the manufacturing of our commercial and clinical products. Certain of those raw materials, medical devices and components are proprietary products of those unaffiliated third-party suppliers and are specifically cited in our drug applications with regulatory agencies so that they must be obtained from that specific sole source or sources and could not be obtained from another supplier unless and until the regulatory agency approved such supplier. For example, we rely on a single source for the SureClick autoinjectors used in the drug delivery of Repatha, ENBREL, Aimovig, AMGEVITA and Aranesp. Also, certain of the raw materials required in the commercial and clinical manufacturing of our products are sourced from other countries and/or derived from biological sources, including mammalian tissues, bovine serum and human serum albumin.

Among the reasons we may be unable to obtain these raw materials, medical devices and components include:

- regulatory requirements or action by regulatory agencies or others;
- adverse financial or other strategic developments at or affecting the supplier, including bankruptcy;
- unexpected demand for or shortage of raw materials, medical devices or components;
- failure to comply with our quality standards which results in quality and product failures, product contamination and/or recall;
- a material shortage, contamination, recall and/or restrictions on the use of certain biologically derived substances or other raw materials;
- discovery of previously unknown or undetected imperfections in raw materials, medical devices or components;
- cyberattacks on supplier systems;
- natural or other disasters, including hurricanes, earthquakes, volcanoes or fires;
- labor disputes or shortages, including from the effects of health emergencies (such as novel viruses or pandemics such as the one we are currently experiencing with COVID-19) or natural disasters; and
- geopolitical conflicts.

For example, in prior years we have experienced shortages in certain components necessary for the formulation, fill and finish of certain of our products in our Puerto Rico facility, and we have also experienced shortages related to single use systems and packaging which has caused disruptions to our manufacturing plans. Further quality issues that result in

unexpected additional demand for certain components have resulted in shortages and in the future may lead to shortages of required raw materials or components (such as we have experienced with EPOGEN glass vials). We may experience similar or other shortages in the future resulting in delayed shipments, supply constraints, clinical trial delays, contract disputes and/or stock-outs of our products. These or other similar events could negatively affect our ability to satisfy demand for our products or conduct clinical trials, which could have a material adverse effect on our product sales, business and results of operations.

Manufacturing difficulties, disruptions or delays could limit supply of our products and limit our product sales.

Manufacturing biologic and small molecule human therapeutic products is difficult, complex and highly regulated. We manufacture many of our commercial products and product candidates internally. In addition, we currently use third-party contract manufacturers to produce, or assist in the production of, a number of our products, and we currently use contract manufacturers to produce, or assist in the production of, a number of our late-stage product candidates and drug delivery devices. See Item 1. Business—Manufacturing, Distribution and Raw Materials—Manufacturing. Our ability to adequately and timely manufacture and supply our products (and product candidates to support our clinical trials) is dependent on the uninterrupted and efficient operation of our facilities and those of our third-party contract manufacturers, which may be affected by:

- capacity of manufacturing facilities;
- contamination by microorganisms or viruses, or foreign particles from the manufacturing process;
- natural or other disasters, including hurricanes, earthquakes, volcanoes or fires;
- labor disputes or shortages, including the effects of health emergencies (such as novel viruses or pandemics such as the one we are currently experiencing with COVID-19) or natural disasters;
- compliance with regulatory requirements;
- changes in forecasts of future demand;
- timing and actual number of production runs and production success rates and yields;
- updates of manufacturing specifications;
- contractual disputes with our suppliers and contract manufacturers;
- timing and outcome of product quality testing;
- power failures and/or other utility failures;
- cyberattacks on supplier systems;
- breakdown, failure, substandard performance or improper installation or operation of equipment (including our information technology systems and network-connected control systems or those of our contract manufacturers or third-party service providers);
- delays in the ability of the FDA or foreign regulatory agencies to provide us necessary reviews, inspections and approvals, including as a result of a subsequent extended U.S. federal or other government shutdowns; and/or
- geopolitical conflicts.

If any of these or other problems affect production in one or more of our facilities or those of our third-party contract manufacturers, or if we do not accurately forecast demand for our products or the amount of our product candidates required in clinical trials, we may be unable to start or increase production in our unaffected facilities to meet demand. If the efficient manufacture and supply of our products or product candidates is interrupted, we may experience delayed shipments, delays in our clinical trials, supply constraints, stock-outs, adverse event trends, contract disputes and/or recalls of our products. From time to time, we have initiated recalls of certain lots of our products. For example, in July 2014 we initiated a voluntary recall of an Aranesp lot distributed in the EU after particles were detected in a quality control sample following distribution of that lot, and in April 2018 we initiated a precautionary recall of two batches of Vectibix distributed in Switzerland after potential crimping defects were discovered in the metal seals on some product vials. If we are at any time unable to provide an uninterrupted supply of our products to patients, we may lose patients and physicians may elect to prescribe competing therapeutics instead of our products, which could have a material adverse effect on our product sales, business and results of operations.

Our manufacturing processes, those of our third-party contract manufacturers and those of certain of our third-party service providers must undergo regulatory approval processes and are subject to continued review by the FDA and other regulatory authorities. It can take longer than five years to build, validate and license another manufacturing plant, and it can take longer than three years to qualify and license a new contract manufacturer or service provider. If we elect or are required to make changes to our manufacturing processes because of new regulatory requirements, new interpretations of existing requirements or other reasons, this could increase our manufacturing costs and result in delayed shipments, delays in our clinical trials, supply constraints, stock-outs, adverse event trends or contract negotiations or disputes. Such manufacturing challenges may also occur if our existing contract manufacturers are unable or unwilling to timely implement such changes, or at all.

In addition, regulatory agencies conduct routine monitoring and inspections of our manufacturing facilities and processes as well as those of our third-party contract manufacturers and service providers. If regulatory authorities determine that we or our third-party contract manufacturers or certain of our third-party service providers have violated regulations, they may mandate corrective actions and/or issue warning letters, or even restrict, suspend or revoke our prior approvals, prohibiting us from manufacturing our products or conducting clinical trials or selling our marketed products until we or the affected third-party contract manufacturers or third-party service providers comply, or indefinitely. See also *Our current products and products in development cannot be sold without regulatory approval*. Such issues may also delay the approval of product candidates we have submitted for regulatory review, even if such product candidates are not directly related to the products, devices or processes at issue with regulators. Because our third-party contract manufacturers and certain of our third-party service providers are subject to the FDA and foreign regulatory authorities, alternative qualified third-party contract manufacturers and third-party service providers may not be available on a timely basis, or at all. If we or our third-party contract manufacturers or third-party service providers cease or interrupt production or if our third-party contract manufacturers and third-party service providers fail to supply materials, products or services to us, we may experience delayed shipments, delays in our clinical trials, supply constraints, contract disputes, stock-outs and/or recalls of our products. Additionally, we distribute a substantial volume of our commercial products through our primary distribution centers in Louisville, Kentucky for the United States and in Breda, Netherlands for Europe and much of the rest of the world. We also conduct most of the labeling and packaging of our products distributed in Europe and much of the rest of the world in Breda. Our ability to timely supply products is dependent on the uninterrupted and efficient operations of our distribution and logistics centers, our third-party logistics providers and our labeling and packaging facility in Breda. Further, we rely on commercial transportation, including air and sea freight, for the distribution of our products to our customers, which has been negatively affected by the ongoing COVID-19 pandemic and may be negatively affected by natural disasters or geopolitical security threats.

There have also been legislative and administrative proposals seeking to incentivize greater drug manufacturing in the United States with the stated goal of improving supply reliability in the United States. For example, on August 6, 2020, the previous Administration issued an Executive Order aimed at boosting domestic production of essential medicines, medical countermeasures, and critical inputs titled “Executive Order on Ensuring Essential Medicines, Medical Countermeasures, and Critical Inputs are Made in the United States.” Additionally, one legislative proposal would have prohibited the U.S. Department of Veterans Affairs from purchasing certain drugs that have active pharmaceutical ingredients manufactured outside the United States. While we perform a substantial majority of our commercial manufacturing activities in the United States, including in the U.S. territory of Puerto Rico, and a substantial majority of our clinical manufacturing activities at our facility in Thousand Oaks, California, the passage of such legislation could result in foreign governments enacting retaliatory legislation or regulatory actions, which may have an adverse effect on our product sales, business and results of operations.

Our business and operations may be negatively affected by the failure, or perceived failure, of achieving our environmental, social and governance objectives.

We continue to work towards operating our business in an environmentally responsible and socially inclusive manner. Stakeholders, including our investors and our employees, have increasingly focused on, and are expected to continue to focus on, our ESG practices. If our ESG practices fail to meet these stakeholders’ expectations and standards, there could be a material adverse effect on our reputation, business and, ultimately, our stock price.

Our ESG report is made available on our website and describes our ESG goals and the progress we have made on the ESG issues deemed most important to our external and internal stakeholders, based on surveys, interviews and certain frameworks for corporate responsibility. Achieving our ESG goals requires long-term investments and broad, coordinated activity, and we may be required to incur additional costs or allocate additional resources towards monitoring, reporting and implementing our ESG practices. Further, we may fail to accurately assess our stakeholders’ ESG priorities, as such priorities have evolved and will continue to evolve. While we have achieved most of our goals set in prior years, whether we can achieve our current and future ESG goals continues to be uncertain and remains subject to numerous risks, including evolving regulatory requirements and social expectations affecting ESG practices, our ability to recruit, develop and retain a diverse workforce, the availability of suppliers and collaboration partners that can meet our ESG goals, the effects of the organic growth of our business and potential

acquisitions of other businesses on our ESG performance, and the availability and cost of technologies or resources, such as carbon credits, that support our goals. For example, impacts on the commodity market and supply chains caused by the armed conflict in Ukraine could limit the availability of electric vehicle components, impairing our ability to meet some of our environmental sustainability goals. Any failure or perceived failure to meet our ESG program priorities could result in a material adverse effect on our reputation, business and stock price.

The effects of global climate change and related natural disasters could negatively affect our business and operations.

Many of our operations and facilities, including those essential to our manufacturing, R&D and distribution activities, are in locations that are subject to natural disasters, including droughts, fires, extreme temperatures, hurricanes, tropical storms and/or floods. For example, in 2017 Hurricane Maria caused catastrophic damage, compounded in 2022 by Hurricane Fiona, to the U.S. territory of Puerto Rico, where we perform a substantial majority of our commercial manufacturing activities. Although our site was well-protected and suffered minimal damage, there can be no assurances that we would have similar results in the face of future natural disasters. The severity and frequency of weather-related natural disasters has been amplified, and is expected to continue to be amplified by, global climate change. Such natural disasters have caused, and in the future may cause, damage to and/or disrupt our operations, which may result in a material adverse effect on our product sales, business and results of operations. Our suppliers, vendors and business partners also face similar risks, and any disruption to their operations could have an adverse effect on our supply and manufacturing chain. Further, many of our key facilities are located on islands, including Puerto Rico, Singapore and Ireland, which rely on essential port facilities that may be vulnerable to climate change-related or other natural disasters. Although we have detailed business continuity plans in place and periodic assessments of our natural disaster risk, any natural disaster may also result in prolonged interruption to our critical operational and business activities, and we may be required to incur significant costs to remedy the effects of such natural disasters and fully resume operations, which may result in a material adverse effect on our product sales, business and results of operations. See *We perform a substantial majority of our commercial manufacturing activities at our facility in the U.S. territory of Puerto Rico and a substantial majority of our clinical manufacturing activities at our facility in Thousand Oaks, California; significant disruptions or production failures at these facilities could significantly impair our ability to supply our products or continue our clinical trials and Manufacturing difficulties, disruptions or delays could limit supply of our products and limit our product sales.*

GENERAL RISK FACTORS

Global economic conditions may negatively affect us and may magnify certain risks that affect our business.

Our operations and performance have been, and may continue to be, affected by global economic conditions. The economic downturn resulting from the COVID-19 pandemic precipitated a global recession, and together with high rates of inflation and energy supply issues experienced in certain regions, have led to regional and/or global macroeconomic challenges, the effects of which may be of an extended duration. In particular, acute rising energy costs may further adversely affect productivity and economic conditions in Europe. Additionally, financial pressures may cause government or other third-party payers to more aggressively seek cost containment measures in healthcare and other settings. See *Our sales depend on coverage and reimbursement from government and commercial third-party payers, and pricing and reimbursement pressures have affected, and are likely to continue to affect, our profitability.* As a result of global economic conditions, some third-party payers may delay or be unable to satisfy their reimbursement obligations. Job losses or other economic hardships (including inflation) may also affect patients' ability to afford healthcare as a result of increased co-pay or deductible obligations, greater cost sensitivity to existing co-pay or deductible obligations, lost healthcare insurance coverage or for other reasons. We believe such conditions have led and could continue to lead to reduced demand for our products, which could have a material adverse effect on our product sales, business and results of operations. The current inflationary environment related to increased aggregate demand, supply chain constraints and the effects from the armed conflict in Ukraine (including the effects of the sanctions that were implemented in response to the conflict and the resulting impacts on the commodity market and supply chains) have also increased our operating expenses and may continue to affect our operating expenses. Our operational costs, including the cost of energy, materials, labor, distribution and our other operational and facilities costs are subject to market conditions and are being adversely affected by inflationary pressures. Economic conditions may also adversely affect the ability of our distributors, customers and suppliers to obtain the liquidity required to buy inventory or raw materials and to perform their obligations under agreements with us, which could disrupt our operations. Although we monitor our distributors', customers' and suppliers' financial condition and their liquidity to mitigate our business risks, some of our distributors, customers and suppliers may become insolvent, which could have a material adverse effect on our product sales, business and results of operations. A significant worsening of global economic conditions could precipitate or materially amplify the other risks described herein.

We maintain a significant portfolio of investments disclosed as cash equivalents and marketable securities on our consolidated balance sheets. The global spread of COVID-19 has also led to disruption and volatility in the global capital markets. We have certain assets, including equity investments, that are exposed to market fluctuations that could, in a sustained

or recurrent series of market disruptions, result in impairments. The value of our investments may also be adversely affected by interest rate fluctuations, inflation, downgrades in credit ratings, illiquidity in the capital markets and other factors that may result in other-than-temporary declines in the value of our investments. Any of those events could cause us to record impairment charges with respect to our investment portfolio or to realize losses on sales of investments.

Our stock price is volatile.

Our stock price, like that of our peers in the biotechnology and pharmaceutical industries, is volatile. Our revenues and operating results may fluctuate from period to period for a number of reasons. Events such as a delay in product development, changes to our expectations or strategy or even a relatively small revenue shortfall may cause financial results for a period to be below our expectations or projections. As a result, our revenues and operating results and, in turn, our stock price may be subject to significant fluctuations. Announcements or discussions, including via social media channels, of possible restrictive actions by government or private payers that would negatively affect our business or industry if ultimately enacted or adopted may also cause our stock price to fluctuate, whether or not such restrictive actions ever actually occur. Similarly, actual or perceived safety issues with our products or similar products or unexpected clinical trial results can have an immediate and rapid effect on our stock price, whether or not our operating results are materially affected.

We may not be able to access the capital and credit markets on terms that are favorable to us, or at all.

The capital and credit markets may experience extreme volatility and disruption, which may lead to uncertainty and liquidity issues for both borrowers and investors. For example, early in 2020, there were significant disruptions in the commercial paper market and several borrowers were unable to obtain funding at normal rates or maturities, which resulted in a significant increase in draws of corporate credit lines with banks. Similarly, the bond markets experienced extreme volatility in terms of interest rates and credit spreads, with several days without new issuances of corporate bonds. We expect to access the capital markets, from time to time, to supplement our existing funds and cash generated from operations to satisfy our needs for working capital; capital expenditure and debt service requirements; our plans to pay dividends and repurchase stock; and other business initiatives we strategically plan to pursue, including acquisitions (such as our acquisition of Horizon) and licensing activities. In the event of adverse capital and credit market conditions, we may be unable to obtain capital market financing on similar favorable terms, or at all, which could have a material adverse effect on our business and results of operations or our ability to complete business acquisitions. Changes in credit ratings issued by nationally recognized credit-rating agencies could adversely affect our ability to obtain capital market financing and the cost of such financing and have an adverse effect on the market price of our securities.

Item 1B. UNRESOLVED STAFF COMMENTS

None.

Item 2. PROPERTIES

As of December 31, 2022, we owned or leased approximately 150 properties. The locations and primary functions of significant properties are summarized in the following tables:

U.S. Location:	Manufacturing	Administrative	R&D	Sales & marketing	Warehouse	Distribution center
Thousand Oaks, CA*	P	P	P	P	P	P
San Francisco, CA			P			
Louisville, KY					P	P
Cambridge, MA			P			
Juncos, Puerto Rico	P	P			P	P
West Greenwich, RI	P	P			P	
Tampa, FL		P				
Other U.S. cities		P		P		

* Corporate headquarters

ROW Location:	Manufacturing	Administrative	R&D	Sales & marketing	Warehouse	Distribution center
Brazil	P	P		P	P	P
Canada		P	P	P		
China		P		P		
Denmark		P	P	P		
Germany		P	P	P		
Iceland		P	P			
Ireland	P	P		P	P	P
Japan		P		P		
Netherlands	P	P		P	P	P
Singapore	P	P		P	P	
Switzerland		P		P		
United Kingdom		P	P	P		
Other countries		P	P	P	P	

Excluded from the information above are (i) undeveloped land and leased properties that have been abandoned and (ii) certain buildings we still own but that are no longer used in our business. There are no material encumbrances on our owned properties.

We believe our facilities are suitable for their intended uses and, in conjunction with our third-party contract manufacturing agreements, provide adequate capacity and are sufficient to meet our expected needs. See Item 1A. Risk Factors for a discussion of the factors that could adversely impact our manufacturing operations and the global supply of our products.

See Item 1. Business—Manufacturing, Distribution and Raw Materials.

Item 3. LEGAL PROCEEDINGS

Certain of the legal proceedings in which we are involved are discussed in Part IV—Note 19, Contingencies and commitments, to the Consolidated Financial Statements and are hereby incorporated by reference.

Item 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

Item 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

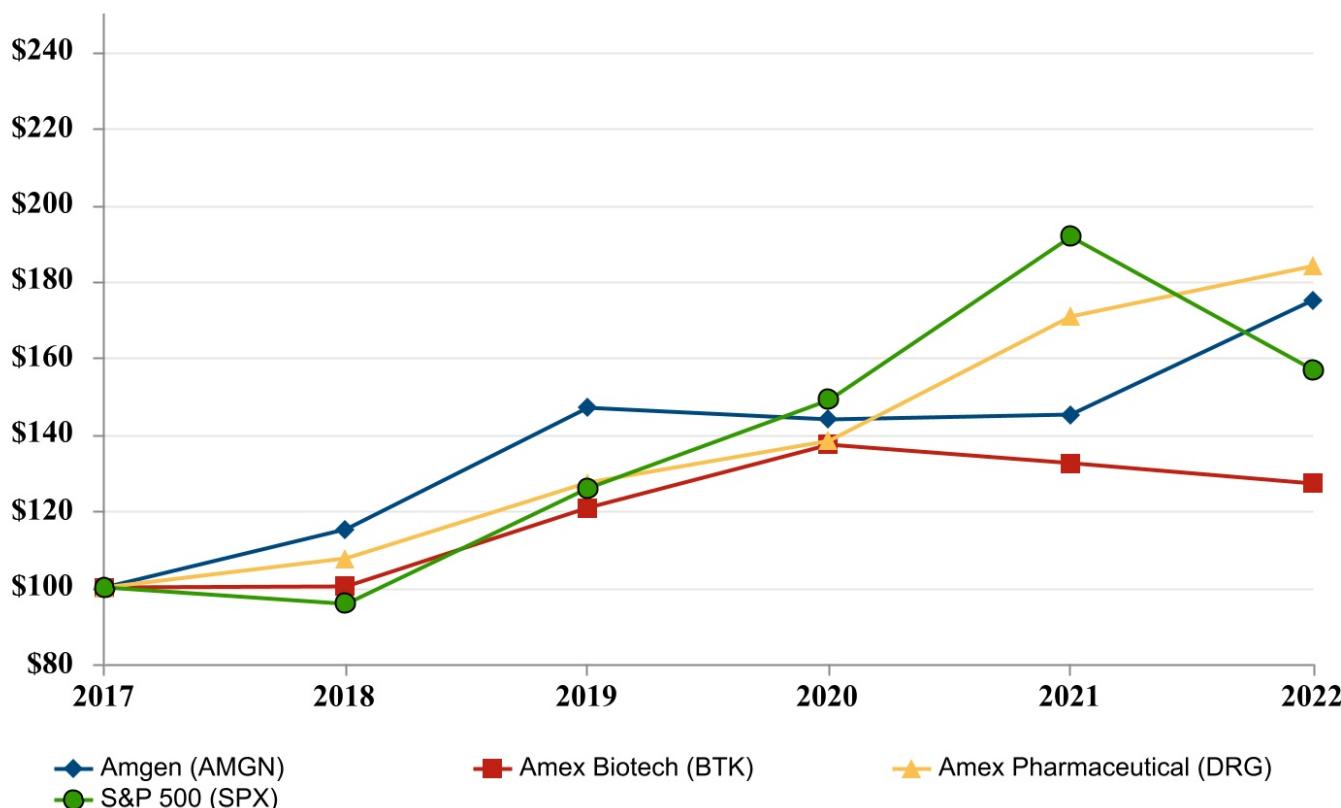
Common stock

Our common stock trades on the NASDAQ Global Select Market under the symbol AMGN. As of February 6, 2023, there were approximately 4,838 holders of record of our common stock.

Performance graph

The following graph shows the value of an investment of \$100 on December 31, 2017, in each of Amgen common stock, the Amex Biotech Index, the Amex Pharmaceutical Index and Standard & Poor's 500 Index. All values assume reinvestment of the pretax value of dividends and are calculated as of December 31 of each year. The historical stock price performance of the Company's common stock shown in the performance graph is not necessarily indicative of future stock price performance.

**Comparison of Five-Year Cumulative Total Return
of a \$100 Investment on December 31, 2017**



	12/31/2017	12/31/2018	12/31/2019	12/31/2020	12/31/2021	12/31/2022
Amgen (AMGN)	\$100.00	\$115.08	\$146.87	\$143.93	\$145.19	\$174.94
Amex Biotech (BTK)	\$100.00	\$100.26	\$120.75	\$137.14	\$132.31	\$127.01
Amex Pharmaceutical (DRG)	\$100.00	\$107.45	\$127.20	\$138.31	\$170.64	\$183.88
Standard & Poor's 500 (SPX)	\$100.00	\$95.63	\$125.73	\$148.86	\$191.54	\$156.74

The material in the above performance graph is not soliciting material, is not deemed filed with the SEC and is not incorporated by reference in any filing of the Company under the Securities Act or the Exchange Act, whether made on, before or after the date of this filing and irrespective of any general incorporation language in such filing.

Stock repurchase program

During the three months and year ended December 31, 2022, we had one outstanding stock repurchase program, under which the repurchasing activity was as follows:

	Total number of shares purchased	Average price paid per share ⁽¹⁾	Total number of shares purchased as part of publicly announced program	Maximum dollar value that may yet be purchased under the program ⁽²⁾
October 1 - October 31	—		—	\$ 6,979,263,848
November 1 - November 30	—		—	\$ 6,979,263,848
December 1 - December 31	—		—	\$ 6,979,263,848
January 1 - December 31 ⁽³⁾	<u><u>26,147,900</u></u>	\$ 241.32	<u><u>26,147,900</u></u>	

⁽¹⁾ Average price paid per share includes related expenses.

⁽²⁾ In October 2022, our Board of Directors increased the amount authorized under the stock repurchase program by an additional \$2.4 billion.

⁽³⁾ Includes the impact of ASR agreements entered into with third-party financial institutions under which a total of 24,784,400 shares of common stock were delivered at an average price of approximately \$242.09 per share.

Dividends

For the years ended December 31, 2022 and 2021, we paid quarterly dividends. We expect to continue to pay quarterly dividends, although the amount and timing of any future dividends are subject to approval by our Board of Directors. Additional information required by this item is incorporated herein by reference to Part IV—Note 16, Stockholders' equity, to the Consolidated Financial Statements.

Securities Authorized for Issuance Under Existing Equity Compensation Plans

Information about securities authorized for issuance under existing equity compensation plans is incorporated by reference from Part III, Item 12—Securities Authorized for Issuance Under Existing Equity Compensation Plans.

Item 6. RESERVED

Item 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following MD&A is intended to assist the reader in understanding Amgen's business. MD&A is provided as a supplement to, and should be read in conjunction with, our consolidated financial statements and accompanying notes. Our results of operations discussed in MD&A are presented in conformity with GAAP. Amgen operates in one business segment: human therapeutics. Therefore, our results of operations are discussed on a consolidated basis.

Forward-looking statements

This report and other documents we file with the SEC contain forward-looking statements that are based on current expectations, estimates, forecasts and projections about us, our future performance, our business, our beliefs and our management's assumptions. In addition, we, or others on our behalf, may make forward-looking statements in press releases, written statements or our communications and discussions with investors and analysts in the normal course of business through meetings, webcasts, phone calls and conference calls. Such words as "expect," "anticipate," "outlook," "could," "target," "project," "intend," "plan," "believe," "seek," "estimate," "should," "may," "assume" and "continue" as well as variations of such words and similar expressions are intended to identify such forward-looking statements. These statements are not guarantees of future performance and they involve certain risks, uncertainties and assumptions that are difficult to predict. We describe our respective risks, uncertainties and assumptions that could affect the outcome or results of operations in Part I, Item 1A. Risk Factors. We have based our forward-looking statements on our management's beliefs and assumptions based on information available to our management at the time the statements are made. We caution you that actual outcomes and results may differ materially from what is expressed, implied or forecasted by our forward-looking statements. Reference is made in particular to forward-looking statements regarding product sales, regulatory activities, clinical trial results, reimbursement, expenses, EPS, liquidity and capital resources, trends, planned dividends, stock repurchases, collaborations and effects of pandemics. Except as required under the federal securities laws and the rules and regulations of the SEC, we do not have any intention or obligation to update publicly any forward-looking statements after the distribution of this report, whether as a result of new information, future events, changes in assumptions or otherwise.

Overview

Amgen is a biotechnology company committed to unlocking the potential of biology for patients suffering from serious illnesses. A biotechnology pioneer since 1980, Amgen has grown to be one of the world's leading independent biotechnology companies, has reached millions of patients around the world and is developing a pipeline of medicines with breakaway potential.

Our principal products are ENBREL, Prolia, Otezla, XGEVA, Aranesp, Nplate, Repatha, KYPROLIS, Neulasta and EVENITY. We also market a number of other products, including MVASI, Vectibix, BLINCYTO, EPOGEN, AMGEVITA, Aimovig, Parsabiv, KANJINTI, LUMAKRAS/LUMYKRAS, TEZSPIRE, NEUPOGEN, Sensipar/Mimpara and TAVNEOS. For additional information about our products, see Part I, Item 1. Business—Marketing, Distribution and Selected Marketed Products.

Our strategy includes integrated activities intended to strengthen our competitive position in the industry. We operate in six commercial areas: inflammation, oncology/hematology, bone health, cardiovascular (CV) disease, nephrology and neuroscience. We conduct discovery research primarily in three therapeutic areas: inflammation, oncology/hematology and general medicine. In 2022, we advanced our innovative pipeline, grew our international business, completed a strategic transaction to augment our marketed product portfolio, announced our intention to acquire Horizon and continued providing uninterrupted supplies of our medicines globally through the third year of the COVID-19 pandemic. We accomplished these objectives while maintaining a strategic and disciplined approach to capital allocation and advancing our ESG efforts.

In 2022, we continued to advance our pipeline, initiating phase 3 clinical trials for a number of programs, including LUMAKRAS/LUMYKRAS for advanced colorectal cancer, olpasiran for CV disease and rocatinlimab for atopic dermatitis. We continued to grow our international business, including achieving key regulatory approvals for TEZSPIRE in the EU and Japan. Our external business development activities for 2022 included the acquisition of ChemoCentryx, adding recently launched TAVNEOS to our inflammation portfolio. We also continued to advance our biosimilar program, with launches in new markets. Our biosimilars are expected to continue launching in new markets throughout 2023, including the U.S. launch of AMGEVITA in January 2023.

During 2022, while gradually recovering from the global pandemic and facing increased competition from biosimilars and generics, total product sales increased 2%, primarily driven by volume growth for certain brands, partially offset by declines in net selling prices of certain products and unfavorable changes to foreign currency exchange rates. Product sales increased 3% in the United States, primarily driven by volume growth, partially offset by declines in net selling prices, and increased 1% in ROW, primarily driven by volume growth, partially offset by unfavorable changes to foreign currency exchange rates and declines in net selling prices. Total operating expenses decreased 9% due to both the acquired IPR&D write-off from the Five Prime acquisition and a licensing-related upfront payment to KKC in 2021, partially offset by a loss on a nonstrategic divestiture in 2022.

Cash flows from operating activities totaled \$9.7 billion, which supported investment in our business while returning capital to shareholders through the payment of cash dividends and stock repurchases. For 2022, we increased our quarterly cash dividend by 10% to \$1.94 per share of common stock. In December 2022, we declared a cash dividend of \$2.13 per share of common stock for the first quarter of 2023, an increase of 10% for this period, to be paid in March 2023. We also repurchased 26.1 million shares of our common stock during 2022 at an aggregate cost of \$6.3 billion. In 2022, we received net proceeds from the issuance of debt of \$6.9 billion and extinguished \$0.3 billion of debt. In December 2022, in connection with the proposed acquisition of Horizon, we entered into a bridge credit agreement and a term loan credit agreement which provide for borrowings in the aggregate of \$28.5 billion.

Amgen's approach to and investment in human capital resource management is directed at attracting, motivating, developing and retaining talent to tackle the challenges of running an enterprise focused on the discovery, development and commercialization of innovative medicines. Our compensation, benefits and development programs are designed to encourage performance, promote accountability and adherence to Company values, and align with the interests of the Company's shareholders. Further, we believe that a diverse and inclusive culture fosters innovation, which supports our ability to serve patients. We are engaging in activities and setting goals to improve our focus on diversity, inclusion and belonging. For further information on these and other efforts, see Part I, Item 1. Business—Human Capital Resources.

We have a long-standing ambition to be environmentally responsible, and we regularly set targets to challenge ourselves to deliver further improvements. We achieved our targets for the 2013–2020 period while growing revenues, increasing production capacity and expanding to approximately 100 countries over the same period. To continue on our path to greater environmental sustainability, in January 2021 we announced a new set of long-term environmental targets to achieve by 2027, including achieving carbon neutrality, reducing water consumption by 40% and reducing waste disposed by 75%.⁽¹⁾⁽²⁾ Additionally, in 2022 we issued our first green bonds to finance eligible projects that meet specified criteria to reduce our impact on the environment.

Our long-term success depends, to a great extent, on our ability to continue to discover, develop and commercialize innovative products and acquire or collaborate on therapies currently in development by other companies. We must develop new products to achieve revenue growth and to offset revenue losses from when products lose their exclusivity or when competing products are launched. Certain of our products face increasing pressure from competition, including biosimilars and generics. For additional information, including information on the expirations of patents for various products, see Part I, Item 1. Business—Marketing, Distribution and Selected Marketed Products—Patents, and Part I, Item 1. Business—Marketing, Distribution and Selected Marketed Products—Competition. We devote considerable resources to R&D activities, but successful product development in the biotechnology industry is highly uncertain. We also face increasing regulatory scrutiny of safety and efficacy both before and after products launch.

Rising healthcare costs, uncertain macroeconomic conditions, including higher inflation and rising interest rates, and geopolitical conflicts continue to pose challenges to our business. As a result of public and private healthcare-provider focus, the industry continues to be subject to cost containment measures and significant pricing pressures, including net price declines. Moreover, legislation enacted to reduce healthcare expenditures, including provisions of the IRA, have affected, and are likely to continue to affect, our business. Finally, wholesale and end-user buying patterns can affect our product sales. These buying patterns can cause fluctuations in quarterly product sales but have generally not been significant to date when comparing full-year product performance to the prior year. See Part I, Item 1. Business—Marketing, Distribution and Selected Marketed Products, and Part I, Item 1A. Risk Factors for further discussion of certain factors that could impact our future product sales.

COVID-19 pandemic

Since the onset of the pandemic in 2020, we have been closely monitoring the pandemic's effects on our global operations. We continue to take appropriate steps to minimize risks to our employees, a significant number of whom have continued to work virtually. To date, our remote working arrangements have not significantly affected our ability to maintain critical business operations, and we have not experienced disruptions to or shortages of our supply of medicines.

Over the course of the pandemic we have experienced changes in demand for some of our products as fluctuations in the frequency of patient visits to doctors' offices have impacted the provision of treatments to existing patients and reduced diagnoses in new patients. During 2021, there was a gradual recovery in both patient visits and diagnosis rates that approached pre-pandemic levels. In 2022, the pandemic continued to impact the healthcare sector and our business, to varying degrees across our markets. During 2022, with the exception of the Asia Pacific region that was affected by lockdowns during most of the year, we saw greater stability in patient visits and demand patterns even in areas that were facing surges in the virus. Given the evolution of COVID-19 since its onset, including the proliferation of variants, we cannot predict the impact of future virus surges on our business and will continue to closely monitor the impact of COVID-19 on our business and on the healthcare sector more generally.

Since early 2021, efforts have been under way to control the COVID-19 pandemic. However, uncertainty remains as to the efficacy of these activities with respect to the ongoing trajectory of the pandemic. Challenges to vaccination efforts, new variants and other causes of virus spread may require governments to change restrictions and/or shutdown requirements in various geographies. As a result, we expect to see continued volatility for at least the duration of the pandemic as governments respond to current local conditions.

With regard to our clinical trial activities, we are continuously monitoring COVID-19 infection rates, including changes from new variants; we are working to mitigate effects on future study enrollment in our clinical trials; and we are evaluating the impact in all relevant countries. We remain focused on supporting our active clinical sites in their providing care for patients and in our providing investigational drug supply. For a discussion of the risks the COVID-19 pandemic could present to our results, see Part I, Item 1A. Risk Factors of this Form 10-K.

⁽¹⁾ Represents reductions against established baselines, taking into account only verified reduction projects and does not take into account changes associated with contraction or expansion of the Company.

⁽²⁾ Carbon neutrality goal refers to Scope 1 and 2.

Selected Financial Information

The following is an overview of our results of operations (in millions, except percentages and per-share data):

	Year ended December 31, 2022	Change	Year ended December 31, 2021
Product sales:			
U.S.	\$ 17,743	3 %	\$ 17,286
ROW	7,058	1 %	7,011
Total product sales	24,801	2 %	24,297
Other revenues			
Total revenues	1,522	(10)%	1,682
Operating expenses	\$ 26,323	1 %	\$ 25,979
Operating income	\$ 16,757	(9)%	\$ 18,340
Net income	\$ 9,566	25 %	\$ 7,639
Diluted EPS	\$ 6,552	11 %	\$ 5,893
Diluted shares	\$ 12.11	18 %	\$ 10.28
	541	(6)%	573

In the following discussion of changes in product sales, any reference to volume growth or decline refers to changes in the purchases of our products by healthcare providers (such as physicians or their clinics), dialysis centers, hospitals and pharmacies. In addition, any reference to increases or decreases in inventory refers to changes in inventory held by wholesaler customers and end users (such as pharmacies).

Total product sales increased in 2022, primarily driven by volume growth for certain brands, including Repatha, Prolia, EVENITY, Nplate, LUMAKRAS/LUMYKRAS, KYPROLIS, Otezla and TEZSPIRE, partially offset by declines in net selling prices of certain products, including Neulasta, Repatha and MVASI, and unfavorable changes to foreign currency exchange rates. For 2023, we expect that net selling prices will continue to decline at a portfolio level driven by increased competition. Further, the first quarter of a year historically represents the lowest product sales quarter for the year, in part due to plan changes, insurance reverifications and higher co-pay expenses as U.S. patients work through deductibles, particularly for products acquired through pharmacy benefit programs.

As a result of uncertain macroeconomic conditions, we expect volatility around foreign currency exchange rates to continue. The impact of unfavorable changes to foreign currency exchange rates will be partially offset by corresponding decreases in our international operating expenses. While not designed to completely address foreign currency changes, our hedging activities also seek to offset, in part, such effects on our net income by hedging our net foreign currency exposure, primarily with respect to product sales denominated in euros.

As discussed above, our product sales have been affected by reduced demand as a result of the COVID-19 pandemic. In general, the dynamics of the pandemic were most significant on our product sales in the early months of the pandemic, with demand beginning to show some recovery in late 2020. In late 2021 and early 2022, increased infection rates caused by variants of the virus (including Omicron) led to diminished capacity in the healthcare sector and reduced working days for our own sales force, which impacted our business. As of the second quarter of 2022, we saw the effects of these variants recede in most markets, which allowed us to engage in increased field-facing activities. Provider and patient activity also increased, leading to improvements in demand for our products to pre-pandemic levels. However, the cumulative decrease in diagnoses over the course of the pandemic has suppressed the volume of new patients starting treatment, which continues to impact our business. Given the unpredictable nature of the pandemic, there could be intermittent disruptions in physician–patient interactions, and as a result, we may experience quarter-to-quarter variability. In addition, other changes in the healthcare ecosystem have the potential to introduce variability into product sales trends. For example, changes in U.S. employment have led to changes to the insured population. Growth in numbers of Medicaid enrollees and uninsured individuals, along with provisions of the IRA, may have a negative impact on product sales. Overall, uncertainty remains around the timing and magnitude of our sales during the COVID-19 pandemic. See Risk Factors in Part I, Item 1A. of this Form 10-K.

Other revenues decreased for 2022, driven by lower revenue from COVID-19 antibody material and licensing-related revenues.

Operating expenses decreased for 2022 due to both the acquired IPR&D write-off related to the bemarituzumab program acquired as part of the Five Prime acquisition and a licensing-related upfront payment to KKC in 2021, partially offset by a loss

on a nonstrategic divestiture in 2022. See Part IV—Note 2, Acquisitions and divestitures, and Note 8, Collaborations, to the Consolidated Financial Statements.

Results of Operations

Product sales

Worldwide product sales were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
ENBREL	\$ 4,117	(8)%	\$ 4,465	(11)%	\$ 4,996
Prolia	3,628	12 %	3,248	18 %	2,763
Otezla	2,288	2 %	2,249	2 %	2,195
XGEVA	2,014	— %	2,018	6 %	1,899
Aranesp	1,421	(4)%	1,480	(6)%	1,568
Nplate	1,307	27 %	1,027	21 %	850
Repatha	1,296	16 %	1,117	26 %	887
KYPROLIS	1,247	13 %	1,108	4 %	1,065
Neulasta	1,126	(35)%	1,734	(24)%	2,293
EVENITY	787	48 %	530	51 %	350
Other products ⁽¹⁾	<u>5,570</u>	5 %	<u>5,321</u>	(1)%	<u>5,374</u>
Total product sales	<u>\$ 24,801</u>	2 %	<u>\$ 24,297</u>	— %	<u>\$ 24,240</u>
Total U.S.	<u>\$ 17,743</u>	3 %	<u>\$ 17,286</u>	(4)%	<u>\$ 17,985</u>
Total ROW	<u>7,058</u>	1 %	<u>7,011</u>	12 %	<u>6,255</u>
Total product sales	<u><u>\$ 24,801</u></u>	<u>2 %</u>	<u><u>\$ 24,297</u></u>	<u>— %</u>	<u><u>\$ 24,240</u></u>

⁽¹⁾ Consists of product sales of our non-principal products, as well as our Gensenta and Bergamo subsidiaries.

Future sales of our products will depend in part on the factors discussed in the Overview, Part I, Item 1. Business—Marketing, Distribution and Selected Marketed Products—Competition, in Part I, Item 1A. Risk Factors, and any additional factors discussed in the individual product sections below. In addition, for a list of our products' significant competitors, see Part I, Item 1. Business—Marketing, Distribution and Selected Marketed Products—Competition.

ENBREL

Total ENBREL sales by geographic region were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
ENBREL — U.S.	\$ 4,044	(7)%	\$ 4,352	(10)%	\$ 4,855
ENBREL — Canada	73	(35)%	113	(20)%	141
Total ENBREL	<u>\$ 4,117</u>	<u>(8)%</u>	<u>\$ 4,465</u>	<u>(11)%</u>	<u>\$ 4,996</u>

The decrease in ENBREL sales for 2022 was primarily driven by unfavorable changes to estimated sales deductions, lower volume and lower net selling price. For 2023, we expect ENBREL to follow the historical pattern of lower sales in the first quarter relative to subsequent quarters due to the impact of benefit plan changes, insurance reverification and increased co-pay expenses as U.S. patients work through deductibles. In addition, for 2023, we expect further declines in net selling price.

The decrease in ENBREL sales for 2021 was driven by lower net selling price, volume and unfavorable changes to inventory.

Prolia

Total Prolia sales by geographic region were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
Prolia — U.S.	\$ 2,465	15 %	\$ 2,150	17 %	\$ 1,830
Prolia — ROW	1,163	6 %	1,098	18 %	933
Total Prolia	\$ 3,628	12 %	\$ 3,248	18 %	\$ 2,763

The increase in global Prolia sales for 2022 was driven by volume growth and higher net selling price, partially offset by unfavorable changes to foreign currency exchange rates.

The increase in global Prolia sales for 2021 was primarily driven by volume growth.

Otezla

Total Otezla sales by geographic region were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
Otezla — U.S.	\$ 1,886	5 %	\$ 1,804	1 %	\$ 1,790
Otezla — ROW	402	(10)%	445	10 %	405
Total Otezla	\$ 2,288	2 %	\$ 2,249	2 %	\$ 2,195

The increase in global Otezla sales for 2022 was primarily driven by volume growth, partially offset by lower net selling price. ROW Otezla sales for 2022 were impacted by unfavorable changes to foreign currency exchange rates. For 2023, we expect Otezla to follow the historical pattern of lower sales in the first quarter relative to subsequent quarters due to the impact of benefit plan changes, insurance reverification and increased co-pay expenses as U.S. patients work through deductibles.

The increase in global Otezla sales for 2021 was driven by volume growth, partially offset by lower net selling price and unfavorable changes to inventory.

For a discussion of ongoing litigation related to Otezla, see Part IV—Note 19, Contingencies and commitments, to the Consolidated Financial Statements.

XGEVA

Total XGEVA sales by geographic region were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
XGEVA — U.S.	\$ 1,480	3 %	\$ 1,434	2 %	\$ 1,405
XGEVA — ROW	534	(9)%	584	18 %	494
Total XGEVA	\$ 2,014	— %	\$ 2,018	6 %	\$ 1,899

Global XGEVA sales were relatively unchanged for 2022 as higher net selling price was offset by lower volume as a result of increased competition and unfavorable changes to foreign currency exchange rates.

The increase in global XGEVA sales for 2021 was primarily driven by volume growth, partially offset by lower net selling price.

Aranesp

Total Aranesp sales by geographic region were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
Aranesp — U.S.	\$ 521	(3)%	\$ 537	(15)%	\$ 629
Aranesp — ROW	900	(5)%	943	— %	939
Total Aranesp	<u><u>\$ 1,421</u></u>	(4)%	<u><u>\$ 1,480</u></u>	(6)%	<u><u>\$ 1,568</u></u>

The decrease in global Aranesp sales for 2022 was driven by lower net selling price and unfavorable changes to foreign currency exchange rates, partially offset by favorable changes to estimated sales deductions and volume growth.

The decrease in global Aranesp sales for 2021 was primarily driven by lower net selling price.

Aranesp continues to face competition from a long-acting erythropoiesis-stimulating agent (ESA) and from a biosimilar version of EPOGEN, which will impact net selling price and volume in the future.

Nplate

Total Nplate sales by geographic region were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
Nplate — U.S.	\$ 848	50 %	\$ 566	17 %	\$ 485
Nplate — ROW	459	— %	461	26 %	365
Total Nplate	<u><u>\$ 1,307</u></u>	27 %	<u><u>\$ 1,027</u></u>	21 %	<u><u>\$ 850</u></u>

The increase in global Nplate sales for 2022 was driven by volume growth. Nplate sales for 2022 included a \$207 million order in the fourth quarter from the U.S. government.

The increase in global Nplate sales for 2021 was primarily driven by volume growth.

Repatha

Total Repatha sales by geographic region were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
Repatha — U.S.	\$ 608	9 %	\$ 557	21 %	\$ 459
Repatha — ROW	688	23 %	560	31 %	428
Total Repatha	<u><u>\$ 1,296</u></u>	16 %	<u><u>\$ 1,117</u></u>	26 %	<u><u>\$ 887</u></u>

The increase in global Repatha sales for 2022 was driven by volume growth, partially offset by lower net selling price and unfavorable changes to foreign currency exchange rates. Volume benefited from contracting changes to support and improve Medicare Part D and commercial patient access and the inclusion of Repatha on China's National Reimbursement Drug List as of January 1, 2022, both of which resulted in decreases to the net selling price in 2022.

The increase in global Repatha sales for 2021 was driven by volume growth, partially offset by lower net selling price.

For a discussion of ongoing litigation related to Repatha, see Part IV—Note 19, Contingencies and commitments, to the Consolidated Financial Statements.

KYPROLIS

Total KYPROLIS sales by geographic region were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
KYPROLIS — U.S.	\$ 850	15 %	\$ 736	4 %	\$ 710
KYPROLIS — ROW	397	7 %	372	5 %	355
Total KYPROLIS	\$ 1,247	13 %	\$ 1,108	4 %	\$ 1,065

The increases in global KYPROLIS sales for 2022 and 2021 were primarily driven by volume growth.

The FDA has reported that it has granted tentative or final approval of ANDAs for generic carfilzomib products filed by a number of companies. The date of approval of those ANDAs for generic carfilzomib products is governed by the Hatch–Waxman Act and any applicable settlement agreements between us and certain companies that seek to develop generic carfilzomib products.

Neulasta

Total Neulasta sales by geographic region were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
Neulasta — U.S.	\$ 959	(37)%	\$ 1,514	(24)%	\$ 2,001
Neulasta — ROW	167	(24)%	220	(25)%	292
Total Neulasta	\$ 1,126	(35)%	\$ 1,734	(24)%	\$ 2,293

The decreases in global Neulasta sales for 2022 and 2021 were driven by lower net selling price and volume.

Increased competition as a result of biosimilar versions of Neulasta has had and will continue to have a significant adverse impact on brand sales, including accelerating net price erosion and lower volume. We also expect other biosimilar versions, including biosimilars that will use an on-body injector that would compete with our Onpro injector, to be approved in the future.

EVENITY

Total EVENITY sales by geographic region were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
EVENITY — U.S.	\$ 533	61 %	\$ 331	73 %	\$ 191
EVENITY — ROW	254	28 %	199	25 %	159
Total EVENITY	\$ 787	48 %	\$ 530	51 %	\$ 350

The increases in global EVENITY sales for 2022 and 2021 were driven by volume growth across our markets.

Other products

Other product sales by geographic region were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
MVASI — U.S.	\$ 602	(27)%	\$ 826	26 %	\$ 656
MVASI — ROW	299	(12)%	340	*	142
Vectibix — U.S.	396	14 %	347	1 %	342
Vectibix — ROW	497	(6)%	526	12 %	469
BLINCYTO — U.S.	336	21 %	278	20 %	231
BLINCYTO — ROW	247	27 %	194	31 %	148
EPOGEN — U.S.	506	(3)%	521	(13)%	598
AMGEVITA — ROW	460	5 %	439	33 %	331
Aimovig — U.S.	398	27 %	313	(17)%	378
Aimovig — ROW	16	*	4	NM	—
Parsabiv — U.S.	253	69 %	150	(75)%	605
Parsabiv — ROW	129	(1)%	130	17 %	111
KANJINTI — U.S.	257	(46)%	479	1 %	475
KANJINTI — ROW	59	(37)%	93	1 %	92
LUMAKRAS — U.S.	222	*	82	NM	—
LUMYKRAS — ROW	63	*	8	NM	—
TEZSPIRE — U.S.	170	NM	—	NM	—
NEUPOGEN — U.S.	87	(14)%	101	(30)%	144
NEUPOGEN — ROW	57	(15)%	67	(17)%	81
Sensipar — U.S.	10	67 %	6	(93)%	92
Sensipar/Mimpara — ROW	54	(31)%	78	(60)%	196
TAVNEOS — U.S. ⁽¹⁾	16	NM	—	NM	—
TAVNEOS — ROW ⁽¹⁾	5	NM	—	NM	—
Other — U.S. ⁽²⁾	296	47 %	202	85 %	109
Other — ROW ⁽²⁾	135	(1)%	137	(21)%	174
Total other product sales	<u>\$ 5,570</u>	5 %	<u>\$ 5,321</u>	(1)%	<u>\$ 5,374</u>
Total U.S. — other products	<u>\$ 3,549</u>	7 %	<u>\$ 3,305</u>	(9)%	<u>\$ 3,630</u>
Total ROW — other products	<u>2,021</u>	— %	<u>2,016</u>	16 %	<u>1,744</u>
Total other product sales	<u>\$ 5,570</u>	5 %	<u>\$ 5,321</u>	(1)%	<u>\$ 5,374</u>

NM = not meaningful

* Change in excess of 100%

⁽¹⁾ TAVNEOS was acquired on October 20, 2022 from our acquisition of ChemoCentryx.

⁽²⁾ Consists of Corlanor, AVSOLA, IMLYGIC and RIABNI, as well as sales by our Gensenta and Bergamo subsidiaries.

Operating expenses

Operating expenses were as follows (dollar amounts in millions):

	Year ended December 31, 2022	Change	Year ended December 31, 2021	Change	Year ended December 31, 2020
Cost of sales	\$ 6,406	(1)%	\$ 6,454	5 %	\$ 6,159
% of product sales	25.8 %		26.6 %		25.4 %
% of total revenues	24.3 %		24.8 %		24.2 %
Research and development	\$ 4,434	(8)%	\$ 4,819	15 %	\$ 4,207
% of product sales	17.9 %		19.8 %		17.4 %
% of total revenues	16.8 %		18.5 %		16.5 %
Acquired in-process research and development	\$ —	NM	\$ 1,505	NM	\$ —
% of product sales	— %		6.2 %		— %
% of total revenues	— %		5.8 %		— %
Selling, general and administrative	\$ 5,414	1 %	\$ 5,368	(6)%	\$ 5,730
% of product sales	21.8 %		22.1 %		23.6 %
% of total revenues	20.6 %		20.7 %		22.5 %
Other	\$ 503	* NM	\$ 194	3 %	\$ 189
Total operating expenses	\$ 16,757	(9)%	\$ 18,340	13 %	\$ 16,285

NM = not meaningful

* Change in excess of 100%

Cost of sales

Cost of sales decreased to 24.3% of total revenues for 2022, driven by lower COVID-19 antibody shipments and manufacturing costs, partially offset by changes in our product mix.

Cost of sales increased to 24.8% of total revenues for 2021, driven by changes in our product mix and higher profit share and royalties, partially offset by lower amortization expense from acquisition-related assets and lower manufacturing costs.

Research and development

The Company groups all of its R&D activities and related expenditures into three categories: (i) research and early pipeline, (ii) later-stage clinical programs and (iii) marketed products. These categories are described below:

Category	Description
Research and early pipeline	R&D expenses incurred in activities substantially in support of early research through the completion of phase 1 clinical trials, including drug discovery, toxicology, pharmacokinetics and drug metabolism and process development
Later-stage clinical programs	R&D expenses incurred in or related to phase 2 and phase 3 clinical programs intended to result in registration of a new product or a new indication for an existing product primarily in the United States or the EU
Marketed products	R&D expenses incurred in support of the Company's marketed products that are authorized to be sold primarily in the United States or the EU. Includes clinical trials designed to gather information on product safety (certain of which may be required by regulatory authorities) and their product characteristics after regulatory approval has been obtained, as well as the costs of obtaining regulatory approval of a product in a new market after approval in either the United States or the EU has been obtained

R&D expense by category was as follows (in millions):

	Years ended December 31,		
	2022	2021	2020
Research and early pipeline	\$ 1,611	\$ 1,670	\$ 1,405
Later-stage clinical programs	1,627	1,726	1,365
Marketed products	1,196	1,423	1,437
Total R&D expense	<u>\$ 4,434</u>	<u>\$ 4,819</u>	<u>\$ 4,207</u>

The decrease in R&D expense for 2022 was driven by higher business development activity in 2021 included in later-stage clinical programs and research and early pipeline and lower marketed products support, partially offset by higher later-stage clinical programs support and research and early pipeline spend.

The increase in R&D expense for 2021 was driven by a licensing-related upfront payment to KKC included in later-stage clinical programs and higher spend in research and early pipeline, including other business development activities.

Acquired in-process research and development

The Acquired IPR&D expense in 2021 was related to the bemarituzumab program, which was acquired as part of the Five Prime acquisition in 2021. See Part IV—Note 2, Acquisitions and divestitures, to the Consolidated Financial Statements.

Selling, general and administrative

The increase in SG&A expense for 2022 was primarily driven by higher acquisition-related expenses.

The decrease in SG&A expense for 2021 was primarily driven by lower spend for marketed products and lower general and administrative expenses.

Other

Other operating expenses for 2022 primarily consisted of a loss on a nonstrategic divestiture. See Part IV—Note 2, Acquisitions and divestitures, to the Consolidated Financial Statements.

Other operating expenses for 2021 primarily consisted of expenses related to cost-savings initiatives and a legal judgment.

Other operating expenses for 2020 primarily consisted of legal settlement expenses.

Nonoperating expenses/income and income taxes

Nonoperating expenses/income and income taxes were as follows (dollar amounts in millions):

	Years ended December 31,		
	2022	2021	2020
Interest expense, net	\$ (1,406)	\$ (1,197)	\$ (1,262)
Other (expense) income, net	\$ (814)	\$ 259	\$ 256
Provision for income taxes	\$ 794	\$ 808	\$ 869
Effective tax rate	10.8 %	12.1 %	10.7 %

Interest expense, net

The increase in Interest expense, net, for 2022 was primarily due to higher overall debt outstanding and higher LIBORs on debt for which we effectively pay a variable rate of interest through the use of interest rate swaps.

The decrease in Interest expense, net, for 2021 was primarily due to net higher costs associated with the early retirement of debt in 2020 and lower LIBORs in 2021 on debt for which we effectively pay a variable rate of interest through the use of interest rate swaps, partially offset by higher overall debt outstanding.

Other (expense) income, net

The change in Other (expense) income, net, for 2022 was primarily due to higher losses recognized in connection with our BeiGene investment compared with 2021 and losses recognized on our investments in limited partnerships, publicly traded equity securities and other strategic investments.

The change in Other (expense) income, net, for 2021 was primarily due to lower losses incurred in connection with our BeiGene investment compared with 2020, partially offset by lower income on our interest-bearing investments in 2021 and other nonrecurring gains recognized in 2020.

Income taxes

The decrease in our effective tax rate for 2022 compared with 2021 was primarily due to the nondeductible IPR&D expense arising from the acquisition of Five Prime in the prior year, partially offset by a nondeductible loss on a nonstrategic divestiture in 2022 and net unfavorable items as compared to the prior year.

The increase in our effective tax rate for 2021 compared with 2020 was primarily driven by the nondeductible IPR&D expense arising from the acquisition of Five Prime, partially offset by earnings mix and adjustments to prior-year tax liabilities.

The Administration and Congress continue to discuss changes to existing tax law that could substantially increase the taxes we pay to the U.S. government. Further, the OECD recently reached an agreement to align countries on a minimum corporate tax rate and an expansion of the taxing rights of market countries. If enacted, either by all OECD participants or unilaterally by individual countries, this agreement could result in a tax increase that could affect our U.S. and foreign tax liabilities.

The U.S. Treasury released final foreign tax credit regulations in December 2021 that eliminated U.S. creditability of the Puerto Rico Excise Tax beginning in 2023, which would have increased our U.S. tax liability. In response, on June 30, 2022, the U.S. territory of Puerto Rico enacted Act 52-2022, which provides for an alternate fixed tax rate on industrial development income that the U.S. Treasury confirmed will be creditable under federal law. As part of this new law, eligible businesses will be subject to incremental income and withholding taxes in lieu of payment of the Puerto Rico Excise Tax. In order to qualify for the alternative fixed tax rate, our current tax grant with the Puerto Rico government was amended in December 2022. We qualify for this alternative fixed tax rate, beginning January 1, 2023 and our tax expense will increase.

In 2017, we received an RAR and a modified RAR from the IRS for the years 2010–2012, proposing significant adjustments that primarily relate to the allocation of profits between certain of our entities in the United States and the U.S. territory of Puerto Rico. We disagreed with the proposed adjustments and calculations and pursued resolution with the IRS appeals office but were unable to reach resolution. In July 2021, we filed a petition in the U.S. Tax Court to contest two duplicate Statutory Notices of Deficiency (Notices) for the years 2010–2012 that we received in May and July 2021, which seek to increase our U.S. taxable income for the years 2010–2012 by an amount that would result in additional federal tax of approximately \$3.6 billion plus interest. Any additional tax that could be imposed for the years 2010–2012 would be reduced by up to approximately \$900 million of repatriation tax previously accrued on our foreign earnings.

In 2020, we received an RAR and a modified RAR from the IRS for the years 2013–2015, also proposing significant adjustments that primarily relate to the allocation of profits between certain of our entities in the United States and the U.S. territory of Puerto Rico similar to those proposed for the years 2010–2012. We disagreed with the proposed adjustments and calculations and pursued resolution with the IRS appeals office but were unable to reach resolution. In July 2022, we filed a petition in the U.S. Tax Court to contest a Notice for the years 2013–2015 that we previously reported receiving in April 2022 that seeks to increase our U.S. taxable income for the years 2013–2015 by an amount that would result in additional federal tax of approximately \$5.1 billion, plus interest. In addition, the Notice asserts penalties of approximately \$2.0 billion. Any additional tax that could be imposed for the years 2013–2015 would be reduced by up to approximately \$2.2 billion of repatriation tax previously accrued on our foreign earnings.

We firmly believe that the IRS positions set forth in the 2010–2012 and 2013–2015 Notices are without merit. We are contesting the 2010–2012 and 2013–2015 Notices through the judicial process. The two cases were consolidated in U.S. Tax Court on December 19, 2022.

We are currently under examination by the IRS for the years 2016–2018 with respect to issues similar to those for the 2010 through 2015 period. In addition, we are under examination by a number of state and foreign tax jurisdictions.

Final resolution of these complex matters is not likely within the next 12 months. We continue to believe our accrual for income tax liabilities is appropriate based on past experience, interpretations of tax law, application of the tax law to our facts and judgments about potential actions by tax authorities; however, due to the complexity of the provision for income taxes and

uncertain resolution of these matters, the ultimate outcome of any tax matters may result in payments substantially greater than amounts accrued and could have a material adverse impact on our consolidated financial statements.

See Part I, Item 1A. Risk Factors—*The adoption and interpretation of new tax legislation or exposure to additional tax liabilities could affect our profitability*; Part II, Item 7. Management’s Discussion and Analysis or Financial Condition and Results of Operations—Critical Accounting Policies and Estimates, Income taxes; and Part IV—Note 6, Income taxes, to the Consolidated Financial Statements for further discussion.

Financial Condition, Liquidity and Capital Resources

Selected financial data was as follows (in millions):

	December 31,	
	2022	2021
Cash, cash equivalents and marketable securities	\$ 9,305	\$ 8,037
Total assets	\$ 65,121	\$ 61,165
Current portion of long-term debt	\$ 1,591	\$ 87
Long-term debt	\$ 37,354	\$ 33,222
Stockholders’ equity	\$ 3,661	\$ 6,700

Cash, cash equivalents and marketable securities

Our balance of cash, cash equivalents and marketable securities was \$9.3 billion at December 31, 2022. The primary objective of our investment portfolio is to maintain safety of principal, prudent levels of liquidity and acceptable levels of risk. Our investment policy limits interest-bearing security investments to certain types of debt and money market instruments issued by institutions with primarily investment-grade credit ratings, and it places restrictions on maturities and concentration by asset class and issuer.

Capital allocation

Consistent with the objective to optimize our capital structure, we deploy our accumulated cash balances in a strategic manner and consider a number of alternatives, including investments in innovation, both internally and externally, strategic transactions (including those that expand our portfolio of products in areas of therapeutic interest), repayment of debt, payment of dividends and stock repurchases.

We intend to continue investing in our business while returning capital to stockholders through the payment of cash dividends and stock repurchases, thereby reflecting our confidence in the future cash flows of our business and our desire to optimize our cost of capital. The timing and amount of future dividends and stock repurchases will vary based on a number of factors, including future capital requirements for strategic transactions, availability of financing on acceptable terms, debt service requirements, our credit rating, changes to applicable tax laws or corporate laws, changes to our business model and periodic determination by our Board of Directors that cash dividends and/or stock repurchases are in the best interests of stockholders and are in compliance with applicable laws and the Company’s agreements. In addition, the timing and amount of stock repurchases may also be affected by our overall level of cash, stock price and blackout periods, during which we are restricted from repurchasing stock. The manner of stock repurchases may include block purchases, tender offers, accelerated share repurchases and market transactions.

The Board of Directors declared quarterly cash dividends of \$1.94, \$1.76 and \$1.60 per share of common stock paid in 2022, 2021 and 2020, respectively, an increase of 10% over the prior year in both 2022 and 2021. In December 2022, the Board of Directors declared a cash dividend of \$2.13 per share of common stock for the first quarter of 2023, an increase of 10% for this period, to be paid in March 2023.

We also returned capital to stockholders through our stock repurchase program. During 2022, we repurchased \$6.3 billion of common stock, including \$6.0 billion under ASR agreements and had cash settlements for stock repurchases of \$6.4 billion. In 2021, we repurchased and had cash settlements of \$5.0 billion of common stock. In 2020, we repurchased and had cash settlements of \$3.5 billion of common stock. In October 2022, the Board of Directors increased the amount authorized under our stock repurchase program by \$2.4 billion. As of December 31, 2022, \$7.0 billion remained available under the stock repurchase program.

As a result of stock repurchases and quarterly dividend payments, we have an accumulated deficit as of December 31, 2022 and 2021. Our accumulated deficit is not anticipated to affect our future ability to operate, repurchase stock, pay dividends or repay our debt given our expected continued profitability and strong financial position.

We believe that existing funds, cash generated from operations and existing sources of and access to financing are adequate to satisfy our needs for working capital, capital expenditure and debt service requirements, our plans to pay dividends and repurchase stock, and other business initiatives we plan to strategically pursue, including acquisitions and licensing activities. We anticipate that our liquidity needs can be met through a variety of sources, including cash provided by operating activities, sales of marketable securities, borrowings through commercial paper and/or syndicated credit facilities, and access to other domestic and foreign debt markets and equity markets. See Part I, Item 1A. Risk Factors—*Global economic conditions may negatively affect us and may magnify certain risks that affect our business.*

Financing arrangements

To help meet our liquidity requirements, we have entered into various financing arrangements. The noncurrent portions of our long-term borrowings as of December 31, 2022 and 2021, were \$37.4 billion and \$33.2 billion, respectively. The carrying values of our long-term borrowings are net of fair value adjustments for interest rate swaps and unamortized discounts, premiums and offering costs. As of December 31, 2022, S&P, Moody's and Fitch assigned credit ratings to our outstanding senior notes of BBB+, Baa1 and BBB+, respectively, which are considered investment grade. Unfavorable changes to these ratings may have an adverse impact on future financings.

During 2022, 2021 and 2020, we issued debt with aggregate principal amounts of \$7.0 billion, \$5.0 billion and \$9.0 billion, respectively. During 2022, we repurchased portions of our debt at a cost of \$0.3 billion. During 2021 and 2020, we repaid/redeemed debt of \$4.2 billion and \$6.5 billion, respectively. In addition, during 2020, we exchanged \$0.7 billion of certain of our outstanding note issuances with \$0.9 billion of newly issued notes with a lower interest rate and later maturity date.

To achieve a desired mix of fixed-rate and floating-rate debt, we entered into interest rate swap contracts that effectively converted a fixed-rate interest coupon for certain of our debt issuances to a floating, LIBOR-based coupon over the lives of the respective notes. These interest rate swap contracts qualify and are designated as fair value hedges. As of both December 31, 2022 and 2021, we had interest rate swap contracts with aggregate notional amount of \$6.7 billion.

To hedge our exposure to foreign currency exchange rate risk associated with certain of our long-term notes denominated in foreign currencies, we entered into cross-currency swap contracts, which effectively convert the interest payments and principal repayment of the respective notes from euros, pounds sterling and Swiss francs to U.S. dollars. These cross-currency swap contracts qualify and are designated as cash flow hedges. As of both December 31, 2022 and 2021, we had cross-currency swap contracts with aggregate notional amount of \$3.4 billion.

As of December 31, 2022, we had a commercial paper program that allows us to issue up to \$2.5 billion of unsecured commercial paper to fund our working-capital needs. During 2022, 2021 and 2020, we did not issue any commercial paper. No commercial paper was outstanding as of December 31, 2022 and 2021.

In 2019, we amended and restated our \$2.5 billion syndicated, unsecured, revolving credit agreement, which is available for general corporate purposes or as a liquidity backstop to our commercial paper program. The commitments under the revolving credit agreement may be increased by up to \$750 million with the agreement of the banks. Each bank that is a party to the agreement has an initial commitment term of five years. This term may be extended for up to two additional one-year periods with the agreement of the banks. Annual commitment fees for this agreement are 0.1% of the unused portion of the facility based on our current credit rating. In December 2022, this revolving credit agreement was further amended to replace LIBOR with SOFR as the reference rate, pursuant to provisions contained therein related to determination of successor rates in case of phaseout or unavailability of existing designated reference rates. Generally, we would be charged interest for any amounts borrowed under this facility, based on our current credit rating, at (i) SOFR plus 1.125% or (ii) the highest of (A) the syndication agent bank base commercial lending rate, (B) the overnight federal funds rate plus 0.50% or (C) one-month SOFR plus 1.1%. As of December 31, 2022 and 2021, no amounts were outstanding under this facility.

In December 2022, in connection with the proposed acquisition of Horizon, we entered into a bridge credit agreement and a term loan credit agreement which provide for borrowings in the aggregate of \$28.5 billion. As of December 31, 2022, no amounts have been borrowed under either agreement. See Part IV—Note 2, Acquisitions and divestitures, to the Consolidated Financial Statements.

It is anticipated that the U.S. dollar LIBOR rate will be phased out and replaced by 2023. The Alternative Reference Rates Committee, a group of private-market participants convened by the Federal Reserve Board and the Federal Reserve Bank of New York to help ensure a successful transition from U.S. dollar LIBOR to a more robust reference rate, recommends SOFR as the U.S. dollar LIBOR alternative. As such, we expect SOFR to become widely adopted by market participants. We do not expect this change to have a material impact on our consolidated financial statements. See Part I, Item 1A. Risk Factors—*Our sales and operations are subject to the risks of doing business internationally, including in emerging markets.*

In February 2020, we filed a shelf registration statement with the SEC that allows us to issue unspecified amounts of debt securities; common stock; preferred stock; warrants to purchase debt securities, common stock, preferred stock or depositary shares; rights to purchase common stock or preferred stock; securities purchase contracts; securities purchase units; and depositary shares. Under this shelf registration statement, all of the securities available for issuance may be offered from time to time with terms to be determined at the time of issuance. This shelf registration statement expires in February 2023, and our Board has approved a new shelf registration statement to replace it.

Certain of our financing arrangements contain nonfinancial covenants. In addition, our revolving credit agreement, bridge credit agreement and term loan credit agreement include a financial covenant that requires us to maintain a specified minimum interest coverage ratio of (i) the sum of consolidated net income, interest expense, provision for income taxes, depreciation expense, amortization expense, unusual or nonrecurring charges and other noncash items (Consolidated EBITDA) to (ii) Consolidated Interest Expense, each as defined and described in the respective agreements. We were in compliance with all applicable covenants under these arrangements as of December 31, 2022.

These financing arrangements are more fully discussed in Part IV—Note 15, Financing arrangements, and Note 18, Derivative instruments, to the Consolidated Financial Statements.

Cash flows

Our summarized cash flow activity was as follows (in millions):

	Years ended December 31,		
	2022	2021	2020
Net cash provided by operating activities	\$ 9,721	\$ 9,261	\$ 10,497
Net cash (used in) provided by investing activities	\$ (6,044)	\$ 733	\$ (5,401)
Net cash used in financing activities	\$ (4,037)	\$ (8,271)	\$ (4,867)

Operating

Cash provided by operating activities has been and is expected to continue to be our primary recurring source of funds. Cash provided by operating activities increased in 2022 primarily due to the timing of payments for sales incentives and discounts, vendor purchases, liabilities to tax authorities and receipts from corporate partners, partially offset by higher manufacturing activities in the current year. Cash provided by operating activities decreased during 2021 primarily due to the monetization of interest rate swaps that occurred in 2020 and the timing of payments for sales incentives and discounts.

Investing

Cash used in investing activities during 2022 was primarily due to our \$3.8 billion purchase of ChemoCentryx and net cash outflows related to marketable securities of \$1.4 billion. Cash provided by investing activities during 2021 was primarily due to net cash inflows related to marketable securities of \$4.3 billion, partially offset by cash used in the acquisitions of Teneobio and Five Prime of \$2.5 billion. Cash used in investing activities during 2020 was primarily due to our \$3.2 billion of purchases of equity method investments, primarily BeiGene, and net cash outflows related to marketable securities of \$1.5 billion. Capital expenditures were \$936 million, \$880 million and \$608 million in 2022, 2021 and 2020, respectively. We currently estimate 2023 spending on capital projects to be approximately \$925 million. A majority of the increase in expenditures relates to expansion of manufacturing capacity to enable supply of products and product candidates.

Financing

Cash used in financing activities during 2022 was primarily due to payments to repurchase our common stock of \$6.4 billion and dividends paid of \$4.2 billion, partially offset by proceeds from the issuance of debt of \$6.9 billion. Cash used in financing activities during 2021 was primarily due to payments to repurchase our common stock of \$5.0 billion and the payment of dividends of \$4.0 billion, partially offset by proceeds from the issuance of debt, net of repayments of \$0.8 billion. Cash used in financing activities during 2020 was primarily due to the payment of dividends of \$3.8 billion and payments to repurchase our common stock of \$3.5 billion, partially offset by proceeds from issuance of debt, net of repayments of \$2.5 billion.

See Part IV—Note 9, Investments; Note 15, Financing arrangements; and Note 16, Stockholders’ equity, to the Consolidated Financial Statements.

Capital requirements

We have material cash requirements to pay third parties under various contractual obligations discussed below.

We are obligated to pay interest and repay principal under our various financing arrangements, including amounts under interest rate swap and cross-currency swap contracts related to certain of our long-term debt obligations. For information on scheduled debt maturities and payments under derivative contracts associated with our long-term debt obligations, see Part IV—Note 15, Financing arrangements, and Note 18, Derivative instruments, to the Consolidated Financial Statements.

We are obligated to make payments for operating leases, including rental commitments on abandoned leases and leases that have not yet commenced. For information on these obligations, see Part IV—Note 13, Leases, to the Consolidated Financial Statements.

Under the 2017 Tax Act, we elected to pay in eight annual installments the repatriation tax related primarily to prior indefinitely invested earnings of our foreign operations. For information on the remaining scheduled repatriation tax installments, see Part IV—Note 19, Contingencies and commitments—Commitments—U.S. repatriation tax, to the Consolidated Financial Statements.

We have purchase obligations of \$3.5 billion primarily related to (i) R&D commitments (including those related to clinical trials) for new and existing products, (ii) capital expenditures and (iii) open purchase orders for the acquisition of goods and services in the ordinary course of business. Most of these obligations are expected to be paid within one year, and payment of certain of these amounts may be reduced based on certain future events.

In addition to the purchase obligations noted above, we are contractually obligated to pay additional amounts that in the aggregate are significant, upon the achievement of various development, regulatory and commercial milestones for agreements we have entered into with third parties, including contingent consideration incurred in the acquisitions of Teneobio and K-A. These payments are contingent upon the occurrence of various future events, substantially all of which have a high degree of uncertainty of occurring, and any resulting cash requirements are managed through our operational budgeting processes. Except with respect to the fair value of the contingent consideration of approximately \$0.3 billion, these obligations are not recorded on our Consolidated Balance Sheets. As of December 31, 2022, the maximum amount that may be payable in the future for agreements we have entered into with third parties is \$5.6 billion.

We have recorded liabilities for UTBs that, because of their nature, have a high degree of uncertainty regarding the timing of future cash payment and other events that extinguish these liabilities. See Part IV—Note 6, Income taxes, to the Consolidated Financial Statements.

Critical Accounting Policies and Estimates

The preparation of our consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the financial statements and the notes to the financial statements. Some of those judgments can be subjective and complex, and therefore, actual results could differ materially from those estimates under different assumptions or conditions. Our significant accounting policies are included in Part IV—Note 1, Summary of significant accounting policies. The following are considered critical to our consolidated financial statements because they require the most difficult, subjective or complex judgments, often because of the need to make estimates about matters that are inherently uncertain.

Product sales and sales deductions

Revenue from product sales is recognized upon transfer of control of a product to a customer, generally upon delivery, based on an amount that reflects the consideration to which we expect to be entitled, net of accruals for estimated rebates, wholesaler chargebacks, discounts and other deductions (collectively, sales deductions) and returns established at the time of sale.

We analyze the adequacy of our accruals for sales deductions quarterly. Amounts accrued for sales deductions are adjusted when trends or significant events indicate that adjustment is appropriate. Accruals are also adjusted to reflect actual results. Amounts recorded in Accrued liabilities in the Consolidated Balance Sheets for sales deductions were as follows (in millions):

	Rebates	Chargebacks	Other deductions	Total
Balance as of December 31, 2019	\$ 3,165	\$ 559	\$ 156	\$ 3,880
Amounts charged against product sales	9,167	8,223	1,818	19,208
Payments	<u>(8,353)</u>	<u>(8,191)</u>	<u>(1,735)</u>	<u>(18,279)</u>
Balance as of December 31, 2020	3,979	591	239	4,809
Amounts charged against product sales	10,195	9,619	2,065	21,879
Payments	<u>(10,027)</u>	<u>(9,413)</u>	<u>(2,074)</u>	<u>(21,514)</u>
Balance as of December 31, 2021	4,147	797	230	5,174
Amounts charged against product sales	12,500	10,630	2,288	25,418
Payments	<u>(11,768)</u>	<u>(10,578)</u>	<u>(2,260)</u>	<u>(24,606)</u>
Balance as of December 31, 2022	<u>\$ 4,879</u>	<u>\$ 849</u>	<u>\$ 258</u>	<u>\$ 5,986</u>

For the years ended December 31, 2022, 2021 and 2020, total sales deductions were 51%, 47% and 44% of gross product sales, respectively. The increase in the total sales deductions balance as of December 31, 2022, compared with December 31, 2021, was primarily driven by the impact of higher U.S. chargeback and commercial rebate discount rates and an increase in gross sales, partially offset by timing of payments. Included in the amounts are immaterial net adjustments related to prior-year sales due to changes in estimates.

In the United States, we use wholesalers as the principal means of distributing our products to healthcare providers such as physicians or their clinics, dialysis centers, hospitals and pharmacies. Products we sell in Europe are distributed principally to hospitals and/or wholesalers depending on the distribution practice in each country where the products are sold. We monitor the inventory levels of our products at our wholesalers by using data from our wholesalers and other third parties, and we believe wholesaler inventories have been maintained at appropriate levels (generally two to three weeks) given end-user demand. Accordingly, historical fluctuations in wholesaler inventory levels have not significantly affected our method of estimating sales deductions and returns.

Accruals for sales deductions are based primarily on estimates of the amounts earned or to be claimed on the related sales. These estimates take into consideration current contractual and statutory requirements, specific known market events and trends, internal and external historical data and forecasted customer buying patterns. Sales deductions are substantially product specific and therefore, for any given year, can be affected by the mix of products sold.

Rebates include primarily amounts paid to payers and providers in the United States, including those paid to state Medicaid programs, and are based on contractual arrangements or statutory requirements that vary by product, by payer and by individual payer plans. As we sell products, we estimate the amount of rebate we will pay based on the product sold, contractual terms, estimated patient population, historical experience and wholesaler inventory levels; and we accrue these rebates in the period the related sales are recorded. We then adjust the rebate accruals as more information becomes available and to reflect

actual claims experience. Estimating such rebates is complicated, in part because of the time delay between the date of sale and the actual settlement of the liability. We believe the methodology we use to accrue for rebates is reasonable and appropriate given current facts and circumstances, but actual results may differ.

Wholesaler chargebacks relate to our contractual agreements to sell products to healthcare providers in the United States at fixed prices that are lower than the prices we charge wholesalers. When healthcare providers purchase our products through wholesalers at these reduced prices, wholesalers charge us for the difference between their purchase prices and the contractual prices between Amgen and the healthcare providers. The provision for chargebacks is based on expected sales by our wholesaler customers to healthcare providers. Accruals for wholesaler chargebacks are less difficult to estimate than rebates are, and they closely approximate actual results because chargeback amounts are fixed at the date of purchase by the healthcare providers and because we generally settle the liability for these deductions within a few weeks.

Product returns

Returns are estimated by comparison of historical return data to their related sales on a production lot basis. Historical rates of return are determined for each product and are adjusted for known or expected changes in the marketplace specific to each product, when appropriate. In each of the past three years, sales return provisions have amounted to less than 1% of gross product sales. Changes in estimates for prior-year sales return provisions have historically been immaterial.

Income taxes

We provide for income taxes based on pretax income and applicable tax rates in the various jurisdictions in which we operate.

We recognize the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained upon examination by tax authorities based on the technical merits of the position. The tax benefit recognized in the consolidated financial statements for a particular tax position is based on the largest benefit that is more likely than not to be realized. The amount of UTBs is adjusted as appropriate for changes in facts and circumstances, such as significant amendments to existing tax law, new regulations or interpretations by tax authorities, new information obtained during a tax examination or resolution of an examination. We believe our estimates for uncertain tax positions are appropriate and sufficient for any assessments that may result from examinations of our tax returns. We recognize both accrued interest and penalties, when appropriate, related to UTBs in income tax expense.

Certain items are included in our tax return at different times than they are reflected in the financial statements, and they cause temporary differences between the tax bases of assets and liabilities and their reported amounts. Such temporary differences create deferred tax assets and liabilities. Deferred tax assets are generally items that can be used as tax deductions or credits in tax returns in future years but for which we have already recorded the tax benefit in the consolidated financial statements. We establish valuation allowances against our deferred tax assets when the amount of expected future taxable income is not likely to support the use of the deduction or credit. Deferred tax liabilities are either (i) tax expenses recognized in the consolidated financial statements for which payment has been deferred, (ii) expenses for which we have already taken a deduction on the tax return but have not yet recognized in the consolidated financial statements or (iii) liabilities for the difference between the book basis and the tax basis of the intangible assets acquired in many business combinations, because future expenses associated with these assets most often will not be tax deductible.

We are a vertically integrated enterprise with operations in the United States and various foreign jurisdictions. In the jurisdictions where we conduct operations, we are subject to income tax based on the tax laws and principles of such jurisdictions and on the functions, risks and activities performed therein. Our pretax income is therefore attributed to domestic or foreign sources based on the operations performed and risks assumed in each location and the tax laws and principles of the respective taxing jurisdictions. For example, we conduct significant operations in Puerto Rico, a territory of the United States that is treated as a foreign jurisdiction for U.S. tax purposes, pertaining to manufacturing, distribution and other related functions to meet our worldwide product demand. Income from our operations in Puerto Rico is subject to tax incentive grants through 2050.

In 2017, we received an RAR and a modified RAR from the IRS for the years 2010–2012, proposing significant adjustments that primarily relate to the allocation of profits between certain of our entities in the United States and the U.S. territory of Puerto Rico. We disagreed with the proposed adjustments and calculations and pursued resolution with the IRS appeals office but were unable to reach resolution. In July 2021, we filed a petition in the U.S. Tax Court to contest two duplicate Statutory Notices of Deficiency (Notices) for the years 2010–2012 that we received in May and July 2021, which seek to increase our U.S. taxable income for the years 2010–2012 by an amount that would result in additional federal tax of approximately \$3.6 billion plus interest. Any additional tax that could be imposed for the years 2010–2012 would be reduced by up to approximately \$900 million of repatriation tax previously accrued on our foreign earnings.

In 2020, we received an RAR and a modified RAR from the IRS for the years 2013–2015, also proposing significant adjustments that primarily relate to the allocation of profits between certain of our entities in the United States and the U.S. territory of Puerto Rico similar to those proposed for the years 2010–2012. We disagreed with the proposed adjustments and calculations and pursued resolution with the IRS appeals office but were unable to reach resolution. In July 2022, we filed a petition in the U.S. Tax Court to contest a Notice for the years 2013–2015 that we received in April 2022 that seeks to increase our U.S. taxable income for the years 2013–2015 by an amount that would result in additional federal tax of approximately \$5.1 billion, plus interest. In addition, the Notice asserts penalties of approximately \$2.0 billion. Any additional tax that could be imposed for the years 2013–2015 would be reduced by up to approximately \$2.2 billion of repatriation tax previously accrued on our foreign earnings.

We firmly believe that the IRS positions set forth in the 2010–2012 and 2013–2015 Notices are without merit. We are contesting the 2010–2012 and 2013–2015 Notices through the judicial process. The two cases were consolidated in U.S. Tax Court on December 19, 2022.

We are currently under examination by the IRS for the years 2016–2018 with respect to issues similar to those for the 2010 through 2015 period. In addition, we have examinations by a number of state and foreign tax jurisdictions.

Final resolution of these complex matters is not likely within the next 12 months. We believe our accrual for income tax liabilities is appropriate based on past experience, interpretations of tax law, application of the tax law to our facts and judgments about potential actions by tax authorities; however, due to the complexity of the provision for income taxes and uncertain resolution of these matters, the ultimate outcome of any tax matters may result in payments substantially greater than amounts accrued and could have a material adverse impact on our consolidated financial statements. See Part I, Item 1A. Risk Factors—*The adoption and interpretation of new tax legislation or exposure to additional tax liabilities could affect our profitability*; Part II, Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations—Results of Operations, Income taxes; and Part IV—Note 6, Income taxes, to the Consolidated Financial Statements for further discussion.

Our operations are subject to the tax laws, regulations and administrative practices of the United States, the U.S. territory of Puerto Rico, U.S. state jurisdictions and other countries in which we do business. Significant changes in these rules could have a material adverse effect on our results of operations. See Part I, Item 1A. Risk Factors—*The adoption and interpretation of new tax legislation or exposure to additional tax liabilities could affect our profitability*.

Contingencies

In the ordinary course of business, we are involved in various legal proceedings, government investigations and other matters such as intellectual property disputes, contractual disputes and class action suits that are complex in nature and have outcomes that are difficult to predict. We describe our legal proceedings and other matters that are significant or that we believe could become significant in Part IV—Note 19, Contingencies and commitments, to the Consolidated Financial Statements. We record accruals for loss contingencies to the extent that we conclude it is probable that a liability has been incurred and the amount of the related loss can be reasonably estimated. We evaluate, on a quarterly basis, developments in legal proceedings and other matters that could cause an increase or decrease in the amount of the liability that has been accrued previously.

While it is not possible to accurately predict or determine the eventual outcomes of these items, an adverse determination in one or more of these items currently pending could have a material adverse effect on our consolidated results of operations, financial position or cash flows.

Valuation of assets and liabilities in connection with acquisitions

We have acquired and continue to acquire intangible assets in connection with business combinations and asset acquisitions. These intangible assets consist primarily of technology associated with currently marketed human therapeutic products and IPR&D product candidates. Discounted cash flow models are typically used to determine the fair values of these intangible assets for purposes of allocating consideration paid to the net assets acquired in an acquisition. See Part IV—Note 2, Acquisitions and divestitures, to the Consolidated Financial Statements. These models require the use of significant estimates and assumptions, including but not limited to:

- determining the timing and expected costs to complete in-process projects, taking into account the stage of completion at the acquisition date;
- projecting the probability and timing of obtaining marketing approval from the FDA and other regulatory agencies for product candidates;
- estimating the timing of and future net cash flows from product sales resulting from completed products and in-process projects; and

- developing appropriate discount rates to calculate the present values of the cash flows.

Significant estimates and assumptions are also required to determine the business combination date fair values of any contingent consideration obligations incurred in connection with business combinations. In addition, we must revalue these obligations each subsequent reporting period until the related contingencies are resolved and record changes in their fair values in earnings. The acquisition date fair values of contingent consideration obligations incurred or assumed in the acquisitions were determined using a combination of valuation techniques. Significant estimates and assumptions required for these valuations included but were not limited to the timing and probability of achieving regulatory milestones, product sales projections under various scenarios and discount rates used to calculate the present value of the required payments. These estimates and assumptions are required to be updated in order to revalue these contingent consideration obligations each reporting period. Accordingly, subsequent changes in underlying facts and circumstances could result in changes in these estimates and assumptions, which could have a material impact on the estimated future fair values of these obligations.

We believe the fair values used to record intangible assets acquired and contingent consideration obligations incurred in connection with business combinations and asset acquisitions are based on reasonable estimates and assumptions given the facts and circumstances as of the related valuation dates.

Impairment of long-lived assets

We review the carrying value of our property, plant and equipment and our finite-lived intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. If such circumstances exist, an estimate of undiscounted future cash flows to be generated by the long-lived asset is compared with the carrying value to determine whether an impairment exists. If an asset is determined to be impaired, the loss is measured based on the difference between the asset's fair value and its carrying value.

Indefinite-lived intangible assets, composed of IPR&D projects acquired in a business combination that have not reached technological feasibility or that lack regulatory approval at the time of acquisition, are reviewed for impairment annually, whenever events or changes in circumstances indicate that the carrying amount may not be recoverable and upon establishment of technological feasibility or regulatory approval. We determine impairment by comparing the fair value of the asset to its carrying value. If the asset's carrying value exceeds its fair value, an impairment charge is recorded for the difference, and its carrying value is reduced accordingly.

Estimating future cash flows of an IPR&D product candidate for purposes of an impairment analysis requires us to make significant estimates and assumptions regarding the amount and timing of costs to complete the project and the amount, timing and probability of achieving revenues from the completed product similar to how the acquisition date fair value of the project was determined, as described above. There are often major risks and uncertainties associated with IPR&D projects as we are required to obtain regulatory approvals in order to be able to market these products. Such approvals require completing clinical trials that demonstrate a product candidate is safe and effective. Consequently, the eventual realized value of the acquired IPR&D project may vary from its fair value at the date of acquisition, and IPR&D impairment charges may occur in future periods which could have a material adverse effect on our results of operations.

We believe our estimations of future cash flows used for assessing impairment of long-lived assets are based on reasonable assumptions given the facts and circumstances as of the related dates of the assessments.

Impairment of equity method investments

We review the carrying value of our equity method investments whenever events or changes in circumstances indicate that the carrying amount of an investment may not be recoverable. We record impairment losses on our equity method investments if we deem the impairment to be other-than-temporary. We deem an impairment to be other-than-temporary based on various factors, including but not limited to, the length of time and the extent to which the fair value is below the carrying value, volatility of the security price, the financial condition of the issuer, changes in technology that may impair the earnings potential of the investment and our intent and ability to retain the investment to allow for a recovery in fair value.

We believe our judgments used in assessing impairment of equity method investments are based on reasonable assumptions given the facts and circumstances as of the related dates of the assessments.

Recently Issued Accounting Standards

See Part IV—Note 1, Summary of significant accounting policies, to the Consolidated Financial Statements for a discussion of recently issued accounting pronouncements not yet adopted as of December 31, 2022.

Item 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to market risks that may result from changes in interest rates, foreign currency exchange rates and prices of equity instruments as well as changes in general economic conditions in the countries where we conduct business. To reduce certain of these risks, we enter into various types of foreign currency and interest rate derivative hedging transactions as part of our risk management program. We do not use derivatives for speculative trading purposes.

In the discussion that follows, we assumed a hypothetical change in interest rates of 100 basis points from those as of December 31, 2022 and 2021. Except as noted below, we also assumed a hypothetical 20% change in foreign currency exchange rates against the U.S. dollar based on its position relative to other currencies as of December 31, 2022 and 2021.

Interest-rate-sensitive financial instruments

Our portfolio of available-for-sale investments as of December 31, 2022 and 2021, was composed almost entirely of U.S. Treasury securities and money market mutual funds. The fair values of our available-for-sale investments were \$4.3 billion and \$7.3 billion as of December 31, 2022 and 2021, respectively. Duration is a sensitivity measure that can be used to approximate the change in the value of a security that will result from a 100 basis point change in interest rates. Applying a duration model, a hypothetical 100 basis point increase in interest rates as of December 31, 2022 and 2021, would not have resulted in a material reduction in the fair values of these securities. In addition, a hypothetical 100 basis point decrease in interest rates as of December 31, 2022 and 2021, would not result in a material effect on income in the respective ensuing year.

As of December 31, 2022, we had outstanding debt with a carrying value of \$38.9 billion and a fair value of \$35.0 billion. As of December 31, 2021, we had outstanding debt with a carrying value of \$33.3 billion and a fair value of \$37.9 billion. Our outstanding debt was composed of debt with fixed interest rates. Changes in interest rates do not affect interest expense on fixed-rate debt. Changes in interest rates would, however, affect the fair values of fixed-rate debt. A hypothetical 100 basis point decrease in interest rates relative to interest rates as of December 31, 2022 and 2021, would have resulted in an increase of \$3.5 billion and \$4.5 billion, respectively, in the aggregate fair value of our outstanding debt on these dates. Analysis of the debt does not consider the impact that hypothetical changes in interest rates would have on related interest rate swap contracts and cross-currency swap contracts, discussed below.

To achieve a desired mix of fixed-rate and floating-rate debt, we entered into interest rate swap contracts that qualified and were designated for accounting purposes as fair value hedges for certain of our fixed-rate debt. These interest rate swap contracts effectively converted a fixed-rate interest coupon to a floating-rate LIBOR-based coupon over the life of the respective notes. Interest rate swap contracts with aggregate notional amounts of \$6.7 billion were outstanding as of both December 31, 2022 and 2021. A hypothetical 100 basis point increase in interest rates relative to interest rates as of December 31, 2022 and 2021, would have resulted in reductions in fair values of approximately \$210 million and \$330 million, respectively, on our interest rate swap contracts on these dates. Analysis of the interest rate swap contracts does not consider the impact that hypothetical changes in interest rates would have on the related fair values of debt that these interest-rate-sensitive instruments were designed to offset.

In connection with the anticipated issuance of long-term fixed-rate debt, we occasionally enter into forward interest rate contracts, which are designated as cash flow hedges, in order to hedge the variability in cash flows due to changes in the applicable U.S. Treasury rate between the time we enter into these contracts and the time the related debt is issued. As of December 31, 2022, we had forward interest rate contracts outstanding with an aggregate notional amount of \$700 million; there were no outstanding forward interest rate contracts as of December 31, 2021. A hypothetical 100 basis point decrease in interest rates relative to interest rates as of December 31, 2022 would have resulted in a reduction in fair value of approximately \$60 million on our forward interest rate contracts on this date.

As of both December 31, 2022 and 2021, we had outstanding cross-currency swap contracts with aggregate notional amount of \$3.4 billion that hedge our foreign-currency-denominated debt and related interest payments. These contracts effectively convert interest payments and principal repayment of this debt to U.S. dollars from euros, pounds sterling and Swiss francs and are designated for accounting purposes as cash flow hedges. A hypothetical 100 basis point adverse movement in interest rates relative to interest rates as of December 31, 2022 and 2021, would have resulted in reductions in the fair values of our cross-currency swap contracts of approximately \$90 million and \$170 million, respectively.

Foreign-currency-sensitive financial instruments

Our international operations are affected by fluctuations in the value of the U.S. dollar compared with foreign currencies, predominantly the euro. Increases and decreases in our international product sales from movements in foreign currency exchange rates are partially offset by corresponding increases or decreases in our international operating expenses. Increases and decreases in our foreign-currency-denominated assets from movements in foreign currency exchange rates are partially offset by corresponding increases or decreases in our foreign-currency-denominated liabilities. To further reduce our net exposure to foreign currency exchange rate fluctuations on our results of operations, we enter into foreign currency forward and cross-currency swap contracts.

As of December 31, 2022, we had outstanding euro-, pound-sterling- and Swiss-franc-denominated debt with a principal carrying value and a fair value of \$3.0 billion and \$2.9 billion, respectively. As of December 31, 2021, we had outstanding euro-, pound-sterling- and Swiss-franc-denominated debt with a principal carrying value and a fair value of \$3.2 billion and \$3.6 billion, respectively. A hypothetical 20% adverse movement in foreign currency exchange rates compared with the U.S. dollar relative to exchange rates as of December 31, 2022, would have resulted in an increase in fair value of this debt of approximately \$580 million on this date and a reduction in income in the ensuing year of approximately \$600 million. A hypothetical 20% adverse movement in foreign currency exchange rates compared with the U.S. dollar relative to exchange rates as of December 31, 2021, would have resulted in an increase in fair value of this debt of \$710 million on this date and a reduction in income in the ensuing year of \$640 million. The impact on income from these hypothetical changes in foreign currency exchange rates would be substantially offset by the impact such changes would have on related cross-currency swap contracts, which are in place for the related foreign-currency-denominated debt.

We have cross-currency swap contracts that are designated as cash flow hedges of our debt denominated in euros, pounds sterling and Swiss francs, with aggregate notional amount of \$3.4 billion as of both December 31, 2022 and 2021. A hypothetical 20% adverse movement in foreign currency exchange rates compared with the U.S. dollar relative to exchange rates on these dates would have resulted in reductions in the fair values of these contracts of approximately \$540 million and \$700 million on these dates, respectively. The impact of this hypothetical adverse movement in foreign currency exchange rates on ensuing years' income from these contracts would be fully offset by corresponding hypothetical changes in the carrying amounts of the related hedged debt.

We enter into foreign currency forward contracts that are designated for accounting purposes as cash flow hedges of certain anticipated foreign currency transactions. As of December 31, 2022, the fair values of these contracts were a \$288 million asset and a \$76 million liability. As of December 31, 2021, the fair values of these contracts were a \$183 million asset and a \$39 million liability. As of December 31, 2022, we had primarily euro-based open foreign currency forward contracts with notional amounts of \$6.0 billion. As of December 31, 2021, we had primarily euro-based open foreign currency forward contracts with notional amounts of \$5.7 billion. With regard to foreign currency forward contracts that were open as of December 31, 2022, a hypothetical 20% adverse movement in foreign currency exchange rates compared with the U.S. dollar relative to exchange rates as of December 31, 2022, would have resulted in a reduction in fair value of these contracts of approximately \$1.1 billion on this date and in the ensuing year, a reduction in income of approximately \$590 million. With regard to contracts that were open as of December 31, 2021, a hypothetical 20% adverse movement in foreign currency exchange rates compared with the U.S. dollar relative to exchange rates as of December 31, 2021, would have resulted in a reduction in fair value of these contracts of approximately \$1.1 billion on this date and in the ensuing year, a reduction in income of \$390 million. The analysis does not consider the impact that hypothetical changes in foreign currency exchange rates would have on anticipated transactions that these foreign-currency-sensitive instruments were designed to offset.

As of December 31, 2022 and 2021, we had open, short-duration, foreign currency forward contracts that mature in one month or less, that had notional amounts of \$0.5 billion and \$0.7 billion, respectively, and that hedged fluctuations of certain assets and liabilities denominated in foreign currencies but were not designated as hedges for accounting purposes. These contracts had no material net unrealized gains or losses as of December 31, 2022 and 2021. With regard to these foreign currency forward contracts that were open as of December 31, 2022 and 2021, a hypothetical 5% adverse movement in foreign currency exchange rates compared with the U.S. dollar relative to exchange rates on these dates would not have a material effect on the fair values of these contracts or related income in the respective ensuing years. The analysis does not consider the impact that hypothetical changes in foreign currency exchange rates would have on assets and liabilities that these foreign-currency-sensitive instruments were designed to offset.

Market-price-sensitive financial instruments

As of December 31, 2022 and 2021, we were exposed to price risk on equity securities included in our portfolio of investments, which were acquired primarily for the promotion of business and strategic objectives. These investments include publicly and privately held small-capitalization stocks, limited partnerships that invest in early-stage biotechnology companies

and our investment in BeiGene. A 20% decrease in the aggregate value of our equity investment portfolio as of December 31, 2022 and 2021, would result in losses in fair value of approximately \$1.1 billion and \$1.4 billion, respectively.

Counterparty credit risks

Our financial instruments, including derivatives, are subject to counterparty credit risk, which we consider as part of the overall fair value measurement. Our financial risk management policy limits derivative transactions by requiring that transactions be made only with institutions with minimum credit ratings of A– or equivalent by S&P, Moody’s or Fitch; and it places exposure limits on the amount with any individual counterparty. In addition, we have an investment policy that limits investments to certain types of debt and money market instruments issued by institutions with investment-grade credit ratings and places restriction on maturities and concentrations by asset class and issuer.

Item 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The information required by this item is incorporated herein by reference to the financial statements and schedule listed in Item 15(a)1 and (a)2 of Part IV and included in this Annual Report on Form 10-K.

Item 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

None.

Item 9A. CONTROLS AND PROCEDURES

We maintain “disclosure controls and procedures,” as such term is defined under the Securities Exchange Act Rule 13a-15(e), that are designed to ensure that information required to be disclosed in Amgen’s Exchange Act reports is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and forms and that such information is accumulated and communicated to Amgen’s management, including its Chief Executive Officer and Chief Financial Officer, as appropriate, to allow timely decisions regarding required disclosures. In designing and evaluating the disclosure controls and procedures, Amgen’s management recognized that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and in reaching a reasonable level of assurance, Amgen’s management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures. We have carried out an evaluation under the supervision and with the participation of our management, including Amgen’s Chief Executive Officer and Chief Financial Officer, of the effectiveness of the design and operation of Amgen’s disclosure controls and procedures. Based upon their evaluation and subject to the foregoing, the Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures were effective as of December 31, 2022.

Management determined that as of December 31, 2022, there were no changes in our internal control over financial reporting that occurred during the fiscal quarter then ended that have materially affected or are reasonably likely to materially affect our internal control over financial reporting.

Management’s Report on Internal Control over Financial Reporting

Management of the Company is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) under the Securities Exchange Act of 1934. The Company’s internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with GAAP in the United States. However, all internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and reporting.

Management assessed the effectiveness of the Company’s internal control over financial reporting as of December 31, 2022. In making this assessment, management used the criteria set forth by the COSO in Internal Control—Integrated Framework (2013 framework). Based on our assessment, management believes that the Company maintained effective internal control over financial reporting as of December 31, 2022, based on the COSO criteria.

The effectiveness of the Company’s internal control over financial reporting has been audited by Ernst & Young LLP, an independent registered public accounting firm, as stated in their attestation report appearing below, which expresses an unqualified opinion on the effectiveness of the Company’s internal control over financial reporting as of December 31, 2022.

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Amgen Inc.

Opinion on Internal Control Over Financial Reporting

We have audited Amgen Inc.'s internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Amgen Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2022 and 2021, the related consolidated statements of income, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2022, and the related notes and the financial statement schedule listed in the Index at Item 15(a)2 and our report dated February 9, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young LLP

Los Angeles, California
February 9, 2023

Item 9B. OTHER INFORMATION

Not applicable.

PART III**Item 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE**

Information about our Directors is incorporated by reference from the section entitled ITEM 1—ELECTION OF DIRECTORS in our Proxy Statement for the 2023 Annual Meeting of Stockholders to be filed with the SEC within 120 days of December 31, 2022 (the Proxy Statement). Information about the procedures by which stockholders may recommend nominees for the Board of Directors is incorporated by reference from APPENDIX A—AMGEN INC. BOARD OF DIRECTORS GUIDELINES FOR DIRECTOR QUALIFICATIONS AND EVALUATIONS and OTHER MATTERS—Stockholder Proposals for the 2024 Annual Meeting in our Proxy Statement. Information about our Audit Committee, members of the committee and our Audit Committee financial experts is incorporated by reference from the section entitled CORPORATE GOVERNANCE—Audit Committee in our Proxy Statement. Information about our executive officers is contained in the discussion entitled Part I, Item 1. Business—Information about our Executive Officers.

Code of Ethics

We maintain a Code of Ethics for the Chief Executive Officer and Senior Financial Officers applicable to our principal executive officer, principal financial officer, principal accounting officer or controller and other persons performing similar functions. To view this code of ethics free of charge, please visit our website at www.amgen.com. (The website address is not intended to function as a hyperlink, and the information contained in our website is not intended to be a part of this filing.) We intend to satisfy the disclosure requirements under Item 5.05 of Form 8-K regarding an amendment to or a waiver from a provision of this code of ethics, if any, by posting such information on our website as set forth above.

Item 11. EXECUTIVE COMPENSATION

Information about director and executive compensation is incorporated by reference from the sections entitled COMPENSATION DISCUSSION AND ANALYSIS, EXECUTIVE COMPENSATION TABLES, DIRECTOR COMPENSATION and CORPORATE GOVERNANCE—Pay Ratio in our Proxy Statement. Information about compensation committee matters is incorporated by reference from the sections entitled CORPORATE GOVERNANCE—Compensation and Management Development Committee and CORPORATE GOVERNANCE—Compensation Committee Report in our Proxy Statement.

Item 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Securities Authorized for Issuance Under Existing Equity Compensation Plans

The following table sets forth certain information as of December 31, 2022, concerning the shares of our common stock that may be issued under any form of award granted under our equity compensation plans in effect as of December 31, 2022 (including upon the exercise of options, upon the vesting of awards of RSUs or when performance units are earned and related dividend equivalents have been granted).

Plan category	(a) Number of securities to be issued upon exercise of outstanding options and rights	(b) Weighted-average exercise price of outstanding options and rights	(c) Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))
Equity compensation plans approved by Amgen security holders:			
Amended and Restated 2009 Equity Incentive Plan ⁽¹⁾	10,235,620	\$ 207.29	15,255,297
Amended and Restated 1991 Equity Incentive Plan ⁽²⁾	2,191		
Amended and Restated Employee Stock Purchase Plan			4,180,287
Total approved plans	<u>10,237,811</u>	<u>207.29</u>	<u>19,435,584</u>
Equity compensation plan not approved by Amgen security holders:			
Amgen Profit Sharing Plan for Employees in Ireland ⁽³⁾			222,310
Total unapproved plans	<u>—</u>	<u>—</u>	<u>222,310</u>
Total all plans	<u>10,237,811</u>	<u>\$ 207.29</u>	<u>19,657,894</u>

⁽¹⁾ The Amended 2009 Plan employs a fungible share-counting formula for determining the number of shares available for issuance under the plan. In accordance with this formula, each option or stock appreciation right counts as one share, while each RSU, performance unit or dividend equivalent counts as 1.9 shares. The number under column (a) represents the actual number of shares issuable under our outstanding awards without giving effect to the fungible share-counting formula. The number under column (c) represents the number of shares available for issuance under this plan based on each such available share counting as one share. Commencing with the grants made in April 2012, RSUs and performance units accrue dividend equivalents that are payable in shares only to the extent and when the underlying RSUs vest or underlying performance units have been earned and the related shares are issued to the grantee. The performance units granted under this plan are earned based on the accomplishment of specified performance goals at the end of their respective three-year performance periods; the number of performance units granted represent target performance, and the maximum number of units that could be earned based on our performance is 200% of the performance units granted in 2020, 2021 and 2022.

As of December 31, 2022, the number of outstanding awards under column (a) includes (i) 5,322,407 shares issuable upon the exercise of outstanding options with a weighted-average exercise price of \$207.29; (ii) 3,173,806 shares issuable upon the vesting of outstanding RSUs (including 307,825 related dividend equivalents); and (iii) 1,739,407 shares subject to outstanding 2020, 2021 and 2022 performance units (including 84,603 related dividend equivalents). The weighted-average exercise price shown in column (b) is for the outstanding options only. The number of available shares under column (c) represents the number of shares that remain available for future issuance under this plan as of December 31, 2022, employing the fungible share formula and presumes the issuance of target shares under the performance units granted in 2020, 2021 and 2022 and related dividend equivalents. The numbers under columns (a) and (c) do not give effect to the additional shares that could be issuable in the event above target performance on the performance goals under these outstanding performance units is achieved. Maximum performance under these goals could result in 200% of target shares being awarded for performance units granted in 2020, 2021 and 2022.

⁽²⁾ This plan has terminated as to future grants. The number under column (a) with respect to this plan includes 2,191 shares issuable upon the settlement of deferred RSUs (including 519 related dividend equivalents).

⁽³⁾ The Profit Sharing Plan was approved by the Board of Directors on July 28, 2011. The Profit Sharing Plan permits eligible employees of the Company's subsidiaries located in Ireland who participate in the Profit Sharing Plan to apply a portion of their qualifying bonus and salary to the purchase of the Company's common stock on the open market at the market price by a third-party trustee as described in the Profit Sharing Plan.

Security Ownership of Directors and Executive Officers and Certain Beneficial Owners

Information about security ownership of certain beneficial owners and management is incorporated by reference from the sections entitled SECURITY OWNERSHIP OF DIRECTORS AND EXECUTIVE OFFICERS and SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS in our Proxy Statement.

Item 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS AND DIRECTOR INDEPENDENCE

Information about certain relationships and related transactions and director independence is incorporated by reference from the sections entitled CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS and CORPORATE GOVERNANCE—Director Independence in our Proxy Statement.

Item 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Information about the fees for professional services rendered by our independent registered public accountants is incorporated by reference from the section entitled AUDIT MATTERS—Independent Registered Public Accountants in our Proxy Statement.

PART IV

Item 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a)1. Index to Financial Statements

The following Consolidated Financial Statements are included herein:

	Page number
Report of Independent Registered Public Accounting Firm (PCAOB ID: 42)	F-1
Consolidated Statements of Income for each of the three years in the period ended December 31, 2022	F-4
Consolidated Statements of Comprehensive Income for each of the three years in the period ended December 31, 2022	F-5
Consolidated Balance Sheets as of December 31, 2022 and 2021	F-6
Consolidated Statements of Stockholders' Equity for each of the three years in the period ended December 31, 2022	F-7
Consolidated Statements of Cash Flows for each of the three years in the period ended December 31, 2022	F-8
Notes to Consolidated Financial Statements	F-9

(a)2. Index to Financial Statement Schedules

The following Schedule is filed as part of this Annual Report on Form 10-K:

	Page number
Schedule II. Valuation and Qualifying Accounts	F-55

All other schedules are omitted because they are not applicable, not required or because the required information is included in the consolidated financial statements or notes thereto.

(a)3. Exhibits

Exhibit No.	Description
2.1	Asset Purchase Agreement, dated August 25, 2019, by and between Amgen Inc. and Celgene Corporation. (Filed as an exhibit to Form 8-K on August 26, 2019 and incorporated herein by reference.)
2.1.1	Amendment No. 1 to the Asset Purchase Agreement, dated October 17, 2019, by and between Amgen Inc. and Celgene Corporation. (Filed as an exhibit to Form 8-K on October 17, 2019 and incorporated herein by reference.)
2.1.2	Amendment No. 2 to the Asset Purchase Agreement, dated October 17, 2019, by and between Amgen Inc. and Celgene Corporation. (Filed as an exhibit to Form 10-K for the year ended December 31, 2019 on February 12, 2020 and incorporated herein by reference.)
2.2	Letter Agreement, dated November 21, 2019, by and between Amgen Inc. and the parties named therein re: Treatment of Certain Product Inventory in connection with Amgen's acquisition of Otezla (Filed as an exhibit to Form 10-K for the year ended December 31, 2019 on February 12, 2020 and incorporated herein by reference.)
2.3	Irrevocable Guarantee, dated August 25, 2019, by and between Amgen Inc. and Bristol-Myers Squibb Company. (Filed as an exhibit to Form 8-K on August 26, 2019 and incorporated herein by reference.)
2.4	Agreement and Plan of Merger, dated July 27, 2021, by and among Amgen Inc., Teneobio, Inc., Tuxedo Merger Sub, Inc., and Fortis Advisors LLC. (portions of the exhibit have been omitted because they are both (i) not material and (ii) is the type of information that the Company treats as private or confidential)(Filed as an exhibit to Form 10-Q for the quarter ended September 30, 2021 on November 3, 2021 and incorporated herein by reference.)

Exhibit No.	Description
2.5	<u>Agreement and Plan of Merger, dated as of August 3, 2022, among ChemoCentryx, Inc., Amgen Inc. and Carnation Merger Sub, Inc.</u> (Filed as an exhibit to Form 8-K on August 4, 2022 and incorporated herein by reference.)
2.6	<u>Transaction Agreement, dated as of December 11, 2022, by and among Amgen Inc., Pillartree Limited and Horizon Therapeutics plc.</u> (Filed as an exhibit to Form 8-K on December 12, 2022 and incorporated herein by reference.)
2.7	<u>Appendix 3 to the Rule 2.7 Announcement, dated as of December 12, 2022 (Conditions Appendix)</u> (Filed as an exhibit to Form 8-K on December 12, 2022 and incorporated herein by reference.)
3.1	<u>Restated Certificate of Incorporation of Amgen Inc.</u> (As Restated March 6, 2013.) (Filed as an exhibit to Form 10-Q for the quarter ended March 31, 2013 on May 3, 2013 and incorporated herein by reference.)
3.2	<u>Amended and Restated Bylaws of Amgen Inc.</u> (As Amended and Restated February 15, 2016.) (Filed as an exhibit to Form 8-K on February 17, 2016 and incorporated herein by reference.)
4.1	<u>Form of stock certificate for the common stock, par value \$.0001 of the Company.</u> (Filed as an exhibit to Form 10-Q for the quarter ended March 31, 1997 on May 14, 1997 and incorporated herein by reference.)
4.2	Form of Indenture, dated January 1, 1992. (Filed as an exhibit to Form S-3 Registration Statement filed on December 19, 1991 and incorporated herein by reference.)
4.3	<u>Agreement of Resignation, Appointment and Acceptance dated February 15, 2008.</u> (Filed as an exhibit to Form 10-K for the year ended December 31, 2007 on February 28, 2008 and incorporated herein by reference.)
4.4	<u>First Supplemental Indenture, dated February 26, 1997.</u> (Filed as an exhibit to Form 8-K on March 14, 1997 and incorporated herein by reference.)
4.5	<u>8-1/8% Debentures due April 1, 2097.</u> (Filed as an exhibit to Form 8-K on April 8, 1997 and incorporated herein by reference.)
4.6	<u>Officer's Certificate of Amgen Inc., dated April 8, 1997, establishing a series of securities entitled "8 1/8% Debentures due April 1, 2097."</u> (Filed as an exhibit to Form 8-K on April 8, 1997 and incorporated herein by reference.)
4.7	<u>Indenture, dated August 4, 2003.</u> (Filed as an exhibit to Form S-3 Registration Statement on August 4, 2003 and incorporated herein by reference.)
4.8	<u>Corporate Commercial Paper - Master Note between and among Amgen Inc., as Issuer, Cede & Co., as Nominee of The Depository Trust Company, and Citibank, N.A., as Paying Agent.</u> (Filed as an exhibit to Form 10-Q for the quarter ended March 31, 1998 on May 13, 1998 and incorporated herein by reference.)
4.9	<u>Officers' Certificate of Amgen Inc., dated May 30, 2007, including form of the Company's 6.375% Senior Notes due 2037.</u> (Filed as an exhibit to Form 8-K on May 30, 2007 and incorporated herein by reference.)
4.10	<u>Officers' Certificate of Amgen Inc., dated May 23, 2008, including form of the Company's 6.90% Senior Notes due 2038.</u> (Filed as exhibit to Form 8-K on May 23, 2008 and incorporated herein by reference.)
4.11	<u>Officers' Certificate of Amgen Inc., dated January 16, 2009, including form of the Company's 6.40% Senior Notes due 2039.</u> (Filed as exhibit to Form 8-K on January 16, 2009 and incorporated herein by reference.)
4.12	<u>Officers' Certificate of Amgen Inc., dated March 12, 2010, including form of the Company's 5.75% Senior Notes due 2040.</u> (Filed as exhibit to Form 8-K on March 12, 2010 and incorporated herein by reference.)
4.13	<u>Officers' Certificate of Amgen Inc., dated September 16, 2010, including form of the Company's 4.95% Senior Notes due 2041.</u> (Filed as an exhibit to Form 8-K on September 17, 2010 and incorporated herein by reference.)
4.14	<u>Officers' Certificate of Amgen Inc., dated June 30, 2011, including form of the Company's 5.65% Senior Notes due 2042.</u> (Filed as an exhibit to Form 8-K on June 30, 2011 and incorporated herein by reference.)
4.15	<u>Officers' Certificate of Amgen Inc., dated November 10, 2011, including form of the Company's 5.15% Senior Notes due 2041.</u> (Filed as an exhibit to Form 8-K on November 10, 2011 and incorporated herein by reference.)

Exhibit No.	Description
4.16	<u>Officers' Certificate of Amgen Inc., dated December 5, 2011, including form of the Company's 5.50% Senior Notes due 2026.</u> (Filed as an exhibit to Form 8-K on December 5, 2011 and incorporated herein by reference.)
4.17	<u>Officers' Certificate of Amgen Inc., dated May 15, 2012, including form of the Company's 5.375% Senior Notes due 2043.</u> (Filed as an exhibit to Form 8-K on May 15, 2012 and incorporated herein by reference.)
4.18	<u>Officers' Certificate of Amgen Inc., dated September 13, 2012, including form of the Company's 4.000% Senior Notes due 2029.</u> (Filed as an exhibit to Form 8-K on September 13, 2012 and incorporated herein by reference.)
4.19	<u>Indenture, dated May 22, 2014, between Amgen Inc. and The Bank of New York Mellon Trust Company, N.A., as Trustee.</u> (Filed as an exhibit to Form 8-K on May 22, 2014 and incorporated herein by reference.)
4.20	<u>Officers' Certificate of Amgen Inc., dated May 22, 2014, including form of the Company's 3.625% Senior Notes due 2024.</u> (Filed as an exhibit to Form 8-K on May 22, 2014 and incorporated herein by reference.)
4.21	<u>Officer's Certificate of Amgen Inc., dated May 1, 2015, including forms of the Company's 3.125% Senior Notes due 2025 and 4.400% Senior Notes due 2045.</u> (Filed as an exhibit on Form 8-K on May 1, 2015 and incorporated herein by reference.)
4.22	<u>Officer's Certificate of Amgen Inc., dated as of February 25, 2016, including form of the Company's 2.000% Senior Notes due 2026.</u> (Filed as an exhibit on Form 8-K on February 26, 2016 and incorporated herein by reference.)
4.23	<u>Form of Permanent Global Certificate for the Company's 0.410% bonds due 2023.</u> (Filed as an exhibit on Form 8-K on March 8, 2016 and incorporated herein by reference.)
4.24	<u>Terms of the Bonds for the Company's 0.410% bonds due 2023.</u> (Filed as an exhibit on Form 8-K on March 8, 2016 and incorporated herein by reference.)
4.25	<u>Officer's Certificate of Amgen Inc., dated as of June 14, 2016, including forms of the Company's 4.563% Senior Notes due 2048 and 4.663% Senior Notes due 2051.</u> (Filed as an exhibit to Form 8-K on June 14, 2016 and incorporated herein by reference.)
4.26	<u>Officer's Certificate of Amgen Inc., dated as of August 19, 2016, including forms of the Company's 2.250% Senior Notes due 2023 and 2.600% Senior Notes due 2026.</u> (Filed as an exhibit to Form 8-K on August 19, 2016 and incorporated herein by reference.)
4.27	<u>Officer's Certificate of Amgen Inc., dated as of November 2, 2017, including in the form of the Company's 3.200% Senior Notes due 2027.</u> (Filed as an exhibit to Form 8-K on November 2, 2017 and incorporated herein by reference.)
4.28	<u>Officer's Certificate of Amgen Inc., dated as of February 21, 2020, including forms of the Company's 1.900% Senior Notes due 2025, 2.200% Senior Notes due 2027, 2.450% Senior Notes due 2030, 3.150% Senior Notes due 2040 and 3.375% Senior Notes due 2050.</u> (Filed as an exhibit to Form 8-K on February 21, 2020 and incorporated herein by reference.)
4.29	<u>Officer's Certificate of Amgen Inc., dated as of May 6, 2020, including form of the Company's 2.300% Senior Notes due 2031.</u> (Filed as an exhibit to Form 8-K on May 6, 2020 and incorporated herein by reference.)
4.30	<u>Officer's Certificate of Amgen Inc., dated as of August 17, 2020, including forms of the Company's 2.770% Senior Notes due 2053.</u> (Filed as an exhibit to Form 8-K on August 18, 2020 and incorporated herein by reference.)
4.31	<u>Officer's Certificate of Amgen Inc., dated as of August 9, 2021, including forms of the Company's 1.650% Senior Notes due 2028, 2.000% Senior Notes due 2032, 2.800% Senior Notes due 2041 and 3.000% Senior Notes due 2052.</u> (Filed as an exhibit to Form 8-K on August 9, 2021 and incorporated herein by reference.)
4.32	<u>Officer's Certificate of Amgen Inc., dated as of February 22, 2022, including forms of the Company's 3.000% Senior Notes due 2029, 3.350% Senior Notes due 2032, 4.200% Senior Notes due 2052 and 4.400% Senior Notes due 2062.</u> (Filed as an exhibit to Form 8-K on February 22, 2022 and incorporated herein by reference.)
4.33	<u>Officer's Certificate of Amgen Inc., dated as of August 18, 2022, including forms of the Company's 4.050% Senior Notes due 2029, 4.200% Senior Notes due 2033 and 4.875% Senior Notes due 2053.</u> (Filed as an exhibit to Form 8-K on August 18, 2022 and incorporated herein by reference.)

Exhibit No.	Description
4.34*	<u>Description of Amgen Inc.'s Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934.</u>
10.1+	<u>Amgen Inc. Amended and Restated 2009 Equity Incentive Plan.</u> (Filed as Appendix C to the Definitive Proxy Statement on Schedule 14A on April 8, 2013 and incorporated herein by reference.)
10.2+	<u>First Amendment to Amgen Inc. Amended and Restated 2009 Equity Incentive Plan, effective March 4, 2015.</u> (Filed as an exhibit to Form 10-Q for the quarter ended March 31, 2015 on April 27, 2015 and incorporated herein by reference.)
10.3+	<u>Second Amendment to Amgen Inc. Amended and Restated 2009 Equity Incentive Plan, effective March 2, 2016.</u> (Filed as an exhibit to Form 10-Q for the quarter ended March 31, 2016 on May 2, 2016 and incorporated herein by reference.)
10.4+*	<u>Form of Grant of Stock Option Agreement for the Amgen Inc. Amended and Restated 2009 Equity Incentive Plan.</u> (As Amended and Restated on December 12, 2022.)
10.5+*	<u>Form of Restricted Stock Unit Agreement for the Amgen Inc. Amended and Restated 2009 Equity Incentive Plan.</u> (As Amended and Restated on December 12, 2022.)
10.6+	<u>Amgen Inc. 2009 Performance Award Program. (As Amended on December 12, 2017.)</u> (Filed as an exhibit to Form 10-K for the year ended December 31, 2017 on February 13, 2018 and incorporated herein by reference.)
10.7+*	<u>Form of Performance Unit Agreement for the Amgen Inc. 2009 Performance Award Program.</u> (As Amended and Reinstated on December 12, 2022.)
10.8+	<u>Amgen Inc. 2009 Director Equity Incentive Program. (As Amended and Restated on October 21, 2020.)</u> (Filed as an exhibit to Form 10-K for the year ended December 31, 2020 on February 9, 2021 and incorporated herein by reference.)
10.9+	<u>Form of Restricted Stock Unit Agreement for the Amgen Inc. 2009 Director Equity Incentive Program. (As Amended on December 11, 2019.)</u> (Filed as an exhibit to Form 10-K for the year ended December 31, 2019 on February 12, 2020 and incorporated herein by reference.)
10.10+	<u>Form of Cash-Settled Restricted Stock Unit Agreement for the Amgen 2009 Director Equity Incentive Program. (As Amended on December 11, 2019.)</u> (Filed as an exhibit to Form 10-K for the year ended December 31, 2019 on February 12, 2020 and incorporated herein by reference.)
10.11+	<u>Amgen Inc. Supplemental Retirement Plan. (As Amended and Restated effective October 16, 2013.)</u> (Filed as an exhibit to Form 10-K for the year ended December 31, 2013 on February 24, 2014 and incorporated herein by reference.)
10.11.1+	<u>First Amendment to the Amgen Inc. Supplemental Retirement Plan, effective October 14, 2016.</u> (Filed as an exhibit to Form 10-Q for the quarter ended September 30, 2016 on October 28, 2016 and incorporated herein by reference.)
10.11.2+	<u>Second Amendment to the Amgen Inc. Supplemental Retirement Plan, effective October 23, 2019.</u> (Filed as an exhibit to Form 10-K for the year ended December 31, 2019 on February 12, 2020 and incorporated herein by reference.)
10.11.3+	<u>Third Amendment to the Amgen Inc. Supplemental Retirement Plan, effective October 20, 2021.</u> (Filed as an exhibit to Form 10-K for the year ended December 31, 2021 on February 16, 2022 and incorporated herein by reference.)
10.11.4+*	<u>Fourth Amendment to the Amgen Inc. Supplemental Retirement Plan, effective October 20, 2022.</u>
10.12+	<u>Amended and Restated Amgen Change of Control Severance Plan. (As Amended and Restated effective December 9, 2010 and subsequently amended effective March 2, 2011.)</u> (Filed as an exhibit to Form 10-Q for the quarter ended March 31, 2011 on May 10, 2011 and incorporated herein by reference.)
10.13+	<u>Amgen Inc. Executive Incentive Plan.</u> (As Amended and Restated effective January 1, 2022.) (Filed as an exhibit to Form 10-Q for the quarter ended March 31, 2022 on April 28, 2022 and incorporated herein by reference.)

Exhibit No.	Description
10.14+	Amgen Nonqualified Deferred Compensation Plan. (As Amended and Restated effective October 16, 2013.) (Filed as an exhibit to Form 10-K for the year ended December 31, 2013 on February 24, 2014 and incorporated herein by reference.)
10.14.1+	First Amendment to the Amgen Nonqualified Deferred Compensation Plan, effective October 14, 2016. (Filed as an exhibit to Form 10-Q for the quarter ended September 30, 2016 on October 28, 2016 and incorporated herein by reference.)
10.14.2+	Second Amendment to the Amgen Nonqualified Deferred Compensation Plan, effective January 1, 2020. (Filed as an exhibit to Form 10-K for the year ended December 31, 2019 on February 12, 2020 and incorporated herein by reference.)
10.14.3+	Third Amendment to the Amgen Nonqualified Deferred Compensation Plan, effective January 1, 2022. (Filed as an exhibit to Form 10-K for the year ended December 31, 2021 on February 16, 2022 and incorporated herein by reference.)
10.15+	Aircraft Time Sharing Agreement, dated December 3, 2021, by and between Amgen Inc. and Robert A. Bradway. (Filed as an exhibit to Form 10-K for the year ended December 31, 2021 on February 16, 2022 and incorporated herein by reference.)
10.16	Second Amended and Restated Credit Agreement, dated December 12, 2019, among Amgen Inc., the Banks therein named, Citibank, N.A., as administrative agent, and JPMorgan Chase Bank, N.A., as syndication agent. (Filed as an exhibit to Form 8-K on December 12, 2019 and incorporated herein by reference.)
10.16.1*	Amendment No. 1 to the Second Amended and Restated Credit Agreement, dated as of December 29, 2022, between Amgen Inc. and Citibank, N.A., as the Administrative Agent and an Issuing Bank.
10.17	Bridge Credit Agreement, dated as of December 12, 2022, by and among Amgen Inc., Citibank, N.A., as administrative agent, Bank of America, N.A., as syndication agent, Citibank, N.A. and Bank of America, N.A., as lead arrangers and book runners, and the other banks party thereto. (Filed as an exhibit to Form 8-K on December 12, 2022 and incorporated herein by reference.)
10.18	Term Loan Credit Agreement, dated as of December 22, 2022, by and among Amgen Inc., Citibank, N.A., as administrative agent, Bank of America, N.A., as syndication agent, Citibank, N.A., Bank of America, N.A., Goldman Sachs Bank USA and Mizuho Bank, Ltd., as lead arrangers and book runners, Goldman Sachs Bank USA and Mizuho Bank, Ltd. as documentation agents, and the other banks party thereto. (Filed as an exhibit to Form 8-K on December 22, 2022 and incorporated herein by reference.)
10.19	Collaboration and License Agreement between Amgen Inc. and Celltech R&D Limited dated May 10, 2002 (portions of the exhibit have been omitted pursuant to a request for confidential treatment) and Amendment No. 1, effective June 9, 2003, to Collaboration and License Agreement between Amgen Inc. and Celltech R&D Limited (portions of the exhibit have been omitted pursuant to a request for confidential treatment). (Filed as an exhibit to Form 10-K/A for the year ended December 31, 2012 on July 31, 2013 and incorporated herein by reference.)
10.19.1	Amendment No. 2 to Collaboration and License Agreement, effective November 14, 2016, between Amgen Inc. and Celltech R&D Limited (portions of the exhibit have been omitted pursuant to a request for confidential treatment). (Filed as an exhibit to Form 10-K for the year ended December 31, 2016 on February 14, 2017 and incorporated herein by reference.)
10.20	Letter Agreement, dated June 25, 2019, by and between Amgen Inc. and UCB Celltech (portions of the exhibit have been omitted because they are both (i) not material and (ii) would be competitively harmful if publicly disclosed). (Filed as an exhibit to Form 10-Q for the quarter ended June 30, 2019 on July 31, 2019 and incorporated herein by reference.)
10.21	Collaboration Agreement, dated October 31, 2019, by and between Amgen Inc. and BeiGene Switzerland GmbH, a wholly-owned subsidiary of BeiGene, Ltd. (portions of the exhibit have been omitted because they are both (i) not material and (ii) would be competitively harmful if publicly disclosed). (Filed as an exhibit to Form 10-K for the year ended December 31, 2019 on February 12, 2020 and incorporated herein by reference.)
10.21.1	First Amendment to Collaboration Agreement, dated April 20, 2022, by and between Amgen Inc. and BeiGene Switzerland GmbH, and BeiGene, Ltd. (portions of the exhibit have been omitted because they are both (i) not material and (ii) is the type of information that the Company treats as private or confidential.) (Filed as an exhibit to Form 10-Q for the quarter ended June 30, 2022 on August 5, 2022 and incorporated herein by reference.)

Exhibit No.	Description
10.22	<u>Guarantee, dated as of October 31, 2019, made by and among BeiGene, Ltd. and Amgen Inc.</u> (Filed as an exhibit to Form 10-K for the year ended December 31, 2019 on February 12, 2020 and incorporated herein by reference.)
10.23	<u>Share Purchase Agreement, dated October 31, 2019, by and between Amgen Inc. and BeiGene, Ltd.</u> (portions of the exhibit have been omitted because they are both (i) not material and (ii) would be competitively harmful if publicly disclosed). (Filed as an exhibit to Schedule 13D on January 8, 2020 and incorporated herein by reference.)
10.23.1	<u>Amendment No. 1 to Share Purchase Agreement, dated December 6, 2019, by and among BeiGene, Ltd. and Amgen Inc.</u> (Filed as an exhibit to Schedule 13D on January 8, 2020 and incorporated herein by reference.)
10.23.2	<u>Restated Amendment No. 2 to Share Purchase Agreement, dated September 24, 2020, by and among BeiGene, Ltd. and Amgen Inc.</u> (Filed as an exhibit to Form 10-Q for the quarter ended September 30, 2020 on October 29, 2020 and incorporated herein by reference.)
10.24	<u>Collaboration Agreement dated March 30, 2012 by and between Amgen Inc. and AstraZeneca Collaboration Ventures, LLC, a wholly owned subsidiary of AstraZeneca Pharmaceuticals LP</u> (portions of the exhibit have been omitted because they are both (i) not material and (ii) is the type of information that the Company treats as private or confidential.) (Filed as an exhibit to Form 10-Q for the quarter ended June 30, 2022 on August 5, 2022 and incorporated herein by reference.)
10.24.1	<u>Amendment No. 1 to the Collaboration Agreement, dated October 1, 2014, by and among Amgen Inc., AstraZeneca Collaboration Ventures, LLC and AstraZeneca Pharmaceuticals LP</u> (portions of the exhibit have been omitted because they are both (i) not material and (ii) is the type of information that the Company treats as private or confidential.) (Filed as an exhibit to Form 10-Q for the quarter ended June 30, 2022 on August 5, 2022 and incorporated herein by reference.)
10.24.2	<u>Amendment Nos. 2 through 6 to the March 30, 2012 Collaboration Agreement between Amgen Inc. and AstraZeneca Collaboration Ventures, LLC, dated May 2 and 27 and October 2, 2016, January 31, 2018, and May 15, 2020, respectively</u> (portions of the exhibit have been omitted because they are both (i) not material and (ii) would be competitively harmful if publicly disclosed.) (Filed as an exhibit to Form 10-Q for the quarter ended June 30, 2020 on July 29, 2020 and incorporated herein by reference.)
10.24.3	<u>Amendment No. 7 to the Collaboration Agreement, dated December 17, 2020, by and between Amgen Inc. and AstraZeneca Collaboration Ventures, LLC</u> (portions of the exhibit have been omitted because they are both (i) not material and (ii) would be competitively harmful if publicly disclosed.) (Filed as an exhibit to Form 10-K for the year ended December 31, 2020 on February 9, 2021 and incorporated herein by reference.)
10.24.4	<u>Amendment No. 8 to the Collaboration Agreement, dated November 19, 2021, by and between Amgen Inc. and AstraZeneca Collaboration Ventures, LLC</u> (portions of the exhibit have been omitted because they are both (i) not material and (ii) is the type of information that the Company treats as private or confidential.) (Filed as an exhibit to Form 10-K for the year ended December 31, 2021 on February 16, 2022 and incorporated herein by reference.)
10.25	<u>License and Collaboration Agreement, dated June 1, 2021, by and between Amgen Inc. and Kyowa Kirin Co., Ltd.</u> (portions of the exhibit have been omitted because they are both (i) not material and (ii) would be competitively harmful if publicly disclosed). (Filed as an exhibit to Form 10-Q for the quarter ended June 30, 2021 on August 4, 2021 and incorporated herein by reference.)
21*	<u>Subsidiaries of the Company.</u>
23	Consent of the Independent Registered Public Accounting Firm. The consent is set forth on page 91 of this Annual Report on the 10-K.
24	Power of Attorney. The Power of Attorney is set forth on page 92 of this Annual Report on Form 10-K.
31*	<u>Rule 13a-14(a) Certifications.</u>
32**	<u>Section 1350 Certifications.</u>
101.INS	Inline XBRL Instance Document - The instance document does not appear in the interactive data file because its XBRL tags are embedded within the Inline XBRL document.
101.SCH*	Inline XBRL Taxonomy Extension Schema Document.

Exhibit No.	Description
101.CAL*	Inline XBRL Taxonomy Extension Calculation Linkbase Document.
101.DEF*	Inline XBRL Taxonomy Extension Definition Linkbase Document.
101.LAB*	Inline XBRL Taxonomy Extension Label Linkbase Document.
101.PRE*	Inline XBRL Taxonomy Extension Presentation Linkbase Document.
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101).

(* = filed herewith)

(** = furnished herewith and not “filed” for purposes of Section 18 of the Securities Exchange Act of 1934, as amended)

(+ = management contract or compensatory plan or arrangement)

Item 16. FORM 10-K SUMMARY

Not applicable.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this Annual Report to be signed on its behalf by the undersigned, thereunto duly authorized.

AMGEN INC.
(Registrant)

Date: February 9, 2023

By: _____ /s/ PETER H. GRIFFITH

Peter H. Griffith

Executive Vice President and Chief Financial Officer
(Principal Financial Officer)

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the following Registration Statements:

- Registration Statement (Form S-3 No. 333-236351) of Amgen Inc.,
- Registration Statement (Form S-8 No. 333-159377) pertaining to the Amgen Inc. Amended and Restated 2009 Equity Incentive Plan,
- Registration Statement (Form S-8 No. 33-39183) pertaining to the Amgen Inc. Amended and Restated Employee Stock Purchase Plan,
- Registration Statements (Form S-8 No. 33-39104, as amended by Form S-8 Nos. 333-144581 and 333-216719) pertaining to the Amgen Retirement and Savings Plan,
- Registration Statements (Form S-8 Nos. 33-47605, 333-144580 and 333-216715) pertaining to The Retirement and Savings Plan for Amgen Manufacturing, Limited (formerly known as the Retirement and Savings Plan for Amgen Manufacturing, Inc.),
- Registration Statements (Form S-8 Nos. 333-81284, 333-177868, 333-216723 and 333-260723) pertaining to the Amgen Nonqualified Deferred Compensation Plan, and
- Registration Statement (Form S-8 Nos. 333-176240 and 333-260724) pertaining to the Amgen Profit Sharing Plan for Employees in Ireland;

of our reports dated February 9, 2023, with respect to the consolidated financial statements of Amgen Inc. and the effectiveness of internal control over financial reporting of Amgen Inc. included in this Annual Report (Form 10-K) of Amgen Inc. for the year ended December 31, 2022.

/s/ Ernst & Young LLP

Los Angeles, California
February 9, 2023

POWER OF ATTORNEY

KNOW ALL MEN AND WOMEN BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Robert A. Bradway, Peter H. Griffith and Jonathan P. Graham, or any of them, his or her attorney-in-fact, each with the power of substitution and re-substitution, for him or her in any and all capacities, to sign any amendments to this Report, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact, or his or her substitute or substitutes, may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated:

Signature	Title	Date
/S/ ROBERT A. BRADWAY <i>Robert A. Bradway</i>	Chairman of the Board, Chief Executive Officer and President, and Director (Principal Executive Officer)	2/9/2023
/S/ PETER H. GRIFFITH <i>Peter H. Griffith</i>	Executive Vice President and Chief Financial Officer (Principal Financial Officer)	2/9/2023
/S/ LINDA H. LOUIE <i>Linda H. Louie</i>	Vice President, Finance and Chief Accounting Officer (Principal Accounting Officer)	2/9/2023
/S/ WANDA M. AUSTIN <i>Wanda M. Austin</i>	Director	2/9/2023
/S/ MICHAEL V. DRAKE <i>Michael V. Drake</i>	Director	2/9/2023
/S/ BRIAN J. DRUKER <i>Brian J. Druker</i>	Director	2/9/2023
/S/ ROBERT A. ECKERT <i>Robert A. Eckert</i>	Director	2/9/2023
/S/ GREG C. GARLAND <i>Greg C. Garland</i>	Director	2/9/2023
/S/ CHARLES M. HOLLEY, JR. <i>Charles M. Holley, Jr.</i>	Director	2/9/2023
/S/ S. OMAR ISHRAK <i>S. Omar Ishrak</i>	Director	2/9/2023
/S/ TYLER JACKS <i>Tyler Jacks</i>	Director	2/9/2023
/S/ ELLEN J. KULLMAN <i>Ellen J. Kullman</i>	Director	2/9/2023
/S/ AMY E. MILES <i>Amy E. Miles</i>	Director	2/9/2023
/S/ RONALD D. SUGAR <i>Ronald D. Sugar</i>	Director	2/9/2023
/S/ R. SANDERS WILLIAMS <i>R. Sanders Williams</i>	Director	2/9/2023

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Amgen Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Amgen Inc. (the Company) as of December 31, 2022 and 2021, the related consolidated statements of income, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2022, and the related notes and the financial statement schedule listed in the Index at Item 15(a)2 (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2022, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) and our report dated February 9, 2023 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Sales deductions

Description of the Matter

As of December 31, 2022, the Company recorded accrued sales deductions of \$6.0 billion. As described in Note 1 to the financial statements under the caption “Product sales and sales deductions,” revenues from product sales are recognized net of accruals for estimated rebates, wholesaler chargebacks, discounts and other deductions (collectively sales deductions), which are established at the time of sale.

Auditing the estimation of sales deductions, which are netted against product sales, is complex, requires significant judgment, and the amounts involved are material to the financial statements taken as a whole. Revenue from product sales is recognized upon transfer of control of a product to a customer, generally upon delivery, and is based on an amount that reflects the consideration to which the Company expects to be entitled, which represents an amount that is net of accruals for estimated sales deductions. The estimated sales deductions are based on current contractual and statutory requirements, market events and trends, internal and external historical data, and forecasted customer buying patterns.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design and tested the operating effectiveness of internal controls over the sales deduction processes. This included testing controls over management’s review of significant assumptions and inputs used in the estimate of sales deductions, including actual sales, contractual terms, historical experience, wholesaler inventory levels, demand data and estimated patient population. We also tested management’s controls over the accuracy of forecasting demand activity as well as the completeness and accuracy of the significant components included in the final sales deduction estimates.

To test management’s estimated sales deductions, we obtained management’s calculations for the respective estimates and performed the following procedures, among others. We tested management’s estimation process over the determination of sales discount accruals by developing an independent expectation of the estimated accrual balances, including comparing accrual balances recorded by management to those implied by historical payment trends, performing a lookback analysis using actual historical data to evaluate the forecasted amounts, assessing subsequent events to determine whether there was any new information that would require adjustment to the initial accruals, evaluating trends in actual sales and discount accrual balances, comparing cash receipts to product sales, confirming terms and conditions for a sample of contracts, testing a sample of credits issued and payments made throughout the year, and agreeing rates to underlying contract terms.

Unrecognized tax benefits

Description of the Matter

As discussed in Notes 1 and 6 to the consolidated financial statements, the Company operates in various jurisdictions in which differing interpretations of complex tax laws and regulations create uncertainty and necessitate the use of significant judgment in the determination of the Company's unrecognized tax benefits related to allocation of profits among various jurisdictions ("transfer pricing"), particularly in the U.S. federal tax jurisdiction where the Company has significant assets and operations. In this regard, the Company uses significant judgment in (1) determining whether a tax position's technical merits are more-likely-than-not to be sustained and (2) measuring the amount of tax benefit that qualifies for recognition. As of December 31, 2022, the Company accrued \$3.8 billion of gross unrecognized tax benefits including those related to transfer pricing. Auditing the assessment of the technical merits and measurement of the Company's unrecognized tax benefits is challenging and can be complex, highly judgmental, and based on interpretations of tax laws and regulations and application of those interpretations to the Company's facts and circumstances.

How We Addressed the Matter in Our Audit

We obtained an understanding, evaluated the design and tested the operating effectiveness of internal controls over the Company's process to assess the technical merits of its tax positions, as well as management's process to measure the unrecognized tax benefits of those tax positions, particularly in regard to transfer pricing. This included testing controls over management's review of the inputs, calculations, assumptions and methods selected to measure the amount of tax benefits that qualify for recognition.

We involved tax and transfer pricing specialists to assist in assessing the technical merits and measurement of certain of the Company's unrecognized tax benefits. Depending on the nature of the specific tax position and, as applicable, developments with the relevant tax authorities, our procedures included obtaining and reviewing the Company's correspondence with such tax authorities and evaluating certain third-party advice to support the Company's evaluations and recorded positions. We used our knowledge of and experience with how the income tax laws and regulations related to transfer pricing are applied by the relevant tax authorities to evaluate the Company's accounting for its unrecognized tax benefits. We evaluated developments in the applicable regulatory environments to assess potential effects on the Company's recorded positions. We assessed management's consideration of current tax controversy, litigation and tax litigation trends. We analyzed the assumptions and data used by the Company when it determined the amount of tax benefits to recognize, including applicable interest and penalties, and we tested the accuracy of those underlying calculations. We have also evaluated the Company's income tax disclosures included in Note 6 in relation to these matters.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1980.
Los Angeles, California
February 9, 2023

AMGEN INC.
CONSOLIDATED STATEMENTS OF INCOME
Years ended December 31, 2022, 2021 and 2020
(In millions, except per-share data)

	2022	2021	2020
Revenues:			
Product sales	\$ 24,801	\$ 24,297	\$ 24,240
Other revenues	1,522	1,682	1,184
Total revenues	<u>26,323</u>	<u>25,979</u>	<u>25,424</u>
Operating expenses:			
Cost of sales	6,406	6,454	6,159
Research and development	4,434	4,819	4,207
Acquired in-process research and development	—	1,505	—
Selling, general and administrative	5,414	5,368	5,730
Other	503	194	189
Total operating expenses	<u>16,757</u>	<u>18,340</u>	<u>16,285</u>
Operating income	9,566	7,639	9,139
Other income (expense):			
Interest expense, net	(1,406)	(1,197)	(1,262)
Other (expense) income, net	<u>(814)</u>	<u>259</u>	<u>256</u>
Income before income taxes	7,346	6,701	8,133
Provision for income taxes	794	808	869
Net income	\$ 6,552	\$ 5,893	\$ 7,264
Earnings per share:			
Basic	\$ 12.18	\$ 10.34	\$ 12.40
Diluted	\$ 12.11	\$ 10.28	\$ 12.31
Shares used in the calculation of earnings per share:			
Basic	538	570	586
Diluted	541	573	590

See accompanying notes.

AMGEN INC.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
Years ended December 31, 2022, 2021 and 2020

(In millions)

	2022	2021	2020
Net income	\$ 6,552	\$ 5,893	\$ 7,264
Other comprehensive income (loss), net of reclassification adjustments and taxes:			
Gains (losses) on foreign currency translation	496	(135)	9
Gains (losses) on cash flow hedges	67	324	(438)
Losses on available-for-sale securities	—	(1)	(21)
Other	2	1	(7)
Other comprehensive income (loss), net of taxes	565	189	(457)
Comprehensive income	\$ 7,117	\$ 6,082	\$ 6,807

See accompanying notes.

AMGEN INC.
CONSOLIDATED BALANCE SHEETS
December 31, 2022 and 2021
(In millions, except per-share data)

	2022	2021
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 7,629	\$ 7,989
Marketable securities	1,676	48
Trade receivables, net	5,563	4,895
Inventories	4,930	4,086
Other current assets	2,388	2,367
Total current assets	22,186	19,385
Property, plant and equipment, net	5,427	5,184
Intangible assets, net	16,080	15,182
Goodwill	15,529	14,890
Other noncurrent assets	5,899	6,524
Total assets	\$ 65,121	\$ 61,165
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$ 1,572	\$ 1,366
Accrued liabilities	12,524	10,731
Current portion of long-term debt	1,591	87
Total current liabilities	15,687	12,184
Long-term debt	37,354	33,222
Long-term tax liabilities	5,757	6,594
Other noncurrent liabilities	2,662	2,465
Contingencies and commitments		
Stockholders' equity:		
Common stock and additional paid-in capital; \$0.0001 par value per share; 2,750.0 shares authorized; outstanding—534.0 shares in 2022 and 558.3 shares in 2021	32,514	32,096
Accumulated deficit	(28,622)	(24,600)
Accumulated other comprehensive loss	(231)	(796)
Total stockholders' equity	3,661	6,700
Total liabilities and stockholders' equity	\$ 65,121	\$ 61,165

See accompanying notes.

AMGEN INC.
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
Years ended December 31, 2022, 2021 and 2020
(In millions, except per-share data)

	Number of shares of common stock	Common stock and additional paid-in capital	Accumulated deficit	Accumulated other comprehensive (loss) income	Total
Balance as of December 31, 2019	591.4	\$ 31,531	\$ (21,330)	\$ (528)	\$ 9,673
Cumulative effect of changes in accounting principles, net of taxes	—	—	(2)	—	(2)
Net income	—	—	7,264	—	7,264
Other comprehensive loss, net of taxes	—	—	—	(457)	(457)
Dividends declared on common stock (\$6.56 per share)	—	—	(3,843)	—	(3,843)
Issuance of common stock in connection with the Company's equity award programs	2.1	91	—	—	91
Stock-based compensation expense	—	349	—	—	349
Tax impact related to employee stock-based compensation expense	—	(169)	—	—	(169)
Repurchases of common stock	(15.2)	—	(3,497)	—	(3,497)
Balance as of December 31, 2020	578.3	31,802	(21,408)	(985)	9,409
Net income	—	—	5,893	—	5,893
Other comprehensive income, net of taxes	—	—	—	189	189
Dividends declared on common stock (\$7.22 per share)	—	—	(4,098)	—	(4,098)
Issuance of common stock in connection with the Company's equity award programs	1.7	82	—	—	82
Stock-based compensation expense	—	361	—	—	361
Tax impact related to employee stock-based compensation expense	—	(149)	—	—	(149)
Repurchases of common stock	(21.7)	—	(4,987)	—	(4,987)
Balance as of December 31, 2021	558.3	32,096	(24,600)	(796)	6,700
Net income	—	—	6,552	—	6,552
Other comprehensive income, net of taxes	—	—	—	565	565
Dividends declared on common stock (\$7.95 per share)	—	—	(4,264)	—	(4,264)
Issuance of common stock in connection with the Company's equity award programs	1.8	138	—	—	138
Stock-based compensation expense	—	419	—	—	419
Tax impact related to employee stock-based compensation expense	—	(139)	—	—	(139)
Repurchases of common stock	(26.1)	—	(6,310)	—	(6,310)
Balance as of December 31, 2022	<u>534.0</u>	<u>\$ 32,514</u>	<u>\$ (28,622)</u>	<u>\$ (231)</u>	<u>\$ 3,661</u>

See accompanying notes.

AMGEN INC.
CONSOLIDATED STATEMENTS OF CASH FLOWS
Years ended December 31, 2022, 2021 and 2020

(In millions)

	2022	2021	2020
Cash flows from operating activities:			
Net income	\$ 6,552	\$ 5,893	\$ 7,264
Depreciation, amortization and other	3,417	3,398	3,601
Stock-based compensation expense	401	341	330
Deferred income taxes	(1,198)	(453)	(287)
Acquired in-process research and development	—	1,505	—
Adjustments for equity method investments	891	33	65
Loss on divestiture	567	—	—
Other items, net	(176)	(262)	(260)
Changes in operating assets and liabilities, net of acquisitions:			
Trade receivables, net	(746)	(429)	(427)
Inventories	(742)	(165)	(215)
Other assets	258	(237)	129
Accounts payable	154	(69)	45
Accrued income taxes, net	(647)	(854)	(249)
Long-term tax liabilities	229	204	(482)
Other liabilities	761	356	983
Net cash provided by operating activities	<u>9,721</u>	<u>9,261</u>	<u>10,497</u>
Cash flows from investing activities:			
Purchases of marketable securities	(2,587)	(8,900)	(8,477)
Proceeds from sales of marketable securities	98	4,403	2,597
Proceeds from maturities of marketable securities	1,120	8,831	4,381
Purchases of property, plant and equipment	(936)	(880)	(608)
Cash paid for acquisitions, net of cash acquired	(3,839)	(2,529)	—
Purchases of equity method investments	(18)	(157)	(3,219)
Proceeds from business divestiture, net of divested cash	130	—	—
Other	(12)	(35)	(75)
Net cash (used in) provided by investing activities	<u>(6,044)</u>	<u>733</u>	<u>(5,401)</u>
Cash flows from financing activities:			
Net proceeds from issuance of debt	6,919	4,945	8,914
Extinguishment of debt	(297)	—	—
Repayment of debt	—	(4,150)	(6,450)
Repurchases of common stock	(6,360)	(4,975)	(3,486)
Dividends paid	(4,196)	(4,013)	(3,755)
Other	(103)	(78)	(90)
Net cash used in financing activities	<u>(4,037)</u>	<u>(8,271)</u>	<u>(4,867)</u>
(Decrease) increase in cash and cash equivalents	(360)	1,723	229
Cash and cash equivalents at beginning of year	7,989	6,266	6,037
Cash and cash equivalents at end of year	<u>\$ 7,629</u>	<u>\$ 7,989</u>	<u>\$ 6,266</u>

See accompanying notes.

AMGEN INC.

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

December 31, 2022

1. Summary of significant accounting policies

Business

Amgen Inc. (including its subsidiaries, referred to as “Amgen,” “the Company,” “we,” “our” or “us”) is a global biotechnology pioneer that discovers, develops, manufactures and delivers innovative human therapeutics. We operate in one business segment: human therapeutics.

Principles of consolidation

The consolidated financial statements include the accounts of Amgen as well as its majority-owned subsidiaries. In determining whether we are the primary beneficiary of a variable interest entity, we consider whether we have both the power to direct activities of the entity that most significantly impact the entity’s economic performance and the obligation to absorb losses of, or the right to receive benefits from, the entity that could potentially be significant to that entity. We do not have any significant interests in any variable interest entities of which we are the primary beneficiary. All material intercompany transactions and balances have been eliminated in consolidation.

Use of estimates

The preparation of consolidated financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the amounts reported in the consolidated financial statements and accompanying notes. Actual results may differ from those estimates.

Revenues

Product sales and sales deductions

Revenue from product sales is recognized upon transfer of control of a product to a customer, generally upon delivery, based on an amount that reflects the consideration to which we expect to be entitled, net of accruals for estimated rebates, wholesaler chargebacks, discounts and other deductions (collectively, sales deductions) and returns established at the time of sale.

We analyze the adequacy of our accruals for sales deductions quarterly. Amounts accrued for sales deductions are adjusted when trends or significant events indicate that an adjustment is appropriate. Accruals are also adjusted to reflect actual results. Accruals for sales deductions are based primarily on estimates of the amounts earned or to be claimed on the related sales. These estimates take into consideration current contractual and statutory requirements, specific known market events and trends, internal and external historical data and forecasted customer buying patterns. Sales deductions are substantially product specific and therefore, for any given period, can be affected by the mix of products sold. Included in sales deductions are immaterial net adjustments related to prior-period sales due to changes in estimates.

Returns are estimated through comparison of historical return data with their related sales on a production lot basis. Historical rates of return are determined for each product and are adjusted for known or expected changes in the marketplace specific to each product, when appropriate. Historically, sales return provisions have amounted to less than 1% of gross product sales. Changes in estimates for prior-period sales return provisions have historically been immaterial.

Our payment terms vary by types and locations of customers and by products or services offered. Payment terms differ by jurisdiction and customer, but payment is generally required in a term ranging from 30 to 120 days from date of shipment or satisfaction of the performance obligation. For certain products or services and certain customer types, we may require payment before products are delivered or services are rendered to customers.

Indirect taxes collected from customers and remitted to government authorities that are related to sales of the Company’s products, primarily in Europe, are excluded from revenues.

As a practical expedient, sales commissions are expensed when incurred because the amortization period would have been one year or less. These costs are recorded in SG&A expense in the Consolidated Statements of Income.

Other revenues

Other revenues consist primarily of royalty income and corporate partner revenues. Royalties from licensees are based on third-party sales of licensed products and are recorded when the related third-party product sale occurs. Royalty income is estimated based on historical and forecasted sales trends. Corporate partner revenues are composed mainly of license fees and milestones earned and our share of commercial profits generated from collaborations. See Arrangements with multiple-performance obligations, discussed below.

Arrangements with multiple-performance obligations

From time to time, we enter into arrangements for the R&D, manufacture and/or commercialization of products and product candidates. Such arrangements may require us to deliver various rights, services and/or goods, including intellectual property rights/licenses, R&D services, manufacturing services and/or commercialization services. The underlying terms of these arrangements generally provide for consideration to Amgen in the form of nonrefundable, upfront license fees; development and commercial-performance milestone payments; royalty payments; and/or profit sharing.

In arrangements involving more than one performance obligation, each required performance obligation is evaluated to determine whether it qualifies as a distinct performance obligation based on whether (i) the customer can benefit from the good or service either on its own or together with other resources that are readily available and (ii) the good or service is separately identifiable from other promises in the contract. The consideration under the arrangement is then allocated to each separate distinct performance obligation based on its respective relative stand-alone selling price. The estimated selling price of each deliverable reflects our best estimate of what the selling price would be if the deliverable was regularly sold by us on a stand-alone basis or by using an adjusted market assessment approach if selling price on a stand-alone basis is not available.

The consideration allocated to each distinct performance obligation is recognized as revenue when control of the related goods or services is transferred. Consideration associated with at-risk substantive performance milestones is recognized as revenue when it is probable that a significant reversal of the cumulative revenue recognized will not occur. We utilize the sales- and usage-based royalty exception in arrangements that resulted from the license of intellectual property, recognizing revenues generated from royalties or profit sharing as the underlying sales occur.

Research and development costs

R&D costs are expensed as incurred and primarily include salaries, benefits and other staff-related costs; facilities and overhead costs; clinical trial and related clinical manufacturing costs; contract services and other outside costs; information systems' costs; and amortization of acquired technology used in R&D with alternative future uses. R&D expenses also include costs and cost recoveries associated with third-party R&D arrangements, including upfront fees and milestones paid to third parties in connection with technologies that had not reached technological feasibility and did not have an alternative future use. Net payment or reimbursement of R&D costs is recognized when the obligations are incurred or as we become entitled to the cost recovery. See Note 8, Collaborations.

Selling, general and administrative costs

SG&A costs are primarily composed of salaries, benefits and other staff-related costs associated with sales and marketing, finance, legal and other administrative personnel; facilities and overhead costs; outside marketing, advertising and legal expenses; the U.S. healthcare reform federal excise fee on Branded Prescription Pharmaceutical Manufacturers and Importers; and other general and administrative costs. Advertising costs are expensed as incurred and were \$841 million, \$843 million and \$962 million during the years ended December 31, 2022, 2021 and 2020, respectively. SG&A expenses also include costs and cost recoveries associated with marketing and promotion efforts under certain collaborative arrangements. Net payment or reimbursement of SG&A costs is recognized when the obligations are incurred or we become entitled to the cost recovery. See Note 8, Collaborations.

Leases

At inception of a contract, we determine whether an arrangement is or contains a lease. For all leases, we determine the classification as either operating or financing. Operating leases are included in Other noncurrent assets, Accrued liabilities and Other noncurrent liabilities in our Consolidated Balance Sheets.

ROU assets represent our right to use an underlying asset for the lease term, and lease liabilities represent our obligation to make lease payments under the lease. Lease recognition occurs at the commencement date, and lease liability amounts are based on the present value of lease payments made during the lease term. Our lease terms may include options to extend or terminate a lease when it is reasonably certain that we will exercise that option. Because most of our leases do not provide information to determine an implicit interest rate, we use our incremental borrowing rate in determining the present value of lease payments. ROU assets also include any lease payments made prior to the commencement date less lease incentives received. Operating lease expense is recognized on a straight-line basis over the lease term.

We have lease agreements with both lease and nonlease components, which are generally accounted for together as a single lease component. In addition, for certain vehicle and equipment leases, we apply a portfolio approach to determine the lease term and discount rate.

Stock-based compensation

We have stock-based compensation plans under which various types of equity-based awards are granted, including RSUs, performance units and stock options. The fair values of RSUs and stock option awards, which are subject only to service conditions with graded vesting, are recognized as compensation expense, generally on a straight-line basis over the service period, net of estimated forfeitures. The fair values of performance unit awards are recognized as compensation expense, generally on a straight-line basis from the grant date to the end of the performance period. See Note 4, Stock-based compensation.

Income taxes

We provide for income taxes based on pretax income and applicable tax rates in the various jurisdictions in which we operate. Significant judgment is required in determining our provision for income taxes and income tax assets and liabilities, including evaluating uncertainties in the application of accounting principles and complex tax laws. Deferred income taxes are recorded for the expected tax consequences of temporary differences between the bases of assets and liabilities, as well as for loss and tax credit carryforwards for financial reporting purposes and amounts recognized for income tax purposes. We record a valuation allowance to reduce our deferred tax assets to the amount of future tax benefit that is more likely than not to be realized.

We recognize the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained upon examination by tax authorities based on the technical merits of the position. The tax benefit recognized in the consolidated financial statements for a particular tax position is based on the largest benefit that is more likely than not to be realized. The amount of UTBs is adjusted as appropriate for changes in facts and circumstances, such as significant amendments to existing tax law, new regulations or interpretations by tax authorities, new information obtained during a tax examination or resolution of an examination. We recognize both accrued interest and penalties, when appropriate, related to UTBs in income tax expense. See Note 6, Income taxes.

Acquisitions

We first determine whether a set of assets acquired constitute a business and should be accounted for as a business combination. If the assets acquired do not constitute a business, we account for the transaction as an asset acquisition. Business combinations are accounted for by means of the acquisition method of accounting. Under the acquisition method, assets acquired, including IPR&D projects, and liabilities assumed are recorded at their respective fair values as of the acquisition date in our consolidated financial statements. The excess of the fair value of consideration transferred over the fair value of the net assets acquired is recorded as goodwill. Contingent consideration obligations incurred in connection with a business combination (including the assumption of an acquiree's liability arising from an acquisition it consummated prior to our acquisition) are recorded at their fair values on the acquisition date and remeasured at their fair values each subsequent reporting period until the related contingencies have been resolved. The resulting changes in fair values are recorded in earnings. In contrast, asset acquisitions are accounted for by using a cost accumulation and allocation model. Under this model, the cost of the acquisition is allocated to the assets acquired and liabilities assumed. IPR&D projects with no alternative future use are recorded in R&D expense upon acquisition, and contingent consideration obligations incurred in connection with an asset acquisition are recorded when it is probable that they will occur and they can be reasonably estimated. See Note 2, Acquisitions and divestitures, and Note 17, Fair value measurement.

Cash equivalents

We consider cash equivalents to be only those investments that are highly liquid, that are readily convertible to cash and that mature within three months from the date of purchase.

Interest-bearing securities

We consider our interest-bearing securities investment portfolio as available-for-sale, and accordingly, these investments are recorded at fair value, with unrealized gains and losses recorded in AOCI. Investments with maturities beyond one year may be classified as short-term marketable securities in the Consolidated Balance Sheets due to their highly liquid nature and because they represent the Company's investments that are available for current operations. See Note 9, Investments, and Note 17, Fair value measurement.

Inventories

Inventories are stated at the lower of cost or net realizable value. Cost, which includes amounts related to materials, labor and overhead, is determined in a manner that approximates the first-in, first-out method. Net realizable value is the estimated selling price in the ordinary course of business less reasonably predictable costs of completion, disposal and transportation. See Note 10, Inventories.

Derivatives

We recognize all of our derivative instruments as either assets or liabilities at fair value in the Consolidated Balance Sheets. The accounting for changes in the fair value of a derivative instrument depends on whether the derivative has been formally designated and qualifies as part of a hedging relationship under the applicable accounting standards and, further, on the type of hedging relationship. For derivatives formally designated as hedges, we assess both at inception and quarterly thereafter whether the hedging derivatives are highly effective in offsetting changes in either the fair value or cash flows of the hedged item. Our derivatives that are not designated and do not qualify as hedges are adjusted to fair value through current earnings. See Note 17, Fair value measurement, and Note 18, Derivative instruments.

Property, plant and equipment, net

Property, plant and equipment is recorded at historical cost, net of accumulated depreciation, amortization and, if applicable, impairment charges. We review our property, plant and equipment assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. Depreciation is recorded over the assets' useful lives on a straight-line basis. Leasehold improvements are amortized on a straight-line basis over the shorter of their estimated useful lives or lease terms. See Note 11, Property, plant and equipment.

Goodwill and other intangible assets

Finite-lived intangible assets are recorded at cost, net of accumulated amortization, and, if applicable, impairment charges. Amortization of finite-lived intangible assets is recorded over the assets' estimated useful lives on a straight-line basis or based on the pattern in which economic benefits are consumed, if reliably determinable. We review our finite-lived intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. See Note 12, Goodwill and other intangible assets.

The fair values of IPR&D projects acquired in a business combination that are not complete are capitalized and accounted for as indefinite-lived intangible assets until completion or abandonment of the related R&D efforts. Upon successful completion of the project, the capitalized amount is amortized over its estimated useful life. If a project is abandoned, all remaining capitalized amounts are written off immediately. Major risks and uncertainties are often associated with IPR&D projects because we are required to obtain regulatory approvals before marketing the resulting products. Such approvals require completing clinical trials that demonstrate a product candidate is safe and effective. Consequently, the eventual realized value of the acquired IPR&D project may vary from its fair value at the date of acquisition, and IPR&D impairment charges may occur in future periods.

Capitalized IPR&D projects are tested for impairment annually and whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. We consider various factors for potential impairment, including the current legal and regulatory environment and the competitive landscape. Adverse clinical trial results, significant delays in obtaining marketing approval, the inability to bring a product to market and the introduction or advancement of competitors' products could result in partial or full impairment of the related intangible assets.

We perform an impairment test of goodwill annually and whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. To date, an impairment of goodwill has not been recorded. See Note 12, Goodwill and other intangible assets.

Contingencies

In the ordinary course of business, we are involved in various legal proceedings, government investigations and other matters that are complex in nature and have outcomes that are difficult to predict. Certain of these proceedings are discussed in Note 19, Contingencies and commitments. We record accruals for loss contingencies to the extent that we conclude it is probable that a liability has been incurred and the amount of the related loss can be reasonably estimated. We evaluate, on a quarterly basis, developments in legal proceedings and other matters that could cause an increase or decrease in the amount of the liability that has been accrued previously.

Foreign currency translation

The net assets of international subsidiaries whose functional currencies are not in U.S. dollars are translated into U.S. dollars using current exchange rates. The U.S. dollar effects that arise from translation of the net assets of these subsidiaries at changing rates are recognized in AOCI. The subsidiaries' earnings are translated into U.S. dollars by using average exchange rates.

Equity investments

Marketable and nonmarketable equity securities

Investments in publicly traded equity securities with readily determinable fair values are recorded at quoted market prices for identical securities, with changes in fair value recorded in Other (expense) income, net, in the Consolidated Statements of Income. Investments in equity securities without readily determinable fair values are recorded at cost minus impairment, if any, adjusted for changes resulting from observable price changes in orderly transactions for identical or similar securities. Such adjustments are recorded in Other (expense) income, net, in the Consolidated Statements of Income.

Equity method investments

Equity investments that give us the ability to exert significant influence, but not control, over an investee for which we have not elected the fair value option are accounted for under the equity method of accounting. In concluding whether we have the ability to exercise significant influence over an investee, we consider factors such as our ownership percentage, voting and other shareholder rights, board of directors representation and the existence of other collaborative or business relationships. The equity method of accounting requires us to allocate the difference between the fair value of securities acquired and our proportionate share of the carrying value of the underlying assets (the basis difference) to various items and amortize such differences over their useful lives. Our share of investees' earnings or losses and amortization of basis differences, if any, are recorded one quarter in arrears in Other (expense) income, net, in the Consolidated Statements of Income. We record impairment losses on our equity method investments if we deem the impairment to be other-than-temporary. We deem an impairment to be other-than-temporary based on various factors, including but not limited to, the length of time the fair value is below the carrying value, volatility of the security price and our intent and ability to retain the investment to allow for a recovery in fair value.

For equity method investments for which we have elected the fair value option, changes in fair value are recorded in Other (expense) income, net, in the Consolidated Statements of Income.

Additionally, we hold investments in limited partnerships, which primarily invest in early-stage biotechnology companies. As a practical expedient, such limited partnership investments are measured by using our proportionate share of the net asset values of the underlying investments held by the limited partnerships, with such changes included in Other (expense) income, net, in the Consolidated Statements of Income.

Recent accounting pronouncements

In March 2020, the FASB issued a new accounting standard to ease the financial reporting burdens caused by the expected market transition from the LIBOR and other interbank offered rates to alternative reference rates, commonly referred to as reference rate reform. The new standard provides temporary optional expedites and exceptions to current GAAP guidance on contract modifications and hedge accounting. Specifically, a modification to transition to an alternative reference rate is treated as an event that does not require contract remeasurement or reassessment of a previous accounting treatment. Moreover, for all types of hedging relationships, an entity is permitted to change the reference rate without having to redesignate the hedging relationship. In January 2021, the FASB issued a new accounting standard to expand the scope of the original March 2020 standard to include derivative instruments on discounting transactions. The provisions of these standards have not had and are not expected to have a material impact on our consolidated financial statements.

In November 2021, the FASB issued a new accounting standard around the recognition and measurement of contract assets and contract liabilities from revenue contracts with customers acquired in a business combination. The new standard clarifies that contract assets and contract liabilities acquired in a business combination from an acquiree should initially be recognized by applying revenue recognition principles and not at fair value. The standard is effective for interim and annual periods beginning on January 1, 2023, and early adoption is permitted. The impact of this standard will depend on the facts and circumstances of future transactions.

2. Acquisitions and divestitures

Proposed acquisition of Horizon Therapeutics plc

On December 12, 2022, we announced that we entered into a transaction agreement under which Amgen will acquire all shares of Horizon for \$116.50 per share in cash for a transaction equity value of approximately \$27.8 billion. Horizon is a global biotechnology company headquartered in Dublin, Ireland and is focused on the discovery, development and commercialization of medicines that address critical needs for people impacted by rare, autoimmune and severe inflammatory diseases. Horizon has 12 marketed medicines and a pipeline with more than 20 development programs. The closing of this transaction is contingent upon satisfaction of certain regulatory (including FTC review) and other customary closing conditions.

In connection with the proposed acquisition of Horizon, Amgen entered into a 364-day bridge credit agreement with a syndicated group of banks for an aggregate amount of \$28.5 billion on December 12, 2022. On December 22, 2022, we entered into a term loan credit agreement with an aggregate principal amount of \$4.0 billion which provides for two equally sized tranches of term loans, one with an 18-month term and one with a three-year term. Accordingly, the bridge credit agreement was reduced by the amount of the term loan credit agreement to \$24.5 billion. As of December 31, 2022, no amounts have been drawn under the bridge credit agreement or the term loan credit agreement. In connection with these credit agreements, Amgen incurred approximately \$97 million of financing costs, which was capitalized primarily in Other current assets in our Consolidated Balance Sheets and is being amortized to Interest expense, net, in our Consolidated Statements of Income over the terms of the agreements. Additionally, we have agreed to maintain a cash balance of \$2.96 billion that, together with any borrowings under the bridge credit agreement and term loan credit agreement, represents sources of funds available to finance the acquisition.

On January 30, 2023, the Company and Horizon each received a request for additional information and documentary materials (Second Request) from the FTC in connection with the FTC's review of the Company's proposed acquisition of Horizon. The effect of the Second Request is to extend the waiting period imposed by the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended, until 30 days after the Company and Horizon have substantially complied with the Second Request, unless that period is extended voluntarily by the Company and Horizon or terminated sooner by the FTC.

Acquisition of ChemoCentryx, Inc.

On October 20, 2022, we acquired all the outstanding stock of ChemoCentryx, a publicly traded biotechnology company focused on orally-administered therapeutics to treat autoimmune diseases, inflammatory disorders and cancer, for \$52.00 per share in cash, representing a total consideration of \$3.9 billion. The acquisition, which was accounted for as a business combination, includes TAVNEOS, an orally administered selective complement 5a receptor inhibitor that was approved by the U.S. FDA in October 2021 as an adjunctive therapy for adults with severe active anti-neutrophil cytoplasmic autoantibody-associated vasculitis (ANCA-associated vasculitis). TAVNEOS is commercialized by us in the United States; for markets outside the United States, TAVNEOS is commercialized by a collaboration partner, and Amgen is entitled to royalties and milestones based off future sales of the product. Upon its acquisition, ChemoCentryx became a wholly owned subsidiary of Amgen, and its operations have been included in our consolidated financial statements commencing on the acquisition date.

During the three months ended December 31, 2022, the Company incurred approximately \$106 million of costs directly related to the acquisition of ChemoCentryx, consisting of share-based payments to settle non-vested equity awards attributable to post-combination services, severance and other transaction costs. These costs were included primarily in SG&A expense in the Consolidated Statements of Income.

The following table summarizes the total consideration and allocated acquisition date fair values of assets acquired and liabilities assumed (in millions):

	Amounts
Cash and cash equivalents	\$ 86
Marketable securities	235
Inventories	41
Finite-lived intangible assets – developed-product-technology rights	3,497
Goodwill	667
Other liabilities, net	(85)
Deferred tax liability, net	(516)
Total assets acquired, net	\$ 3,925

The \$3.9 billion total consideration consisted of (i) a \$3.7 billion cash payment to outstanding common stockholders of ChemoCentryx and (ii) a \$181 million cash payment to equity award holders of ChemoCentryx for services rendered prior to the acquisition date of October 20, 2022, under the ChemoCentryx equity award plans.

The developed-product-technology rights acquired relates to TAVNEOS, which is approved in the United States and EU for ANCA-associated vasculitis. The estimated fair values of \$3.5 billion were determined by using a multi-period excess earnings income approach that discounts expected future cash flows to present value by applying a discount rate that represents the estimated rate that market participants would use to value the intangible assets. The developed-product-technology rights are being amortized on a straight-line basis over a weighted-average period of approximately 11 years using the straight-line method.

The estimated fair value of the acquired inventory of \$41 million was determined using the comparative sales method, which uses actual or expected selling prices of inventory as the base amount to which adjustments for selling effort and a profit on the buyer's effort are applied. The inventory fair value adjustment is being amortized as inventory turns over, which we estimate to be approximately 13 months.

A net deferred tax liability of \$516 million was recognized on the temporary differences related to the book bases and tax bases of the acquired identifiable assets and assumed liabilities, primarily driven by the intangible assets acquired.

The excess of the acquisition date consideration over the fair values assigned to the assets acquired and the liabilities assumed of \$667 million was recorded as goodwill, which is not deductible for tax purposes. The goodwill value is primarily attributable to the expected synergies from the TAVNEOS asset.

Our accounting for this acquisition is preliminary and will be finalized upon completion of our analysis to determine the acquisition date fair values of certain assets acquired, liabilities assumed and tax-related items as we obtain additional information during the measurement period of up to one year from the acquisition date.

Acquisition of Teneobio, Inc.

On October 19, 2021, we acquired all of the outstanding stock of Teneobio, a privately held, clinical-stage biotechnology company developing a new class of biologics called human heavy-chain antibodies, which are single-chain antibodies composed of the human heavy-chain domain. The transaction, which was accounted for as a business combination, includes Teneobio's proprietary bispecific and multispecific antibody technologies, which complement Amgen's existing antibody capabilities and bispecific T-cell engager BiTE® platform and will enable significant acceleration and efficiency in the discovery and development of new molecules to treat diseases across Amgen's core therapeutic areas. Upon its acquisition, Teneobio became a wholly owned subsidiary of Amgen, and its operations have been included in our consolidated financial statements commencing on the acquisition date.

Measurement period adjustments for the year ended December 31, 2022, included changes to the purchase price allocation and total consideration, resulting in a net increase of \$22 million to goodwill. The measurement period adjustments resulted primarily from valuation inputs pertaining to certain acquired assets based on facts and circumstances that existed as of the acquisition date and did not result from events subsequent to the acquisition date. These adjustments did not have a significant impact on Amgen's results of operations during the year ended December 31, 2022, and would not have had a significant impact on prior-period results if these adjustments had been made as of the acquisition date. The following table summarizes the final total consideration and allocated acquisition date fair values of assets acquired and liabilities assumed, inclusive of measurement period adjustments (in millions):

	Amounts
Cash purchase price	\$ 993
Contingent consideration	299
Total consideration	<u><u>\$ 1,292</u></u>
Cash and cash equivalents	\$ 100
IPR&D	991
Finite-lived intangible asset – R&D technology rights	115
Finite-lived intangible assets – licensing rights	41
Goodwill	273
Other assets, net	16
Deferred tax liability	(244)
Total assets acquired, net	<u><u>\$ 1,292</u></u>

Consideration for this transaction comprised of (i) an upfront cash payment of \$993 million, which included a working-capital adjustment, and (ii) future contingent milestone payments to Teneobio's former equity holders of up to \$1.6 billion in cash, based on the achievement of various development and regulatory milestones with regard to the leading asset (AMG 340, formerly TNB-585) and to various development milestones for other drug candidates. The estimated fair values of the contingent consideration obligations aggregated \$299 million as of the acquisition date and were determined using a probability-weighted expected return methodology. The assumptions in this method include the probability of achieving the milestones and the expected payment dates, with such amounts discounted to present value based on our pretax cost of debt. See Note 17, Fair value measurement, for information regarding the estimated fair value of these obligations as of December 31, 2022.

The estimated fair values of acquired IPR&D assets totaled \$991 million, of which \$784 million relates to AMG 340, that is in a Phase 1 clinical trial for the treatment of metastatic castration-resistant prostate cancer (mCRPC), and the balance relates to four separate preclinical oncology programs. The R&D technology rights of \$115 million relate to Teneobio's proprietary bispecific and multispecific antibody technologies; the amount is being amortized over 10 years by using the straight-line method. Teneobio has also licensed its technology and certain identified targets to various third parties, representing contractual agreements valued at \$41 million. The estimated fair values for these intangible assets were determined using a multi-period excess earnings income approach that discounts expected future cash flows to present value by applying a discount rate that represents the estimated rate that market participants would use to value the intangible assets. The projected cash flows were based on certain assumptions attributable to the respective intangible asset, including estimates of future revenues and expenses, the time and resources needed to complete development and the probabilities of obtaining marketing approval from the FDA and other regulatory agencies.

A deferred tax liability of \$244 million was recognized on temporary differences related to the book bases and tax bases of the acquired identifiable assets and assumed liabilities, primarily driven by the intangible assets acquired.

The excess of the acquisition date consideration over the fair values assigned to the assets acquired and the liabilities assumed of \$273 million was recorded as goodwill, which is not deductible for tax purposes. The goodwill value represents expected synergies from both AMG 340 and the technologies acquired.

Acquisition of Five Prime Therapeutics, Inc.

On April 16, 2021, Amgen completed its acquisition of Five Prime for a total cash consideration of \$1.6 billion, net of cash acquired. The purchase price was funded with cash on hand. This transaction was accounted for as an asset acquisition because substantially all the value of the assets acquired was concentrated in the intellectual property rights of bemarituzumab, a Phase 3 first-in-class program for gastric cancer. Five Prime's operations have been included in our consolidated financial statements commencing after the acquisition date.

We allocated the consideration to acquire Five Prime to the bemarituzumab IPR&D program of \$1.5 billion, which was expensed immediately in Acquired IPR&D expense in the Consolidated Statements of Income; deferred tax assets of \$177 million; and other net liabilities of \$47 million. The acquired IPR&D expense was not tax deductible.

Divestiture of Gensenta İlaç Sanayi ve Ticaret A.Ş.

On November 2, 2022, we sold our shares in Gensenta, a subsidiary in Turkey, to Eczacıbaşı for net cash proceeds of approximately \$130 million. The transaction was accounted for as a sale of a business and did not meet the criteria to be classified as discontinued operations. Upon closing of this transaction, net assets related to Gensenta of \$86 million were divested, and during the year ended December 31, 2022, we recognized a loss on divestiture of \$567 million recorded in Other operating expenses in the Consolidated Statements of Income, primarily due to the reclassification of \$615 million of cumulative foreign currency translation losses from AOCI into earnings. See Note 16, Stockholders' equity.

3. Revenues

We operate in one business segment: human therapeutics. Therefore, results of our operations are reported on a consolidated basis for purposes of segment reporting, consistent with internal management reporting. Revenues by product and by geographic area, based on customers' locations, are presented below. The majority of ROW revenues relates to products sold in Europe.

Revenues were as follows (in millions):

	Year ended December 31, 2022			Year ended December 31, 2021			Year ended December 31, 2020		
	U.S.	ROW	Total	U.S.	ROW	Total	U.S.	ROW	Total
ENBREL	\$ 4,044	\$ 73	\$ 4,117	\$ 4,352	\$ 113	\$ 4,465	\$ 4,855	\$ 141	\$ 4,996
Prolia	2,465	1,163	3,628	2,150	1,098	3,248	1,830	933	2,763
Otezla	1,886	402	2,288	1,804	445	2,249	1,790	405	2,195
XGEVA	1,480	534	2,014	1,434	584	2,018	1,405	494	1,899
Aranesp	521	900	1,421	537	943	1,480	629	939	1,568
Nplate	848	459	1,307	566	461	1,027	485	365	850
Repatha	608	688	1,296	557	560	1,117	459	428	887
KYPROLIS	850	397	1,247	736	372	1,108	710	355	1,065
Neulasta	959	167	1,126	1,514	220	1,734	2,001	292	2,293
EVENITY	533	254	787	331	199	530	191	159	350
Other products ⁽¹⁾	3,549	2,021	5,570	3,305	2,016	5,321	3,630	1,744	5,374
Total product sales ⁽²⁾	17,743	7,058	24,801	17,286	7,011	24,297	17,985	6,255	24,240
Other revenues	852	670	1,522	908	774	1,682	511	673	1,184
Total revenues	<u>\$ 18,595</u>	<u>\$ 7,728</u>	<u>\$ 26,323</u>	<u>\$ 18,194</u>	<u>\$ 7,785</u>	<u>\$ 25,979</u>	<u>\$ 18,496</u>	<u>\$ 6,928</u>	<u>\$ 25,424</u>

⁽¹⁾ Consists of product sales of our non-principal products, as well as our Gensenta and Bergamo subsidiaries.

⁽²⁾ Hedging gains and losses, which are included in product sales, were not material for the years ended December 31, 2022, 2021 and 2020.

In the United States, we sell primarily to pharmaceutical wholesale distributors that we use as the principal means of distributing our products to healthcare providers. Outside the United States, we sell principally to healthcare providers and/or pharmaceutical wholesale distributors depending on the distribution practice in each country. We monitor the financial condition of our larger customers and limit our credit exposure by setting credit limits and, in certain circumstances, by requiring letters of credit or obtaining credit insurance.

We had product sales to three customers that individually accounted for more than 10% of total revenues for each of the years ended December 31, 2022, 2021 and 2020. For the year ended December 31, 2022, on a combined basis, these customers accounted for 82% of total gross revenues as shown in the following table. Certain information with respect to these customers was as follows (dollar amounts in millions):

	Years ended December 31,		
	2022	2021	2020
McKesson Corporation:			
Gross product sales	\$ 17,305	\$ 15,187	\$ 13,779
% of total gross revenues	35 %	33 %	32 %
AmerisourceBergen Corporation:			
Gross product sales	\$ 15,443	\$ 14,783	\$ 14,743
% of total gross revenues	31 %	32 %	34 %
Cardinal Health, Inc.:			
Gross product sales	\$ 8,319	\$ 7,681	\$ 7,332
% of total gross revenues	16 %	17 %	17 %

As of December 31, 2022 and 2021, amounts due from these three customers each exceeded 10% of gross trade receivables and accounted for 75% and 73%, respectively, of net trade receivables on a combined basis. As of December 31, 2022 and 2021, 26% and 27%, respectively, of net trade receivables were due from customers located outside the United States, the majority of which were from Europe. Our total allowance for doubtful accounts as of December 31, 2022 and 2021, was not material.

4. Stock-based compensation

Our Amended 2009 Plan authorizes for issuance to employees of Amgen and nonemployee members of our Board of Directors shares of our common stock pursuant to grants of equity-based awards, including RSUs, stock options and performance units. The pool of shares available under the Amended 2009 Plan is reduced by one share for each stock option granted and by 1.9 shares for other types of awards granted, including full-value awards. In general, if any shares subject to an award granted under the Amended 2009 Plan expire or become forfeited, terminated or canceled without the issuance of shares, the shares subject to such awards are added back into the authorized pool on the same basis that they were removed. In addition, under the Amended 2009 Plan, shares withheld to pay for minimum statutory tax obligations with respect to full-value awards are added back into the authorized pool on the basis of 1.9 shares. As of December 31, 2022, the Amended 2009 Plan provides for future grants and/or issuances of up to approximately 15 million shares of our common stock. Stock-based awards under our employee compensation plans are made with newly issued shares reserved for this purpose.

The following table reflects the components of stock-based compensation expense recognized in our Consolidated Statements of Income (in millions):

	Years ended December 31,		
	2022	2021	2020
RSUs	\$ 227	\$ 183	\$ 178
Performance units	132	121	118
Stock options	42	37	34
Total stock-based compensation expense, pretax	401	341	330
Tax benefit from stock-based compensation expense	(86)	(74)	(72)
Total stock-based compensation expense, net of tax	<u>\$ 315</u>	<u>\$ 267</u>	<u>\$ 258</u>

Restricted stock units and stock options

Eligible employees generally receive an annual grant of RSUs and, for certain executive-level employees, stock options, with the size and type of award generally determined by the employee's salary grade and performance level. Certain management and professional-level employees typically receive RSU grants upon commencement of employment. Nonemployee members of our Board of Directors also receive an annual grant of RSUs.

Our RSU and stock option grants provide for accelerated or continued vesting in certain circumstances as defined in the plans and related grant agreements, including upon death, disability, termination in connection with a change in control and the retirement of employees who meet certain service and/or age requirements. RSUs and stock options generally vest in equal amounts on the second, third and fourth anniversaries of the grant date. RSUs accrue dividend equivalents, which are typically payable in shares only when and to the extent the underlying RSUs vest and are issued to the recipient.

Restricted stock units

The grant date fair value of an RSU equals the closing price of our common stock on the grant date, as RSUs accrue dividend equivalents during their vesting period. The weighted-average grant date fair values per unit of RSUs granted during the years ended December 31, 2022, 2021 and 2020, were \$234.47, \$233.10 and \$235.63, respectively.

The following table summarizes information regarding our RSUs:

	Year ended December 31, 2022	
	Units (in millions)	Weighted-average grant date fair value
Balance nonvested as of December 31, 2021	3.0	\$ 217.95
Granted	1.0	\$ 234.47
Vested	(0.9)	\$ 201.47
Forfeited	(0.3)	\$ 226.15
Balance nonvested as of December 31, 2022	2.8	\$ 228.71

The total grant date fair values of RSUs that vested during the years ended December 31, 2022, 2021 and 2020, were \$192 million, \$166 million and \$161 million, respectively.

Stock options

The exercise price of stock options is set as the closing price of our common stock on the grant date, and the related number of shares granted is fixed at that point in time. Awards expire 10 years from the date of grant. We use the Black–Scholes option valuation model to estimate the grant date fair value of stock options.

The weighted-average assumptions used in the option valuation model and the resulting weighted-average grant date fair values of stock options granted were as follows:

	Years ended December 31,		
	2022	2021	2020
Closing price of our common stock on grant date	\$ 230.92	\$ 237.17	\$ 236.36
Expected volatility (average of implied and historical volatility)	24.5 %	25.6 %	28.1 %
Expected life (in years)	5.7	5.7	5.8
Risk-free interest rate	2.8 %	1.0 %	0.4 %
Expected dividend yield	3.3 %	2.9 %	3.0 %
Fair value of stock options granted	\$ 42.43	\$ 40.43	\$ 42.34

The following table summarizes information regarding our stock options:

	Year ended December 31, 2022			
	Options (in millions)	Weighted-average exercise price	Weighted-average remaining contractual life (in years)	Aggregate intrinsic value (in millions)
Balance unexercised as of December 31, 2021	5.1	\$ 197.27		
Granted	1.1	\$ 230.92		
Exercised	(0.7)	\$ 167.44		
Expired/forfeited	(0.2)	\$ 226.35		
Balance unexercised as of December 31, 2022	5.3	\$ 207.29	7.0	\$ 295
Vested or expected to vest as of December 31, 2022	5.2	\$ 206.47	7.0	\$ 290
Exercisable as of December 31, 2022	2.2	\$ 177.48	5.3	\$ 187

The total intrinsic values of options exercised during the years ended December 31, 2022, 2021 and 2020, were \$67 million, \$56 million and \$98 million, respectively. The actual tax benefits realized from tax deductions from option exercises during the years ended December 31, 2022, 2021 and 2020, were \$14 million, \$12 million and \$21 million, respectively.

As of December 31, 2022, \$362 million of unrecognized compensation cost was related to nonvested RSUs and unvested stock options, which is expected to be recognized over a weighted-average period of 1.7 years.

Performance units

Certain management-level employees also receive annual grants of performance units, which give the recipient the right to receive common stock that is contingent upon achievement of specified preestablished goals over the performance period, which is generally three years. The performance goals for the units granted during the years ended December 31, 2022, 2021 and 2020, which are accounted for as equity awards, are based on (i) Amgen's stockholder return compared with a comparator group of companies, which are considered market conditions and are therefore reflected in the grant date fair values of the units, and (ii) Amgen's stand-alone financial performance measures, which are considered performance conditions. The expense recognized for awards is based on the grant date fair value of a unit multiplied by the number of units expected to be earned with respect to the related performance conditions, net of estimated forfeitures. Depending on the outcome of these performance goals, a recipient may ultimately earn a number of units greater or less than the number of units granted. Shares of our common stock are issued on a one-for-one basis for each performance unit earned. In general, performance unit awards vest at the end of the performance period. The performance award program provides for accelerated or continued vesting in certain circumstances as defined in the plan, including upon death, disability, a change in control and retirement of employees who meet certain service and/or age requirements. Performance units accrue dividend equivalents that are typically payable in shares only when and to the extent the underlying performance units vest and are issued to the recipient, including with respect to market and performance conditions that affect the number of performance units earned.

We use a payout simulation model to estimate the grant date fair value of performance units. The weighted-average assumptions used in the payout simulation model and the resulting weighted-average grant date fair values of performance units granted were as follows:

	Years ended December 31,		
	2022	2021	2020
Closing price of our common stock on grant date	\$ 230.92	\$ 239.64	\$ 236.36
Volatility	28.1 %	29.3 %	27.5 %
Risk-free interest rate	0.3 %	0.3 %	0.2 %
Fair value of units granted	\$ 247.48	\$ 254.68	\$ 249.07

The payout simulation model assumes correlations of returns of the stock prices of our common stock and the common stocks of the comparator groups of companies and stock price volatilities of the comparator groups of companies to simulate stockholder returns over the performance periods and their resulting impact on the payout percentages based on the contractual terms of the performance units.

As of both December 31, 2022 and 2021, 1.6 million performance units were outstanding, with weighted-average grant date fair values per unit of \$250.27 and \$229.39 per unit, respectively. During the year ended December 31, 2022, 0.6 million performance units with a weighted-average grant date fair value per unit of \$247.48 were granted, and 0.1 million performance units with a weighted-average grant date fair value per unit of \$250.94 were forfeited.

The total fair values of performance units paid during the years ended December 31, 2022, 2021 and 2020, were \$150 million, \$149 million and \$230 million, respectively, based on the number of performance units earned multiplied by the closing stock price of our common stock on the last day of the performance period.

As of December 31, 2022, \$132 million of unrecognized compensation cost was related to nonvested performance units, which is expected to be recognized over a weighted-average period of one year.

5. Defined contribution plan

The Company has defined contribution plans to which certain employees of the Company and participating subsidiaries may defer compensation for income tax purposes. Participants are eligible to receive matching contributions based on their contributions, in addition to other Company contributions. Defined contribution plan expenses were \$243 million, \$279 million and \$231 million for the years ended December 31, 2022, 2021 and 2020, respectively.

6. Income taxes

Income before income taxes included the following (in millions):

	Years ended December 31,		
	2022	2021	2020
Domestic	\$ 3,026	\$ 1,850	\$ 4,087
Foreign	4,320	4,851	4,046
Total income before income taxes	\$ 7,346	\$ 6,701	\$ 8,133

The provision for income taxes included the following (in millions):

	Years ended December 31,		
	2022	2021	2020
Current provision:			
Federal	\$ 1,721	\$ 865	\$ 921
State	44	18	34
Foreign	304	359	277
Total current provision	2,069	1,242	1,232
Deferred benefit:			
Federal	(1,185)	(308)	(321)
State	(27)	(9)	9
Foreign	(63)	(117)	(51)
Total deferred benefit	(1,275)	(434)	(363)
Total provision for income taxes	\$ 794	\$ 808	\$ 869

Deferred income taxes reflect the tax effect of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes, tax credit carryforwards and the tax effects of NOL carryforwards. As of December 31, 2022, we elected to establish deferred taxes with respect to the U.S. minimum tax on the earnings of our foreign subsidiaries for the reversal of temporary items in future years. Significant components of our deferred tax assets and liabilities were as follows (in millions):

	December 31,	
	2022	2021
Deferred income tax assets:		
NOL and credit carryforwards	\$ 1,344	\$ 1,065
Accrued expenses	584	600
Capitalized research and development expenses	515	—
Investments	270	—
Expenses capitalized for tax	211	244
Earnings of foreign subsidiaries	192	—
Stock-based compensation	104	96
Other	317	326
Total deferred income tax assets	3,537	2,331
Valuation allowance	(718)	(663)
Net deferred income tax assets	2,819	1,668
Deferred income tax liabilities:		
Acquired intangible assets	(1,238)	(824)
Debt	(272)	(275)
Fixed assets	(112)	(129)
Other	(254)	(221)
Total deferred income tax liabilities	(1,876)	(1,449)
Total deferred income taxes, net	\$ 943	\$ 219

Valuation allowances are provided to reduce the amounts of our deferred tax assets to an amount that is more likely than not to be realized based on an assessment of positive and negative evidence, including estimates of future taxable income necessary to realize future deductible amounts.

The valuation allowance increased in 2022, primarily driven by the Company's expectation that certain state R&D credits will expire unused.

As of December 31, 2022, we had \$170 million of federal tax credit carryforwards available to reduce future federal income taxes and have provided a valuation allowance for \$6 million of those federal tax credit carryforwards. The federal tax credit carryforwards expire between 2023 and 2042. We had \$896 million of state tax credit carryforwards available to reduce future state income taxes and have provided a valuation allowance for \$813 million of those state tax credit carryforwards. We had \$51 million of tax credit carryforwards related to our foreign jurisdictions available to offset future foreign income taxes for which we have provided no valuation allowance.

As of December 31, 2022, we had \$1.3 billion of federal NOL carryforwards available to reduce future federal income taxes and have provided no valuation allowance on those federal NOL carryforwards. Additionally, \$1.0 billion of those federal NOL carryforwards have no expiration; the remainder begin to expire between 2023 and 2037. We had \$536 million of state NOL carryforwards available to reduce future state income taxes and have provided a valuation allowance for \$415 million of those state NOL carryforwards. We had \$1.9 billion of foreign NOL carryforwards available to reduce future foreign income taxes and have provided a valuation allowance for \$186 million of those foreign NOL carryforwards. For the foreign NOLs with no valuation allowance provided, \$640 million have no expiration; and the remainder will expire between 2023 and 2051.

The reconciliations of the total gross amounts of UTBs were as follows (in millions):

	Years ended December 31,		
	2022	2021	2020
Beginning balance	\$ 3,546	\$ 3,352	\$ 3,287
Additions based on tax positions related to the current year	151	171	165
Additions based on tax positions related to prior years	90	35	3
Reductions for tax positions of prior years	(14)	(4)	(35)
Reductions for expiration of statute of limitations	(3)	—	—
Settlements	—	(8)	(68)
Ending balance	<u>\$ 3,770</u>	<u>\$ 3,546</u>	<u>\$ 3,352</u>

Substantially all of the UTBs as of December 31, 2022, if recognized, would affect our effective tax rate. During the year ended December 31, 2020, we effectively settled certain issues with the IRS. As a result, we remeasured our UTBs accordingly.

Interest and penalties related to UTBs are included in our provision for income taxes. During the years ended December 31, 2022, 2021 and 2020, we recognized \$189 million, \$98 million and \$116 million, respectively, of interest and penalties through the income tax provision in the Consolidated Statements of Income. The increase in interest expense for the year ended December 31, 2022, was primarily due to higher interest rates during 2022. As of December 31, 2022 and 2021, accrued interest and penalties associated with UTBs were \$1.1 billion and \$881 million, respectively.

The reconciliations between the federal statutory tax rate applied to income before income taxes and our effective tax rate were as follows:

	Years ended December 31,		
	2022	2021	2020
Federal statutory tax rate	21.0 %	21.0 %	21.0 %
Foreign earnings	(5.6)%	(7.8)%	(4.7)%
Foreign-derived intangible income	(1.3)%	(1.0)%	(0.7)%
Credits, Puerto Rico excise tax	(2.8)%	(3.4)%	(2.9)%
Interest on uncertain tax positions	1.9 %	1.1 %	1.1 %
Credits, primarily federal R&D	(2.0)%	(2.1)%	(1.4)%
Acquisition IPR&D	— %	4.9 %	— %
Audit settlements	— %	— %	(1.0)%
Other, net	(0.4)%	(0.6)%	(0.7)%
Effective tax rate	<u>10.8 %</u>	<u>12.1 %</u>	<u>10.7 %</u>

The effective tax rates for the years ended December 31, 2022, 2021 and 2020, differ from the federal statutory rate primarily due to impacts of the jurisdictional mix of income and expenses. Substantially all of the benefit to our effective tax rate from foreign earnings results from the Company's operations in Puerto Rico, a territory of the United States that is treated as a foreign jurisdiction for U.S. tax purposes. Our operations in Puerto Rico are subject to tax incentive grants through 2050. Additionally, the Company's operations conducted in Singapore are subject to a tax incentive grant through 2034. Our foreign earnings are also subject to U.S. tax at a reduced rate of 10.5%.

The U.S. territory of Puerto Rico imposes a 4% excise tax on the gross intercompany purchase price of goods and services from our manufacturer in Puerto Rico effective through December 31, 2022. For 2022, we account for the excise tax as a manufacturing cost that is capitalized in Inventories and expensed in Cost of sales when the related products are sold. For U.S. income tax purposes, the excise tax results in foreign tax credits that are generally recognized in our provision for income taxes when the excise tax is incurred.

Income taxes paid during the years ended December 31, 2022, 2021 and 2020, were \$2.4 billion, \$1.9 billion and \$1.4 billion, respectively.

One or more of our legal entities file income tax returns in the U.S. federal jurisdiction, various U.S. state jurisdictions and certain foreign jurisdictions. Our income tax returns are routinely examined by tax authorities in those jurisdictions. Significant disputes can and have arisen with tax authorities involving issues regarding the timing and amount of deductions, the use of tax credits and allocations of income and expenses among various tax jurisdictions because of differing interpretations of tax laws, regulations and relevant facts. Tax authorities, including the IRS, are becoming more aggressive and are particularly focused on such matters.

In 2017, we received an RAR and a modified RAR from the IRS for the years 2010–2012, proposing significant adjustments that primarily relate to the allocation of profits between certain of our entities in the United States and the U.S. territory of Puerto Rico. We disagreed with the proposed adjustments and calculations and pursued resolution with the IRS appeals office but were unable to reach resolution. In July 2021, we filed a petition in the U.S. Tax Court to contest two duplicate Statutory Notices of Deficiency (Notices) for the years 2010–2012 that we received in May and July 2021, which seek to increase our U.S. taxable income for the years 2010–2012 by an amount that would result in additional federal tax of approximately \$3.6 billion plus interest. Any additional tax that could be imposed for the years 2010–2012 would be reduced by up to approximately \$900 million of repatriation tax previously accrued on our foreign earnings.

In 2020, we received an RAR and a modified RAR from the IRS for the years 2013–2015, also proposing significant adjustments that primarily relate to the allocation of profits between certain of our entities in the United States and the U.S. territory of Puerto Rico similar to those proposed for the years 2010–2012. We disagreed with the proposed adjustments and calculations and pursued resolution with the IRS appeals office but were unable to reach resolution. In July 2022, we filed a petition in the U.S. Tax Court to contest a Notice for the years 2013–2015 that we previously reported receiving in April 2022 that seeks to increase our U.S. taxable income for the years 2013–2015 by an amount that would result in additional federal tax of approximately \$5.1 billion, plus interest. In addition, the Notice asserts penalties of approximately \$2.0 billion. Any additional tax that could be imposed for the years 2013–2015 would be reduced by up to approximately \$2.2 billion of repatriation tax previously accrued on our foreign earnings.

We firmly believe that the IRS positions set forth in the 2010–2012 and 2013–2015 Notices are without merit. We are contesting the 2010–2012 and 2013–2015 Notices through the judicial process. The two cases were consolidated in U.S. Tax Court on December 19, 2022.

We are currently under examination by the IRS for the years 2016–2018 with respect to issues similar to those for the 2010 through 2015 period. In addition, we are under examination by a number of state and foreign tax jurisdictions.

Final resolution of these complex matters is not likely within the next 12 months. We continue to believe our accrual for income tax liabilities is appropriate based on past experience, interpretations of tax law, application of the tax law to our facts and judgments about potential actions by tax authorities; however, due to the complexity of the provision for income taxes and uncertain resolution of these matters, the ultimate outcome of any tax matters may result in payments substantially greater than amounts accrued and could have a material adverse impact on our consolidated financial statements.

We are no longer subject to U.S. federal income tax examinations for years ended on or before December 31, 2009.

7. Earnings per share

The computation of basic EPS is based on the weighted-average number of our common shares outstanding. The computation of diluted EPS is based on the weighted-average number of our common shares outstanding and dilutive potential common shares, which primarily include shares that may be issued under our stock option, restricted stock and performance unit award programs (collectively, dilutive securities), as determined by using the treasury stock method.

The computations for basic and diluted EPS were as follows (in millions, except per-share data):

	Years ended December 31,		
	2022	2021	2020
Income (Numerator):			
Net income for basic and diluted EPS	\$ 6,552	\$ 5,893	\$ 7,264
Shares (Denominator):			
Weighted-average shares for basic EPS	538	570	586
Effect of dilutive securities	3	3	4
Weighted-average shares for diluted EPS	541	573	590
Basic EPS	\$ 12.18	\$ 10.34	\$ 12.40
Diluted EPS	\$ 12.11	\$ 10.28	\$ 12.31

For each of the three years ended December 31, 2022, the number of antidilutive employee stock-based awards excluded from the computation of diluted EPS was not significant.

8. Collaborations

A collaborative arrangement is a contractual arrangement that involves a joint operating activity. Such arrangements involve two or more parties that are both (i) active participants in the activity and (ii) exposed to significant risks and rewards dependent on the commercial success of the activity.

From time to time, we enter into collaborative arrangements for the R&D, manufacture and/or commercialization of products and/or product candidates. These collaborations generally provide for nonrefundable upfront license fees, development and commercial-performance milestone payments, cost sharing, royalties and/or profit sharing. Our collaboration arrangements are performed with no guarantee of either technological or commercial success, and each arrangement is unique in nature. See Note 1, Summary of significant accounting policies, for additional discussion of revenues recognized under these types of arrangements. Operating expenses for costs incurred pursuant to these arrangements are reported in their respective expense line items in the Consolidated Statements of Income, net of any payments due to or reimbursements due from our collaboration partners, with such reimbursements being recognized at the time the party becomes obligated to pay. Our significant arrangements are discussed below.

BeiGene, Ltd.

In January 2020, we acquired an equity stake in BeiGene for approximately \$2.8 billion in cash as part of a collaboration to expand our oncology presence in China. For additional information regarding our equity investment in BeiGene, see Note 9, Investments. Under the collaboration, BeiGene began selling XGEVA in 2020, BLINCYTO in 2021 and KYPROLIS in 2022 in China, and Amgen shares profits and losses equally during the initial product-specific commercialization periods; thereafter, product rights may revert to Amgen, and Amgen will pay royalties to BeiGene on sales in China of such products for a specified period. Amgen manufactures and supplies the collaboration products to BeiGene.

In addition, we jointly develop a portion of our oncology portfolio with BeiGene, which shares in global R&D costs by providing cash and development services of up to \$1.25 billion. Upon regulatory approval, BeiGene will assume commercialization rights in China for a specified period, and Amgen and BeiGene will share profits equally until certain of these product rights revert to Amgen. Upon return of the product rights, Amgen will pay royalties to BeiGene on sales in China for a specified period. For product sales outside China, Amgen will also pay royalties to BeiGene.

During the years ended December 31, 2022, 2021 and 2020, net costs recovered from BeiGene for oncology product candidates were \$199 million, \$220 million and \$225 million, respectively, and were recorded as an offset to R&D expense in the Consolidated Statements of Income. During the years ended December 31, 2022 and 2021, product sales from Amgen to

BeiGene under the collaboration were \$64 million and \$72 million, respectively, and were recorded in Product sales in the Consolidated Statements of Income. During the years ended December 31, 2022 and 2021, profit and loss share expenses related to the initial product-specific commercialization period were \$53 million and \$64 million, respectively, and were recorded in SG&A expense in the Consolidated Statements of Income. Product sales from Amgen to BeiGene and profit and loss share expenses were not material during the year ended December 31, 2020. Amounts owed from BeiGene for product sales were \$6 million and \$21 million as of December 31, 2022 and 2021, respectively, which are included in Trade receivables, net, in the Consolidated Balance Sheets. Net amounts owed from BeiGene for cost recoveries and profit and loss share payments were \$47 million and \$61 million as of December 31, 2022 and 2021, respectively, which are included in Other current assets in the Consolidated Balance Sheets.

AstraZeneca plc

We are in a collaboration with AstraZeneca for the development and commercialization of TEZSPIRE. Under our collaboration, both companies share global costs, profits and losses equally after payment by AstraZeneca of a mid-single-digit royalty to Amgen. AstraZeneca leads global development, and both Amgen and AstraZeneca jointly commercialize TEZSPIRE in North America. In North America, Amgen, as the principal, recognizes product sales of TEZSPIRE in the United States, and AstraZeneca, as the principal, recognizes product sales of TEZSPIRE in Canada. AstraZeneca leads commercialization for TEZSPIRE outside North America. Amgen manufactures and supplies TEZSPIRE worldwide.

During the years ended December 31, 2022, 2021 and 2020, net costs due to AstraZeneca for global development were \$74 million, \$49 million and \$52 million, respectively, and were recorded in R&D Expense in the Consolidated Statements of Income. During the years ended December 31, 2022, 2021 and 2020, net costs due to AstraZeneca for global commercialization were \$60 million, \$39 million and \$16 million, respectively, and were recorded in SG&A Expense in the Consolidated Statements of Income. During the year ended December 31, 2022, global profit and loss share expenses were \$119 million and were recorded primarily in Cost of sales in the Consolidated Statements of Income. TEZSPIRE launched in the United States in January 2022.

UCB

We are in a collaboration with UCB for the development and commercialization of EVENITY. Under our collaboration, UCB has rights to lead commercialization for EVENITY in most countries in Europe and China (excluding Hong Kong). Amgen, as the principal, leads commercialization for EVENITY and recognizes product sales in all other territories, including the United States. Global development costs and commercialization profits and losses related to the collaboration are shared equally. Amgen manufactures and supplies EVENITY worldwide.

During the years ended December 31, 2022, 2021 and 2020, global profit and loss share expenses were \$255 million, \$186 million and \$115 million, respectively, and were recorded primarily in Cost of sales in the Consolidated Statements of Income. Net costs recovered from and due to UCB during the years ended December 31, 2022, 2021 and 2020, were not material.

Novartis Pharma AG

We are in a collaboration with Novartis to jointly develop and commercialize Aimovig. On January 31, 2022, we modified the terms of the collaboration. Effective January 1, 2022, in the United States, Novartis no longer collaborates with Amgen, shares Aimovig commercialization costs or is required to pay milestones, and Amgen no longer pays royalties to Novartis on U.S. sales of Aimovig. Novartis continues to hold global co-development rights and exclusive commercial rights outside the United States and Japan for Aimovig. Amgen and Novartis share global development expenses, and Novartis pays Amgen double-digit royalties on net sales of the product outside the United States and Japan. Amgen manufactures and supplies Aimovig worldwide.

During the year ended December 31, 2022, net costs recovered from Novartis for migraine products were \$53 million and were recorded in R&D expense in the Consolidated Statements of Income. During the years ended December 31, 2021 and 2020, net costs recovered from Novartis for migraine products were \$160 million and \$192 million, respectively, and were recorded primarily in SG&A expense in the Consolidated Statements of Income. During the years ended December 31, 2021 and 2020, royalties due to Novartis for Aimovig were \$116 million and \$139 million, respectively, and were recorded in Cost of sales in the Consolidated Statements of Income. During the years ended December 31, 2022, 2021 and 2020, royalties due from Novartis for Aimovig were not material.

Kyowa Kirin Co., Ltd.

On July 30, 2021, we closed our collaboration and licensing agreement with KKC to jointly develop and commercialize rocatinlimab, an anti-OX40 fully human monoclonal antibody, worldwide, except in Japan. Rocatinlimab is for the treatment of atopic dermatitis, with potential for treatment of other autoimmune diseases.

Under the terms of the agreement, we lead the global development, manufacture and commercialization of rocatinlimab, except in Japan. KKC will co-promote rocatinlimab with Amgen in the United States and have opt in rights to co-promote rocatinlimab in various other markets outside the United States, including in Europe and Asia.

We made an upfront payment of \$400 million to KKC that was recognized in R&D expense in the third quarter of 2021. Amgen and KKC share equally the global development costs, except in Japan, and the U.S. commercialization costs. Outside the United States and Japan, any commercialization costs incurred by KKC will be reimbursed by Amgen. We may also be required to make milestone payments of up to \$850 million contingent upon the achievement of certain regulatory events and commercial thresholds. We will also pay KKC significant double-digit royalties on global sales, except in Japan. Net costs recovered from and due to KKC were not material during the years ended December 31, 2022 and 2021.

Other

In addition to the collaborations discussed above, we have various other collaborations that are not individually significant to our business at this time. Pursuant to the terms of those agreements, we may be required to pay additional amounts or we may receive additional amounts upon the achievement of various development and commercial milestones that in the aggregate could be significant. We may also incur or have reimbursed to us significant R&D costs if a related product candidate were to advance to late-stage clinical trials. In addition, if any products related to these collaborations are approved for sale, we may be required to pay significant royalties or we may receive significant royalties on future sales. The payments of these amounts, however, are contingent upon the occurrence of various future events that have high degrees of uncertainty of occurrence.

9. Investments

Available-for-sale investments

The amortized cost, gross unrealized gains, gross unrealized losses and fair values of interest-bearing securities, which are considered available-for-sale, by type of security were as follows (in millions):

Types of securities as of December 31, 2022	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair values
U.S. Treasury notes	\$ —	\$ —	\$ —	\$ —
U.S. Treasury bills	1,676	—	—	1,676
Money market mutual funds	2,659	—	—	2,659
Other short-term interest-bearing securities	—	—	—	—
Total available-for-sale investments	<u>\$ 4,335</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 4,335</u>

Types of securities as of December 31, 2021	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair values
U.S. Treasury notes	\$ 47	\$ —	\$ —	\$ 47
U.S. Treasury bills	1,400	—	—	1,400
Money market mutual funds	5,856	—	—	5,856
Other short-term interest-bearing securities	1	—	—	1
Total available-for-sale investments	<u>\$ 7,304</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 7,304</u>

The fair values of available-for-sale investments by location in the Consolidated Balance Sheets were as follows (in millions):

Consolidated Balance Sheets locations	December 31,	
	2022	2021
Cash and cash equivalents	\$ 2,659	\$ 7,256
Marketable securities	1,676	48
Total available-for-sale investments	<u>\$ 4,335</u>	<u>\$ 7,304</u>

Cash and cash equivalents in the above table excludes bank account cash of \$4,970 million and \$733 million as of December 31, 2022 and 2021, respectively.

All interest-bearing securities as of December 31, 2022 and 2021, mature in one year or less.

For the years ended December 31, 2022, 2021 and 2020, realized gains and losses on interest-bearing securities were not material. Realized gains and losses on interest-bearing securities are recorded in Other (expense) income, net, in the Consolidated Statements of Income. The cost of securities sold is based on the specific-identification method.

The primary objective of our investment portfolio is to maintain safety of principal, prudent levels of liquidity and acceptable levels of risk. Our investment policy limits interest-bearing security investments to certain types of debt and money market instruments issued by institutions with investment-grade credit ratings, and it places restrictions on maturities and concentration by asset class and issuer.

Equity securities

We held investments in equity securities with readily determinable fair values (publicly traded securities) of \$480 million and \$611 million as of December 31, 2022 and 2021, respectively, which are included in Other noncurrent assets in the Consolidated Balance Sheets. For the years ended December 31, 2022, 2021 and 2020, net unrealized gains and losses on publicly traded securities were a loss of \$165 million and gains of \$161 million and \$174 million, respectively. Realized gains and losses on publicly traded securities for the years ended December 31, 2022, 2021 and 2020, were not material.

We held investments of \$233 million and \$262 million in equity securities without readily determinable fair values as of December 31, 2022 and 2021, respectively, which are included in Other noncurrent assets in the Consolidated Balance Sheets. For the years ended December 31, 2022 and 2020, gains due to upward adjustments and gains realized upon dispositions of

these securities were not material. For the year ended December 31, 2021, gains due to upward adjustments were \$152 million, and gains realized on the dispositions of these securities were \$41 million. For the year ended December 31, 2022, downward adjustments to the carrying values of these securities were \$67 million. For the years ended December 31, 2021 and 2020, downward adjustments were not material. Adjustments were based on observable price transactions.

Equity Method Investments

BeiGene, Ltd.

On January 2, 2020, we acquired a 20.5% ownership interest in BeiGene for \$2.8 billion, of which \$2.6 billion was attributed to the fair value of equity securities upon closing, with the remainder attributed to prepaid R&D. Our equity investment in BeiGene is included in Other noncurrent assets in the Consolidated Balance Sheets. As of December 31, 2022, our equity investment is accounted for under the equity method of accounting due to our ability to exert significant influence over BeiGene. See Note 1, Summary of significant accounting policies, for factors in concluding our ability to exert significant influence over BeiGene. The fair value of equity securities acquired exceeded our proportionate share of the carrying value of the underlying net assets of BeiGene by approximately \$2.4 billion. The equity method of accounting requires us to identify and allocate amounts to items that give rise to the basis difference and to amortize these items over their useful lives. This amortization, along with our share of the results of operations of BeiGene, is included in Other (expense) income, net, in our Consolidated Statements of Income. Recognition occurs one quarter in arrears, which began in the second quarter of 2020. The basis difference was allocated to finite-lived intangible assets, indefinite-lived intangible assets, equity-method goodwill and related deferred taxes. The finite-lived intangible assets are being amortized over a period ranging from 8 to 15 years.

During the years ended December 31, 2022, 2021 and 2020, the carrying value of the investment was reduced by our share of BeiGene's net losses of \$394 million, \$265 million and \$229 million, respectively, and amortization of the basis difference of \$190 million, \$172 million and \$109 million, respectively. During the years ended December 31, 2021 and 2020, we increased the carrying value by \$50 million and \$569 million, respectively, as a result of our purchases of additional shares of BeiGene; we did not purchase additional shares of BeiGene during the year ended December 31, 2022. In addition, during the years ended December 31, 2022, 2021 and 2020, the carrying value increased by \$11 million, \$265 million and \$34 million, respectively, from the impact of other BeiGene ownership transactions.

As of December 31, 2022 and 2021, our ownership interest in BeiGene was approximately 18.2% and 18.4%, respectively. As of December 31, 2022 and 2021, the carrying value of our investment in BeiGene was \$2.2 billion and \$2.8 billion, respectively. As of December 31, 2022 and 2021, the fair value of our investment in BeiGene was \$4.2 billion and \$5.1 billion, respectively. We believe that as of December 31, 2022, the carrying value of our equity investment in BeiGene is fully recoverable. For information on a collaboration agreement we entered into with BeiGene in connection with this investment, see Note 8, Collaborations.

Effective January 30, 2023, we relinquished our right to appoint a director to BeiGene's Board of Directors. We no longer have the ability to exert significant influence over BeiGene and therefore will account for our equity investment at fair value, with changes in fair value recorded in earnings starting in the first quarter of 2023.

Neumora Therapeutics, Inc.

On September 30, 2021, we acquired an approximately 25.9% ownership interest in Neumora, a privately held company, for \$257 million, which is included in Other noncurrent assets in the Consolidated Balance Sheets, in exchange for a \$100 million cash payment and \$157 million in noncash consideration primarily related to future services. Although our equity investment provides us with the ability to exercise significant influence over Neumora, we have elected the fair value option to account for our equity investment. Under the fair value option, changes in the fair value of the investment are recognized through earnings each reporting period. We believe the fair value option best reflects the economics of the underlying transaction. During the year ended December 31, 2022, we made an additional \$10 million cash investment via participation in Neumora's subsequent financing round. As of December 31, 2022 and 2021, our ownership interest in Neumora was approximately 24.9% and 25.9%, respectively, and the fair value of our investment was \$335 million and \$220 million, respectively. During the years ended December 31, 2022 and 2021, we recognized a net gain of \$105 million and a net loss of \$37 million, respectively, for the change in fair values in Other (expense) income, net, in the Consolidated Statements of Income. For information on determination of fair values, see Note 17, Fair value measurement.

Limited partnerships

We held limited partnership investments of \$249 million and \$573 million as of December 31, 2022 and 2021, respectively, which are included in Other noncurrent assets in the Consolidated Balance Sheets. These investments, which are primarily investment funds of early-stage biotechnology companies, are accounted for by using the equity method of accounting and are measured by using our proportionate share of the net asset values of the underlying investments held by the limited partnerships as a practical expedient. These investments are typically redeemable only through distributions upon liquidation of the underlying assets. As of December 31, 2022, unfunded additional commitments to be made for these investments during the next several years were \$187 million. For the years ended December 31, 2022, 2021 and 2020, net gains and losses recognized from our limited partnership investments were a net loss of \$284 million and net gains of \$143 million and \$241 million, respectively.

10. Inventories

Inventories consisted of the following (in millions):

	December 31,	
	2022	2021
Raw materials	\$ 828	\$ 647
Work in process	3,098	2,367
Finished goods	1,004	1,072
Total inventories	\$ 4,930	\$ 4,086

11. Property, plant and equipment

Property, plant and equipment consisted of the following (dollar amounts in millions):

	Useful life (in years)	December 31,	
		2022	2021
Land	—	\$ 292	\$ 279
Buildings and improvements	10-40	4,201	4,028
Manufacturing equipment	8-12	3,105	3,080
Laboratory equipment	8-12	1,277	1,193
Fixed equipment	12	2,478	2,402
Capitalized software	3-5	1,215	1,151
Other	5-10	929	862
Construction in progress	—	1,213	987
Property, plant and equipment, gross		<u>14,710</u>	<u>13,982</u>
Less accumulated depreciation and amortization		<u>(9,283)</u>	<u>(8,798)</u>
Property, plant and equipment, net		<u>\$ 5,427</u>	<u>\$ 5,184</u>

During the years ended December 31, 2022, 2021 and 2020, we recognized depreciation and amortization expense associated with our property, plant and equipment of \$661 million, \$644 million and \$640 million, respectively.

Geographic information

Certain geographic information with respect to property, plant and equipment, net (long-lived assets), was as follows (in millions):

	December 31,	
	2022	2021
U.S.	\$ 3,154	\$ 2,801
Puerto Rico	1,247	1,311
ROW	1,026	1,072
Total property, plant and equipment, net	<u>\$ 5,427</u>	<u>\$ 5,184</u>

12. Goodwill and other intangible assets

Goodwill

The changes in the carrying amounts of goodwill were as follows (in millions):

	December 31,	
	2022	2021
Beginning balance	\$ 14,890	\$ 14,689
Changes to goodwill resulting from acquisitions and divestitures, net ⁽¹⁾	651	251
Currency translation adjustments	(12)	(50)
Ending balance	<u><u>\$ 15,529</u></u>	<u><u>\$ 14,890</u></u>

⁽¹⁾ For 2022, the changes to goodwill consist of goodwill resulting from the acquisition of ChemoCentryx, changes to the acquisition date fair values of net assets acquired in the acquisition of Teneobio and the nonstrategic Gensenta divestiture. See Note 2, Acquisitions and divestitures.

Other intangible assets

Other intangible assets consisted of the following (in millions):

	December 31,						
	2022				2021		
	Gross carrying amounts	Accumulated amortization	Other intangible assets, net		Gross carrying amounts	Accumulated amortization	Other intangible assets, net
Finite-lived intangible assets:							
Developed-product-technology rights	\$ 29,028	\$ (15,045)	\$ 13,983		\$ 25,561	\$ (12,769)	\$ 12,792
Licensing rights	3,864	(3,123)	741		3,807	(2,973)	834
Marketing-related rights	1,326	(1,167)	159		1,354	(1,112)	242
R&D technology rights	1,378	(1,190)	188		1,377	(1,133)	244
Total finite-lived intangible assets	35,596	(20,525)	15,071		32,099	(17,987)	14,112
Indefinite-lived intangible assets:							
IPR&D	1,009	—	1,009		1,070	—	1,070
Total other intangible assets	<u><u>\$ 36,605</u></u>	<u><u>\$ (20,525)</u></u>	<u><u>\$ 16,080</u></u>		<u><u>\$ 33,169</u></u>	<u><u>\$ (17,987)</u></u>	<u><u>\$ 15,182</u></u>

Developed-product-technology rights consists of rights related to marketed products acquired in acquisitions. Licensing rights consists primarily of contractual rights acquired in acquisitions to receive future milestone, royalty and profit-sharing payments; capitalized payments to third parties for milestones related to regulatory approvals to commercialize products; and up-front payments associated with royalty obligations for marketed products. Marketing-related rights consists primarily of rights related to the sale and distribution of marketed products. R&D technology rights pertains to technologies used in R&D that have alternative future uses. Developed-product-technology rights include assets acquired with the ChemoCentryx acquisition. IPR&D, R&D technology rights and licensing rights includes assets acquired with the Teneobio acquisition. See Note 2, Acquisitions and divestitures.

IPR&D consists of R&D projects acquired in a business combination that are not complete at the time of acquisition due to remaining technological risks and/or lack of receipt of required regulatory approvals. All IPR&D projects have major risks and uncertainties associated with the timely and successful completion of the development and commercialization of product candidates, including our ability to confirm safety and efficacy based on data from clinical trials, our ability to obtain necessary regulatory approvals and our ability to successfully complete these tasks within budgeted costs. We are not permitted to market a human therapeutic without obtaining regulatory approvals, and such approvals require the completion of clinical trials that demonstrate that a product candidate is safe and effective. In addition, the availability and extent of coverage and reimbursement from third-party payers, including government healthcare programs and private insurance plans as well as competitive product launches, affect the revenues a product can generate. Consequently, the eventual realized values, if any, of acquired IPR&D projects may vary from their estimated fair values. We review IPR&D projects for impairment annually, whenever events or changes in circumstances indicate that the carrying amounts may not be recoverable and upon the establishment of technological feasibility or regulatory approval.

During the years ended December 31, 2022, 2021 and 2020, we recognized amortization associated with our finite-lived intangible assets of \$2.6 billion, \$2.6 billion and \$2.8 billion, respectively. Amortization of intangible assets is included primarily in Cost of sales in the Consolidated Statements of Income. The total estimated amortization for our finite-lived intangible assets for the years ending December 31, 2023, 2024, 2025, 2026 and 2027, are \$2.8 billion, \$2.7 billion, \$2.5 billion, \$2.1 billion and \$2.1 billion, respectively.

13. Leases

We lease certain facilities and equipment related primarily to R&D, administrative and commercial activities. Leases with terms of 12 months or less are expensed as incurred and are not recorded in the Consolidated Balance Sheets.

Most leases include one or more options to renew, with renewal terms that may extend the lease term up to seven years. The exercise of lease renewal options is at our sole discretion. In addition, some of our lease agreements include rental payments adjusted periodically for inflation. Our lease agreements neither contain residual value guarantees nor impose significant restrictions or covenants. We sublease certain real estate to third parties. Our sublease portfolio consists of operating leases from former R&D and administrative space.

The following table summarizes information related to our leases, all of which are classified as operating, included in our Consolidated Balance Sheets (in millions):

Consolidated Balance Sheets locations	December 31,	
	2022	2021
Assets:		
Other noncurrent assets	\$ 579	\$ 566
Liabilities:		
Accrued liabilities	\$ 156	\$ 145
Other noncurrent liabilities	539	525
Total lease liabilities	\$ 695	\$ 670

The components of net lease costs were as follows (in millions):

Lease costs	Years ended December 31,		
	2022	2021	2020
Operating ⁽¹⁾	\$ 218	\$ 237	\$ 223
Sublease income	(32)	(38)	(34)
Total net lease costs	\$ 186	\$ 199	\$ 189

⁽¹⁾ Includes short-term leases and variable lease costs, which were not material for the years ended December 31, 2022, 2021 and 2020.

Maturities of lease liabilities as of December 31, 2022, were as follows (in millions):

Maturity dates	Amounts
2023	\$ 172
2024	109
2025	80
2026	70
2027	64
Thereafter	286
Total lease payments ⁽¹⁾	781
Less imputed interest	(86)
Present value of lease liabilities	\$ 695

⁽¹⁾ Includes future rental commitments for abandoned leases of \$90 million. We expect to receive total future rental income of \$76 million related to noncancelable subleases for abandoned facilities.

The weighted-average remaining lease terms and weighted-average discount rates were as follows:

	December 31,	
	2022	2021
Weighted-average remaining lease term (in years)	8.2	8.3
Weighted-average discount rate	2.7 %	2.5 %

Cash and noncash information related to our leases was as follows (in millions):

	Years ended December 31,		
	2022	2021	2020
Cash paid for amounts included in the measurement of lease liabilities:			
Operating cash flows for operating leases	\$ 171	\$ 190	\$ 177
ROU assets obtained in exchange for lease obligations:			
Operating leases	\$ 191	\$ 340	\$ 101

As of December 31, 2022, the total undiscounted future lease payments for leases that have not yet commenced were not material.

14. Other current assets and accrued liabilities

Other current assets consisted of the following (in millions):

	December 31,	
	2022	2021
Prepaid expenses	\$ 1,204	\$ 1,223
Corporate partner receivables	700	780
Tax receivables	129	164
Other	355	200
Total other current assets	\$ 2,388	\$ 2,367

Accrued liabilities consisted of the following (in millions):

	December 31,	
	2022	2021
Sales deductions	\$ 5,986	\$ 5,174
Income taxes payable	1,195	701
Dividends payable	1,137	1,083
Employee compensation and benefits	1,099	1,081
Sales returns reserve	548	542
Other	2,559	2,150
Total accrued liabilities	\$ 12,524	\$ 10,731

15. Financing arrangements

Our borrowings consisted of the following (in millions):

	December 31,	
	2022	2021
0.41% CHF700 million bonds due 2023 (0.41% 2023 Swiss franc Bonds)	\$ 757	\$ 767
2.25% notes due 2023 (2.25% 2023 Notes)	750	750
3.625% notes due 2024 (3.625% 2024 Notes)	1,400	1,400
1.90% notes due 2025 (1.90% 2025 Notes)	500	500
3.125% notes due 2025 (3.125% 2025 Notes)	1,000	1,000
2.00% €750 million notes due 2026 (2.00% 2026 euro Notes)	803	853
2.60% notes due 2026 (2.60% 2026 Notes)	1,250	1,250
5.50% £475 million notes due 2026 (5.50% 2026 pound sterling Notes)	574	643
2.20% notes due 2027 (2.20% 2027 Notes)	1,724	1,750
3.20% notes due 2027 (3.20% 2027 Notes)	1,000	1,000
1.65% notes due in 2028 (1.65% 2028 Notes)	1,234	1,250
3.00% notes due 2029 (3.00% 2029 Notes)	750	—
4.05% notes due 2029 (4.05% 2029 Notes)	1,250	—
4.00% £700 million notes due 2029 (4.00% 2029 pound sterling Notes)	846	947
2.45% notes due 2030 (2.45% 2030 Notes)	1,250	1,250
2.30% notes due 2031 (2.30% 2031 Notes)	1,250	1,250
2.00% notes due 2032 (2.00% 2032 Notes)	1,051	1,250
3.35% notes due 2032 (3.35% 2032 Notes)	1,000	—
4.20% notes due 2033 (4.20% 2033 Notes)	750	—
6.375% notes due 2037 (6.375% 2037 Notes)	478	478
6.90% notes due 2038 (6.90% 2038 Notes)	254	254
6.40% notes due 2039 (6.40% 2039 Notes)	333	333
3.15% notes due 2040 (3.15% 2040 Notes)	2,000	2,000
5.75% notes due 2040 (5.75% 2040 Notes)	373	373
2.80% notes due 2041 (2.80% 2041 Notes)	1,110	1,150
4.95% notes due 2041 (4.95% 2041 Notes)	600	600
5.15% notes due 2041 (5.15% 2041 Notes)	729	729
5.65% notes due 2042 (5.65% 2042 Notes)	415	415
5.375% notes due 2043 (5.375% 2043 Notes)	185	185
4.40% notes due 2045 (4.40% 2045 Notes)	2,250	2,250
4.563% notes due 2048 (4.563% 2048 Notes)	1,415	1,415
3.375% notes due 2050 (3.375% 2050 Notes)	2,250	2,250
4.663% notes due 2051 (4.663% 2051 Notes)	3,541	3,541
3.00% notes due 2052 (3.00% 2052 Notes)	1,254	1,350
4.20% notes due 2052 (4.20% 2052 Notes)	1,000	—
4.875% notes due 2053 (4.875% 2053 Notes)	1,000	—
2.77% notes due 2053 (2.77% 2053 Notes)	940	940
4.40% notes due 2062 (4.40% 2062 Notes)	1,250	—
Other notes due 2097	100	100
Unamortized bond discounts, premiums and issuance costs, net	(1,246)	(1,213)
Fair value adjustments	(437)	284
Other	12	15
Total carrying value of debt	38,945	33,309
Less current portion	(1,591)	(87)
Total long-term debt	\$ 37,354	\$ 33,222

There are no material differences between the effective interest rates and the coupon rates of any of our borrowings, except for the 4.563% 2048 Notes, the 4.663% 2051 Notes and the 2.77% 2053 Notes, which have effective interest rates of 6.3%, 5.6% and 5.2%, respectively.

Under the terms of all of our outstanding notes, except our Other notes due 2097, in the event of a change-in-control triggering event we may be required to purchase all or a portion of these debt securities at prices equal to 101% of the principal amounts of the notes plus accrued and unpaid interest. In addition, all of our outstanding notes—except our 0.41% 2023 Swiss franc Bonds and Other notes due 2097—may be redeemed at any time at our option—in whole or in part—at the principal amounts of the notes being redeemed plus accrued and unpaid interest and make-whole amounts, which are defined by the terms of the notes. Certain of the redeemable notes do not require the payment of make-whole amounts if redeemed during a specified period of time immediately prior to the maturity of the notes. Such time periods range from one month to six months prior to maturity.

Debt issuances

During the years ended December 31, 2022, 2021 and 2020, we issued debt securities in the following offerings:

- In 2022, we issued \$7.0 billion of debt consisting of \$750 million of the 3.00% 2029 Notes, \$1.25 billion of the 4.05% 2029 Notes, \$1.0 billion of the 3.35% 2032 Notes, \$750 million of the 4.20% 2033 Notes, \$1.0 billion of the 4.20% 2052 Notes, \$1.0 billion of the 4.875% 2053 Notes and \$1.25 billion of the 4.40% 2062 Notes. The 3.00% 2029 Notes were issued to finance eligible projects that meet specified criteria to reduce our impact on the environment.
- In 2021, we issued \$5.0 billion of debt consisting of \$1.25 billion of the 1.65% 2028 Notes, \$1.25 billion of the 2.00% 2032 Notes, \$1.15 billion of the 2.80% 2041 Notes and \$1.35 billion of the 3.00% 2052 Notes.
- In 2020, we issued \$9.0 billion of debt consisting of \$500 million of the 1.90% 2025 Notes, \$1.75 billion of the 2.20% 2027 Notes, \$1.25 billion of the 2.45% 2030 Notes, \$1.25 billion of the 2.30% 2031 Notes, \$2.0 billion of the 3.15% 2040 Notes and \$2.25 billion of the 3.375% 2050 Notes.

Debt extinguishment

In 2022, we repurchased portions of the 2.20% 2027 Notes, the 1.65% 2028 Notes, the 2.00% 2032 Notes, the 2.80% 2041 Notes and the 3.00% 2052 Notes for an aggregate cost of \$297 million, which resulted in the recognition of a \$78 million gain on extinguishment of debt recorded in Other (expense) income, net, in the Consolidated Statements of Income.

Debt repayments/redemptions

We made debt repayments/redemptions during the years ended December 31, 2022, 2021 and 2020, as follows:

- In 2022, no debt was repaid/redeemed.
- In 2021, we redeemed \$4.2 billion of debt, including the €1.25 billion aggregate principal amount (\$1.4 billion upon settlement of the related cross-currency swap) of the 1.25% 2022 euro Notes, the \$500 million aggregate principal amount of the 2.70% 2022 Notes, the \$1.5 billion aggregate principal amount of the 2.65% 2022 Notes and the \$750 million aggregate principal amount of the 3.625% 2022 Notes. In connection with the redemption of these notes, we paid a total of \$24 million in make-whole amounts plus associated accrued and unpaid interest, all of which was recognized in Interest expense, net, in the Consolidated Statements of Income.
- In 2020, we repaid/redeemed \$6.5 billion of debt, including the repayment at maturity of the \$300 million aggregate principal amount of the 4.50% 2020 Notes, the \$750 million aggregate principal amount of the 2.125% 2020 Notes, the \$300 million Floating Rate Notes due 2020 and the \$700 million aggregate principal amount of the 2.20% 2020 Notes. In connection with the redemption of the \$900 million aggregate principal amount of the 3.45% 2020 Notes, the \$1.0 billion aggregate principal balance of the 4.10% 2021 Notes, the \$750 million aggregate principal balance of the 1.85% 2021 Notes and the \$1.75 billion aggregate principal balance of the 3.875% 2021 Notes, we paid a total of \$96 million in make-whole amounts plus associated accrued and unpaid interest, all of which was recognized in Interest expense, net, in the Consolidated Statements of Income.

Interest rate swaps

To achieve a desired mix of fixed-rate and floating-rate debt, we entered into interest rate swap contracts that effectively converted fixed-rate interest coupons for certain of our debt issuances to floating LIBOR-based coupons over the lives of the respective notes. These interest rate swap contracts qualified and are designated as fair value hedges.

During the year ended December 31, 2021, we entered into interest rate swap contracts with an aggregate notional amount of \$1.0 billion with respect to the 2.45% 2030 Notes and an aggregate notional amount of \$500 million with respect to the 2.30% 2031 Notes. In connection with the redemption of the 3.625% 2022 Notes, discussed above, associated interest rate swap contracts with an aggregate notional amount of \$750 million were terminated.

In connection with the redemption of certain of the notes during the year ended December 31, 2020, discussed above, associated interest rate swap contracts with an aggregate notional value of \$3.65 billion were terminated. In addition, because of historically low interest rates, during the year ended December 31, 2020, we terminated interest rate swaps with an aggregate notional amount of \$5.2 billion that hedged the 3.625% 2024 Notes, the 2.60% 2026 Notes, the 4.663% 2051 Notes and portions of the 3.625% 2022 Notes and the 3.125% 2025 Notes, which resulted in the receipt of \$576 million of cash and reduced counterparty credit risk. Immediately following the terminations of these contracts, we entered into new interest rate swap agreements at then-current interest rates on the same \$5.2 billion principal amount of notes. See Note 18, Derivative instruments.

As of December 31, 2022 and 2021, the effective interest rates on notes for which we have entered into interest rate swap contracts and the related notional amounts of these contracts were as follows (dollar amounts in millions):

Notes		Notional amounts	Effective interest rates
3.625% 2024 Notes	\$	1,400	LIBOR + 3.2%
3.125% 2025 Notes		1,000	LIBOR + 1.8%
2.60% 2026 Notes		1,250	LIBOR + 1.8%
2.45% 2030 Notes		1,000	LIBOR + 1.0%
2.30% 2031 Notes		500	LIBOR + 0.8%
4.663% 2051 Notes		1,500	LIBOR + 4.1%
Total notional amounts	\$	6,650	

Debt exchange

In 2020, we completed a private offering to exchange portions of certain outstanding senior notes due 2037 through 2043 (collectively, Old Notes), listed below, for the \$940 million principal amount of the newly issued 2.77% 2053 Notes (the Exchange Offer).

The following principal amounts of each series of Old Notes were validly tendered and subsequently canceled in connection with the Exchange Offer (in millions):

	Principal amount exchanged
6.375% 2037 Notes	\$ 74
6.90% 2038 Notes	\$ 37
6.40% 2039 Notes	\$ 133
5.75% 2040 Notes	\$ 39
5.15% 2041 Notes	\$ 245
5.65% 2042 Notes	\$ 72
5.375% 2043 Notes	\$ 76

The 2.77% 2053 Notes bear interest at a lower fixed coupon rate while requiring higher principal repayment at a later maturity date as compared to those of the Old Notes that were exchanged. There were no other significant changes to the terms between the Old Notes and the 2.77% 2053 Notes. In connection with the Exchange Offer, \$85 million was paid to holders of the Old Notes (the cash consideration).

The Exchange Offer was accounted for as a debt modification, and accordingly, deferred financing costs and discounts associated with the Old Notes, the cash consideration and the \$264 million discount associated with the 2.77% 2053 Notes are being accreted over the term of these newly issued notes and recorded as Interest expense, net, in the Consolidated Statements of Income.

Cross-currency swaps

To hedge our exposure to foreign currency exchange rate risk associated with certain of our long-term notes denominated in foreign currencies, we entered into cross-currency swap contracts. The terms of these contracts effectively convert the interest payments and principal repayments on our 0.41% 2023 Swiss franc Bonds, 2.00% 2026 euro Notes, 5.50% 2026 pound sterling Notes and 4.00% 2029 pound sterling Notes from euros, pounds sterling and Swiss francs to U.S. dollars. These cross-currency swap contracts have been designated as cash flow hedges. For information regarding the terms of these contracts, see Note 18, Derivative instruments.

In connection with the redemption of the 1.25% 2022 euro Notes, discussed above, associated cross-currency swap contracts with an aggregate notional amount of €1.25 billion were terminated.

Shelf registration statement and other facilities

As of December 31, 2022, we have a commercial paper program that allows us to issue up to \$2.5 billion of unsecured commercial paper to fund our working-capital needs. As of December 31, 2022 and 2021, we had no amounts outstanding under our commercial paper program.

In 2019, we amended and restated our \$2.5 billion syndicated, unsecured, revolving credit agreement, which is available for general corporate purposes or as a liquidity backstop to our commercial paper program. The commitments under the revolving credit agreement may be increased by up to \$750 million with the agreement of the banks. Each bank that is a party to the agreement has an initial commitment term of five years. This term may be extended for up to two additional one-year periods with the agreement of the banks. Annual commitment fees for this agreement are 0.1% of the unused portion of the facility based on our current credit rating. In December 2022, this revolving credit agreement was further amended to replace LIBOR with SOFR as the reference rate, pursuant to provisions contained therein related to determination of successor rates in case of phaseout or unavailability of existing designated reference rates. Generally, we would be charged interest for any amounts borrowed under this facility, based on our current credit rating, at (i) SOFR plus 1.125% or (ii) the highest of (A) the syndication agent bank base commercial lending rate, (B) the overnight federal funds rate plus 0.50% or (C) one-month SOFR plus 1.1%. As of December 31, 2022 and 2021, no amounts were outstanding under this facility.

In February 2020, we filed a shelf registration statement with the SEC that allows us to issue unspecified amounts of debt securities; common stock; preferred stock; warrants to purchase debt securities, common stock, preferred stock or depositary shares; rights to purchase common stock or preferred stock; securities purchase contracts; securities purchase units; and depositary shares. Under this shelf registration statement, all of the securities available for issuance may be offered from time to time with terms to be determined at the time of issuance. This shelf registration statement expires in February 2023, and our Board has approved a new shelf registration statement to replace it.

In December 2022, in connection with the proposed acquisition of Horizon, we entered into a bridge credit agreement and a term loan credit agreement which provide for borrowings aggregating \$28.5 billion. As of December 31, 2022, no amounts have been borrowed under either agreement. See Note 2, Acquisitions and divestitures.

Certain of our financing arrangements contain nonfinancial covenants. In addition, our revolving credit agreement, bridge credit agreement and term loan agreement include a financial covenant, which requires us to maintain a specified minimum interest coverage ratio of (i) the sum of consolidated net income, interest expense, provision for income taxes, depreciation expense, amortization expense, unusual or nonrecurring charges and other noncash items (Consolidated EBITDA) to (ii) Consolidated Interest Expense, each as defined and described in the respective agreements. We were in compliance with all applicable covenants under these arrangements as of December 31, 2022.

Contractual maturities of debt obligations

The aggregate contractual maturities of all borrowings due subsequent to December 31, 2022, are as follows (in millions):

Maturity dates	Amounts
2023	\$ 1,509
2024	1,400
2025	1,500
2026	2,627
2027	2,724
Thereafter	30,868
Total	\$ 40,628

Interest costs

Interest costs are expensed as incurred except to the extent such interest is related to construction in progress, in which case interest is capitalized. Interest costs capitalized for the years ended December 31, 2022, 2021 and 2020, were not material. Interest paid, including the ongoing impact of interest rate and cross-currency swap contracts, during each of the years ended December 31, 2022, 2021 and 2020, were \$1.2 billion.

16. Stockholders' equity

Stock repurchase program

Activity under our stock repurchase program, on a trade date basis, was as follows (in millions):

	Years ended December 31,					
	2022		2021		2020	
	Shares	Dollars	Shares	Dollars	Shares	Dollars
First quarter	24.6	\$ 5,410	3.7	\$ 865	4.3	\$ 933
Second quarter	—	—	6.5	1,592	2.6	591
Third quarter	1.5	900	4.6	1,069	3.0	752
Fourth quarter	—	—	6.9	1,461	5.3	1,221
Total stock repurchases	<u>26.1</u>	<u>\$ 6,310</u>	<u>21.7</u>	<u>\$ 4,987</u>	<u>15.2</u>	<u>\$ 3,497</u>

During the first quarter of 2022, the Company entered into ASR agreements with third-party financial institutions (Dealers) whereby the Company made payments in an aggregate amount of \$6.0 billion to the Dealers and received and retired an initial 23.3 million shares of the Company's common stock from the Dealers. The payments were recorded as reductions to shareholders' equity, consisting of a \$5.1 billion increase to accumulated deficit, which reflects the value of the initial shares received, and a \$0.9 billion decrease in additional paid-in capital, which reflects the value of the stock that remained to be delivered by the Dealers. During the third quarter of 2022, an additional 1.5 million shares of the Company's common stock were received from the Dealers which constituted final settlement under the ASR agreements, and accordingly, the \$0.9 billion decrease in additional paid-in capital recorded in the first quarter was reclassified to accumulated deficit. In total, we repurchased 26.1 million shares of common stock during the year ended December 31, 2022, consisting primarily of the 24.8 million shares received under the ASR agreements.

In October 2022, our Board of Directors increased the amount authorized under our stock repurchase program by an additional \$2.4 billion. As of December 31, 2022, \$7.0 billion remained available under our stock repurchase program.

Dividends

Our Board of Directors declared quarterly dividends per share of \$1.94, \$1.76 and \$1.60, which were paid in each of the four quarters of 2022, 2021 and 2020, respectively.

Historically, we have declared dividends in December of each year, which were paid in the first quarter of the following fiscal year and in March, July and October, which were paid in the second, third and fourth quarters, respectively, of the same fiscal year. Additionally, on December 12, 2022, the Board of Directors declared a quarterly cash dividend of \$2.13 per share of common stock, which will be paid in March 2023, to all stockholders of record as of the close of business on February 15, 2023.

Accumulated other comprehensive loss

The components of AOCI were as follows (in millions):

	Foreign currency translation	Cash flow hedges	Available-for-sale securities	Other	AOCI
Balance as of December 31, 2019	\$ (718)	\$ 175	\$ 22	\$ (7)	\$ (528)
Foreign currency translation adjustments	9	—	—	—	9
Unrealized (losses) gains	—	(61)	6	—	(55)
Reclassification adjustments to income	—	(501)	(33)	—	(534)
Other losses	—	—	—	(7)	(7)
Income taxes	—	124	6	—	130
Balance as of December 31, 2020	(709)	(263)	1	(14)	(985)
Foreign currency translation adjustments	(135)	—	—	—	(135)
Unrealized gains (losses)	—	159	(1)	—	158
Reclassification adjustments to income	—	253	—	—	253
Other gains	—	—	—	1	1
Income taxes	—	(88)	—	—	(88)
Balance as of December 31, 2021	(844)	61	—	(13)	(796)
Foreign currency translation adjustments	496	—	—	—	496
Unrealized gains	—	84	—	—	84
Reclassification adjustments to income	—	2	—	—	2
Other gains	—	—	—	2	2
Income taxes	—	(19)	—	—	(19)
Balance as of December 31, 2022	<u>\$ (348)</u>	<u>\$ 128</u>	<u>\$ —</u>	<u>\$ (11)</u>	<u>\$ (231)</u>

With respect to the table above, income tax expenses or benefits for unrealized gains and losses and the related reclassification adjustments to income for cash flow hedges were a \$19 million expense and a \$0 million expense in 2022, a \$33 million expense and a \$55 million expense in 2021 and a \$14 million benefit and a \$110 million benefit in 2020, respectively. Income tax expenses or benefits for unrealized gains and losses and the related reclassification adjustments to income for available-for-sale securities were a \$1 million expense and a \$7 million benefit in 2020, respectively.

Reclassifications out of AOCI and into earnings were as follows (in millions):

Components of AOCI	Years ended December 31,			Consolidated Statements of Income locations	
	2022	2021	2020		
Cash flow hedges:					
Foreign currency contract gains (losses)	\$ 231	\$ (8)	\$ 178	Product sales	
Cross-currency swap contract (losses) gains	<u>(233)</u>	<u>(245)</u>	<u>323</u>	Other (expense) income, net	
	<u>(2)</u>	<u>(253)</u>	<u>501</u>	Income before income taxes	
	<u>—</u>	<u>55</u>	<u>(110)</u>	Provision for income taxes	
	<u>\$ (2)</u>	<u>\$ (198)</u>	<u>\$ 391</u>	Net income	
Available-for-sale securities:					
Net realized gains	\$ —	\$ —	\$ 33	Other (expense) income, net	
	<u>—</u>	<u>—</u>	<u>(7)</u>	Provision for income taxes	
	<u>\$ —</u>	<u>\$ —</u>	<u>\$ 26</u>	Net income	

Other

In addition to common stock, our authorized capital includes 5 million shares of preferred stock, \$0.0001 par value. As of December 31, 2022 and 2021, no shares of preferred stock were issued or outstanding.

17. Fair value measurement

To estimate the fair value of our financial assets and liabilities, we use valuation approaches within a hierarchy that maximizes the use of observable inputs and minimizes the use of unobservable inputs by requiring that observable inputs be used when available. Observable inputs are inputs that market participants would use in pricing an asset or liability based on market data obtained from sources independent of the Company. Unobservable inputs are inputs that reflect the Company's assumptions about the inputs that market participants would use in pricing an asset or liability and are developed based on the best information available in the circumstances. The fair value hierarchy is divided into three levels based on the source of inputs as follows:

- Level 1 — Valuations based on unadjusted quoted prices in active markets for identical assets or liabilities that the Company has the ability to access
- Level 2 — Valuations for which all significant inputs are observable either directly or indirectly—other than Level 1 inputs
- Level 3 — Valuations based on inputs that are unobservable and significant to the overall fair value measurement

The availability of observable inputs can vary among the various types of financial assets and liabilities. To the extent that the valuation is based on models or inputs that are less observable or unobservable in the market, the determination of fair value requires more judgment. In certain cases, the inputs used for measuring fair value may fall into different levels of the fair value hierarchy. In such cases, for financial statement disclosure purposes, the level in the fair value hierarchy within which the fair value measurement is categorized is based on the lowest level of input used that is significant to the overall fair value measurement.

The fair values of each major class of the Company's financial assets and liabilities measured at fair value on a recurring basis were as follows (in millions):

Fair value measurement as of December 31, 2022, using:	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)	Total
Assets:				
Available-for-sale securities:				
U.S. Treasury notes	\$ —	\$ —	\$ —	\$ —
U.S. Treasury bills	1,676	—	—	1,676
Money market mutual funds	2,659	—	—	2,659
Other short-term interest-bearing securities	—	—	—	—
Other investments	—	130	—	130
Equity securities	480	—	335	815
Derivatives:				
Foreign currency forward contracts	—	287	—	287
Cross-currency swap contracts	—	54	—	54
Interest rate swap contracts	—	—	—	—
Total assets	\$ 4,815	\$ 471	\$ 335	\$ 5,621
Liabilities:				
Derivatives:				
Foreign currency forward contracts	\$ —	\$ 76	\$ —	\$ 76
Cross-currency swap contracts	—	541	—	541
Interest rate swap contracts	—	776	—	776
Forward interest rate contracts	—	5	—	5
Contingent consideration obligations	—	—	270	270
Total liabilities	\$ —	\$ 1,398	\$ 270	\$ 1,668

Fair value measurement as of December 31, 2021, using:	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)	Total
Assets:				
Available-for-sale securities:				
U.S. Treasury notes	\$ 47	\$ —	\$ —	\$ 47
U.S. Treasury bills	1,400	—	—	1,400
Money market mutual funds	5,856	—	—	5,856
Other short-term interest-bearing securities	—	1	—	1
Other investments	—	—	—	—
Equity securities	611	—	220	831
Derivatives:				
Foreign currency forward contracts	—	183	—	183
Cross-currency swap contracts	—	66	—	66
Interest rate swap contracts	—	16	—	16
Total assets	\$ 7,914	\$ 266	\$ 220	\$ 8,400
Liabilities:				
Derivatives:				
Foreign currency forward contracts	\$ —	\$ 39	\$ —	\$ 39
Cross-currency swap contracts	—	339	—	339
Interest rate swap contracts	—	156	—	156
Forward interest rate contracts	—	—	—	—
Contingent consideration obligations	—	—	342	342
Total liabilities	\$ —	\$ 534	\$ 342	\$ 876

Interest-bearing and equity securities

The fair values of our U.S. Treasury securities, money market mutual funds and equity investments in publicly traded securities are based on quoted market prices in active markets, with no valuation adjustment. Other investments consist of interest-bearing deposits that are valued at amortized cost, which approximates fair value given their near term maturity. The fair value of equity securities for which the fair value option was elected are initially valued at the transaction price and subsequently valued based on a combination of observable price transactions, when available, market performance and publicly available market information for similar companies that have actively traded equity securities. See Note 9, Investments—Neumora Therapeutics, Inc.

Derivatives

Our foreign currency forward contracts, cross-currency swap contracts and interest rate swap contracts are with counterparties that have minimum credit ratings of A– or equivalent by S&P, Moody’s or Fitch. We estimate the fair values of these contracts by taking into consideration valuations obtained from a third-party valuation service that uses an income-based industry-standard valuation model for which all significant inputs are observable either directly or indirectly. These inputs, as applicable, include foreign currency exchange rates, LIBOR, swap rates, obligor credit default swap rates and cross-currency basis swap spreads. Certain inputs, when applicable, are at commonly quoted intervals. See Note 18, Derivative instruments.

Contingent consideration obligations

As a result of our business acquisitions, we have incurred contingent consideration obligations as discussed below. The contingent consideration obligations are recorded at their fair values by using probability-adjusted discounted cash flows, and we revalue these obligations each reporting period until the related contingencies have been resolved. The fair value measurements of these obligations are based on significant unobservable inputs related to licensing rights and product candidates acquired in business combinations, and they are reviewed quarterly by management in our R&D and commercial sales organizations. The inputs include, as applicable, estimated probabilities and the timing of achieving specified development, regulatory and commercial milestones as well as estimated annual sales. Significant changes to these inputs would result in corresponding increases or decreases in the fair values of the obligations, as applicable. Changes in the fair values of contingent consideration obligations are recognized in Other operating expenses in the Consolidated Statements of Income.

Changes in the carrying amounts of contingent consideration obligations were as follows (in millions):

	Years ended December 31,		
	2022	2021	2020
Beginning balance	\$ 342	\$ 33	\$ 61
Additions	—	309	—
Payments	(7)	(7)	(6)
Net changes in valuations	(65)	7	(22)
Ending balance	<u>\$ 270</u>	<u>\$ 342</u>	<u>\$ 33</u>

As a result of our acquisition of Teneobio in 2021, we are obligated to pay its former shareholders up to \$1.6 billion upon achieving separate development and regulatory milestones with regard to various R&D programs. See Note 2, Acquisitions and divestitures.

As a result of our acquisition of K-A in 2018, we are obligated to make single-digit royalty payments to Kirin Holdings Company, Limited contingent upon sales of brodalumab.

As a result of our acquisition of BioVex Group Inc. in 2011, we were obligated to pay its former shareholders upon achieving separate sales-related milestones with regard to IMLYGIC if certain sales thresholds were met. During the year ended December 31, 2020, we determined that the likelihood of achieving these milestones was no longer probable, and accordingly, the obligations were written off.

Summary of the fair values of other financial instruments

Cash equivalents

The fair values of cash equivalents approximate their carrying values due to the short-term nature of such financial instruments.

Borrowings

We estimated the fair values of our borrowings by using Level 2 inputs. As of December 31, 2022 and 2021, the aggregate fair values of our borrowings were \$35.0 billion and \$37.9 billion, respectively, and the carrying values were \$38.9 billion and \$33.3 billion, respectively.

Investment in BeiGene

We estimated the fair value of our investment in BeiGene by using Level 1 inputs. As of December 31, 2022 and 2021, the fair values were \$4.2 billion and \$5.1 billion, and the carrying values were \$2.2 billion and \$2.8 billion, respectively.

During the years ended December 31, 2022 and 2021, there were no transfers of assets or liabilities between fair value measurement levels, and there were no material remeasurements to the fair values of assets and liabilities that are not measured at fair value on a recurring basis.

18. Derivative instruments

The Company is exposed to foreign currency exchange rate and interest rate risks related to its business operations. To reduce our risks related to such exposures, we use or have used certain derivative instruments, including foreign currency forward, foreign currency option, cross-currency swap, forward interest rate and interest rate swap contracts. We have designated certain of our derivatives as cash flow and fair value hedges; we also have derivatives not designated as hedges. We do not use derivatives for speculative trading purposes.

Cash flow hedges

We are exposed to possible changes in the values of certain anticipated foreign currency cash flows resulting from changes in foreign currency exchange rates primarily associated with our euro-denominated international product sales. The foreign currency exchange rate fluctuation exposure associated with cash inflows from our international product sales are partially offset by corresponding cash outflows from our international operating expenses. To further reduce this exposure, we enter into foreign currency forward contracts to hedge a portion of our projected international product sales up to a maximum of three years into the future; and at any given point in time, a higher percentage of nearer-term projected product sales is being hedged than in successive periods.

As of December 31, 2022, 2021 and 2020, we had outstanding foreign currency forward contracts with aggregate notional amounts of \$6.0 billion, \$5.7 billion and \$5.1 billion, respectively. We have designated these foreign currency forward contracts, which are primarily euro based, as cash flow hedges. Accordingly, we report unrealized gains and losses on these contracts in AOCI in the Consolidated Balance Sheets, and we reclassify them to Product sales in the Consolidated Statements of Income in the same periods during which the hedged transactions affect earnings.

To hedge our exposure to foreign currency exchange rate risk associated with certain of our long-term debt denominated in foreign currencies, we enter into cross-currency swap contracts. Under the terms of such contracts, we paid euros, pounds sterling and Swiss francs and received U.S. dollars for the notional amounts at inception of the contracts; and based on these notional amounts, we exchange interest payments at fixed rates over the lives of the contracts by paying U.S. dollars and receiving euros, pounds sterling and Swiss francs. In addition, we will pay U.S. dollars to and receive euros, pounds sterling and Swiss francs from the counterparties at the maturities of the contracts for these same notional amounts. The terms of these contracts correspond to the related hedged debt, thereby effectively converting the interest payments and principal repayment on the debt from euros, pounds sterling and Swiss francs to U.S. dollars. We have designated these cross-currency swap contracts as cash flow hedges. Accordingly, the unrealized gains and losses on these contracts are reported in AOCI in the Consolidated Balance Sheets and reclassified to Other (expense) income, net, in the Consolidated Statements of Income in the same periods during which the hedged debt affects earnings.

The notional amounts and interest rates of our cross-currency swaps as of December 31, 2022, were as follows (notional amounts in millions):

Hedged notes	Foreign currency		U.S. dollars	
	Notional amounts	Interest rates	Notional amounts	Interest rates
0.41% 2023 Swiss franc Bonds	CHF 700	0.4 %	\$ 704	3.4 %
2.00% 2026 euro Notes	€ 750	2.0 %	\$ 833	3.9 %
5.50% 2026 pound sterling Notes	£ 475	5.5 %	\$ 747	6.0 %
4.00% 2029 pound sterling Notes	£ 700	4.0 %	\$ 1,111	4.6 %

In connection with the anticipated issuance of long-term fixed-rate debt, we occasionally enter into forward interest rate contracts in order to hedge the variability in cash flows due to changes in the applicable U.S. Treasury rate between the time we enter into these contracts and the time the related debt is issued. Gains and losses on forward interest rate contracts, which are designated as cash flow hedges, are recognized in AOCI in the Consolidated Balance Sheets and are amortized into Interest expense, net, in the Consolidated Statements of Income over the lives of the associated debt issuances. In December 2022, we entered into a forward interest rate contract with an aggregate notional amount of \$700 million. Amounts expected to be recognized during the subsequent 12 months on forward interest rate contracts are not material.

The unrealized gains and losses recognized in AOCI for our derivative instruments designated as cash flow hedges were as follows (in millions):

Derivatives in cash flow hedging relationships	Years ended December 31,		
	2022	2021	2020
Foreign currency forward contracts	\$ 308	\$ 373	\$ (251)
Cross-currency swap contracts	(219)	(214)	190
Forward interest rate contracts	(5)	—	—
Total unrealized gains (losses)	\$ 84	\$ 159	\$ (61)

Fair value hedges

To achieve a desired mix of fixed-rate and floating-rate debt, we entered into interest rate swap contracts that qualified for and were designated as fair value hedges. These interest rate swap contracts effectively convert fixed-rate coupons to floating-rate LIBOR-based coupons over the terms of the related hedge contracts. As of both December 31, 2022 and 2021, we had interest rate swap contracts with aggregate notional amounts of \$6.7 billion that hedge certain portions of our long-term debt issuances. See Note 15, Financing arrangements, for information on our interest rate swaps.

For interest rate swap contracts that qualify for and are designated as fair value hedges, we recognize in Interest expense, net, in the Consolidated Statements of Income the unrealized gain or loss on the derivative resulting from the change in fair value during the period, as well as the offsetting unrealized loss or gain of the hedged item resulting from the change in fair value during the period attributable to the hedged risk. If a hedging relationship involving an interest rate swap contract is terminated, the gain or loss realized on contract termination is recorded as an adjustment to the carrying value of the debt and amortized into Interest expense, net, over the remaining life of the previously hedged debt.

The hedged liabilities and related cumulative-basis adjustments for fair value hedges of those liabilities were recorded in the Consolidated Balance Sheets as follows (in millions):

Consolidated Balance Sheets locations	Carrying amounts of hedged liabilities ⁽¹⁾		Cumulative amounts of fair value hedging adjustments related to the carrying amounts of the hedged liabilities ⁽²⁾	
	December 31,		December 31,	
	2022	2021	2022	2021
Current portion of long-term debt	\$ 82	\$ 85	\$ 82	\$ 85
Long-term debt	\$ 6,017	\$ 6,729	\$ (519)	\$ 199

⁽¹⁾ Current portion of long-term debt includes \$82 million and \$85 million of carrying value with discontinued hedging relationships as of December 31, 2022 and 2021, respectively. Long-term debt includes \$357 million and \$440 million of carrying value with discontinued hedging relationships as of December 31, 2022 and 2021, respectively.

⁽²⁾ Current portion of long-term debt includes \$82 million and \$85 million of hedging adjustments on discontinued hedging relationships as of December 31, 2022 and 2021, respectively. Long-term debt includes \$257 million and \$340 million of hedging adjustments on discontinued hedging relationships as of December 31, 2022 and 2021, respectively.

Impact of hedging transactions

The following tables summarize the amounts recorded in income and expense line items and the effects thereon from fair value and cash flow hedging, including discontinued hedging relationships (in millions):

	Year ended December 31, 2022		
	Product sales	Other (expense) income, net	Interest expense, net
Total amounts recorded in income and (expense) line items presented in the Consolidated Statements of Income	\$ 24,801	\$ (814)	\$ (1,406)
The effects of cash flow and fair value hedging:			
Gains (losses) on cash flow hedging relationships reclassified out of AOCI:			
Foreign currency forward contracts	\$ 231	\$ —	\$ —
Cross-currency swap contracts	\$ —	\$ (233)	\$ —
Gains (losses) on fair value hedging relationships—interest rate swap agreements:			
Hedged items ⁽¹⁾	\$ —	\$ —	\$ 716
Derivatives designated as hedging instruments	\$ —	\$ —	\$ (636)
	Year ended December 31, 2021		
	Product sales	Other (expense) income, net	Interest expense, net
Total amounts recorded in income and (expense) line items presented in the Consolidated Statements of Income	\$ 24,297	\$ 259	\$ (1,197)
The effects of cash flow and fair value hedging:			
Losses on cash flow hedging relationships reclassified out of AOCI:			
Foreign currency forward contracts	\$ (8)	\$ —	\$ —
Cross-currency swap contracts	\$ —	\$ (245)	\$ —
Gains (losses) on fair value hedging relationships—interest rate swap agreements:			
Hedged items ⁽¹⁾	\$ —	\$ —	\$ 281
Derivatives designated as hedging instruments	\$ —	\$ —	\$ (192)
	Year ended December 31, 2020		
	Product sales	Other (expense) income, net	Interest expense, net
Total amounts recorded in income and (expense) line items presented in the Consolidated Statements of Income	\$ 24,240	\$ 256	\$ (1,262)
The effects of cash flow and fair value hedging:			
Gains on cash flow hedging relationships reclassified out of AOCI:			
Foreign currency forward contracts	\$ 178	\$ —	\$ —
Cross-currency swap contracts	\$ —	\$ 323	\$ —
Gains (losses) on fair value hedging relationships—interest rate swap agreements:			
Hedged items ⁽¹⁾	\$ —	\$ —	\$ 315
Derivatives designated as hedging instruments	\$ —	\$ —	\$ (204)

⁽¹⁾ Gains on hedged items do not completely offset losses on the related designated hedging instruments due to amortization of the cumulative amounts of fair value hedging adjustments included in the carrying amount of the hedged debt for discontinued hedging relationships and the recognition of gains on terminated hedges when the corresponding hedged item was paid down in the period.

No portions of our cash flow hedge contracts were excluded from the assessment of hedge effectiveness. As of December 31, 2022, we expected to reclassify \$159 million of net gains on our foreign currency and cross-currency swap contracts out of AOCI and into earnings during the next 12 months.

Derivatives not designated as hedges

To reduce our exposure to foreign currency fluctuations in certain assets and liabilities denominated in foreign currencies, we enter into foreign currency forward contracts that are not designated as hedging transactions. Most of these exposures are hedged on a month-to-month basis. As of December 31, 2022, 2021 and 2020, the total notional amounts of these foreign currency forward contracts were \$517 million, \$680 million and \$1.0 billion, respectively. Gains and losses recognized in earnings for our derivative instruments not designated as hedging instruments were not material for the years ended December 31, 2022, 2021 and 2020.

Fair values of derivatives

The fair values of derivatives included in the Consolidated Balance Sheets were as follows (in millions):

December 31, 2022	Derivative assets		Derivative liabilities	
	Consolidated Balance Sheets locations	Fair values	Consolidated Balance Sheets locations	Fair values
Derivatives designated as hedging instruments:				
Foreign currency forward contracts	Other current assets/ Other noncurrent assets	\$ 287	Accrued liabilities/ Other noncurrent liabilities	\$ 76
Cross-currency swap contracts	Other current assets/ Other noncurrent assets	54	Accrued liabilities/ Other noncurrent liabilities	541
Interest rate swap contracts	Other current assets/ Other noncurrent assets	—	Accrued liabilities/ Other noncurrent liabilities	776
Forward interest rate contracts	Other current assets/ Other noncurrent assets	—	Accrued liabilities/ Other noncurrent liabilities	5
Total derivatives designated as hedging instruments		341		1,398
Total derivatives		\$ 341		\$ 1,398

December 31, 2021	Derivative assets		Derivative liabilities	
	Consolidated Balance Sheets locations	Fair values	Consolidated Balance Sheets locations	Fair values
Derivatives designated as hedging instruments:				
Foreign currency forward contracts	Other current assets/ Other noncurrent assets	\$ 183	Accrued liabilities/ Other noncurrent liabilities	\$ 39
Cross-currency swap contracts	Other current assets/ Other noncurrent assets	66	Accrued liabilities/ Other noncurrent liabilities	339
Interest rate swap contracts	Other current assets/ Other noncurrent assets	16	Accrued liabilities/ Other noncurrent liabilities	156
Forward interest rate contracts	Other current assets/ Other noncurrent assets	—	Accrued liabilities/ Other noncurrent liabilities	—
Total derivatives designated as hedging instruments		265		534
Total derivatives		\$ 265		\$ 534

For additional information, see Note 17, Fair value measurement.

Our derivative contracts that were in liability positions as of December 31, 2022, contain certain credit-risk-related contingent provisions that would be triggered if (i) we were to undergo a change-in-control and (ii) our or the surviving entity's creditworthiness deteriorates, which is generally defined as having either a credit rating that is below investment grade or a materially weaker creditworthiness after the change-in-control. If these events were to occur, the counterparties would have the right, but not the obligation, to close the contracts under early-termination provisions. In such circumstances, the counterparties could request immediate settlement of these contracts for amounts that approximate the then current fair values of the contracts. In addition, our derivative contracts are not subject to any type of master netting arrangement, and amounts due either to or from a counterparty under the contracts may be offset against other amounts due either to or from the same counterparty only if an event of default or termination, as defined, were to occur.

The cash flow effects of our derivative contracts in the Consolidated Statements of Cash Flows are included in Net cash provided by operating activities, except for the settlement of notional amounts of cross-currency swaps, which are included in Net cash used in financing activities.

19. Contingencies and commitments

Contingencies

In the ordinary course of business, we are involved in various legal proceedings, government investigations and other matters that are complex in nature and have outcomes that are difficult to predict. See Part I, Item 1A. Risk Factors—*Our business may be affected by litigation and government investigations*. We describe our legal proceedings and other matters that are significant or that we believe could become significant in this footnote.

We record accruals for loss contingencies to the extent that we conclude it is probable that a liability has been incurred and the amount of the related loss can be reasonably estimated. We evaluate, on a quarterly basis, developments in legal proceedings and other matters that could cause an increase or decrease in the amount of the liability that has been accrued previously.

Our legal proceedings involve various aspects of our business and a variety of claims, some of which present novel factual allegations and/or unique legal theories. In each of the matters described in this filing, in which we could incur a liability, our opponents seek an award of a not-yet-quantified amount of damages or an amount that is not material. In addition, a number of the matters pending against us are at very early stages of the legal process, which in complex proceedings of the sort we face often extend for several years. As a result, none of the matters described in this filing, in which we could incur a liability, have progressed sufficiently through discovery and/or the development of important factual information and legal issues to enable us to estimate a range of possible loss, if any, or such amounts are not material. While it is not possible to accurately predict or determine the eventual outcomes of these matters, an adverse determination in one or more of these matters currently pending could have a material adverse effect on our consolidated results of operations, financial position or cash flows.

Certain recent developments concerning our legal proceedings and other matters are discussed below:

ANDA Patent Litigation

Otezla ANDA Patent Litigation

Amgen Inc. v. Sandoz Inc., et al.

Beginning in June 2018, Celgene filed 19 separate lawsuits in the U.S. District Court for the District of New Jersey (the New Jersey District Court) against Alkem Laboratories Ltd. (Alkem); Amneal Pharmaceuticals LLC (Amneal); Annora Pharma Private Ltd. and Hetero USA Inc. (collectively, Hetero); Aurobindo Pharma Ltd. and Aurobindo Pharma USA Inc. (collectively, Aurobindo); Cipla Limited (Cipla Ltd); DRL; Emcure Pharmaceuticals Ltd. and Heritage Pharmaceuticals Inc. (collectively, Emcure); Glenmark Pharmaceuticals Ltd. (Glenmark); Macleods Pharmaceuticals Ltd. (Macleods); Mankind Pharma Ltd. (Mankind); MSN Laboratories Private Limited (MSN); Pharmascience Inc. (Pharmascience); Princeton Pharmaceutical Inc. (Princeton); Sandoz Inc. (Sandoz); Shilpa Medicare Ltd. (Shilpa); Teva Pharmaceuticals USA, Inc. and Actavis LLC (collectively, Actavis); Torrent Pharmaceuticals Ltd. (Torrent); Unichem Laboratories, Ltd. (Unichem); and Zydus Pharmaceuticals (USA) Inc. (Zydus), each for infringement of one or more of the following patents: U.S. Patent Nos. 6,962,940 (the '940 Patent), 7,208,516 (the '516 Patent), 7,427,638 (the '638 Patent), 7,659,302 (the '302 Patent), 7,893,101 (the '101 Patent), 8,455,536 (the '536 Patent), 8,802,717 (the '717 Patent), 9,018,243 (the '243 Patent) and 9,872,854 (the '854 Patent), which are listed in the Orange Book for Otezla. Each of these lawsuits was based on each defendant's submission of an ANDA seeking FDA approval to market a generic version of Otezla. The New Jersey District Court consolidated these 19 lawsuits for discovery and case management purposes into a single case, *Celgene Corp. v. Sandoz Inc., et al.* Each lawsuit seeks an order of the New Jersey District Court making any FDA approval of the respective defendant's ANDA effective no earlier than the expiration of the applicable patents.

In August 2018, Celgene filed amended complaints against Alkem, Amneal, Aurobindo, Cipla Ltd, DRL, Glenmark, Pharmascience, Sandoz, Actavis, Unichem and Zydus additionally asserting U.S. Patent No. 9,724,330 (the '330 Patent), which is listed in the Orange Book for Otezla. Between October 15 and November 27, 2018, Celgene filed amended complaints against Alkem, Amneal, Hetero, Aurobindo, Cipla Ltd, DRL, Emcure, Glenmark, Macleods, Mankind, MSN, Pharmascience, Prinston, Sandoz, Actavis, Torrent, Unichem and Zydus additionally asserting U.S. Patent No. 10,092,541 (the '541 Patent), which is listed in the Orange Book for Otezla. Between March 1 and April 4, 2019, Celgene filed amended complaints against Hetero, MSN and Emcure for infringement of one or more of the above-listed patents. On October 1, 2019, Celgene filed an amended complaint against Mankind for infringement of the '940, '302, '536, '243 and '330 Patents. On October 8, 2019, Celgene filed a separate lawsuit against Zydus in the New Jersey District Court for infringement of U.S. Patent Nos. 8,093,283 (the '283 Patent) and 8,629,173, which are not listed in the Orange Book for Otezla. On December 19, 2019, the New Jersey District Court consolidated this lawsuit for discovery and case management purposes into the existing consolidated case, *Celgene Corp. v. Sandoz Inc., et al.* Each defendant has filed an answer to the above-listed complaints and amended complaints disputing infringement and/or validity of the patents asserted against it. Along with their answers, each of Alkem, Hetero, Cipla Ltd, DRL, Emcure, Glenmark, Macleods, Mankind, Pharmascience, Sandoz, Shilpa, Actavis, Torrent, Unichem and Zydus filed declaratory judgment counterclaims asserting that some or all of the patents are not infringed and/or are invalid. In August 2019, based on a joint request by Celgene and Glenmark, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, having made, using, selling, offering to sell, importing, or distributing of Glenmark's apremilast product during the term of the '940, '638, '302, '101, '536, '243, '330 and '541 Patents, unless authorized pursuant to a confidential settlement agreement.

Following Amgen's acquisition of the patents-in-suit and the new drug application for Otezla, on February 14, 2020, the New Jersey District Court issued an order substituting Amgen for Celgene as plaintiff in the consolidated action and all related actions, terminating Celgene as plaintiff in the consolidated action and all related actions, and amending the case caption in the consolidated action and all related actions to reflect Amgen as the sole plaintiff.

On March 25, 2020, based on a joint request by Amgen and Unichem, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Unichem's apremilast product during the term of the '940, '638, '302, '101, '536, '243, '330 and '541 Patents, unless authorized pursuant to a confidential settlement agreement. On April 3, 2020, based on a joint request by Amgen and Hetero, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Hetero's apremilast product during the term of the '940, '516, '638, '302, '101, '536, '717, '243, '330, '854 and '541 Patents, unless authorized pursuant to a confidential settlement agreement. On May 28, 2020, based on a joint request by Amgen and Emcure, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Emcure's apremilast product during the term of the '638, '101, '854 and '541 Patents unless authorized pursuant to a confidential settlement agreement. On July 7, 2020, the New Jersey District Court ordered a stipulated dismissal without prejudice of all claims, counterclaims, and affirmative defenses between Amgen and Sandoz with respect to the '717, '516 and '854 Patents, leaving the '940, '302, '536, '243, '330, '638, '101 and '541 Patents asserted by Amgen against Sandoz in the litigation. On August 6, 2020, based on a joint request by Amgen and Mankind, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Mankind's apremilast product during the term of the '940, '302, '536, '243, '330, '638, '101 and '541 Patents, unless authorized pursuant to a confidential settlement agreement. On August 14, 2020, based on a joint request by Amgen and Macleods, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Macleods' apremilast product during the term of the '638 and '541 Patents, unless authorized pursuant to a confidential settlement agreement. On October 7, 2020, based on a joint request by Amgen and Amneal, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Amneal's apremilast product during the term of the '101, '940, '638, '302, '536, '243, '330 and '541 Patents, unless authorized pursuant to a confidential settlement agreement. On December 30, 2020, based on a joint request by Amgen and Shilpa, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Shilpa's apremilast product during the term of the '638, '101 and '854 Patents, unless authorized pursuant to a confidential settlement agreement. On January 26, 2021, based on a joint request by Amgen and Actavis, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Actavis' apremilast product during the term of the '940, '516, '638, '302, '536, '717, '330, '854 and '541 Patents, unless authorized pursuant to a confidential settlement agreement. On March 24, 2021, based on a joint request by Amgen and Prinston, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Prinston's apremilast product during the term of the '638 and '541 Patents, unless authorized pursuant to a confidential settlement agreement. On April 6, 2021, based on a joint request by Amgen and Aurobindo, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Aurobindo's apremilast product during the term of the '940, '516, '638, '302, '101, '536, '717, '243, '330, '854 and '541 Patents, unless authorized pursuant to a confidential settlement agreement.

On May 5, 2021, based on a joint request by Amgen and Cipla, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Cipla's apremilast product during the term of the '940, '638, '302, '536, '330 and '541 Patents, unless authorized pursuant to a confidential settlement agreement. On May 14, 2021, based on a joint request by Amgen and Torrent, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Torrent's apremilast product during the term of the '101, '638, '854 and '541 Patents, unless authorized pursuant to a confidential settlement agreement. On May 19, 2021, based on a joint request by Amgen and Alkem, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Alkem's apremilast product during the term of the '940, '638, '302, '536, '330 and '541 Patents, unless authorized pursuant to a confidential settlement agreement. On May 25, 2021, based on a joint request by Amgen and MSN, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of MSN's apremilast product during the term of the '940, '638, '302, '536, '330 and '541 Patents, unless authorized pursuant to a confidential settlement agreement. On June 11, 2021, based on a joint request by Amgen and Pharmascience, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Pharmascience's apremilast product during the term of the '243, '940, '638, '302, '101, '536, '330 and '541 Patents, unless authorized pursuant to a confidential settlement agreement. On June 17, 2021, based on a joint request by Amgen and DRL, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of DRL's apremilast product during the term of the '638, '101, '536 and '541 Patents, unless authorized pursuant to a confidential settlement agreement.

Trial on the consolidated patent infringement action against Sandoz and Zydus was held at the New Jersey District Court from June 14 to 25, 2021, with closing arguments on July 28, 2021.

On September 28, 2021, consistent with its September 20, 2021 opinion and order, the New Jersey District Court entered final judgment in favor of Amgen and against Zydus with respect to claims 3 and 6 of the '638 Patent, claim 6 of the '536 Patent and claims 2 and 27 of the '283 Patent; and final judgment in favor of Zydus and against Amgen with respect to claims 1 and 15 of the '101 Patent and claims 2, 19 and 21 of the '541 Patent. The final judgment ordered that the effective date of any final approval by the FDA of Zydus's ANDA must be after expiration of the three infringed patents (the '638, '536 and '283 Patents) and any regulatory exclusivity to which Amgen may become entitled. The final judgment also includes an injunction prohibiting Zydus from making, using, offering to sell, or selling in the United States, or importing into the United States, Zydus's generic apremilast products during the term of the three infringed patents. On October 27, 2021, Zydus filed a notice of appeal to the Federal Circuit Court with respect to the '638 Patent. On October 28, 2021, Amgen filed a notice of appeal to the Federal Circuit Court.

On October 12, 2021, the New Jersey District Court also entered final judgment in favor of Amgen and against Sandoz with respect to claims 3 and 6 of the '638 Patent, claim 6 of the '536 Patent and claims 1 and 15 of the '101 Patent; and final judgment in favor of Sandoz and against Amgen with respect to claims 2, 19 and 21 of the '541 Patent. The final judgment ordered that the effective date of any final approval by the FDA of Sandoz's ANDA must be after expiration of the three infringed patents (the '638, '536 and '101 Patents) and any regulatory exclusivity to which Amgen may become entitled. The final judgment also includes an injunction prohibiting Sandoz from making, using, offering to sell, or selling in the United States, or importing into the United States, Sandoz's generic apremilast products during the term of the three infringed patents. On November 9, 2021, Sandoz filed a notice of appeal to the Federal Circuit Court with respect to the '638 and '101 Patents. On November 10, 2021, Amgen filed a notice of appeal to the Federal Circuit Court.

Oral argument for Amgen's, Sandoz's and Zydus' appeals was held on February 8, 2023.

Amgen Inc. v. Apotex Inc.

On June 14, 2022, Amgen filed a lawsuit in the New Jersey District Court against Apotex Inc. (Apotex) for infringement of the '638 Patent, the '854 Patent and the '541 Patent. This lawsuit was based on Apotex's submission of an ANDA seeking FDA approval to market a generic version of Otezla and seeks an order of the New Jersey District Court making any FDA approval of Apotex's ANDA effective no earlier than the expiration of the applicable patents.

On October 14, 2022, Apotex filed its answer, disputing infringement and/or validity of the patents-in-suit. Along with its answer, Apotex also filed declaratory judgment counterclaims asserting that the patents-in-suit are not infringed and/or are invalid.

On January 20, 2023, based on a joint request by Amgen and Apotex, the New Jersey District Court entered a consent judgment and injunction prohibiting the making, using, selling, offering to sell, or importing of Apotex's apremilast product during the term of the '638, '854, and '541 Patents, unless authorized pursuant to a confidential settlement agreement.

Repatha Patent Litigation

Amgen Inc., et al. v. Sanofi, et al.

In October 2014, Amgen initiated a series of lawsuits that were consolidated by the U.S. District Court for the District of Delaware (Delaware District Court) in December 2014 into a single case against Sanofi, Sanofi-Aventis U.S. LLC and Aventisub LLC, formerly doing business as Aventis Pharmaceuticals Inc. (collectively, Sanofi) and Regeneron Pharmaceuticals, Inc. (Regeneron), addressing seven of our patents: U.S. Patent Nos. 8,563,698; 8,829,165 (the '165 Patent); 8,859,741 (the '741 Patent); 8,871,913; 8,871,914; 8,883,983; and 8,889,834. These patents describe and claim monoclonal antibodies to PCSK9. By its complaints, Amgen seeks an injunction to prevent the infringing manufacture, use and sale of Sanofi and Regeneron's alirocumab, a monoclonal antibody targeting PCSK9. In January 2016, the Delaware District Court granted Amgen's motion to amend the complaint to add its affiliates, Amgen Manufacturing, Limited and Amgen USA Inc., as plaintiffs and to add the allegation that Sanofi and Regeneron's infringement of Amgen's patents is willful.

In February 2016, the Delaware District Court entered a stipulated order finding alirocumab and the drug product containing it, PRALUENT infringe certain of Amgen's patents, including claims 2, 7, 9, 15, 19 and 29 of the '165 Patent and claim 7 of the '741 Patent. In March 2016, the Delaware District Court entered judgment in favor of Amgen following a five-day jury trial and a unanimous jury verdict that these patent claims are all valid. In January 2017, the Delaware District Court denied Sanofi and Regeneron's posttrial motions seeking a new trial and for judgment as a matter of law, and granted Amgen's motion for a permanent injunction prohibiting the infringing manufacture, use, sale, offer for sale or import of alirocumab in the United States. Sanofi and Regeneron filed an appeal of the judgment and the permanent injunction to the Federal Circuit Court. In February 2017, following a motion by Sanofi and Regeneron, the Federal Circuit Court entered a stay of the permanent injunction during the pendency of the appeal. In October 2017, the Federal Circuit Court reversed in part the judgment of the Delaware District Court and remanded for a new trial two of the patent validity defenses (lack of written description and enablement of the claimed inventions), and affirmed the Delaware District Court's judgment of infringement of claims 2, 7, 9, 15, 19 and 29 of the '165 Patent and claim 7 of the '741 Patent and the third patent validity defense (finding that the claimed inventions were not obvious to a person of ordinary skill in the field of the patents).

In March 2018, the Federal Circuit Court issued a mandate returning the case to the Delaware District Court for a new trial on two of Sanofi and Regeneron's challenges to the validity of our patents (lack of written description and enablement of the claimed inventions) and for further consideration of a permanent injunction. In July 2018, Amgen filed a petition for certiorari with the U.S. Supreme Court seeking review of the Federal Circuit Court's conclusion that the judgment affirming the validity of Amgen's patents was based, in part, on an erroneous application of the law of written description. On January 7, 2019, the U.S. Supreme Court denied Amgen's petition for certiorari. On remand, the Delaware District Court scheduled a new trial on Sanofi and Regeneron's challenges to the validity of our patents based on lack of written description and enablement of the claimed inventions. The Delaware District Court also entered judgment on the pleadings for Sanofi and Regeneron on Amgen's claim of willful infringement.

On February 25, 2019, a jury of the Delaware District Court again unanimously upheld the validity of claims 19 and 29 of the '165 Patent and claim 7 of the '741 Patent. The jury also found that claims 7 and 15 of the '165 Patent meet the enablement requirement, but are invalid for failure to meet the written description requirement. On March 18, 2019, Sanofi and Regeneron filed posttrial motions seeking to reverse the jury verdict against them or for a new trial, and Amgen filed a motion for a permanent injunction. On August 28, 2019, the Delaware District Court ruled on the posttrial motions, denying Sanofi and Regeneron's request for a new trial and their request to reverse the jury verdict that the '165 Patent and the '741 Patent provide written description support for the claimed inventions. The Delaware District Court also ruled as a matter of law that claims 19 and 29 of the '165 Patent and claim 7 of the '741 Patent are invalid for failing to meet the enablement requirement, overturning the jury verdict.

On October 23, 2019, Amgen filed a notice of appeal to the Federal Circuit Court and based on the subsequent hearing, on February 11, 2021 the Federal Circuit Court issued a decision affirming the Delaware District Court's ruling. Amgen filed a petition for rehearing en banc which was denied on June 21, 2021. On November 18, 2021, Amgen filed a petition for writ of certiorari with the U.S. Supreme Court seeking review of the invalidation of claims 19 and 29 of the '165 Patent and claim 7 of the '741 Patent as lacking an enabling disclosure of the invention.

On November 4, 2022, the U.S. Supreme Court granted review on Amgen's petition for certiorari on the question of whether the appropriate standard was applied by the lower courts in invalidating claims 19 and 29 of the '165 Patent and claim 7 of the '741 Patent as lacking an enabling disclosure of the invention. Amgen filed its opening brief on December 27, 2022. On February 3, 2023, Sanofi and Regeneron filed a brief in response. Oral argument before the U.S. Supreme Court is scheduled for March 27, 2023.

Patent Disputes in the International Region

We are involved in and expect future involvement in additional disputes regarding our PCSK9 patents in other jurisdictions and regions. This includes matters filed against us and that we have filed in Germany, Spain and Japan.

In February 2016, the European Patent Office (EPO) granted European Patent No. 2,215,124 (EP 2,215,124) to Amgen. This patent describes and claims monoclonal antibodies to PCSK9 and methods of treatment and Sanofi filed an opposition to the patent in the EPO seeking to invalidate it. In November 2016, Sanofi-Aventis Deutschland GmbH, Sanofi-Aventis Groupe S.A. and Sanofi Winthrop Industrie S.A. filed a joint opposition against Amgen's patent, and each of Lilly, Regeneron and Strawman Ltd. also filed oppositions to Amgen's patent. In November 2018, the EPO confirmed the validity of Amgen's EP 2,215,124, which was appealed to the Technical Board of Appeal (TBA). On October 29, 2020, the TBA upheld the validity of certain claims, including claims that protect Repatha, but ruled that broader claims encompassing PRALUENT were invalid. As a result of the TBA's decision, national litigations regarding PRALUENT in Europe are in the process of being resolved. In Germany, Sanofi-Aventis Deutschland GmbH and Regeneron have filed actions seeking damages arising from the provisional enforcement of an injunction against PRALUENT that was lifted after the TBA's October 29, 2020 ruling.

On March 23, 2022, Amgen filed counterclaims alleging that PRALUENT infringes Amgen's European Patent No. 2,641,917 (the '917 Patent). A EPO opposition to the '917 Patent, filed by Sanofi on February 5, 2021, is pending, and the hearing before the EPO's Opposition Division is scheduled for February 21, 2023.

On July 21, 2022, Sanofi Biotechnology SAS filed an action against Amgen GmbH and Amgen (Europe) B.V. before the Regional Court of Dusseldorf alleging that the marketing and sale of Repatha infringes European Patent No. 2,756,004 (the EP'004 Patent), seeking infringement damages and injunctive relief. The EP'004 Patent is currently in opposition proceedings, initiated by Amgen and an anonymous third party, before the EPO. A hearing before the Opposition Division of the EPO was held on June 8 and 9, 2022, and on August 16, 2022, the Opposition Division issued a written decision upholding the validity of the EP'004 Patent claims at issue, with narrowing amendments. Proceedings before the TBA commenced on August 17, 2022. On November 22, 2022, Amgen filed Grounds of Appeal before the TBA, and on December 30, 2022, Regeneron filed Grounds of Appeal before the TBA. On January 23, 2023, the TBA invited Amgen to file any response to Regeneron's Grounds of Appeal by May 23, 2023.

On April 24, 2020, the Supreme Court of Japan declined to hear Sanofi K.K.'s appeals making final the Japanese High Court's decisions that PRALUENT infringes Amgen's valid patent rights in Japan. On June 24, 2020, Amgen filed written answers to the invalidity trials initiated by Regeneron on February 12, 2020 before the Japan Patent Office seeking to invalidate Amgen's Japanese patents that were previously held infringed by PRALUENT and valid over challenges filed by Sanofi K.K. On April 15, 2021, the Japanese Patent Office dismissed Regeneron's invalidity trials, and in August 2021 Regeneron appealed the decisions to the Japanese High Court. On January 26, 2023, the Japanese High Court found Amgen's patent claims invalid for lacking adequate support. The decision is subject to appeal to the Japanese Supreme Court. Damages proceedings against Sanofi K.K. are ongoing before the Tokyo District Court, where Sanofi K.K. has initiated new validity challenges to Amgen patents in Japan.

ABP 654 (ustekinumab) Patent Litigation

Janssen Biotech, Inc. v. Amgen Inc.

On November 29, 2022, Janssen filed a lawsuit in the Delaware District Court alleging Amgen's infringement of two patents by Amgen's submission of an application for FDA licensure of ABP 654, Amgen's biosimilar version of Janssen's STELARA (ustekinumab) and also seeking declaratory judgment of infringement of the same two patents.

Antitrust Class Action

Sensipar Antitrust Class Actions

From February to April 2019, four plaintiffs filed putative class action lawsuits against Amgen and various entities affiliated with Teva Pharmaceuticals USA, Inc. (Teva) alleging anticompetitive conduct in connection with settlements between Amgen and manufacturers of generic cinacalcet product. two of those actions were brought in the Delaware District Court, captioned *UFCW Local 1500 Welfare Fund v. Amgen Inc., et al.* (February 21, 2019) (Local 1500) and *Cesar Castillo, Inc. v. Amgen Inc., et al.* (February 26, 2019) (Castillo). The third action was brought in the New Jersey District Court, captioned *Teamsters Local 237 Welfare Fund, et al. v. Amgen Inc., et al.* (March 14, 2019) (Local 237) and the fourth action was brought in the U.S. District Court for the Eastern District of Pennsylvania (the Eastern Pennsylvania District Court), captioned *KPH Healthcare Services, Inc. a/k/a Kinney Drugs, Inc. v. Amgen Inc., et al* (April 10, 2019) (KPH). Each of the lawsuits is brought on behalf of a putative class of direct or indirect purchasers of Sensipar and alleges that the plaintiffs have overpaid for Sensipar as a result of Amgen's conduct that allegedly improperly delayed market entry by manufacturers of generic cinacalcet products.

The lawsuits focus predominantly on the settlement among Amgen, Watson Laboratories, Inc. (Watson) and Teva of the parties' patent infringement litigation. Each of the lawsuits seeks, among other things, treble damages, equitable relief and attorneys' fees and costs. On April 10, 2019, the plaintiff in the KPH lawsuit filed a motion seeking to have the four lawsuits consolidated and designated as a multidistrict litigation (MDL) in the Eastern Pennsylvania District Court, and the plaintiff in the Local 1500 lawsuit filed a motion seeking to have the four lawsuits, along with *Cipla Ltd. v. Amgen Inc.*, consolidated and designated as an MDL in the Delaware District Court.

On July 31, 2019, the MDL panel entered an order consolidating in the Delaware District Court the four class action lawsuits. On September 13, 2019, the plaintiffs filed amended complaints, and on October 15, 2019, Amgen filed its motion to dismiss both the direct purchaser plaintiffs' consolidated class action complaint and the indirect purchaser end payer plaintiffs' complaint. On December 6, 2019, the plaintiffs responded to Amgen's motion to dismiss and, on January 10, 2020, Amgen filed its response. On February 6, 2020, the motions in the class action lawsuits were transferred to the U.S. Magistrate Judge for the District of Delaware (Magistrate Judge) for a recommendation. The MDL panel certified its conditional transfer order on February 6, 2020 transferring the additional class action lawsuit brought in the U.S. District Court for the Southern District of Florida, captioned *MSP Recovery Claims v. Amgen Inc., et al.*, to the Delaware District Court.

On July 22, 2020, the Magistrate Judge issued a recommendation to the Delaware District Court that the claims against Amgen be dismissed but leave be given to plaintiffs to amend their complaints. On August 5, 2020, the plaintiffs filed objections to the Magistrate Judge's report and recommendation. On August 19, 2020, Amgen filed a response to the plaintiffs' objections. On November 30, 2020, the District Court adopted the Magistrate Judge's recommendation in part and denied it in part, denying Amgen's motion to dismiss on the grounds that plaintiffs adequately alleged reverse payment claims but granted Amgen's motion to dismiss with respect to the other Federal antitrust claims. On December 23, 2020, Teva, Watson and Actavis filed a motion for interlocutory appeal and for a stay pending appeal and Amgen filed its joinder (the 1292 Motion). On January 5, 2021, a joint status report was filed advising the Delaware District Court that the defendants are still considering whether to withdraw the 1292 Motion and plaintiffs' offer to stay discovery, pending further rulings on motions to dismiss the amended complaints. On January 19, 2021, a joint status report was filed pursuant to the Delaware District Court's January 6, 2021 order along with a stipulation to defer the 1292 Motion until after rulings on the amended complaints.

On February 16, 2021, the plaintiffs in the antitrust class action lawsuit brought on behalf of putative classes of direct or indirect purchasers of Sensipar filed their amended complaints. On March 4, 2021, a stipulation and order regarding the filing of a second amended complaint were filed to add another plaintiff: Teamsters Western Region & Local 177 Health Care Fund. On March 17, 2021, a defendant, MSP Recovery Claims, Series LLC, filed its notice of voluntary dismissal. On March 30, 2021, the remaining defendants, including Amgen, filed their motions to dismiss the second amended complaint.

On April 27, 2021, plaintiffs filed their oppositions to defendants' (including Amgen's) motion to dismiss, and defendants' reply was filed on May 25, 2021. A hearing on defendants' motion to dismiss was held in the Delaware District Court on July 13, 2021.

On March 11, 2022, the Delaware District Court granted defendants' (including Amgen's) motion to dismiss except as to the reverse payment claim and various state law claims from ten of the states in which plaintiffs reside. On May 11, 2022, the parties filed motions asking permission to seek interlocutory appeal. The plaintiffs did not oppose Amgen's motion and instead argued all issues should be appealed at this time. Amgen filed its opposition to plaintiffs' motion on June 10, 2022, and reply briefs were filed on June 24, 2022.

Regeneron Pharmaceuticals, Inc. Antitrust Action

On May 27, 2022, Regeneron Pharmaceuticals, Inc. (Regeneron) filed suit against Amgen in the Delaware District Court for federal and state antitrust and unfair competition violations and tortious interference with prospective business relations. Regeneron alleges that Amgen's sales contracting practices for Repatha, ENBREL and Otezla with key insurers, third-party payers and PBMs have harmed the sales of its product PRALUENT and focuses on two primary arguments: that Amgen improperly bundled sales of Repatha with ENBREL, Otezla and potentially other products and sought exclusive or de facto exclusive formulary positioning for Repatha. Amgen's initial responsive pleading, a motion to dismiss, was filed on August 1, 2022.

On August 11, 2022, Amgen moved to stay the case pending the ultimate decision on the merits of the ongoing patent litigation between Amgen and Regeneron in *Amgen Inc., et al. v. Sanofi, et al.* On January 6, 2023, the Delaware District Court heard oral argument on the motion to stay and the motion to dismiss.

U.S. Tax Litigation.

Amgen Inc. & Subsidiaries v. Commissioner of Internal Revenue

See Note 6, Income taxes, for discussion of the IRS tax dispute and the Company's petitions in the U.S. Tax Court.

ChemoCentryx, Inc. Securities Matters

On May 5 and June 8 of 2021, ChemoCentryx and its Chief Executive Officer were named as defendants in two putative shareholder class actions filed in the U.S. District Court for the Northern District of California (Northern District Court of California). These cases were consolidated into *Homyk v. ChemoCentryx, Inc.* in which the plaintiffs allege violations of Sections 10(b) and 20(a) of the Securities Exchange Act in connection with statements regarding the New Drug Application for TAVNEOS and the underlying Phase 3 clinical trial, seeking an award of damages, interest and attorneys' fees. On March 28, 2022, the plaintiffs filed their consolidated amended complaint, and on May 19, 2022, ChemoCentryx moved to dismiss these claims.

On January 25, 2022, the Board of Directors and certain of ChemoCentryx's officers were named as defendants in a putative shareholder derivative action filed in the Northern District Court of California, *Napoli v. Schall*, and on March 11, 2022, the Northern District Court of California stayed the action until judgment is entered in the *Homyk v. ChemoCentryx, Inc.* action. On December 5, 2022 the plaintiffs in *Napoli* filed a Notice of Voluntary Dismissal, and on December 22, 2022, the Court ordered the dismissal of the case.

Commitments – U.S. repatriation tax

Under the 2017 Tax Act, we elected to pay in eight annual installments the repatriation tax related primarily to prior indefinitely invested earnings of our foreign operations. The following table summarizes the remaining scheduled repatriation tax payments as of December 31, 2022 (in millions):

	Amounts
2023	\$ 1,100
2024	1,467
2025	1,834
Total remaining U.S. repatriation tax commitments	<u><u>\$ 4,401</u></u>

SCHEDULE II

AMGEN INC.
VALUATION AND QUALIFYING ACCOUNTS
Years ended December 31, 2022, 2021 and 2020
(In millions)

Allowance for doubtful accounts	Balance at beginning of period	Additions charged to costs and expenses	Other additions	Deductions	Balance at end of period
Year ended December 31, 2022	\$ 26	\$ —	\$ —	\$ (4)	\$ 22
Year ended December 31, 2021	\$ 32	\$ —	\$ —	\$ (6)	\$ 26
Year ended December 31, 2020	\$ 26	\$ 8	\$ —	\$ (2)	\$ 32