# Item 3. Key Information

## 3.A [Reserved]

## 3.B Capitalization and indebtedness

Not applicable.

## 3.C Reasons for the offer and use of proceeds

Not applicable.

## 3.D Risk factors

Our businesses face significant risks and uncertainties. You should carefully consider all of the information set forth in this Annual Report and in other documents we file with or furnish to the SEC, including the following risk factors, before deciding to invest in or to maintain an investment in any Novartis securities. Our business, as well as our reputation, financial condition, results of operations, and share price, could be materially adversely affected by any of these risks, as well as other risks and uncertainties not currently known to us or not currently considered material.

### Strategic risks

#### Key products and commercial priorities

***Risk description***
Failure to deliver key commercial priorities and successfully launch new products

***Context and potential impact***
Our ability to maintain and grow our business and to replace revenue and income lost to generic, biosimilar and other competition depends heavily on the commercial success of our new or existing key products. The commercial success of these products could be impacted at any time by a number of factors, including pressure from new or existing competitive products, changes in the prescribing habits of healthcare professionals, unexpected side effects or safety signals, supply chain issues or other product shortages, pricing pressure, regulatory proceedings, changes in labeling, loss of intellectual property protection, and global pandemics. In addition, our revenue and margins could be significantly impacted by the timing and rate of commercial acceptance of new products.

Healthcare professionals, patients and payers may choose competitor products instead of ours for various reasons, including if they perceive them to be better in terms of efficacy, safety, cost, convenience or other reasons. The commercial success of our key products and launches in the face of increasing competition requires significant attention and management focus. Such competition could significantly affect the revenue from our products and our results of operations. This impact could also be compounded to the extent that such competition results in us making significant additional investments in research and development, marketing or sales.

#### Research and development

***Risk description***
Failure to successfully prioritize, integrate and execute our research and development programs for new products or new indications for existing products, given our focus on innovative medicines

***Context and potential impact***
We engage in extensive and costly research and development activities, both through our own internal resources and through collaborations with third parties, in an effort to identify and develop new products and new indications for existing products that address unmet and changing medical needs, and that are commercially successful. Our ability to grow our business and our product pipeline; to replace sales lost due to branded competition, entry of generics, or other reasons; and to bring to market products that take advantage of new and potentially disruptive technologies, including cell, gene and radioligand therapies, depends in significant part on the success of these efforts.

Failure to successfully develop our pipeline products is typically the result of the inherent uncertainty of science, suboptimal internal execution, or both. Key elements of internal execution include our ability to prioritize our investments on our highest potential value assets, optimize the transition of assets from research to

development, integrate externally acquired assets in an efficient way, and execute the steps in our drug development process that enable our assets to be approved and reimbursed in a timely manner to positively impact clinical practice. See also "Item 4. Information on the Company— Item 4.B Business overview—Innovative Medicines—Research and development" with regards to the research and development efforts of our Innovative Medicines Division.

Our new products must undergo intensive preclinical and clinical testing and are approved by means of a highly complex, lengthy, and expensive approval process that varies substantially from country to country and may have very specific requirements for the recruitment of patients for clinical trials. We face increasing and evolving regulatory approval and reimbursement requirements. If we fail to successfully progress late-stage assets and the core elements of drug development for key programs, this could have a negative impact on the development of our product pipeline, and ultimately on the success of our business and our financial results.

In addition, in the US it is becoming increasingly challenging to adequately recruit a sufficient number of US patients in clinical trials due to new and changing requirements for recruitment of patients into such trials. As a result, we may be unable to develop the necessary clinical evidence to support the desired indications and product profile for a particular disease that is needed to drive clinical adoption of our new products, and thereby achieve the full potential of our assets (also known as the "target product profile"). Similarly, the post-approval regulatory burden has also increased. These requirements make the maintenance of regulatory approvals for our products increasingly expensive, and further heighten the risk of recalls, product withdrawals, change to product specifications, loss of market share, and loss of revenue and profitability.

The clinical testing, regulatory processes and post-approval activities described above become more difficult during pandemics, such as the COVID-19 pandemic, as well as during periods of geopolitical and economic uncertainty. This is due to challenges related to recruiting, enrolling and treating patients in clinical trials, as well as ensuring the supply of trial materials. For a further description of the research and development of, and approval processes for, the products of our Innovative Medicines Division, see the sections headed "Research and development" and "Regulation" included in the description of our Innovative Medicines Division under "Item 4. Information on the Company—Item 4.B Business overview—Innovative Medicines."

Our Sandoz Division has made, and expects to continue to make, significant investments in the development of biotechnology-based, "biologic" medicines that are intended for sale as bioequivalent or "biosimilar" versions of currently marketed biotechnology products. While the development of such products is typically significantly less costly and complex than the development of the equivalent originator medicines, it is nonetheless significantly more costly and complex than that for typical small-molecule generic products. For more information about the research and development efforts of our Sandoz Division, see "Item 4. Information on the Company—Item 4.B Business overview— Sandoz—Development and registration." In addition, many countries do not yet have fully developed legislative or regulatory pathways to facilitate the development of biosimilars, and to permit their sale in such a way that they are readily substitutable alternatives to the originator product. Further delays or difficulties in the development or marketing of biosimilars could put at risk the significant investments that Sandoz has made, and will continue to make, in its Biopharmaceuticals business. Failure to successfully develop and market biosimilars could have a material adverse effect on the success of the Sandoz Division and the Group as a whole. For more information about the approval processes that must be followed to market Sandoz Division products, see "Item 4. Information on the Company—Item 4.B Business overview—Sandoz—Regulation."

Furthermore, our research and development activities must be conducted in an ethical and compliant manner. Among other things, we are concerned with patient safety (both pre- and post-product approval), data privacy, current Good Clinical Practices (cGCP) requirements, data integrity, the fair treatment of patients, diversity and inclusion in the recruitment of patients to clinical trials, and animal welfare. Should we fail to properly manage such issues, we risk injury to third parties, damage to our reputation, negative financial consequences as a result of potential claims for damages, sanctions and fines, and the potential that investments in research and development activities may not bring the expected benefits to the Group.

## Pricing, reimbursement and access

***Risk description***

Pricing and reimbursement pressure, including pricing transparency and access to healthcare

***Context and potential impact***

Our business has continuously experienced significant pressures on the pricing of our products and on our ability to obtain and maintain satisfactory rates of reimbursement for our products by governments, insurers and other payers. These pressures have many sources, including growth of healthcare costs as a percentage of gross domestic product; funding restrictions and policy changes; and public controversies, political debate, investigations and legal proceedings regarding pharmaceutical pricing. Pressures on pricing may negatively impact both our product pricing and the availability of our products.

In addition, we face numerous cost-containment measures imposed by governments and other payers. These include government-imposed industrywide price reductions, mandatory pricing systems, reference pricing systems, payers limiting access to treatments based on cost-benefit analyses, the importation of drugs from lower-cost countries to higher-cost countries, the shifting of the payment burden to patients through higher co-payments and co-pay accumulator programs, the limiting of physicians' ability to choose among competing medicines, the mandatory substitution of generic drugs for the patented equivalent, pressure on physicians to reduce the prescribing of patented prescription medicines, increasing pressure on intellectual property

protections, and growing requirements for increased transparency on pricing. For more information on price controls, see "Item 4. Information on the Company—Item 4.B Business overview—Innovative Medicines—Price controls."

Recent trends in the external environment may have an impact on the likelihood of these pricing and reimbursement pressures occurring. A worldwide slowdown in economic growth following the COVID-19 pandemic and the war in Ukraine (contributing to challenges such as high energy costs and inflation) has led to increased strain on fiscal budgets in many major economies. In addition, legislative developments such as those in the US (e.g., the Inflation Reduction Act) and in Europe (e.g., the EU Joint Health Technology Assessment) pose potential further pressures on pricing and timelines for reimbursement in these countries. These external factors may materially affect our ability to achieve value-based prices; to achieve and maintain an acceptable return on our investments in the research and development of our products; and may impact our ability to research and develop new products.

In addition, our Sandoz Division has faced and may continue to face intense competition from other generic and biosimilar pharmaceutical companies that aggressively compete for market share, including through significant price competition. Such competitive actions may increase the costs and risks associated with our efforts to introduce and market generic and biosimilar products, may delay the introduction or marketing of such products, and may further limit the prices at which we are able to sell these products. In particular, in the US in past years, industrywide price competition among generic pharmaceutical companies and consolidation of buyers caused significant declines in sales and profits of Sandoz.

## Alliances, acquisitions and divestments

***Risk description***

Failure to identify, execute, and/or realize the expected benefits from our external business opportunities

***Context and potential impact***

As part of our strategy, from time to time we acquire and divest products or entire businesses and enter into strategic alliances and collaborations. For example, in February 2022, we closed the acquisition of Gyroscope Therapeutics. This strategy is partly dependent on our ability to identify strategic external business opportunities and to close transactions with third parties on acceptable terms.

Once the terms of a strategic transaction have been agreed with a third party, we may not be able to complete the transaction in a timely manner or at all, nor can we be sure that pre-transaction due diligence will identify all possible issues that might arise during and after the transaction. Our efforts on such transactions can also divert management's attention from our existing businesses.

After a transaction is closed, efforts to develop and market acquired or licensed products, to integrate the acquired business or to achieve expected synergies may fail or may not fully meet expectations. This may occur due to difficulties in retaining key personnel, customers and suppliers; failure to obtain marketing approval or reimbursement within expected time frames or at all; differences in corporate culture, standards, controls, processes and policies; or other factors. Transactions can also result in liabilities being incurred that were not known at the time of acquisition, or the creation of tax or accounting issues. Acquired businesses are not always in full compliance with legal, regulatory or Novartis standards, including, for example, Current Good Manufacturing Practices (cGMP) or cGCP standards, which can be costly and time-consuming to remediate. Furthermore, our strategic alliances and collaborations with third parties may not achieve their intended goals and objectives within expected time frames, or at all.

Similarly, we cannot ensure that we will be able to successfully divest or spin off businesses or other assets that we have identified for this purpose, or that any completed divestment or spin-off will achieve the expected strategic benefits, operational efficiencies or opportunities, or that the divestment or spin-off will ultimately maximize shareholder value.

## Intellectual property

***Risk description***

Expiry, assertion or loss of intellectual property protection

***Context and potential impact***

Many products of our Innovative Medicines Division are protected by intellectual property rights, which may provide us with exclusive rights to market those products for a limited time, and to enable our purpose of reimagining medicine by sustainably financing our research and development. However, the strength and duration of those rights can vary significantly from product to product and from country to country, and they may be successfully challenged by third parties or governmental authorities.

Loss of intellectual property protection and the introduction of generic or biosimilar competition for a patented branded medicine in a country typically result in a significant and rapid reduction in net sales and operating income for the branded product. Such competition can occur after successful challenges to intellectual property rights or the regular expiration of the patent term or other intellectual property rights. Such competition can also result from the entry of generic or biosimilar versions of another medicine in the same therapeutic class as one of our drugs or in a competing therapeutic class, from a Declaration of Public Interest or the compulsory licensing of our intellectual property by governmental authorities, or as a result of a general weakening of intellectual property and governing laws in certain countries around the world. In addition, generic or biosimilar manufacturers may sometimes conduct so-called "launches at risk" of products that are still under legal challenge for infringement, or whose patents are still under legal challenge for validity, before final resolution of legal proceedings.

We also rely in all aspects of our businesses on unpatented proprietary technology, know-how, trade secrets,

and other confidential information, which we seek to protect through various measures, including confidentiality agreements with licensees, employees, third-party collaborators and consultants who may have had access to such information. If these agreements are breached or our other protective measures should fail, then our contractual or other remedies may not be adequate to cover our losses.

We may also be subject to assertions of intellectual property rights against our innovative medicines by third parties. If successful, these actions may involve payment of future royalties or damages, for example for patent infringement, and may also involve injunctive relief requiring the removal of one or more dosage strengths of a product from the market (or removal of a therapeutic indication from the product's approved labeling) for some period of time or throughout the life of the asserted intellectual property right. Such damages or such an injunction may have a material impact on our operating income and net sales.

In any given year, we may experience a potentially significant impact on our net sales from products that have already lost intellectual property protections, as well as products that may lose protection during the year. Because we may have substantially reduced marketing and research and development expenses related to products that are in their final years of exclusivity, the initial loss of protection for a product during a given year could also have an impact on our operating income for that year in an amount corresponding to a significant portion of the product's lost sales. The magnitude of the impact of generic or biosimilar competition on our income could depend on a number of factors. These include, with respect to income in a given year, the time of year at which the generic or biosimilar competitor is launched; the ease or difficulty of manufacturing a competitor product and obtaining regulatory approval to market it; the number of generic or biosimilar competitor products approved, including whether, in the US, a single competitor is granted an exclusive marketing period; whether an authorized generic is launched; the geographies in which generic or biosimilar competitor products are approved, including the strength of the market for generic or biosimilar pharmaceutical products in such geographies, and the comparative profitability of branded pharmaceutical products in such geographies; and our ability to successfully develop and launch new products for patients that may also offset the income lost to generic or biosimilar competition. For more information on the patent and generic competition status of our Innovative Medicines Division products, see "Item 4. Information on the Company—Item 4.B Business overview—Innovative Medicines—Intellectual property."

## Strategic transformations

***Risk description***

Failure to meet organizational transformation programs objectives and/or unintended adverse impacts on our business

***Context and potential impact***

From time to time, we reassess our business organization to ensure we have the optimal structure with which to execute our strategy. In April 2022, we announced a new organizational structure and operating model designed to support our innovation, growth, and productivity ambitions as a focused medicines company. See "Item 4. Information on the Company—Item 4.B Overview."

In addition, in October 2021 we announced the commencement of a strategic review of our Sandoz Division. After exploring all options, ranging from retaining the business to separation, on August 25, 2022, we announced our intention to separate our Sandoz Division into a new publicly traded standalone company, by way of a 100% spin-off in order to maximize shareholder value. See "Item 4. Information on the Company—Item 4.B Sandoz."

Our inability to successfully implement our new organizational structure and operating model or to successfully complete the spin-off of our Sandoz Division could have a material adverse effect on the success of the Group as a whole, and could have a material adverse effect on our results of operations and financial condition. The overall extent and pace of these organizational changes, and the additional workload and complexity for our employees in some areas, could trigger uncertainty, stress and fatigue among employees, potentially resulting in instability within the organization that could lead to failure of these organizational changes to succeed or to achieve the desired benefits. As a result, the expected benefits of these organizational changes may never be fully realized or may take longer to realize than expected.

## Environmental, social and governance matters

***Risk description***

Failure to meet environmental, social and governance expectations

***Context and potential impact***

Increasingly, in addition to financial results, companies are being judged by performance on a variety of environmental, social and governance (ESG) matters, which can contribute to the long-term sustainability of our company's performance. An inability to successfully perform on ESG matters and to meet societal expectations can result in negative impacts on our recruitment, retention, operations, financial results, reputation, and share price.

Topics related to large societal changes such as social inequity, access to medicines and climate change are increasingly important to a wide range of our stakeholders. For example, a variety of organizations measure the performance of companies on ESG topics, and the results of these assessments are widely publicized. In addition, investments in funds that specialize in companies that perform well in such assessments are increasingly popular, and major institutional investors have publicly emphasized the importance of such ESG measures in making their investment decisions. Our actions related

to ESG topics may in the long-term therefore impact our operations and ability to achieve our strategic goals, and ultimately could have a potential negative impact on the value of Novartis. For this reason, the role of our Board of Directors and executive officers in supervising various sustainability issues is becoming increasingly important.

We actively manage a broad range of ESG matters, taking into consideration their expected impact on the sustainability of our business over time, and the potential impact of our business on society and the environment. We have created a Sustainability & ESG Office, which, in coordination with the ESG Committee of the Executive Committee of Novartis, is tasked with developing our ESG strategy and tracking our performance against our ESG targets. However, considering investors' increasing focus on ESG matters, the fast pace of change of external expectations, and a range of upcoming regulations, there can be no certainty that we will manage such issues successfully, that the ESG standards we currently use to measure our performance against will remain the same, or that we will successfully meet society or investors' expectations.

## Operational risks

### Cybersecurity and IT systems

***Risk description***
Cybersecurity breaches, data loss and catastrophic loss of IT systems

***Context and potential impact***
We are heavily dependent on critical, complex and interdependent information technology (IT) systems, including internet-based systems to support our business processes. We have also outsourced significant parts of our IT infrastructure to third-party providers, and we currently use these providers to perform business-critical IT services for us. We are therefore vulnerable to cybersecurity attacks and incidents on such networks and systems, whether our own or those of the third-party providers we contract, and we have experienced and may in the future experience such cybersecurity threats and attacks. Cybersecurity threats and attacks take many forms, and the size, age and complexity of our IT systems make them potentially vulnerable to external and internal security threats; outages; malicious intrusions and attacks; cybercrimes, including state-sponsored cybercrimes; malware; misplaced data, lost data or data errors; programming or human errors; or other similar events. In the context of the COVID-19 pandemic, the risk of such threats and attacks has increased, as virtual and remote working has become more widely used, and sensitive data is accessed by employees working in less secure, home-based environments. In addition, due to our reliance on third-party providers, we have experienced and may in the future experience interruptions, delays or outages in IT service availability due to a variety of factors outside of our control, including technical failures, natural disasters, fraud, or security attacks experienced by or caused by third-party providers. Interruptions in the service provided by these third parties could affect our ability to perform critical tasks.

A significant information security or other event, such as a disruption or loss of availability of one or more of our IT systems, whether managed by us or a third-party service provider, has previously and could in the future negatively impact important business processes, such as the conduct of scientific research and clinical trials, the submission of data and information to health authorities, our manufacturing and supply chain processes, our shipments to customers, our compliance with legal obligations, and communication between employees and with third parties. IT issues have previously led to, and could in the future lead to, the compromise of trade secrets or other intellectual property that could be sold and used by competitors to accelerate the development or manufacturing of competing products; to the compromise of personal financial and health information; and to the compromise of IT security data such as usernames, passwords and encryption keys, as well as security strategies and information about network infrastructure, which could allow unauthorized parties to gain access to additional systems or data. In addition, malfunctions in software or medical devices that make significant use of IT could lead to a risk of direct harm to patients.

Although we have experienced some of the events described above, to date they have not had a material impact on our operations. Nonetheless, the occurrence of any of the events described above in the future could disrupt our business operations and result in enforcement actions or liability, including potential government fines and penalties, claims for damages, and shareholder litigation or allegations that the public health, or the health of individuals, has been harmed.

Any significant events of this type could require us to expend significant resources beyond those we already invest to remediate any damage, to further modify or enhance our protective measures, and to enable the continuity of our business.

### Fragmented IT landscape and strategic technology programs implementation

***Risk description***
Failure to address fragmented business processes, unclear data ownership, and IT applications and infrastructure nearing their end-of-life, may disrupt our core business processes

***Context and potential impact***
We rely on various IT systems to operate our complex global business. Historically, while highly overlapping data strategy and architectural needs exist across our businesses, in the past we built distinct solutions across both prior business units and our various geographies, which have led to a fragmented and complex landscape of IT systems. Additionally, several of our current IT systems are reaching the end of their useful life, which, together with our fragmented IT landscape, may cause disruptions to our operational stability. As a result, we started to implement several companywide IT programs with a view toward replacing and consolidating outdated IT systems. For example, we have completed the conceptual design phase and started to build a new global Enterprise Resource Planning (ERP) system that seeks to simplify, standardize and digitize processes in our

commercial, finance and operations functions, thereby helping to ensure efficient and compliant business operations across our businesses and geographies, as well as the availability of high-quality data necessary to aid our decision-making. We expect the first implementation of our new ERP system to begin in the first quarter of 2024, with full implementation by 2028. In addition, we are also implementing other IT projects, seeking to simplify and standardize our processes, systems and tools, and create a unified data marketplace. Implementation and operation of the new ERP system and other IT projects involves certain risks, including a failure of the new ERP system and other IT projects to operate as expected, a failure to properly integrate with other systems we use, potential loss of data or information, compliance issues, or cost overruns and delays. Any disruptions or malfunctions of the new ERP system and other IT projects could cause critical information to be delayed, lost, defective, corrupted, or rendered inadequate or inaccessible, which could negatively impact our operations and the effectiveness of our internal controls.

### Talent management

***Risk description***

Inability to attract, retain and motivate qualified individuals in key roles and markets

***Context and potential impact***

We rely on attracting and retaining a diverse, highly skilled workforce across our businesses and functions to achieve our business objectives. If we are unable to sustain our supply of key personnel – including senior members of our scientific and management teams, high-quality researchers and development specialists and skilled employees in key markets – our ability to achieve our major business objectives may be adversely affected. In addition, our brand and reputation could be negatively impacted, and the diversity of our workforce may decline.

The market for skilled talent has become increasingly competitive, and we anticipate this trend will persist long-term. We face a challenge to attract and retain top talent in several areas, including biology, chemistry, clinical development, drug manufacturing, IT, oncology, and advanced therapy platforms (i.e., gene and cell therapy, radioligand therapy and "xRNA"). In addition, many biotechnology companies have received significant inflows of capital and are not only competing with us to attract the same skilled talent but are also aggressively pursuing our experienced talent.

In recent years, we have adopted new ways of working that include location flexibility and increasingly recruiting from a global pool of talent. However, the success of our business continues to depend on having employees who possess local knowledge of, and experience in, our key markets. The external talent supply is especially limited in many of the geographies that are expected to be sources of growth for Novartis. In the United States, China and several other markets, the geographic mobility of talent is decreasing, as they find ample career opportunities available closer to home.

In addition, in April 2022 we announced a new, integrated organizational structure and operating model. The corporate reorganization undertaken to implement this new organizational structure has resulted in significant redundancies and senior leadership changes that may reduce morale, increase employee distraction and prompt higher voluntary turnover, any of which could negatively impact our competitiveness and ability to achieve strategic objectives. For more information on this new organizational structure see "Item 4. Information on the Company—Item 4.B Overview."

The risks associated with the challenging external talent market and the implementation of our new organizational structure will be exacerbated if we are unable to retain and effectively develop employees and maintain an internal pipeline with critical skills, experiences, and leadership to deliver our business priorities. As a result, development, engagement, motivation, succession planning and performance rewards for our critical talent are essential to achieve our business priorities.

### Third-party management

***Risk description***

Failure to maintain adequate governance and oversight over third-party relationships, and failure of third parties to meet their contractual, regulatory or other obligations

***Context and potential impact***

We outsource the performance of certain key business functions and services to third parties. Such activities include research and development collaborations, manufacturing operations, warehousing and distribution, certain finance functions, sales and marketing activities, data management and others. Some third parties, particularly those in developing countries, do not have internal compliance systems or resources comparable to those of Novartis. As a result, our investment and efforts in relation to third party management include focusing on risk management and the oversight of such third parties.

Our reliance on third parties poses certain risks, including the misappropriation of our intellectual property, the failure of the third party to comply with regulatory and quality assurance requirements, the failure of the third party to comply with environmental, anti-bribery and human rights standards and regulations, unexpected supply disruptions, breach of our agreement by the third party, and the unexpected termination or non-renewal of our agreement by the third party.

In addition, governments require, and the public expects, Novartis to take responsibility for and report on compliance with various human rights, responsible sourcing and environmental practices, as well as other actions of our third-party contractors around the world.

Ultimately, if third parties fail to meet their obligations to us, we may lose our investment in the relationship with the third parties or fail to receive the expected benefits of our agreements with such third parties. In addition, should any of these third parties fail to comply with the law or our standards, or should they otherwise act inappropriately while performing services for us, there is a risk that we could be held responsible for their acts, that our reputation may suffer, and that penalties may be imposed on us.

## Legal, ethics and compliance

***Risk description***
Challenges posed by evolving legal and regulatory requirements and societal expectations regarding ethical behavior

***Context and potential impact***
We must comply with the laws of all countries in which we operate, and we sell products with respect to a wide and growing range of activities. Such legal requirements are extensive and complex.

The laws and regulations relevant to the healthcare industry and applicable to us are broad in scope, are subject to change, and have evolving interpretations, which could require us to incur substantial costs associated with compliance or to alter one or more of our business practices. For example, we have been, are currently, and may in the future be, subject to various significant legal proceedings, such as private party litigation, government investigations and law enforcement actions worldwide. These types of matters may take various forms based on evolving government enforcement and private party litigation priorities, and could include, for example, matters pertaining to pricing; bribery and corruption; trade regulation and embargo legislation; product liability; commercial disputes; employment and wrongful discharge; antitrust and competition; securities; government benefit programs; reimbursement; rebates; healthcare fraud; sales and marketing practices; insider trading; occupational health and safety; environmental regulations; tax; cybersecurity; data privacy; regulatory interactions; and intellectual property. Such matters can involve civil and/or criminal proceedings and can retroactively challenge practices previously considered to be legal.

There is also a risk that governance for our medical and patient support activities, and our interactions with governments, public officials/institutions, healthcare professionals, healthcare organizations and patient organizations may be inadequate or fail, or that we may undertake activities based on improper or inadequate scientific justification.

Our Sandoz Division may from time to time seek approval to market a generic version of a product before the expiration of patents claimed by the marketer of the patented product. We do this in cases in which we believe the relevant patents are invalid or unenforceable, or would not be infringed by our generic product. As a result, affiliates of our Sandoz Division frequently face patent litigation, and in certain circumstances we may make the business decision to market a generic product even though patent infringement actions are still pending. Should we elect to do so and conduct a so-called "launch at risk," we could face substantial damages if the final court decision is adverse to us.

Legal proceedings and investigations are inherently unpredictable, and large judgments sometimes occur. Consequently, we may in the future incur judgments that could involve large payments, including the potential repayment of amounts allegedly obtained improperly, and other penalties, including treble damages. In addition, such legal proceedings and investigations, even if meritless, may affect our reputation, may create a risk of potential exclusion from government reimbursement programs in the US and other countries, and may lead to civil litigation and/or criminal exposure. As a result, having considered all relevant factors, we have in the past and may again in the future enter into major settlements of such claims without bringing them to final legal adjudication by courts or other such bodies, despite having potentially significant defenses against them, to limit the risks they pose to our business and reputation. Such settlements may require us to pay significant sums of money and to enter into corporate integrity or similar agreements, which are intended to regulate company behavior for extended periods.

For information on significant legal matters pending against us, see "Item 18. Financial Statements—Note 20. Provisions and other non-current liabilities" and "Item 18. Financial Statements—Note 28. Commitments and contingent liabilities."

New requirements may also be imposed on us due to changing government and societal expectations regarding the healthcare industry, and acceptable corporate behavior generally. For example, we are faced with laws and regulations requiring changes in how we do business, including with respect to disclosures concerning our interactions with healthcare professionals, healthcare organizations and patient organizations. These laws and regulations include requirements that we disclose payments or other transfers of value made to healthcare professionals and organizations, as well as information relating to the costs and prices for our products, which represent evolving standards of acceptable corporate behavior. These requirements may incur significant costs, including substantial time and additional resources, that are necessary to bring our interactions with healthcare professionals and organizations into compliance with these evolving standards.

In addition to legal and regulatory requirements, we aim to meet the evolving societal expectations of the public and our investors regarding ethical behavior and the increasing importance placed on ESG matters.

To support our efforts to comply with the many requirements that impact us, we have a significant global ethics and compliance program in place, and we devote substantial time and resources to efforts to ensure that we conduct business in a lawful manner, and in line with society's expectations. Despite our efforts, an actual or alleged failure to comply with the law or with heightened public expectations could lead to substantial liabilities that may not be covered by insurance, or to other significant losses.

## Manufacturing and product quality

***Risk description***
Inability to ensure proper controls in product development and product manufacturing, and failure to comply with applicable regulations and standards

***Context and potential impact***
The development and manufacture of our products is complex and heavily regulated by governmental health authorities around the world. Whether or not our products and the related raw materials are developed and manufactured at our own manufacturing sites or by third

parties, we must ensure that all development and manufacturing processes comply with regulatory requirements, as well as our own quality standards in order to deliver novel therapies to patients with unmet needs while ensuring patient safety. Failure to comply with regulatory requirements has resulted in, and may in the future result in, warning letters, suspension of manufacturing, seizure of products, injunctions, product recalls, failure to secure product approvals, or debarment.

In recent years, global health authorities have substantially intensified their scrutiny of manufacturers' compliance with regulatory requirements. Any significant failure by us or our third-party suppliers to comply with regulatory requirements, or with health authorities' expectations, may create the need to suspend clinical trials, shut down production facilities or production lines, and recall commercial products. A failure to fully comply with regulatory requirements could also lead to a delay in the approval of new products, an inability to ship or import our products, and significant penalties and reputational harm.

In addition, the technically complex manufacturing processes required to manufacture many of our products increase the risk of both production failures and product recalls and can increase the cost of producing our goods. Some of our products require a supply of highly specialized raw materials, such as cell lines, tissue samples, bacteria, viral strains and radioisotopes. In addition, we manufacture and sell a number of sterile products, biologic products and products that involve advanced therapy platforms, such as CAR-T therapies, gene therapies and radioligand therapy products, all of which are particularly complex and involve highly specialized manufacturing technologies. As a result, even slight deviations at any point in their production processes or in material used have led to, and may in the future lead to, production failures or recalls. See "Item 4. Information on the Company—Item 4.B. Business overview—Sandoz—Production."

### Supply chain

***Risk description***

Inability to maintain continuity of product supply

***Context and potential impact***

Many of our products are produced using technically complex manufacturing processes and require a supply of highly specialized raw materials. For some of our products and raw materials, we may rely on a single source of supply. In addition, we manufacture and sell a number of sterile products, biologic products, and products that involve advanced therapy platforms, such as gene and cell therapy, radioligand therapy, and "xRNA", all of which are particularly complex and involve highly specialized manufacturing technologies. Due to this complexity, there is a risk of production and supply of critical raw materials failures, which may result in supply interruptions or product recalls due to manufactured products not meeting required specifications.

In addition, due to the inherent complexities of our manufacturing processes and the supply chains for advanced therapy platforms, we are required to plan our production activities and purchase of materials well in advance. If we suffer from third-party raw material shortages, underestimate market demand for a product, or fail to accurately predict when a new product will be approved for sale, then we may not be able to produce sufficient product to meet demand. These issues could be made worse during a pandemic, such as the COVID-19 pandemic, or geopolitical events, such as the war in Ukraine, and could lead to (i) a sudden increase in demand for selected medicinal products, resulting in the short-term unavailability of critical materials; (ii) logistical and supply challenges that may lead to our inability to ship products from one place to another due to restrictions imposed as a result of a pandemic or geopolitical events and any related sanctions, which can also impact transportation and warehousing costs; or (iii) our inability to properly operate a manufacturing site due to restrictions imposed as the result of a pandemic or any issues arising from geopolitical events.

Our or our third-party suppliers' inability to manage such issues could lead to shutdowns, product shortages, or to us being entirely unable to supply products to patients for an extended period of time. Furthermore, as our products are intended to promote the health of patients, such shortages or shutdowns could endanger our reputation and have led to, and could continue to lead to, significant losses of sales revenue, potential litigation or allegations that the public health, or the health of individuals, has been harmed.

### Data privacy

***Risk description***

Noncompliance with personal data protection laws and regulations

***Context and potential impact***

We operate in an environment that relies on the collection, processing, analysis and interpretation of large sets of patients and other individuals' personal information, including via social media and mobile technologies. In addition, the operation of our business requires data to flow across the borders of numerous countries in which there are different, potentially conflicting, and frequently changing, data privacy laws in effect. Examples of such laws include: the EU General Data Protection Regulation (GDPR), which took effect in May 2018; the California Consumer Privacy Act, which took effect in January 2020; Brazil's General Personal Data Protection Law, which entered into force in September 2020; and the Personal Information Protection Law in China, which took effect in November 2021. Such laws impose stringent requirements on how we and third parties with whom we contract collect, share, export or otherwise process personal information, and provide for significant penalties for noncompliance. Breaches of our systems or those of our third-party contractors, or other failures to protect the data we collect from misuse or breach by third parties, could expose such personal information to unauthorized persons.

Events involving the substantial loss of personal information, use of personal information without a legal basis, or other privacy violations could give rise to significant liability, reputational harm, damaged relationships with business partners, and potentially substantial monetary

penalties and other sanctions under laws enacted or being enacted around the world. Such events could also lead to restrictions on our ability to use personal information and/or transfer personal information across country borders. In addition, there is a trend of increasing divergence of data privacy legal frameworks, not only across these frameworks but also within individual legal frameworks themselves. This divergence may constrain the implementation of global business processes and may lead to different approaches on the use of health data for scientific research, which may have a negative impact on our business and operations.

### Falsified medicines

***Risk description***
Impact of falsified medicines on patient safety, and reputational and financial harm to Novartis and our products

***Context and potential impact***
We continue to be challenged by the vulnerability of distribution channels to falsified medicines, which include counterfeit, stolen, tampered and illegally diverted medicines as defined by the World Health Organization.

Falsified medicines pose patient safety risks and can be seriously harmful or life-threatening. Reports of adverse events related to falsified medicines and increased levels of falsified medicines in the healthcare system affect patient confidence in genuine medicines and in healthcare systems in general. These events could also cause us substantial reputational and financial harm, and potentially lead to litigation if the adverse event from the falsified medicine is mistakenly attributed to the genuine one. Stolen or illegally diverted medicines that are not properly stored and later sold through unauthorized channels, could adversely impact patient safety, our reputation and our business. Furthermore, there is a direct financial loss when, for example, falsified medicines replace sales of genuine medicines, or genuine medicines are recalled following the discovery of falsified products.

## Emerging risks

### Geopolitical developments

***Risk description***
Impact of geo- and socio-political threats

***Context and potential impact***
Challenging political conditions currently exist in various parts of the world, including an economic downturn; risk of direct conflicts between nations, such as the war in Ukraine; a global pandemic; resistance in certain areas against free trade; anti-corporate sentiment; and social unrest.

The imposition of tariffs, including those imposed by the US and China, and the possibility of additional tariffs or other trade restrictions relating to trade could have a material negative impact on our business. Given that the outcome of ongoing trade negotiations remains uncertain, we cannot yet determine the nature or extent of the potential impact on our business. For example, if tariffs on pharmaceutical products or active pharmaceutical ingredients (APIs) were increased, this could impact the profitability of our products and disrupt our supply chain. Increasing opposition to free trade may increase the risks we face in our efforts to improve and harmonize standards in regulation and intellectual property.

Furthermore, significant conflicts continue in certain parts of the world. Collectively, such unstable conditions could, among other things, disturb the international flow of goods and increase the costs and difficulties of international transactions, which could in turn significantly impact time to market and our ability to supply our products to patients in an undisrupted fashion, and further erode reimbursement levels for innovative therapies.

### Macroeconomic developments

***Risk description***
Impact of macroeconomic developments

***Context and potential impact***
Our business may be impacted by deteriorating macroeconomic and financial conditions directly affecting consumers. Given that patients, in many countries, directly pay a sizable portion of their own healthcare costs, there is a risk that consumers may cut back on prescription drugs due to financial constraints.

Negative macroeconomic developments may also adversely affect the ability of payers, as well as our distributors, customers, suppliers, and service providers, to pay for our products, or otherwise to buy necessary inventory or raw materials, and to perform their obligations under agreements with us. Although we make efforts to monitor the financial condition and liquidity of these third parties, our ability to do so is limited, and some of them may become unable to pay their bills in a timely manner or may even become insolvent. These risks may be elevated with respect to our interactions with fiscally challenged government payers, or with third parties with substantial exposure to such payers.

At the same time, significant changes, and potential future volatility in financial markets, the consumer and business environment, the competitive landscape, and the global political and security landscape make it increasingly difficult for us to predict our revenues and earnings. As a result, any revenue or earnings guidance or outlook that we have given or might give may be overtaken by events or may otherwise prove to be inaccurate. Although we endeavor to give reasonable estimates of future revenues and earnings at the time at which we give such guidance, based on then-current knowledge and conditions, there is a risk that such guidance or outlook will prove to be incorrect.

Asset price corrections in financial markets may also result in lower returns on our financial investments. In addition, pricing pressures in developed markets resulting from efforts to reduce the cost of healthcare (e.g., the Inflation Reduction Act in the US, which targets drug prices) may have a negative impact on our revenue and our net sales. In addition, inflation has an impact on our operating costs due to the increased cost of supplies. Higher costs for energy, raw materials, wages, and capital will increase our operating costs, potentially reducing our net sales.

Uncertainties around future central bank and other economic policies in the US and EU, as well as high debt levels in some countries could also impact world trade. Sudden increases in economic, currency or financial market volatility in different countries, such as the recent appreciation of the US dollar, have also impacted, and may continue to have an unpredictable impact on our business, or results of operations, including the conversion of our operating results into our reporting currency, the US dollar, as well as the value of our investments in our pension plans.

For a discussion on the effect of price controls on our business, see "Item 4. Information on the Company—Item 4.B—Business overview—Innovative Medicines—Price controls." See also "Item 5. Operating and Financial Review and Prospects—Item 5.B Liquidity and capital resources—Effects of currency fluctuations," "Item 5. Operating and Financial Review and Prospects—Item 5.B Liquidity and capital resources—Condensed consolidated balance sheets," "Item 18. Financial Statements—Note 15. Trade receivables" and "Item 18. Financial Statements—Note 29. Financial instruments – additional disclosures."

## Climate change

***Risk description***

Impact of climate change and increased risk of major natural disasters

***Context and potential impact***

Novartis is exposed to a broad range of climate risks such as transition risks (e.g., regulatory frameworks, carbon pricing, and the cost of and access to capital) and physical risks (e.g., heat, water scarcity, sea level rise, and flooding from severe weather events), which could vary in magnitude and impact across different countries.

Climate change has triggered, and may continue to trigger, the adoption of new regulatory requirements across the globe. To comply with such legislation, we may be required to increase our investment in technology to reduce our energy use, water use and greenhouse gas emissions. In addition, legislative and regulatory action, both current and in the future, includes or could include carbon pricing, climate risk related disclosures, and changes in zoning or building codes to increase climate resilience. As a result, the combined impact of these transition risks could increase our direct operating costs and impact our supply chain. We have also committed to incorporating the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) framework into our business, which includes providing qualitative and quantitative disclosures on climate-related topics on a recurring basis. As a result of these transition risks, we are committed to becoming carbon neutral in our own operations by 2025, and carbon neutral across our value chain by 2030. In addition, we are committed to achieving net zero across our value chain by 2040. Any failure to achieve these commitments in the expected time frame, or at all, could result in negative impacts on our reputation, our operations, and the price of our shares.

Climate change has created, and will continue to create, physical risks to our business. Some of our production facilities that depend on the availability of significant water supplies are located in areas where water is increasingly scarce. Other facilities are located in areas that, due to increasingly violent weather events, rising sea levels, or both, are increasingly at risk of substantial flooding. In regions where such a risk is present, this has an impact not only on our own operations but also our distributed supply chain. Such events may result in the loss of life, increased costs, business interruptions, destruction of facilities, and disruption to healthcare systems that patients use to access our medicines.

Furthermore, our corporate headquarters, the headquarters of our Innovative Medicines and Sandoz Divisions, and a number of major Innovative Medicines Division production and research facilities are located near earthquake fault lines in Basel, Switzerland. Other major facilities are located near major earthquake fault lines in various locations around the world. A major earthquake could result in loss of life, business interruptions and the destruction of our facilities.

## Tax laws and developments

***Risk description***

Changes in tax laws or their application

***Context and potential impact***

Our multinational operations are taxed under the laws of the countries and other jurisdictions in which we operate. Changes in tax laws or in their application could lead to an increased risk of international tax disputes and an increase in our effective tax rate, which could adversely affect our financial results. The integrated nature of our worldwide operations can produce conflicting claims from revenue authorities in different countries as to the profits to be taxed in the individual countries, including potential disputes relating to the prices our subsidiaries charge one another for intercompany transactions, known as transfer pricing. Most of the jurisdictions in which we operate have double tax treaties with other foreign jurisdictions, which provide a framework for mitigating the impact of double taxation on our revenues and capital gains. However, mechanisms developed to resolve such conflicting claims are largely untried and can be expected to be very lengthy. Accruals for tax contingencies are made based on experience, interpretations of tax law, and judgments about potential actions by tax authorities. However, due to the complexity of tax contingencies, the ultimate resolution of any tax matter may result in payments materially different from the amounts accrued.

In 2019, the Organization for Economic Co-operation and Development (OECD) launched a new initiative on behalf of the G20 to minimize profit shifting by working toward a global tax framework that ensures that corporate income taxes are paid where consumption takes place, in addition to introducing a global standard on minimum taxation combined with new tax dispute resolution processes. This project achieved OECD political consensus in October 2021, and the detailed principles are still under discussion by the OECD and political leaders. The OECD expects that the implementation of these new principles will begin globally in 2024. Once changes to the tax laws in any jurisdiction in which the Group

operates are enacted or substantially enacted, the Group may be subject to the OECD top-up tax, the aim of which is to bring the total amount of taxes paid on our profit in a jurisdiction up to a minimum rate of 15%. In 2020, the EU announced that it would introduce new centralized taxation powers (which have not yet been introduced) to address the financial impact of the COVID-19 pandemic. In addition, the European Commission continues to extend the application of its policies seeking to limit fiscal aid by member states to particular companies, together with the related investigation into member states' practices regarding the issuance of rulings on tax matters relating to individual companies. Although we have taken steps to comply with evolving initiatives such as these of the OECD and the EU, and we will continue to do so, significant uncertainties remain as to the outcome of our efforts. For more information, see "Item 18. Financial Statements—Note 6. Income taxes" and "Item 18. Financial Statements—Note 12. Deferred tax assets and liabilities."

## General risks

### Indebtedness

***Risk description***
Our indebtedness could adversely affect our operations

***Context and potential impact***
As of December 31, 2022, we had USD 20.2 billion of non-current financial debt, and USD 5.9 billion of current financial debt. Our current and long-term debt requires us to dedicate a portion of our cash flow to service interest and principal payments and, if interest rates rise, this amount may increase. As a result, our existing debt may limit our ability to use our cash flow to fund capital expenditures, to engage in transactions, or to meet other capital needs, or otherwise may place us at a competitive disadvantage relative to competitors that have less debt. Our debt could also limit our flexibility to plan for and react to changes in our business or industry, and increase our vulnerability to general adverse economic and industry conditions, including changes in interest rates or a downturn in our business or the economy. We may also have difficulty refinancing our existing debt or incurring new debt on terms that we would consider to be commercially reasonable, if at all.

### Goodwill and intangible assets

***Risk description***
Goodwill and intangible assets resulting in significant impairment charges

***Context and potential impact***
We carry a significant amount of goodwill and other intangible assets on our consolidated balance sheet, including, in particular, substantial goodwill and other intangible assets obtained through acquisitions, including most recently through our acquisitions of Gyroscope Therapeutics, The Medicines Company, *Xiidra*, Endocyte, Novartis Gene Therapies, and AAA. As a result, we may incur significant impairment charges in the future if the fair value of the intangible assets and the groupings of cash-generating units containing goodwill would be less than their carrying value on the Group's consolidated balance sheet at any point in time.

We regularly review our intangible and tangible assets for impairment, including identifiable intangible assets and goodwill. Any significant impairment charges could have a material adverse effect on our results of operations and financial condition. In 2022, for example, we recorded intangible asset impairment charges of USD 1.3 billion.

For a detailed discussion of how we determine whether an impairment has occurred, what factors could result in an impairment, and the impact of impairment charges on our results of operations, see Item 18. Financial Statements—Note 1. Significant accounting policies" and "Item 18. Financial Statements—Note 11. Goodwill and intangible assets."

### Foreign currency exchange rates

***Risk description***
Negative effect on financial results due to foreign currency exchange rate fluctuations

***Context and potential impact***
Changes in exchange rates between the US dollar, our reporting currency, and other currencies can result in significant increases or decreases in our reported sales, costs and earnings as expressed in US dollars, and in the reported value of our assets, liabilities and cash flows.

In addition to ordinary market risk, there is a risk that countries could take affirmative steps that could significantly impact the value of their currencies. Such steps could include "quantitative easing" measures and potential withdrawals by countries from common currencies. In addition, countries facing local financial difficulties, including countries experiencing high inflation rates, and highly indebted countries facing large capital outflows, may impose controls on the exchange of foreign currency. Currency exchange controls and sanctions could limit our ability to distribute retained earnings from our local affiliates, or to pay intercompany payables due from those countries.

Despite measures undertaken to reduce or hedge against foreign currency exchange risks, as a significant portion of our earnings and expenditures are in currencies other than the US dollar, including expenditures in Swiss francs that are significantly higher than our revenue in Swiss francs, any such exchange rate volatility may negatively and materially impact our results of operations and financial condition, and may impact the reported value of our net sales, earnings, assets and liabilities. In addition, the timing and extent of such volatility can be difficult to predict. Furthermore, depending on the movements of particular foreign exchange rates, we may be materially adversely affected at a time when the same currency movements are benefiting some of our competitors.

For more information on the effects of currency fluctuations on our consolidated financial statements and on how we manage currency risk, see "Item 5. Operating and Financial Review and Prospects—Item 5.B Liquidity and capital resources—Effects of currency

fluctuations" and "Item 18. Financial Statements—Note 29. Financial instruments – additional disclosures."

## Key customers

***Risk description***
Ongoing consolidation among our distributors and retailers, and the concentration of credit risk

***Context and potential impact***
A significant portion of our global sales is made to a relatively small number of drug wholesalers, retail chains and other purchasing organizations. For example, our three most important customers globally accounted for approximately 16%, 11% and 7%, respectively, of net sales in 2022. The largest trade receivables outstanding were for these three customers, amounting to 16%, 14% and 7%, respectively, of the Group's trade receivables at December 31, 2022. The trend has been toward further consolidation among some distributors and retailers. As a result, we may be affected by fluctuations in the buying patterns of such customers. Furthermore, these customers are gaining additional purchasing leverage, increasing the pricing pressures facing our businesses. These pressures can impact our Sandoz Division in particular, the generic products of which can often be obtained from numerous competitors. Moreover, we are exposed to a concentration of credit risk as a result of this concentration among our customers. If one or more of our major customers experienced financial difficulties, the effect on us would be substantial, and could include a substantial loss of sales and an inability to collect amounts owed to us.

## Environmental matters

***Risk description***
Impact of environmental liabilities

***Context and potential impact***
The environmental laws of various jurisdictions impose actual and potential obligations on us to investigate and remediate contaminated sites, including in connection with activities in the past by businesses that are no longer part of Novartis. In some cases, these remediation efforts may take many years. While we have set aside provisions for known worldwide environmental liabilities that are probable and estimable, there is no guarantee that additional costs will not be incurred beyond the amounts for which we have provided in the Group consolidated financial statements. If environmental contamination resulting from our facility operations, business activities or products adversely impacts third parties or if we fail to properly manage the safety of our facilities, including the safety of our employees and contractors, and the environmental risks, we may face substantial one-time and recurring costs and other penalties, and be required to increase our provisions for environmental liabilities.

See also "Item 4. Information on the Company—Item 4.D Property, plants and equipment" and "Item 18. Financial Statements—Note 20. Provisions and other non-current liabilities."

## Pension plans

***Risk description***
Inaccuracies in the assumptions and estimates used to calculate our pension plan and other post-employment obligations

***Context and potential impact***
We sponsor pension and other post-employment benefit plans in various forms that cover a significant portion of our current and former employees. For post-employment plans with defined benefit obligations, we are required to make significant assumptions and estimates about future events in calculating the expense and the present value of the liability related to these plans. These include assumptions about the discount rates we apply to estimate future defined benefit obligations and net periodic pension expense, as well as rates of future pension increases. In addition, our actuarial consultants provide our management with historical statistical information, such as withdrawal and mortality rates in connection with these estimates.

Assumptions and estimates that we use may differ materially from the actual results we experience due to changing market and economic conditions, higher or lower withdrawal rates, and longer or shorter life spans of participants, among other factors. Depending on events, such differences could have a material effect on our total equity, and may require us to make additional contributions to our pension funds.

For more information on obligations under retirement and other post-employment benefit plans and underlying actuarial assumptions, see "Item 18. Financial Statements—Note 25. Post-employment benefits for employees."

# Item 4. Information on the Company

## 4.A History and development of Novartis

### Novartis AG

Novartis AG was incorporated on February 29, 1996, under the laws of Switzerland as a stock corporation ("Aktiengesellschaft") with an indefinite duration. On December 20, 1996, our predecessor companies, Ciba-Geigy AG and Sandoz AG, merged into this new entity, creating Novartis. We are domiciled in and governed by the laws of Switzerland. Our registered office is located at the following address:

Novartis AG
Lichtstrasse 35
CH-4056 Basel, Switzerland
Telephone: +41-61-324-1111
Web: www.novartis.com

Novartis is a multinational group of companies specializing in the research, development, manufacturing and marketing of a broad range of innovative pharmaceuticals and cost-saving generic medicines. Novartis AG, our Swiss holding company, owns, directly or indirectly, all of our significant operating companies. For a list of our significant operating subsidiaries, see "Item 18. Financial Statements—Note 31. Principal Group subsidiaries and associated companies."

For a description of important corporate developments since January 1, 2020, see "Item 18. Financial Statements—Note 2. Significant transactions." For information regarding the Company's material commitments for capital expenditures, see "Item 5. Operating and Financial Review and Prospects—Liquidity and Capital Resources—Material short- and long-term cash requirements."

The SEC maintains an internet site at http://www.sec.gov that contains reports, information statements, and other information regarding issuers that file electronically with the SEC.

## 4.B Business overview

## Overview

Our purpose is to reimagine medicine to improve and extend people's lives. We use innovative science and technology to address some of society's most challenging healthcare issues. We discover and develop breakthrough treatments and find new ways to deliver them to as many people as possible. We also aim to reward those who invest their money, time and ideas in our Company. Our vision is to become the most valued and trusted medicines company in the world. Our strategy is to deliver high-value medicines that alleviate society's greatest disease burdens through technology leadership in research and development (R&D) and novel access approaches. To support this strategy, we have clear focus areas and priorities, ensuring we deliver on our purpose and continue to create value for both stakeholders and society. See, "Item 5. Operating and Financial Review and Prospects—Item 5.A Operating Results—Overview—Our strategy."

In 2022, Novartis achieved net sales from continuing operations of USD 50.5 billion, and total net income amounted to USD 7.0 billion. Headquartered in Basel, Switzerland, our Group companies employed approximately 102 000 full-time equivalent employees as of December 31, 2022. Our products are sold in approximately 140 countries around the world.

The Group comprises two global operating divisions:

- Innovative Medicines: innovative patent-protected prescription medicines
  For a description of our Innovative Medicines Division, see "—Innovative Medicines—Overview" below.

- Sandoz: generic pharmaceuticals and biosimilars
  For a description of our Sandoz Division, see "—Sandoz" below.

In April 2022, we announced a new, integrated organizational structure and operating model designed to support our innovation, growth, and productivity ambitions as a focused medicines company. As part of this new organizational structure, we have integrated our former Pharmaceuticals and Oncology business units and created two separate commercial organizations—Innovative Medicines US and Innovative Medicines International. The Innovative Medicines Division focuses on five core therapeutic areas—cardiovascular, immunology, neuroscience, solid tumor, and hematology—as well as other promoted brands (in the therapeutic areas of ophthalmology and respiratory) and established brands. For more information, see "Item 4. Information on the Company—Item 4.B Innovative Medicines." We have also created a new Strategy and Growth function that combines corporate strategy, R&D portfolio strategy and business development. The purpose of our Strategy and Growth function is to help drive the company's growth strategy

end-to-end and look across internal and external opportunities to strengthen the Novartis pipeline with medicines that are both transformational and can make significant contributions to growth. Finally, we have combined our former Novartis Technical Operations and Customer & Technology Solutions units to create a new operations unit called Operations. This new unit seeks to provide a stronger and simpler operational backbone that can accelerate multiple technology transformation initiatives more efficiently, create novel digital solutions at scale, and increase productivity, while maintaining industry-leading quality and service levels.

Under this new organizational structure, our divisions are supported by the following organizational units: the Novartis Institutes for BioMedical Research (NIBR), Global Drug Development (GDD), and Operations. The financial results of these organizational units are included in the results of the divisions for which their work is performed. For more information about NIBR, see "—Innovative Medicines—Research and development—Research program" below. For more information about GDD, see "—Innovative Medicines—Research and development—Development program" below. For more information about Operations, see "—Item 4.D Property, plants and equipment" and "Item 18. Financial Statements—Note 3. Segmentation of key figures 2022, 2021 and 2020."

## Corporate activities

We separately report the results of Corporate activities. The financial results of our Corporate activities include the costs of the Group headquarters and those of corporate coordination functions in major countries. In addition, Corporate includes other items of income and expense that are not attributable to specific segments, such as certain revenues from intellectual property rights and certain expenses related to post-employment benefits, environmental remediation liabilities, charitable activities, donations and sponsorships.

# Innovative Medicines

## Overview

Our Innovative Medicines Division is a world leader in offering patent-protected medicines to patients and physicians. The Innovative Medicines Division researches, develops, manufactures, distributes and sells patented pharmaceuticals. The Innovative Medicines Division is organized into two commercial organizational units—Innovative Medicines US and Innovative Medicines International. These units were created in April 2022 as part of our new, integrated organizational structure. Prior to April 2022, the Innovative Medicines Division was organized into two global business units: Novartis Oncology and Novartis Pharmaceuticals. See "Item 4. Information on the Company—Item 4.B Overview."

The Innovative Medicines Division focuses on core therapeutic areas—cardiovascular, immunology, neuroscience, solid tumor, and hematology—as well as other promoted brands (in the therapeutic areas of ophthalmology and respiratory) and established brands.

The Innovative Medicines Division is the larger of our two divisions in terms of consolidated net sales. It reported consolidated net sales of USD 41.3 billion in 2022, which represented 81.7% of the Group's net sales. The product portfolio of the Innovative Medicines Division includes a significant number of key marketed products, many of which are among the leaders in their respective therapeutic areas.

## Innovative Medicines Division products

The following summaries describe certain key marketed products in our Innovative Medicines Division, listed according to year-end net sales within each therapeutic area or reporting category. Some of the products described below have lost patent protection or are otherwise subject to generic competition. Others are subject to patent challenges by potential generic competitors. Please see "—Intellectual property" for general information on intellectual property and regulatory data protection, and for more information on the status of patents and exclusivity for Innovative Medicines Division products.

While we typically seek to sell our marketed products throughout the world, not all products and indications are available in every country. The indications described in these summaries may therefore vary by country. In addition, a product may be available under different brand names depending on country and indication.

### Key marketed products

#### *Cardiovascular*

- *Entresto* (sacubitril/valsartan) is an oral, first-in-class angiotensin receptor neprilysin inhibitor. *Entresto* enhances the protective effects of a hormone system called the natriuretic peptide system, and simultaneously suppresses the harmful effects of a hormone system called the renin-angiotensin-aldosterone system. It is approved:
  - In the US, the EU and other countries to treat adults who have symptomatic heart failure with reduced ejection fraction (HFrEF). HFrEF is a disease in which the heart cannot pump enough blood.
  - In the US and other countries to treat most heart failure patients with preserved ejection fraction (HFpEF). HFpEF is another disease in which the heart cannot pump enough blood.
  - In the US and other countries to treat children aged 1 year and older who have symptomatic heart failure with systemic left ventricular systolic dysfunction

- In China and Japan to treat patients with essential hypertension (a type of high blood pressure)

- *Leqvio* (inclisiran) is the first and only small-interfering RNA therapy to reduce LDL cholesterol, a risk factor for atherosclerotic cardiovascular disease (ASCVD), which is caused by plaque buildup in the arteries. *Leqvio* is administered by a healthcare professional twice a year as an injection, following an initial dose and a dose at three months. It is approved:
  - In the EU and other countries to treat adults with primary hypercholesterolemia (heterozygous familial and non-familial) or mixed dyslipidemia. In patients unable to reach LDL cholesterol goals, *Leqvio* is used in combination with the maximum tolerated dose of a statin, or alone or in combination with other lipid-lowering therapies in patients who are statin-intolerant or for whom a statin is contraindicated. Primary hypercholesterolemia and mixed dyslipidemia are disorders characterized by high levels of fats in the blood.
  - In the US to treat adults with clinical ASCVD or heterozygous familial hypercholesterolemia (HeFH), as an adjunct to diet and maximally tolerated statin therapy, who require additional lowering of LDL cholesterol. HeFH is an inherited disorder that causes dangerously high levels of LDL cholesterol. (The effect of *Leqvio* on cardiovascular morbidity and mortality has not yet been determined).

  Novartis obtained global rights to develop, manufacture and commercialize *Leqvio* under a license and collaboration agreement with Alnylam Pharmaceuticals, Inc.

***Immunology***

- *Cosentyx* (secukinumab) is an injectable, fully human monoclonal antibody that selectively inhibits interleukin-17A (IL-17A), a cytokine involved in several immunological diseases. It is approved in the US, the EU and other countries to treat:
  - Adults and children aged 6 years and older with moderate-to-severe plaque psoriasis. Psoriasis is a debilitating systemic inflammatory disease that is characterized by the appearance of raised, red patches on the skin.
  - Adults with active ankylosing spondylitis (AS). AS is a progressive inflammatory disease that is characterized by chronic back pain, is generally visible on X-rays, and can cause structural damage to the bones and joints.
  - Adults with active non-radiographic axial spondyloarthritis (nr-axSpA). This is a long-term inflammatory disease that is characterized by chronic back pain and is not visible on X-rays.
  - Adults and children (aged 2 years and older in the US and 6 years and older in the EU) with active psoriatic arthritis (PsA). PsA is a type of progressive inflammatory arthritis that results in swollen and painful joints and tendons, which can cause structural damage to the bones and joints.
  - Children (aged 4 years and older in the US and 6 years and older in the EU) with enthesitis-related arthritis (ERA) and children (aged 2 years and older in the US and 6 years and older in the EU) with juvenile psoriatic arthritis (JPsA). ERA and JPsA are subtypes of juvenile idiopathic arthritis. If left untreated, they can lead to high levels of pain and disability.

- *Xolair* (omalizumab) is an injectable prescription medicine and the only approved antibody designed to target and block immunoglobulin E (IgE). It is approved in the US, the EU and other countries to treat:
  - Adults and children aged 6 years and older with moderate-to-severe, or severe, persistent allergic asthma
  - Adults and children aged 12 years and older with chronic spontaneous urticaria/chronic idiopathic urticaria (hives)
  - Adults with nasal polyps or severe chronic rhinosinusitis with nasal polyps (CRSwNP). CRSwNP is a chronic inflammation of the nose and the sinuses with the presence of benign lesions (nasal polyps) on the lining of the nasal sinuses or nasal cavity.

  Approved indications vary by country. *Xolair* is provided as lyophilized powder for reconstitution, and as liquid formulation in a pre-filled syringe. Novartis co-promotes *Xolair* with Genentech in the US and shares a portion of operating income, but Novartis does not record any US sales. Novartis records all sales of *Xolair* outside the US. For more information, see "Item 18. Financial Statements—Note 27. Transactions with related parties—Roche Holding AG."

- *Ilaris* (canakinumab) is an injectable, selective, high-affinity, fully human monoclonal antibody that inhibits interleukin-1 beta (IL-1 beta), a key cytokine in the inflammatory pathway. It is approved in the US, the EU and other countries to treat patients with certain debilitating autoinflammatory disorders, including:
  - Adults and children with periodic fever syndromes. Periodic fever syndromes are a set of rare disorders characterized by recurrent episodes of illness, with fever as the main symptom.
  - Patients with Still's disease, including systemic juvenile idiopathic arthritis and adult-onset Still's disease. Still's disease is a disorder that causes fevers, rash and joint pain.
  - Adults with acute gouty arthritis. Gouty arthritis is a type of arthritis characterized by pain, redness, tenderness and swelling in one or more joints.

  Approved indications vary by country.

***Neuroscience***

- *Gilenya* (fingolimod) is an oral sphingosine-1-phosphate (S1P) receptor modulator that inhibits the movement of lymphocytes (a type of white blood cell) out of the lymph nodes into the central nervous system, thereby preventing nerve inflammation and nervous tissue damage. It is approved:
  - In the US to treat adults and children aged 10 years and older with relapsing forms of multiple sclerosis, including clinically isolated syndrome, relapsing-remitting multiple sclerosis (RRMS) and active secondary progressive multiple sclerosis (SPMS). Multiple

sclerosis is a disease in which the immune system attacks the protective covering of nerves (known as myelin).
- In the EU to treat adults and children aged 10 years and older who have highly active RRMS despite treatment with at least one disease-modifying agent, or who have rapidly evolving severe RRMS

*Gilenya* is licensed from Mitsubishi Tanabe Pharma Corporation.

- *Zolgensma* (onasemnogene abeparvovec) is a one-time intravenous gene therapy designed to address the genetic root cause of spinal muscular atrophy (SMA) by replacing the function of the missing or nonworking SMN1 gene. *Zolgensma* delivers a new working copy of the SMN1 gene into a patient's cells. It is approved in the US, the EU and other countries to treat:
  - Babies and young children who have SMA with biallelic mutations in the SMN1 gene. SMA is a rare, genetic neuromuscular disease resulting in the progressive and irreversible loss of motor neurons, which causes muscle weakness and atrophy.

- *Kesimpta* (ofatumumab) is an anti-CD20 monoclonal antibody that enables the targeted depletion of B-cells, specifically in lymph nodes. *Kesimpta* is self-administered as a once-monthly injection via the *Sensoready* autoinjector pen. It is approved:
  - In the US to treat adults with relapsing forms of multiple sclerosis, including clinically isolated syndrome, relapsing-remitting multiple sclerosis (RRMS) and active secondary progressive multiple sclerosis (SPMS). Multiple sclerosis is a disease in which the immune system attacks the protective covering of nerves (known as myelin).
  - In the EU to treat adults with relapsing forms of multiple sclerosis with active disease defined by clinical or imaging features (i.e., relapse, disability, or lesions detected by MRI scans)

  Approved indications vary across other countries. Ofatumumab was originally developed by Genmab and licensed to GlaxoSmithKline (GSK). Novartis obtained the rights to ofatumumab from GSK across all indications.

***Solid Tumor***

- *Tafinlar* + *Mekinist* (dabrafenib + trametinib) is an oral combination therapy. *Tafinlar* and *Mekinist* are kinase inhibitors of the BRAF and MEK1/2 proteins, respectively, approved in combination in the US, the EU and other countries to treat patients who have certain types of cancer with a change in the BRAF gene (called a BRAF V600 mutation), including:
  - Adults with unresectable or metastatic melanoma with a BRAF V600 mutation. Melanoma is a form of skin cancer; unresectable melanoma cannot be removed with surgery and metastatic melanoma has spread to other parts of the body. *Tafinlar* and *Mekinist* are also approved as single agents for this indication.
  - Adults with stage III melanoma with a BRAF V600 mutation as an adjuvant treatment (following surgery)
  - Adults with advanced non-small cell lung cancer (NSCLC) with a BRAF V600 mutation. NSCLC is the most common type of lung cancer.
  - Adults with locally advanced or metastatic anaplastic thyroid cancer (ATC) with a BRAF V600 mutation whose cancer has progressed following treatment, and who have no satisfactory alternative treatment options (US). ATC is a rare and aggressive form of thyroid cancer.

  Approved indications vary by country. Novartis has worldwide exclusive rights to develop, manufacture and commercialize trametinib granted by Japan Tobacco Inc.

- *Kisqali* (ribociclib) is a selective oral cyclin-dependent inhibitor of kinases 4 and 6 (CDK4/6) with somewhat greater inhibitory activity against CDK4 vs CDK6 – the two enzymes involved in the control of cell cycle progression. *Kisqali* is approved in the US, the EU and other countries to treat:
  - Pre-, peri- and postmenopausal women, and men (US), with hormone receptor-positive (HR+)/human epidermal growth factor receptor 2-negative (HER2-) locally advanced or metastatic breast cancer, in combination with an aromatase inhibitor as initial endocrine-based therapy. HR+/HER2- breast cancer is the most common subtype of breast cancer.
  - Pre-, peri- (EU) and postmenopausal women, and men (US), with HR+/HER2- locally advanced or metastatic breast cancer, in combination with fulvestrant, as first- or second-line therapy

  *Kisqali* was developed by the Novartis Institutes for BioMedical Research under a research collaboration with Astex Pharmaceuticals.

- *Piqray* (alpelisib) is an oral kinase inhibitor that specifically targets the PIK3CA gene. This is the most commonly mutated gene in HR+/HER2- breast cancer, the most common subtype of breast cancer. *Piqray* is approved in the US, the EU and other countries to treat:
  - Postmenopausal women, and men, with hormone receptor-positive (HR+)/human epidermal growth factor receptor 2-negative (HER2-) locally advanced or metastatic breast cancer with a PIK3CA mutation. It is used in combination with fulvestrant after disease progression while on or following an endocrine-based regimen (US), or after disease progression following endocrine therapy as monotherapy (EU).

- *Pluvicto* (lutetium ($^{177}$Lu) vipivotide tetraxetan) is an intravenous radioligand therapy combining a targeting compound (a ligand) with a therapeutic radionuclide (a radioactive particle, in this case lutetium-177). *Pluvicto* delivers radiation selectively to PSMA-positive cells and the surrounding cells. It is approved in the US, the EU and other countries to treat:
  - Adults with a type of advanced cancer that has spread to other parts of the body (metastatic) called prostate-specific membrane antigen–positive

metastatic castration-resistant prostate cancer (PSMA-positive mCRPC) who have already been treated with other anticancer treatments (androgen receptor pathway inhibition and taxane-based chemotherapy)

### *Hematology*

- *Promacta*/*Revolade* (eltrombopag) is a once-daily oral thrombopoietin receptor agonist that works by stimulating bone marrow cells to produce platelets. It is approved in the US, the EU and other countries to treat:
  - Immune thrombocytopenia (ITP) in patients who have had an insufficient response to or have failed previous therapies. ITP is a bleeding disorder caused by an unusually low number of platelets.
  - Thrombocytopenia in patients with chronic hepatitis C to allow them to initiate and maintain interferon-based therapy
  - Patients with severe aplastic anemia (SAA). SAA is a condition in which the body does not produce enough blood cells

  *Promacta*/*Revolade* is marketed under a research, development and license agreement between Novartis and RPI Finance Trust (dba Royalty Pharma), as assignee of Ligand Pharmaceuticals.

- *Tasigna* (nilotinib) is a twice-daily oral tyrosine kinase inhibitor that acts by blocking the BCR-ABL protein. It is approved in the US, the EU and other countries to treat:
  - Patients with Philadelphia chromosome-positive chronic myeloid leukemia (Ph+ CML) in the chronic and/or accelerated phase who are resistant or intolerant to existing treatment. Ph+ CML is a cancer that starts in the blood-forming cells of bone marrow.
  - Newly diagnosed adults and children with Ph+ CML in the chronic phase

- *Jakavi* (ruxolitinib) is an oral inhibitor of the JAK1 and JAK2 tyrosine kinases. It is the first therapy approved in the EU and other countries to treat:
  - Adults with myelofibrosis (MF), including primary myelofibrosis, post-polycythemia vera myelofibrosis and post-essential thrombocythemia myelofibrosis. MF is a rare blood cancer characterized by abnormal blood cell production and scarring in the bone marrow, which can lead to an enlarged spleen.
  - Adults with polycythemia vera (PV) who are resistant or intolerant to a medication called hydroxyurea. PV is a rare blood cancer in which the bone marrow produces too many red blood cells, resulting in serious problems like clots.
  - Patients aged 12 years and older with acute or chronic graft-versus-host disease (GvHD) and who have had an inadequate response to corticosteroids or other systemic therapies. GvHD occurs in stem-cell transplant patients when donor cells see the recipient's healthy cells as foreign and attack them.

  Novartis licensed ruxolitinib from Incyte Corporation for development and commercialization in the indications of oncology, hematology and graft-versus-host disease outside the US. Incyte Corporation markets ruxolitinib as Jakafi® in the US.

- *Scemblix* (asciminib) is an oral kinase inhibitor that works by binding to the ABL myristoyl pocket. It is approved:
  - In the US, the EU and other countries to treat adults with Philadelphia chromosome-positive chronic myeloid leukemia (Ph+ CML) in chronic phase who have previously been treated with two or more tyrosine kinase inhibitors (TKIs). CML is a type of cancer that starts in the blood-forming cells of the bone marrow and invades the blood. There are three phases of CML: chronic phase, accelerated phase and blast phase.
  - In the US and other countries to treat adults with Ph+ CML in chronic phase with the T315I mutation. Some patients with CML develop mutations that cause resistance to TKI therapy, including the T315I mutation, which confers resistance to most available TKIs. As a result, patients with this mutation have limited treatment options.

### *Other Promoted Brands*

- *Lucentis* (ranibizumab) is a humanized, high-affinity antibody fragment that binds to vascular endothelial growth factor A (VEGF-A), a protein that can cause the growth of blood vessels in the eye, potentially leading to vision loss. *Lucentis* is an anti-VEGF therapy that is injected into the eye. It is approved in the EU and other countries to treat patients with certain eye conditions, including:
  - Adults with neovascular (wet) age-related macular degeneration (AMD). Wet AMD develops when abnormal blood vessels grow under the macula and leak blood and other fluids in the back of the eye, which damages the macula.
  - Adults with proliferative diabetic retinopathy, moderately severe to severe non-proliferative diabetic retinopathy, and/or diabetic macular edema. These conditions are complications of diabetes.
  - Adults with visual impairment due to macular edema secondary to retinal vein occlusion (branch RVO or central RVO). Retinal vein occlusion is a blockage of the branch or central retinal veins, which carry blood away from the retina.

  Approved indications vary by country. *Lucentis* is licensed from Genentech, and Novartis holds the rights to commercialize the product outside the US. Genentech holds the rights to commercialize *Lucentis* in the US. For more information, see "Item 18. Financial Statements—Note 27. Transactions with related parties—Roche Holding AG."

- *Xiidra* (lifitegrast 0.5%), an LFA-1 antagonist, is a prescription eye drop designed to block the interaction of two key proteins called ICAM-1 and LFA-1, thereby reducing inflammation. It is approved in the US and other countries to treat:
  - The signs and symptoms of dry eye disease in adults

***Established Brands***

- *Sandostatin* SC (octreotide acetate for injection) and *Sandostatin* LAR (octreotide acetate for injectable suspension) are somatostatin analogs approved in the US, the EU and other countries to treat:
  - Adults with acromegaly that is inadequately controlled by surgery or radiotherapy. Acromegaly is a chronic disease caused by the oversecretion of growth hormone.
  - Patients with certain symptoms associated with carcinoid tumors and other types of functional gastrointestinal and pancreatic neuroendocrine tumors

  *Sandostatin* LAR is also approved in the EU and other countries to treat patients with advanced neuroendocrine tumors of the midgut or of unknown primary tumor origin.

**Compounds in development**

The following table provides an overview of the key Innovative Medicines Division projects currently in the Confirmatory Development stage and may also describe certain projects in the Exploratory Development stage. Projects typically enter Confirmatory Development and become the responsibility of our Global Drug Development organization during Phase II testing. (For more information about our drug development program, see "—Research and development—Development program.") Projects are listed in alphabetical order by compound code, or by product name where applicable. Projects include those seeking to develop potential uses of new molecular entities as well as potential additional indications or new formulations for already marketed products. The table below, entitled "Projects removed from the development table since 2021," highlights changes to the table entitled "Selected development projects" from the previous year.

The year that each project entered the current phase of development refers to the year of the first patient's first visit in the first clinical trial of that phase. For projects in Phase II, the year refers to the first patient's first visit in the first Phase II trial, which can occur before the Confirmatory Development stage. Prior to 2020, we reported the current phase based on the year in which the decision to enter the phase was made. To maintain continuity, we have included certain previously disclosed projects, noted below, that have not yet achieved "first patient, first visit" in any Phase I-III study for the reported indication and route of administration. We have disclosed these projects using our previous reporting criteria.

A reference to a project being in registration means that an application has been submitted to a health authority for marketing approval. Compounds and new indications in development are subject to required regulatory approvals and, in certain instances, contractual limitations. These compounds and indications are in various stages of development throughout the world. It may not be possible to obtain regulatory approval for any or all of the new compounds and new indications referred to in this Form 20-F in any country or in every country. See "—Regulation" for more information on the approval process.

## *Selected development projects*

| Compound/ product | Common name | Mechanism of action | Potential indication | Category | Formulation/ route of administration | Year project entered current development phase | Planned filing dates/current phase |
|---|---|---|---|---|---|---|---|
| AVXS-101 (OAV101) | onasemno-gene abepar-vovec | Survival motor neuron (SMN) gene therapy | Spinal muscular atrophy (IT formulation) | Neuroscience | Intrathecal injection | 2021 | 2025/III |
| *Beovu* | brolucizumab | VEGF inhibitor | Diabetic retinopathy | Ophthalmology | Intravitreal injection | 2020 | 2025/III |
| CFZ533 | iscalimab | CD40 inhibitor | Sjögren's syndrome | Immunology | Subcutaneous injection | 2019 | ≥2026/II |
| *Coartem* | artemether + lumefantrine | PGH-1 (artemisinin combination therapy) | Malaria, uncomplicated (<5 kg patients) | Global Health | Oral | 2020 | 2024/III |
| *Cosentyx* | secukinumab | IL-17A inhibitor | Hidradenitis suppurativa | Immunology | Subcutaneous injection | 2022 | US/EU registration |
| | | | Giant cell arteritis | Immunology | Subcutaneous injection | 2021 | 2025/III |
| | | | Lupus nephritis | Immunology | Subcutaneous injection | 2020 | ≥2026/III |
| | | | Psoriatic arthritis (IV formulation) | Immunology | Intravenous infusion | 2022 | US registration |
| | | | Ankylosing spondylitis (IV formulation) | Immunology | Intravenous infusion | 2022 | US registration |
| JDQ443 | TBD | KRAS inhibitor | Non-small cell lung cancer, 2/3L [1] | Solid Tumor | Oral | 2022 | 2024/III |
| KAE609 | cipargamin | PfATP4 inhibitor | Malaria, uncomplicated | Global Health | Oral | 2017 | ≥2026/II |
| | | | Malaria, severe | Global Health | Oral | 2022 | ≥2026/II |
| KAF156 | ganaplacide | Non-artemisinin plasmodium falciparum inhibitor | Malaria, uncomplicated | Global Health | Oral | 2017 | ≥2026/II |
| *Kisqali* | ribociclib | CDK4 inhibitor | Hormone receptor-positive (HR+)/human epidermal growth factor receptor 2-negative (HER2-) early breast cancer (adjuvant) | Solid Tumor | Oral | 2018 | 2023/III |
| *Leqvio* | inclisiran | siRNA (regulation of LDL-C) | Secondary prevention of cardiovascular events in patients with elevated levels of LDL-C | Cardiovascular | Subcutaneous injection | 2018 | ≥2026/III |
| LNA043 | TBD | ANGPTL3 agonist | Knee osteoarthritis | Immunology | Intra-articular | 2021 | ≥2026/II |
| LNP023 | iptacopan | CFB inhibitor | IgA nephropathy | Cardiovascular | Oral | 2021 | 2024/III |
| | | | C3 glomerulopathy | Cardiovascular | Oral | 2021 | 2024/III |
| | | | Paroxysmal nocturnal hemoglobinuria | Hematology | Oral | 2021 | 2023/III |
| | | | Atypical hemolytic uremic syndrome | Hematology | Oral | 2021 | ≥2026/III |
| LOU064 | remibrutinib | BTK inhibitor | Chronic spontaneous urticaria | Immunology | Oral | 2021 | 2024/III |
| | | | Sjögren's syndrome | Immunology | Oral | 2019 | ≥2026/II |
| | | | Multiple sclerosis | Neuroscience | Oral | 2021 | ≥2026/III |
| *Lutathera* | lutetium Lu 177 dotatate/ lutetium ($^{177}$Lu) oxodotreotide | Radioligand therapy targeting SSTR | Gastroenteropancreatic neuroendocrine tumors, 1$^{st}$ line in G2/3 tumors | Solid Tumor | Intravenous infusion | 2020 | 2023/III |
| LXE408 | TBD | Proteasome inhibitor | Visceral leishmaniasis | Global Health | Oral | 2022 | ≥2026/II |
| MBG453 | sabatolimab | TIM-3 antagonist | Myelodysplastic syndrome | Hematology | Intravenous infusion | 2020 | 2024/III |
| | | | Unfit acute myeloid leukemia | Hematology | Intravenous infusion | 2020 | ≥2026/II |
| MIJ821 | onfasprodil | NR2B negative allosteric modulator | Major depressive disorder | Neuroscience | Intravenous infusion | 2021 | ≥2026/II |
| NIS793 | TBD | TGF-beta 1 inhibitor | Pancreatic cancer, 1$^{st}$ line | Solid Tumor | Intravenous infusion | 2021 | 2025/III |
| *Piqray* | alpelisib | PI3K-alpha inhibitor | Ovarian cancer | Solid Tumor | Oral | 2021 | 2023/III |
| Pluvicto | lutetium Lu 177 vipivotide tetraxetan/ lutetium ($^{177}$Lu) vipivotide tetraxetan | Radioligand therapy targeting PSMA | Metastatic castration-resistant prostate cancer, pre-taxane | Solid Tumor | Intravenous infusion | 2021 | 2023/III |
| | | | Metastatic hormone-sensitive prostate cancer | Solid Tumor | Intravenous infusion | 2021 | 2024/III |

[1] Project added to selected development projects table in 2022 – entered Confirmatory Development

| Compound/ product | Common name | Mechanism of action | Potential indication | Category | Formulation/ route of administration | Year project entered current development phase | Planned filing dates/current phase |
|---|---|---|---|---|---|---|---|
| PPY988[2] | TBD | Gene therapy - complement factor I modulation | Geographic atrophy | Ophthalmology | Subretinal injection | 2022 | ≥2026/II |
| QGE031 | ligelizumab | IgE inhibitor | Food allergy | Immunology | Subcutaneous injection | 2021 | ≥2026/III |
| SAF312 | libvatrep | TRPV1 antagonist | Chronic ocular surface pain | Ophthalmology | Topical | 2016 | ≥2026/II |
| *Scemblix* | asciminib | BCR-ABL inhibitor | Chronic myeloid leukemia, 1st line | Hematology | Oral | 2021 | 2025/III |
| SKO136[3] | ensovibep | Multispecific DARPin | Coronavirus infection | Global Health | Intravenous infusion | Not applicable (N/A) | TBD[4]/II |
| TQJ230 | pelacarsen | ASO targeting lipoprotein(a) | Secondary prevention of cardiovascular events in patients with elevated levels of lipoprotein(a) | Cardiovascular | Subcutaneous injection | 2019 | 2025/III |
| VAY736 | ianalumab | BAFF-R inhibitor | Autoimmune hepatitis | Immunology | Subcutaneous injection | 2018 | ≥2026/II |
| | | | Lupus nephritis[5] | Immunology | Subcutaneous injection | 2022 | ≥2026/III |
| | | | Sjögren's syndrome | Immunology | Subcutaneous injection | 2022 | ≥2026/III |
| | | | Warm autoimmune hemolytic anemia[5] (wAIHA) | Hematology | Intravenous infusion | 2022 | ≥2026/III |
| VDT482 | tislelizumab | Anti-PD-1 monoclonal antibody | Esophageal cancer, 2nd line | Solid Tumor | Intravenous infusion | N/A | US/EU registration |
| | | | Non-small cell lung cancer | Solid Tumor | Intravenous infusion | N/A | EU registration |
| | | | Nasopharyngeal carcinoma, 1st line | Solid Tumor | Intravenous infusion | N/A | 2023/III |
| | | | Gastric cancer, 1st line | Solid Tumor | Intravenous infusion | N/A | 2023/III |
| | | | Esophageal cancer, 1st line | Solid Tumor | Intravenous infusion | N/A | 2023/III |
| | | | Localized esophageal cancer | Solid Tumor | Intravenous infusion | N/A | 2024/III |
| | | | Hepatocellular carcinoma, 1st line | Solid Tumor | Intravenous infusion | N/A | 2023/III |
| | | | Small cell lung cancer, 1st line | Solid Tumor | Intravenous infusion | N/A | 2024/III |
| | | | Urothelial cell carcinoma, 1st line[6] | Solid Tumor | Intravenous infusion | N/A | ≥2026/III |
| VPM087 | gevokizumab | IL-1 beta antagonist | Colorectal cancer, 1st line | Solid Tumor | Intravenous infusion | 2019 | ≥2026/I |
| *Xolair* | omalizumab | IgE inhibitor | Food allergy | Immunology | Subcutaneous injection | 2019 | 2023/III |
| XXB750[5] | TBD | NPR1 agonist | Hypertension | Cardiovascular | Subcutaneous injection | 2022 | ≥2026/II |

[2] Entered confirmatory development following the acquisition of Gyroscope Thereapeutics.
[3] In-licensed from Molecular Partners in 2021 (option deal)
[4] No definite submission date can be provided at this time
[5] Project added to selected development projects table in 2022 – entered Confirmatory Development
[6] Formerly "bladder urothelial cell carcinoma". Indication language updated in 2022 to reflect latest development plan

### *Projects removed from the development table since 2021*

| Compound/product | Potential indication | Change | Reason |
|---|---|---|---|
| ACZ885 (canakinumab) | Non-small cell lung cancer, adjuvant | Removed | Development discontinued |
| *Beovu* | Diabetic macular edema | Commercialized | |
| CFZ533 (iscalimab) | Liver transplantation | Removed | Development discontinued |
| *Cosentyx* | Ankylosing spondylitis head-to-head study versus Sandoz biosimilar Hyrimoz (adalimumab) | Removed | Development discontinued |
| *Cosentyx* | Lichen Planus | Removed | Development discontinued |
| CSJ117 | Asthma | Removed | Development discontinued |
| *Jakavi* | Acute graft-versus-host disease | Commercialized | |
| *Jakavi* | Chronic graft-versus-host disease | Commercialized | |
| *Kymriah* | Relapsed/refractory follicular lymphoma | Commercialized | |
| LJN452 | Nonalcoholic steatohepatitis | Removed | Development discontinued |
| LMI070 | Huntington's disease | Removed | Development discontinued |
| LNP023 | Membranous nephropathy | Removed | Development discontinued |
| *Vijoice* [1] | PIK3CA-related overgrowth spectrum | Commercialized | |
| *Piqray* | Triple negative breast cancer | Removed | Development discontinued |
| *Piqray* | Human epidermal growth factor receptor 2-positive (HER2+) advanced breast cancer | Removed | Development discontinued |
| *Pluvicto* | Metastatic castration-resistant prostate cancer, post-taxane | Commercialized | |
| QBW251 (icenticaftor) | Chronic obstructive pulmonary disease | Removed | Development discontinued |
| QGE031 (ligelizumab) | Chronic spontaneous urticaria | Removed | Development discontinued |
| QGE031 (ligelizumab) | Chronic inducible urticaria | Removed | Development discontinued |
| *Scemblix* | Chronic myeloid leukemia, 3rd line | Commercialized | |
| UNR844 | Presbyopia | Removed | Development discontinued |

[1] Formerly listed as BYL719

## Principal markets

The Innovative Medicines Division sells products in approximately 130 countries worldwide. Net sales are primarily concentrated in the US and Europe. The following table sets forth the aggregate 2022 net sales of the Innovative Medicines Division by region:

### Innovative Medicines

| | 2022 net sales to third parties | |
|---|---|---|
| | USD millions | % |
| United States | 15 899 | 39 |
| Europe | 13 554 | 33 |
| Asia, Africa, Australasia | 8 929 | 22 |
| Canada and Latin America | 2 914 | 6 |
| **Total** | **41 296** | **100** |
| Of which in Established Markets [1] | 30 548 | 74 |
| Of which in Emerging Growth Markets [1] | 10 748 | 26 |

[1] Emerging Growth Markets comprise all markets other than the Established Markets of the US, Canada, Western Europe, Japan, Australia and New Zealand.

Many of our Innovative Medicines Division products are used for chronic conditions that require patients to consume the product over long periods of time, ranging from months to years. However, certain of our marketed products and development projects, such as cell and gene therapies, are administered only once. Net sales of the vast majority of our products are not subject to material changes in seasonal demand.

## Production

Our primary goal is to ensure the uninterrupted and timely supply of medicines that meet all product specifications and quality standards, and that are produced in the most cost-effective and sustainable manner. The manufacturing of our products is highly regulated by governmental health authorities around the world, including the US Food and Drug Administration (FDA) and European Medicines Agency (EMA). In addition to regulatory requirements, many of our products involve technically complex manufacturing processes or require highly specialized raw materials.

In 2022, we began to integrate Advanced Accelerator Applications (AAA), a Novartis company that focuses on radioligand therapies, into our existing manufacturing and supply structure. We manufacture our products across the following technologies at facilities worldwide: large molecules, small molecules, cell and gene therapy, RNA therapy and radioligand therapy (see also "—Item 4.D Property, plants and equipment"). In our manufacturing network, we maintain state-of-the-art processes, with quality as a priority, and require our suppliers to adhere to the same high standards we expect from our own people and processes. These processes include: chemical and biological syntheses; radioisotope handling, which relates to our radioligand therapies; sterile processing, including CAR-T cell processing; and formulation and packaging. We are constantly working to improve our existing manufacturing processes, develop new and innovative technologies, and review and adapt our manufacturing network to meet our needs and those of our patients and customers.

We produce raw materials for manufacturing in-house or purchase them from a number of third-party suppliers. Where possible, we maintain multiple supply sources so that the business is not dependent on a single or limited number of suppliers. However, our ability to do so may at times be limited by regulatory or other requirements. We monitor market developments that could have an adverse effect on the supply of essential materials. Our suppliers of raw materials are required to comply with applicable regulations and Novartis quality standards.

Because the manufacturing of our products is complex and highly regulated by governmental health authorities, supply is never guaranteed. If we or our third-party suppliers fail to comply with applicable regulations, then there could be a product recall or other disruption to our production activities. We have experienced supply interruptions for our products in the past, and there can be no assurance that supply will not be interrupted again in the future. However, we have implemented a global manufacturing strategy to maximize business continuity in case of such events.

## Marketing and sales

The Innovative Medicines Division serves customers with 21 564 field force representatives, as of December 31, 2022, including supervisors and administrative personnel. These trained representatives present the therapeutic benefits and risks of our products to physicians, pharmacists, hospitals, insurance groups, managed care organizations and other healthcare professionals. In the US, Novartis advertises certain products via digital and traditional media channels, including the internet, television, newspapers and magazines. Novartis also pursues co-promotion or co-marketing opportunities as well as licensing and distribution agreements with other companies in various markets.

The marketplace for healthcare is evolving. Customer groups beyond prescribers have increasing influence on treatment decisions and guidelines, while patients continue to become more informed stakeholders in their healthcare decisions and look for solutions to meet their changing needs. Novartis is responding by adapting our business practices to engage appropriately with patients, customer groups and other stakeholders, including by delivering innovative solutions to drive education, access and improved patient care.

The COVID-19 pandemic has accelerated additional changes related to marketing and sales techniques in the healthcare industry. For example, many healthcare professionals have increased their use of virtual platforms when interacting with pharmaceutical companies, and prefer to receive information in a more convenient and personalized way. In response, Novartis is working to implement a new customer engagement model that combines traditional face-to-face visits with digital and other methods of engaging healthcare professionals to improve the efficiency and effectiveness of every interaction. We are similarly changing our approach to engaging healthcare systems, payers and other healthcare providers.

Although specific distribution patterns vary by country, Novartis generally sells its prescription drugs primarily to wholesale and retail drug distributors, hospitals, clinics, government agencies and managed healthcare providers. The growing number of so-called "specialty" drugs in our portfolio has resulted in increased engagement with specialty pharmacies.

In the US, the US Centers for Medicare & Medicaid Services (CMS) is the largest single payer for healthcare services as a result of continuing changes in healthcare economics and an aging population. In addition, both commercial and government-sponsored managed care organizations continue to be among the largest groups of payers for healthcare services in the US. In other countries, national health services are often the only significant payer for healthcare services. In an effort to control prescription drug costs, almost all managed care organizations and national health services use formularies that list specific drugs that may be reimbursed and/or the level of reimbursement for each drug. Managed care organizations and national health services also increasingly use cost-benefit analyses to determine whether or not newly approved drugs will be added to a formulary and/or the level of reimbursement for that drug, and to determine whether or not to continue to reimburse existing drugs. We have dedicated teams that actively seek to optimize patient access, including formulary positions, for our products.

The trend toward consolidation among distributors and retailers of Innovative Medicines Division products continues in the US and internationally, both within and across countries. This has increased our customers' purchasing leverage and resulted in increased pricing pressure on our products. Moreover, we are exposed to increased concentration of credit risk as a result of the consolidation among our customers.

Drug pricing is an increasingly prominent issue in many countries as healthcare spending continues to rise. This issue has received significant attention in the US, especially with the recent passage of the Inflation Reduction Act (please see "—Price controls" for more information). At Novartis, we are increasing our efforts to enable patient access through innovative pricing and access initiatives in the US, Europe and other markets. These include contract structures such as pay-over-time and outcome-based agreements.

In 2021, Novartis reached an agreement with the National Health Service (NHS) in England to implement a first-of-its-kind population health management approach designed to provide faster and broader access to *Leqvio* for certain high-risk patients with atherosclerotic cardiovascular disease. Novartis is engaging in similar collaborations with other countries.

Additionally, following conditional approval of *Zolgensma* in Europe in 2020, Novartis Gene Therapies established "Day One" early access agreements in multiple European countries. These agreements support early patient access by allowing a variety of customizable options, including retroactive rebates, deferred payments, installment options, outcome-based rebates, and collaborations with healthcare systems to optimize disease management. These efforts have expanded globally, and we now have multiple early access agreements and pay-for-performance agreements (i.e., outcome-based arrangements) in place in various markets around the world. *Zolgensma* is approved in 45 countries.

## Competition

The global pharmaceutical market is highly competitive. We compete against other major international corporations that have substantial financial and other resources, as well as against smaller companies that operate regionally or nationally. Competition within the industry is intense and extends across a wide range of activities, including pricing, product characteristics, customer service, sales and marketing, and research and development.

Like other companies selling patented pharmaceuticals, Novartis faces challenges from companies selling competing patented products. Generic forms of our products may follow the expiry of intellectual property protection or regulatory exclusivities, and generic companies may also gain entry to the market through successfully challenging our intellectual property rights and exclusivities. We use appropriate, legally permissible measures to defend those rights and exclusivities. (See also "—Intellectual property" below). We also may face competition from over-the-counter (OTC) products that do not require a prescription from a physician.

There is ongoing consolidation in the pharmaceutical industry. At the same time, new entrants are looking to use their expertise to establish or expand their presence in healthcare, including technology companies seeking to benefit from the increasing importance of data and data management in our industry.

## Research and development

The discovery and development of a new drug usually requires approximately 10 to 15 years from the initial research to bringing a drug to market. This includes

approximately six to eight years from Phase I clinical trials to market entry. At each of these steps, there is a substantial risk that a compound (i.e., drug or biologic) or other therapeutic candidate will not meet the requirements to progress further. In such an event, we may be required to abandon the development of a potential therapy in which we have made a substantial investment.

We manage our research and development expenditures across our entire portfolio in accordance with our strategic priorities. We make decisions about whether or not to proceed with development projects on a project-by-project basis. These decisions are based on the project's potential to meet a significant unmet medical need or to improve patient outcomes, the strength of the science underlying the project, and the potential of the project (subject to the risks inherent in pharmaceutical development) to generate significant positive financial results for the Company. Once a management decision has been made to proceed with the development of a particular molecule, the level of research and development investment required will be driven by many factors. These include the medical indications for which it is being developed, the number of indications being pursued, whether the molecule is of a chemical or biological nature, the stage of development, and the level of evidence necessary to demonstrate clinical efficacy and safety.

**Research program**

Our research program is conducted by the Novartis Institutes for BioMedical Research (NIBR), which is the research and early development innovation engine of Novartis. NIBR is responsible for the discovery of new medicines for diseases with unmet medical need. We focus our work in areas where we believe we can have the most impact for patients. This requires the hiring and retention of highly talented employees, a focus on fundamental disease mechanisms that are relevant across different disease areas, continuous improvement in technologies for drug discovery and potential therapies, working with patients to understand their diseases and the potential benefits of therapies, close alliances with clinical and commercial colleagues, and the establishment of strategic external alliances.

Approximately 5 500 full-time-equivalent scientists, physicians and business professionals work at NIBR sites in Basel, Switzerland; Cambridge, Massachusetts; East Hanover, New Jersey; San Diego, California; and Emeryville, California. They contribute to research into disease areas such as cardiovascular, renal and metabolic diseases; neuroscience; oncology; hematology; muscle disorders; ophthalmology; autoimmune diseases; and respiratory and allergic diseases. Research at the Friedrich Miescher Institute focuses on basic genetic and genomic research, and the Novartis Institute for Tropical Diseases (NITD), in Emeryville, California, focuses on discovering new medicines to fight tropical diseases, including malaria and cryptosporidiosis.

All drug candidates go through proof-of-concept trials to enable an early assessment of the safety and efficacy of the drug while collecting basic information on pharmacokinetics and tolerability, and adhering to the guidance for early clinical testing set forth by health authorities. Following proof of concept, our Global Drug Development unit conducts confirmatory trials on the drug candidates.

In 2022, we integrated the Genomics Institute of the Novartis Research Foundation (GNF), which is based in San Diego, US, into NIBR. This enables closer collaboration with colleagues across NIBR and gives greater access to biological, therapeutic, and translational platforms to researchers across Novartis. The NIBR San Diego site is focused on developing novel technology to drive drug discovery research, including regenerative medicine, small interfering RNA therapy and covalent drug discovery.

**Development program**

Our Global Drug Development (GDD) organization oversees and executes drug development activities, working collaboratively with NIBR, our commercial organization and other parts of the Company on our overall pipeline strategy. The GDD organization includes centralized global functions such as Regulatory Affairs and Global Development Operations, and global Development Units, and has approximately 12 800 full-time equivalent employees worldwide.

The traditional model of clinical development consists of three phases:

**Phase I:** The first clinical trials of a new compound – generally performed in a small number of healthy human volunteers – to assess the drug's safety profile, including the safe dosage range. These trials also determine how a drug is absorbed, distributed, metabolized and excreted, and the duration of its action.

**Phase II:** Clinical studies performed with patients who have the target disease, with the aim of continuing the Phase I safety assessment in a larger group, assessing the efficacy of the drug in the patient population, and determining the appropriate doses for further evaluation.

**Phase III:** Large-scale clinical studies with several hundred to several thousand patients, which are conducted to establish the safety and efficacy of the drug in specific indications for regulatory approval. Phase III trials may also be used to compare a new drug against a current standard of care to evaluate the overall benefit-risk relationship of the new medicine.

In each of these phases, physicians monitor volunteer patients closely to assess the safety and efficacy of a potential new drug or indication.

Although we use this traditional model, we have tailored the development process to be simpler, more flexible and more efficient. We divide the development process into two stages: Exploratory Development to establish proof of concept, followed by Confirmatory Development to confirm the concept in large numbers of patients. Exploratory Development consists of clinical proof-of-concept (PoC) studies, which are small clinical trials (typically involving between five and 15 patients) that combine elements of traditional Phase I/II testing. NIBR conducts these customized trials, which are designed to give early insights into issues such as safety, efficacy and toxicity for a drug in a given indication. Once a positive proof of concept has been established, the

drug moves to the Confirmatory Development stage and becomes the responsibility of GDD. Confirmatory Development has elements of traditional Phase II/III testing and includes trials aimed at confirming the safety and efficacy of the drug in the given indication, leading up to submission of a dossier to health authorities for approval. This stage can also include trials that compare the drug to the current standard of care for the disease in order to evaluate the drug's overall benefit-risk profile. Further, with new treatment approaches such as gene therapy for rare diseases, elements of Exploratory and Confirmatory Development may be combined and suffice for registration under certain conditions such as high unmet medical need and clinical data showing highly favorable benefit-risk. In these cases, additional post-approval studies may be required by the regulatory authorities to continue to gather important data to further support approval.

The vast amount of data that must be collected and evaluated makes clinical testing the most time-consuming and expensive part of new drug development. The next stage in the drug development process is to seek registration for the new drug. For more information, see "—Regulation."

Our Innovation Management Board (IMB) is responsible for all strategic aspects of our development portfolio and oversees our drug development budget as well as major project phase transitions and milestones following a positive proof-of-concept outcome, including transitions to Confirmatory Development and the decision to submit a regulatory application to the health authorities. The IMB is also responsible for the endorsement of overall development strategy, the endorsement of development project priorities, and decisions on project discontinuations. Our Chief Executive Officer chairs the IMB, and other representatives from Novartis senior management, with expertise spanning multiple fields, are among its core and extended membership.

**Alliances and acquisitions**

Our Innovative Medicines Division enters into business development agreements with other pharmaceutical and biotechnology companies and with academic and other institutions to develop new products and access new markets. We license products that complement our current product line and are appropriate to our business strategy. We focus on strategic alliances and acquisition activities for key disease areas and indications that we expect to be growth drivers in the future. We review products and compounds we are considering licensing, using the same criteria that we use for our own internally discovered drugs.

In February 2022, Novartis completed the acquisition of Gyroscope Therapeutics Holdings Plc. Through the acquisition, Novartis added PPY988 (GT005), an investigational one-time gene therapy for geographic atrophy, to its portfolio.

For more information about recent business acquisitions, see "Item 18. Financial Statements—Note 2. Significant transactions."

## Regulation

The international pharmaceutical industry is highly regulated. Regulatory authorities around the world administer numerous laws and regulations regarding the testing, approval, manufacturing, importing, labeling and marketing of drugs, and review the safety and efficacy of pharmaceutical products. Extensive controls exist on the non-clinical and clinical development of pharmaceutical products. These regulatory requirements, and the implementation of them by local health authorities around the globe, are a major factor in determining whether a substance can be developed into a marketable product, and the amount of time and expense associated with that development.

Health authorities, including those in the US and the EU, have high standards of technical evaluation. The introduction of new pharmaceutical products generally entails a lengthy approval process. Products must be authorized or registered prior to marketing, and such authorization or registration must subsequently be maintained. In recent years, the registration process has required increased testing and documentation for the approval of new drugs, with a corresponding increase in the expense of product introduction.

To register a pharmaceutical product, a registration dossier containing evidence establishing the safety, efficacy and quality of the product must be submitted to regulatory authorities. Generally, a therapeutic product must be registered in each country in which it will be sold. In every country, the submission of an application to a regulatory authority does not guarantee that approval to market the product will be granted. Although the criteria for the registration of therapeutic drugs are similar in most countries, the formal structure of the necessary registration documents and the specific requirements, including risk tolerance, of the local health authorities can vary significantly from country to country. Even if a drug is registered and marketed in one country, the registration authority in another country may request additional information from the pharmaceutical company prior to registration or even reject the product. A drug may be approved for different indications in different countries.

The registration process generally takes between six months and several years, depending on the country, the quality of the data submitted, the efficiency of the registration authority's procedures, and the nature of the product. Many countries provide for accelerated processing of registration applications for innovative products of particular therapeutic interest. In recent years, the US and the EU have made efforts to harmonize registration requirements in order to achieve shorter development and registration times for medical products. However, the requirement in many countries to negotiate selling prices or reimbursement levels with government regulators and other payers can substantially extend the time until a product may finally be available to patients.

The following provides a summary of the regulatory processes in the principal markets served by Innovative Medicines Division affiliates:

### United States

In the US, applications for drug registration are submitted to and reviewed by the FDA. The FDA regulates the testing, manufacturing, labeling and approval for marketing of pharmaceutical products intended for commercialization in the US. The FDA continues to monitor the safety of pharmaceutical products after they have been approved for sale in the US market. The pharmaceutical development and registration process is typically intensive, lengthy and rigorous. When a pharmaceutical company has gathered data that it believes sufficiently demonstrates a drug's safety, efficacy and quality, the company may file a New Drug Application (NDA) or Biologics License Application (BLA), as applicable, for the compound. The NDA or BLA must contain all the scientific information that has been gathered about the compound. This typically includes information regarding the clinical experiences of patients tested in the drug's clinical trials. A Supplemental New Drug Application (sNDA) or Supplemental Biologics License Application (sBLA) must be filed for new indications and dosage forms for a previously approved drug.

Once an application is submitted, the FDA assigns reviewers from its staff, including experts in biopharmaceutics, chemistry, clinical microbiology, pharmacology/toxicology, and statistics. After a complete review, these content experts provide written evaluations of the NDA or BLA. These recommendations are consolidated and are used by senior FDA staff in its final evaluation of the NDA or BLA. Based on that final evaluation, the FDA then provides to the NDA or BLA's sponsor an approval, or a "complete response" letter if the NDA or BLA application is not approved. If not approved, the letter will state the specific deficiencies in the NDA or BLA that need to be addressed. The sponsor must then submit an adequate response to the deficiencies in order to restart the review procedure.

Once the FDA has approved an NDA, BLA, sNDA or sBLA, the company can make the new drug available for physicians and other healthcare providers to prescribe. The drug owner must submit periodic reports to the FDA, including any cases of adverse reactions. For some medications, the FDA requires additional post-approval studies (Phase IV) to evaluate long-term effects or to gather information on the use of the product under specified conditions.

Throughout the life cycle of a product, the FDA requires compliance with standards relating to good laboratory, clinical and manufacturing practices. The FDA also requires compliance with rules pertaining to the manner in which we may promote our products.

### European Union

In the EU, there are three main procedures for application for authorization to market pharmaceutical products in more than one EU member state at the same time: the centralized procedure, the mutual recognition procedure and the decentralized procedure. It is also possible to obtain a national authorization for products intended for commercialization in a single EU member state only. The procedure used for first authorization must continue to be followed for subsequent changes, e.g., to add an indication for a licensed product.

Under the centralized procedure, applications are made to the EMA for an authorization that is valid for the European Union (all member states). The centralized procedure is mandatory for all biotechnology products; new chemical entities in cancer, neurodegenerative disorders, diabetes, AIDS, autoimmune diseases and other immune dysfunctions; advanced therapy medicines, such as gene therapy, somatic cell therapy and tissue-engineered medicines; and orphan medicines (medicines for rare diseases). It is optional for other new chemical entities, innovative medicinal products, and medicines for which authorization would be in the interest of public health. When a pharmaceutical company has gathered data that it believes sufficiently demonstrates a drug's safety, efficacy and quality, the company may submit an application to the EMA. The EMA then receives and validates the application, and the specialized committee for human medicines, the CHMP, appoints a rapporteur and co-rapporteur to review it. They use experts from their countries to carry out the assessment but can also draw on expertise from other member states ("multinational teams"). The entire review cycle must be completed within 210 days, although there are "clock stops" to allow the company to respond to questions set forth in the rapporteur and co-rapporteur's assessment report and agreed with the CHMP. The first clock stop is at Day 120 and the clock restarts on Day 121, when the company's complete response is received by the EMA. If there are further aspects of the dossier requiring clarification, the CHMP will issue further questions at Day 180, and may also request an oral explanation, in which case the sponsor must not only respond to the further questions but also appear before the committee to justify its responses. On Day 210, the CHMP will take a vote to recommend the approval or non-approval of the application, and their opinion is transferred to the EC. The final EC decision under this centralized procedure is a single decision that is applicable to all member states. This decision occurs 60 days, on average, after a positive CHMP recommendation.

Under both the mutual recognition procedure (MRP) and the decentralized procedure (DCP), the assessment is led by one member state, called the reference member state (RMS) which then liaises with other member states, known as the concerned member states. In the MRP, the company first obtains a marketing authorization in the RMS, which is then recognized by the concerned member states in 90 days. In the DCP, the application is done simultaneously in the RMS and all concerned member states. During the DCP, the RMS drafts an assessment report within 120 days. Within an additional 90 days, the concerned member states review the application and can issue objections or requests for additional information. On Day 90, each concerned member state must be assured that the product is safe and effective, and that it will cause no undue risks to the public health. Once an agreement has been reached, each member state grants national marketing authorizations for the product.

After receiving the marketing authorizations, the company must submit periodic safety reports to the relevant health authority (EMA for the centralized procedure, national health authorities for DCP or MRP). In addition, pharmacovigilance measures must be implemented

and monitored, including the collection, evaluation and expedited reporting of adverse events, and updates to risk management plans. For some medications, post-approval studies (Phase IV) may be imposed to complement available data with additional data to evaluate long-term effects (called a Post-Approval Safety Study, or PASS) or to gather additional efficacy data (called a Post-Approval Efficacy Study, or PAES).

European marketing authorizations have an initial duration of five years. The holder of the marketing authorization must actively apply for its renewal after this first five-year period. As part of the renewal procedure, the competent authority performs a full benefit-risk review of the product. Should the authority conclude that the benefit-risk balance is no longer positive, the marketing authorization can be suspended or revoked. Once renewed, the marketing authorization is valid for an unlimited period, unless it is determined that the product must be further monitored for safety reasons. In this case, the authority may require another renewal at 10 years. If the holder does not apply for renewal, the marketing authorization automatically lapses. Any marketing authorization that is not followed within three years of its granting by the actual placing on the market of the corresponding medicinal product ceases to be valid.

## Price controls

In most of the markets where we operate, the prices of pharmaceutical products are subject to both direct and indirect price controls and to drug reimbursement programs with varying price control mechanisms. Due to increasing political pressure and governmental budget constraints, we expect these mechanisms to remain robust – and potentially even strengthened – and to have a continued negative influence on the prices we are able to charge for our products.

### Direct governmental efforts to control prices

United States: The Inflation Reduction Act of 2022 (the "Act") was signed into law, which mandates the negotiation of eligible Medicare Part B and Part D drugs; redesigns the Medicare Part D benefit, including a USD 2 000 out-of-pocket cap for Medicare beneficiaries; and imposes penalties for Medicare drugs that increase in price faster than the rate of inflation. Under the Act, the US government is required to negotiate the Medicare prices of single-sourced small molecule drugs that have been on the market for seven years following FDA approval as well as single-sourced biologics that have been on the market for 11 years after FDA approval.

Medicare drugs with the highest total cost to the US government will be selected for negotiation once they become eligible. Exemptions include orphan drugs with an indication for one rare disease or condition, drugs with a total cost to the US government of less than USD 200 million, and plasma-derived drugs.

The negotiated price will be publicly available and will become effective for selected drugs nine years after FDA approval for eligible small molecules and 13 years after approval for eligible biologics. The negotiated price will be implemented as follows:

- 10 eligible Medicare Part D drugs in 2026;
- an additional 15 eligible Medicare Part D drugs in 2027;
- an additional 15 eligible combined Medicare Part B and Part D drugs in 2028;
- an additional 20 eligible combined Medicare Part B and Part D drugs in 2029; and
- an additional 20 eligible combined Medicare Part B and Part D drugs each year after 2029

Novartis will participate in the Medicare negotiation process if Novartis drugs are selected. Pharmaceutical manufacturers that choose not to participate in the negotiation process will be subject to an excise tax of up to 95% of sales. Novartis may also be affected by other provisions of the Act, such as price increase penalties for Medicare Part D drugs starting in 2022 and for Medicare Part B drugs in 2023, and rebates on eligible Medicare Part D sales starting in 2025.

In addition, by December 31, 2022, 20 US states had passed legislation intended to impact pricing or requiring manufacturer price transparency reporting, with eight of these states also allowing for drug affordability (i.e., price control) review boards. The disclosure requirements vary by state. Many states require multiple types of reporting, including for new drug applications, new drug launches, prior notice of price increases, and quarterly or annual reporting. It is expected that state legislatures will continue to focus on drug pricing in 2023 and that similar bills will be passed in more states.

Europe: In Europe, our operations are subject to significant price and marketing regulations. Many governments are introducing healthcare reforms in a further attempt to curb increasing healthcare costs. In some member states, these include reforms to permit the reimbursed use of off-label medicines, despite the presence of licensed alternatives on the market. In the EU, governments influence the price of pharmaceutical products through their control of national healthcare systems that fund a large part of the cost of such products to patients. The downward pressure on healthcare costs in general in the EU, particularly with regard to prescription drugs, is intense. Increasingly strict analyses are applied when evaluating the entry of new products, and as a result, access to innovative medicines is limited based on strict cost-benefit assessments. In addition, prices for marketed products are referenced within member states and across international borders, further impacting individual EU member state pricing. Member states also collaborate to enhance pricing transparency and have started conducting joint health technology assessments, joint pricing negotiations and/or joint purchasing. As an additional control for healthcare budgets, some EU countries have passed legislation to impose further mandatory rebates for pharmaceutical products and/or financial claw-backs on the pharmaceutical industry. The calculation of these rebates and claw-backs may lack transparency in some cases and can be difficult to predict.

### Regulations favoring generics and biosimilars

In response to rising healthcare costs, most governments and private medical care providers have established reimbursement schemes that favor the substitution of generic pharmaceuticals for more expensive

brand-name pharmaceuticals. All US states have generic substitution statutes. These statutes permit or require the dispensing pharmacist to substitute a less expensive generic drug instead of an original drug. Other countries, including many European countries, have similar laws. We expect that the pressure for generic substitution will continue to increase. In addition, the US, the EU and other jurisdictions are increasingly introducing laws and regulations encouraging the development of biosimilar versions of biologic drugs, which can also be expected to have an impact on pricing.

**Cross-border sales**

Price controls in one country can have an impact in other countries as a result of cross-border sales. In the EU, products that we have sold to customers in countries with stringent price controls can be legally resold to customers in other EU countries at a lower price than the price at which the product is otherwise available in the importing country (known as parallel trade). In North America, products that we have sold to customers in Canada – which has relatively stringent price controls – are sometimes resold into the US, again at a lower price than the price at which the product is otherwise sold in the US. Such imports from Canada and other countries into the US are currently illegal in most states. However, six US states (Colorado, Florida, Minnesota, New Hampshire, New Mexico, and Vermont) have enacted laws allowing the import of pharmaceutical drugs from select foreign countries. The Secretary of the US Department of Health and Human Services (HHS) must certify that each state's importation plan is safe and cost-effective before it can be implemented.

We expect that pressures on pricing will continue worldwide and will likely increase. Because of these pressures, there can be no certainty that in every instance we will be able to charge prices for a product that, in a particular country or in the aggregate, would enable us to earn an adequate return on our investment in that product.

## Intellectual property

We attach great importance to intellectual property (IP) rights – including patents, trademarks, copyrights, know-how, trade secrets and regulatory data protection – as essential to our purpose of reimagining medicine to improve and extend people's lives, and to protect our investment in research and development, manufacturing and marketing. The IP system provides a means to attract the investments needed to conduct and sustainably finance innovative R&D, and to manage the risks inherent in our work. For example, we seek IP protection under applicable laws for significant product developments in major markets. Among other things, patents may cover the products themselves, including the product's active ingredient or ingredients and its formulation. Patents may cover processes for manufacturing a product, including processes for manufacturing intermediate substances used in the manufacture of the product. Patents may also cover particular uses of a product, such as its use to treat a particular disease, or its dosage regimen. In addition, patents may cover tests for certain diseases or biomarkers – which can improve patient outcomes when administered with certain drugs – as well as assays, research tools and other techniques used to identify new drugs. The protection afforded, which may vary from country to country, depends upon the type of patent, its duration and its scope of coverage.

In the US and other countries, the law recognizes that product development and review by the FDA and other health authorities can take an extended period, and provides an extension of patent term for a period related to the time taken for the conduct of clinical trials and for the health authority's review. However, the length of this extension and the patents to which it applies cannot be known in advance and can only be determined after the product is approved. In practice, it is not uncommon for patent term extensions (PTEs) or supplementary protection certificates (SPCs) to not fully account for the time it took to develop the product and receive marketing authorization. As a result, it is rarely the case, for example, that a `product's active ingredient(s) will have a full patent term at the time the product is approved by the FDA and other health authorities.

In addition to patent protection, various countries provide regulatory-based protection, including regulatory data protection (RDP) and/or other market exclusivities, for a prescribed period of time. RDP is a distinct type of IP right providing exclusivity that precludes a potential competitor from filing a regulatory application that relies on the sponsor's clinical trial data, or that precludes the regulatory authority from approving the application for a set period of time. The RDP period can vary depending on the type of data included in the sponsor's application. When it is available, market exclusivity, unlike RDP, may preclude a competitor from obtaining marketing approval for a product even if a competitor's application relies on its own data. RDP and market exclusivity periods generally run from the date a product is approved, and so their expiration dates cannot be known with certainty until the product approval date is known and exclusivity has been granted by the relevant authorities.

**United States**

***Patents***

In the US, a patent issued from an application filed today will receive a term of 20 years from the earliest application filing date, subject to potential patent term adjustments for delays in patent issuance based upon certain delays in prosecution by the United States Patent and Trademark Office (USPTO). A US pharmaceutical patent that claims a product, method of treatment using a product, or method of manufacturing a product may also be eligible for a PTE. This type of extension may only extend the patent term for a maximum of five years, and may not extend the patent term beyond 14 years from regulatory approval. Only one patent may be extended for a product based on FDA review.

***RDP and market exclusivity***

Separate from patent exclusivities, the FDA may provide regulatory-based protection, which runs in parallel to any patent protection.

- A new small-molecule active pharmaceutical ingredient receives five years of RDP, during which time a competitor generally may not obtain final approval of an

application to the FDA based on a sponsor's clinical data.
- A new biologic active pharmaceutical ingredient receives 12 years of regulatory-based market exclusivity, during which time a competitor generally may not market the same or similar drug.
- The FDA may also request that a sponsor conduct pediatric studies and, in exchange, it will grant an additional six-month period of pediatric market exclusivity if the sponsor makes a timely submission of the reports of the pediatric studies in response to the FDA's Written Request. The sponsor must also have a patent-based and/or regulatory-based exclusivity period for the product to which the pediatric market exclusivity is appended.
- Orphan drug exclusivity provides seven years of market exclusivity for drugs designated by the FDA as orphan drugs, meaning drugs that treat rare diseases. During this period, a potential competitor generally may not market the same or similar drug for the same indication even if the competitor's application does not rely on data from the sponsor.

**European Union**

***Patents***

Patent applications in Europe may be filed in the European Patent Office (EPO) or in a particular country or countries. The EPO system permits a single application to be granted for the EU plus other non-EU countries such as Switzerland, Turkey and the UK. When the EPO grants a patent, it is then validated in the countries that the patent owner designates. The term of a patent granted by the EPO or a European country office is 20 years from the earliest application filing date. Pharmaceutical patents can be granted a further period of exclusivity under the SPC system. SPCs are designed, in part, to account for the time taken to receive marketing authorization of a product by the European health authorities. An SPC may be granted to provide, in combination with the patent, up to 15 years of exclusivity from the date of the first European marketing authorization. However, an SPC cannot last longer than five years. The SPC duration may be extended by a further six months if the product is the subject of an agreed and successfully completed pediatric investigation plan. The post-grant phase of patents, including the SPC system, is currently administered on a country-by-country basis under national laws that, while differing, are intended to (but do not always) have the same effect.

***RDP and market exclusivity***

Separate from patent exclusivities, the EU provides a system of regulatory data protection for authorized human medicines that runs in parallel to any patent protection. The system for new drugs being approved today is usually referred to as "8+2+1" because it provides an initial period of eight years of data protection, during which a competitor cannot rely on the relevant data; a further period of two years of market exclusivity, during which the data can be used to support applications for marketing authorization but a competitive product cannot be launched; and a possible one-year extension of the market exclusivity period if, during the initial eight-year data exclusivity period, the sponsor registered a new therapeutic indication with "significant clinical benefit." This system generally applies both to national and centralized authorizations in the EU plus other non-EU countries such as the UK.

The EU also has an orphan drug exclusivity system for medicines. If a medicine is designated as an orphan drug, then it benefits from 10 years of market exclusivity after it is authorized, during which time an application for the same or similar medicine for the same indication will not generally be accepted or granted. Under certain circumstances, this exclusivity can be extended with a two-year pediatric extension.

**Third-party patents and challenges to intellectual property**

Third parties can challenge our IP, including patents, patent term extensions, RDP and marketing exclusivities (such as pediatric extensions and orphan drug exclusivity), through various proceedings. For example, patents in the US can be challenged in the United States Patent and Trademark Office (USPTO) through various proceedings, including Inter Partes Review (IPR) and Post-Grant Review (PGR) proceedings. They may also be challenged through patent infringement litigation under the Abbreviated New Drug Application (ANDA) provisions of the Hatch-Waxman Act or under the Biologics Price Competition and Innovation Act (BPCIA). In the EU, patents may be challenged through oppositions in the EPO, or national patents may be challenged in national courts or national patent offices. The outcomes of such challenges can be difficult to predict.

In addition to directly challenging our IP rights, in some circumstances a competitor may be able to market a generic version of one of our products by, for example, designing around our patents or marketing the generic product for non-patent-protected indications, or filing a separate New Drug Application (NDA) under the Hatch-Waxman Act (typically referred to as a 505(b)(2) application). Despite RDP, a competitor could opt to incur the costs of conducting its own clinical trials and preparing its own regulatory application, and avoid our RDP altogether. There is a risk that some countries may seek to impose limitations on or seek not to recognize the availability of IP rights for pharmaceutical products, or limit the extent to which such rights may be enforced. Also, even though we may own, co-own or in-license patents protecting our products, and conduct freedom-to-operate analyses, a third party may nevertheless assert that one of our products infringes a third-party patent for which we do not have a license, seeking remedies such as monetary damages or an injunction against our continued marketing of the product.

As a result, there can be no assurance that our IP rights will protect our products or that we will be able to avoid adverse effects from the loss of IP protection or from third-party patents in the future.

**Intellectual property protection for certain key marketed products and compounds in development**

We present additional details below regarding certain IP protection for the listed Innovative Medicines Division products. For each, we identify issued, unexpired

patents by their general subject matter and, in parentheses, years of expiry, if relevant, in the US and the EU. The identified patents are owned, co-owned or exclusively in-licensed by Novartis and relate to at least one dosage strength of the product or to the method of treatment or its use as it is currently approved and marketed or, in the case of a compound in development, as it is currently submitted to the FDA and/or the EMA for approval. Identification of an EU patent refers to national patents in EU countries and/or to the national patents that have been derived from a patent granted by the EPO. Novartis may own, co-own, control or have rights to additional patents, for example, relating to compound forms, methods of treatment or use, formulations, devices, processes, product-by-process, synthesis, purification and detection.

We identify unexpired RDP periods and, in parentheses, years of expiry if the relevant marketing authorizations have been authorized or granted. We identify certain unexpired patent term extensions and marketing exclusivities and, in parentheses, years of expiry if they are granted; their subject matter scope may be limited and is not specified. Marketing exclusivities and patent term extensions include orphan drug exclusivity (ODE), pediatric exclusivity (PE), patent term extension (PTE) and supplementary protection certificate (SPC). We designate these as "pending" if they have been applied for but not granted and include years of expiry if estimable. Such pending applications ultimately may or may not be granted.

In the case of the EU, identification of a patent, supplementary protection certificate, marketing exclusivity or regulatory data protection means grant, authorization and maintenance in at least one EU country or the UK. However, it could be pending, not granted, expired or found invalid in others.

For each product below, we indicate whether there is current generic or biosimilar competition for one or more product versions in one or more approved indications in either the US or one or more EU countries, if IP is otherwise disclosed. We identify certain enforcement actions, or ongoing challenges to the disclosed IP, including IPRs or PGRs if instituted by the USPTO, that have not been finally resolved (including appeals) unless noted. Challenges identified as being in administrative entities, such as national patent offices, include judicial appeals from decisions of those entities. Resolution of challenges to the disclosed IP, which in the EU may involve IP in one or more EU countries, may include settlement agreements under which Novartis permits or does not permit future launch of generic versions of our products before expiration of that IP. We identify certain material terms of such settlement agreements where they could have a material adverse effect on our business. In other cases, such settlement agreements may contain confidentiality obligations restricting what may be disclosed.

In the event that a product listed below does not have identified patents as described above, we provide information only on generic competition.

For additional information regarding commercial arrangements with respect to these products, see "—Key marketed products."

***Cardiovascular***

- *Entresto*. US: Four patents on combination (2023 (4)), PTE (2025), four PEs (2023, 2023, 2024, 2025); two patents on complex (2026, 2027), two PEs (2027, 2027); three patents on methods of treatment (2033 (3)); patent on dosage regimen (2036); RDP for new pediatric patient population (2022), PE (2023); RDP for labeling changes related to new clinical investigation (2024). EU: Patent on combination (2023), SPC (2028); two patents on complex (2026, 2026), two SPCs (2030, 2030); patent on formulation (2028); patent on method of use (2034); RDP (2025). There is no generic competition in the US or the EU. In the US, two combination patents, the two complex patents, and the dosage regimen patent are being challenged in ANDA proceedings against generic manufacturers. In the EU, one complex patent and the use patent are being opposed in the EPO. In some EU countries, the combination patent or its associated SPC is being challenged by generic manufacturers.

- *Leqvio*. US: Two patents on composition of matter (2027, 2034), PTE pending (2035); two patents on method of treatment and dosing regimen (2027, 2036); RDP (2026). EU: One patent on composition of matter (2033), SPC (2035); RDP (2030). There is no generic competition in the US or the EU.

***Immunology***

- *Cosentyx*. US: Five patents on composition of matter (2025 (4), 2026), PTE (2029); patent on psoriatic arthritis use (2031); patent on psoriasis use (2032); two patents on ankylosing spondylitis use (2032, 2033); RDP (2027). EU: Four patents on composition of matter (2025 (4)), SPC (2030), PE (2030); patent on psoriasis use (2031); patent on ankylosing spondylitis use (2031); RDP (2026). There is no generic competition in the US or the EU. In the EU, the patent on ankylosing spondylitis use is being opposed in the EPO.

- *Xolair*. US: Two patents on syringe formulation (2024, 2025). EU: Three patents on syringe formulation (2024, 2024, 2025). There is no generic competition in the US or the EU.

- *Ilaris*. US: Patent on composition of matter (2024); patent on cryopyrin-associated periodic syndromes use (2026); patent on familial Mediterranean fever (FMF) use (2026); patent on systemic onset juvenile idiopathic arthritis (SJIA) use (2028); patent on hyperimmunoglobulin D syndrome and tumor necrosis factor receptor-associated periodic syndrome use (2029); patent on formulation (2029). EU: Patent on composition of matter (2021), SPC (2024), PE (2025); patent on SJIA use (2026); patent on FMF use (2026); two patents on formulation (2029, 2029). There is no generic competition in the US or the EU.

***Neuroscience***

- *Gilenya*. US: Patent on dosage regimen (2027), PE (2027); patent on 0.25 mg formulation (2032), PE (2032); patent on method of treatment (2027). EU: Patent on formulation (2024), SPC (2026); patent on

0.25 mg formulation (2032); patent on dosing regimen (2027). There is generic competition in the US and in most EU countries. In the US, the dosage regimen patent was challenged in ANDA proceedings against a generic manufacturer and was found invalid by the US Court of Appeals for the Federal Circuit in June 2022. Novartis has filed a petition seeking further review with the US Supreme Court. Novartis is also enforcing the method of treatment patent against a generic manufacturer. In the EU, Novartis is enforcing the dosing regimen patent against generic manufacturers. The dosing regimen patent is being opposed in the EPO.

- *Zolgensma*. US: Four patents on composition of matter (2024, 2024, 2026, 2033), PTE pending (2029); three patents on methods of treatment (2028, 2028, 2029); ODE for spinal muscular atrophy (SMA) in patients less than 2 years old with biallelic mutations in the SMN1 gene (2026); RDP (2031). EU: Three patents on composition of matter (2024, 2024, 2028), SPC (2029); two patents on methods of use (2028, 2028), SPC (2033), SPC pending (2033); ODE for SMA in patients with a biallelic mutation in the SMN1 gene and a clinical diagnosis of SMA type 1, or patients with a biallelic mutation in the SMN1 gene and up to three copies of the SMN2 gene (2030); RDP (2030). There is no generic competition in the US or the EU.

- *Kesimpta*. US: Patent on compound (2031); patent on dosing regimen (2037). EU: Patent on compound (2023); patent on use (2023), SPC (2028); patent on formulation (2028), patent on formulation and use (2028), SPC (2033); patent on dosing regimen (2037). There is no generic competition in the US or the EU.

***Solid Tumor***

- *Tafinlar* and *Mekinist*.

  *Tafinlar*. US: Two patents on compound (2030, 2030); patent on method of treatment (2029). EU: Patent on compound (2029); RDP (2024). There is no generic competition in the US or the EU.

  *Mekinist*. US: Patent on compound (2025), PTE (2027); patent on method of treatment (2025); four patents on formulation (2032 (4)). EU: Patent on compound (2025), SPC (2029); patent on formulation (2031); RDP (2025). There is no generic competition in the US or the EU. In the EU, the formulation patent is being opposed in the EPO.

  Use of *Mekinist* with *Tafinlar* or *Tafinlar* with *Mekinist*. US: Patent on combination (2030); four patents on method of use of combination (2025, 2030, 2030, 2033); ODE on non-small cell lung cancer (2024); ODE on adjuvant treatment of melanoma (2025); ODE on anaplastic thyroid cancer (2025); ODE on metastatic solid tumors (2025). EU: Patent on combination (2030); patent on adjuvant for melanoma use (2033). There is no generic competition in the US or the EU. In the EU, the adjuvant use patent is being opposed in the EPO.

- *Kisqali*. US: Three patents on compound (2028, 2030, 2031), PTE (2031); three patents on methods of treatment (2029, 2029, 2031); patent on salt form (2031); patent for tablet formulation (2036). EU: Patent on compound (2027); patent on compound (2029), SPC (2032); patent on salt form (2031); patent on methods of use with letrozole (2034); patent on formulation (2036); RDP (2027). There is no generic competition in the US or the EU. In the US, the three compound patents, the three method of treatment patents, the salt patent and the formulation patent are being challenged in ANDA proceedings against generic manufacturers. In the EU, the method of use patent is being opposed in the EPO.

- *Piqray*. US: Patent on compound (2029); patent on compound and use (2029), PTE pending (2033); RDP (2024). EU: Patent on compound and use (2029), SPC (2034); RDP (2030). There is no generic competition in the US or the EU.

- *Pluvicto*. US: Three patents on composition of matter (2028, 2028, 2034); RDP (2027). PTE pending. EU: RDP (2032). There is no generic competition in the US or the EU.

***Hematology***

- *Promacta/Revolade*. US: Patent on compound (2021), PTE (2022), PE (2023); patent on method of enhancing platelet production using salt (2023), PE (2023); patent on salt form and thrombocytopenia use (2025), PE (2026); five patents on tablet formulations of different dose strengths (2027 (5)), five PEs (2028 (5)); ODE on severe aplastic anemia patients in combination with standard immunosuppressive therapy (2025). EU: Patent on compound (2021), SPC (2025), PE (2025); patent on salt form (2023); patent on severe aplastic anemia use (2028). There is no generic competition in the US or the EU. In the US, generic manufacturers have filed ANDAs challenging certain patents other than the compound patent. In the EU, the severe aplastic anemia use patent is being opposed in the EPO.

- *Tasigna*. US: Patent on compound (2023), PE (2024); two patents on salt forms (2026, 2028), two PEs (2027, 2029); patent on polymorph compound form (2026), PE (2027); two patents on capsule form (2026, 2027), two PEs (2027, 2028); patent on method of treatment (2032), PE (2032). EU: Patent on compound (2023); patent on salt form (2026); patent on polymorph compound form (2026); patent on capsule form (2027); patent on method of treatment (2030). There is no generic competition in the US or the EU. In the US, generic manufacturers have filed ANDAs challenging certain patents other than the compound patent.

- *Jakavi*. EU: Patent on compound (2026), SPC (2027); two patents on salt form (2028, 2028); patent on compound for polycythemia vera (PV) use (2026); patent on salt form for graft-versus-host disease (GvHD) use (2028). There is no generic competition in the EU.

- *Scemblix*. US: Patent on compound (2033), PTE pending (2035); Patent on polymorph compound form (2040); RDP (2026); ODE (2028). EU: Patent on compound (2033), SPC pending (2037); RDP (2032); ODE (2032). There is no generic competition in the US or the EU.

***Other Promoted Brands***

- *Lucentis*. EU: There is generic competition in some EU markets.

- *Xiidra*. US: Four patents on compound (2024, 2024, 2025, 2026); two patents on formulation (2024, 2033); five patents on method of treatment (2024, 2024, 2026, 2029, 2029); one patent on polymorph compound form (2029). PTE pending. There is no generic competition in the US. *Xiidra* is not marketed in the EU. In the US, the compound, compound and use, formulation, method of treatment, and polymorph compound form patents are being challenged in ANDA proceedings against generic manufacturers.

***Established Brands***

- *Sandostatin* SC and *Sandostatin* LAR:

  *Sandostatin* SC: There is generic competition in the US and the EU.

  *Sandostatin* LAR: There is generic competition in most EU countries but no generic competition in the US.

**Compounds in development**

We provide certain patent information for non-marketed compounds in development that have been submitted to the FDA and/or the EMA for registration but have not yet been approved by either agency. For these products, Novartis will seek all appropriate RDP, will continue to seek additional intellectual property protection for significant product developments, and will apply for PTEs and SPCs in keeping with the great importance we attach to intellectual property.

- VDT482 (tislelizumab). US: Patent on composition of matter (2033). EU: Patent on composition of matter (2033).

# Sandoz

Our Sandoz Division is a global leader in generic pharmaceuticals and biosimilars, and sells products in well over 100 countries. In 2022, the Sandoz Division achieved consolidated net sales of USD 9.2 billion, representing 18.3% of the Group's total net sales. Sandoz develops, manufactures and markets finished dosage form medicines as well as intermediary products including active pharmaceutical ingredients.

Sandoz is organized globally into three franchises: Retail Generics, Anti-Infectives and Biopharmaceuticals. In Retail Generics, Sandoz develops, manufactures and markets finished dosage forms of small-molecule pharmaceuticals for sale to third parties across a broad range of therapeutic areas, including finished dosage form anti-infectives sold to third parties. In Anti-Infectives, Sandoz manufactures and supplies active pharmaceutical ingredients and intermediates – mainly antibiotics – for internal use by Retail Generics and for sale to third-party customers. In Biopharmaceuticals, Sandoz develops, manufactures and markets protein- and other biotechnology-based products, including biosimilars.

The Sandoz strategic ambition is to be the world's leading and most valued generics and biosimilars company . Our divisional strategy focuses on three areas: developing a broad and consistent pipeline of generic and biosimilar launches across key geographies and across a broad range of therapeutic areas; positioning Sandoz to be "first in" by having a strong pipeline with a focus on being first to market and "last out" by way of competitive costs and stable supply; and instilling a true "generic mindset," with a focus on priorities, simple and rapid decision-making, and focused resource allocation.

Sandoz is a global market leader in biosimilars, with a total of eight approved and marketed products, and a pipeline of over 15 molecules. In addition to internally developed projects, our biosimilar portfolio comprises publicly announced commercialization agreements with BioCon, Gan & Lee, EirGenix, Polpharma Biologics and Bio-Thera Solutions Ltd. Availability of our biosimilars varies by country.

Sandoz is also the global market leader in generic antibiotics. Its Kundl, Austria, manufacturing site is the hub of the last fully vertically integrated penicillin production chain in Europe, which offers certain competitive advantages including added supply chain resilience.

In January 2020, we closed the previously announced acquisition of the Japanese business of Aspen Global Incorporated, consisting of off-patent branded medicines with a focus on anesthetics and specialty brands.

In July 2020, Sandoz and the Austrian government announced a planned combined investment of more than EUR 150 million to enhance the long-term competitiveness and supply resilience of European production for key antibiotics.

In May 2021, Sandoz confirmed details of a previously announced investment of EUR 100 million in antibiotic manufacturing technology for its Kundl, Austria, manufacturing site, and announced an additional EUR 50 million investment in a new sterile production line in Palafolls, Spain. In November 2022, Sandoz announced an additional EUR 50 million investment to support increased manufacturing capacity for finished dosage form penicillin at its Kundl, Austria, manufacturing site.

In October 2021, Sandoz announced that its planned acquisition of GSK's global cephalosporin antibiotics business, first announced in February 2021, had been successfully closed.

On October 1, 2021, Sandoz Inc., the US subsidiary of Sandoz, entered into a settlement agreement with the Civil Division of the US Department of Justice (DOJ) concerning the department's years-long pricing investigation into the US generic drug industry. This settlement

was an expected outcome of the resolution the company reached in March 2020 with the DOJ Antitrust Division regarding the same investigation and underlying conduct. As part of the settlement, Sandoz agreed to certain corporate integrity obligations as part of a corporate integrity agreement with the Office of Inspector General of the US Department of Health and Human Services, which have now been implemented. The settlement contains no new factual allegations against Sandoz and, in 2020, the Group fully provisioned for this settlement and disclosed the agreement in principle as part of the March 2020 resolution. For more information, see "Item 18. Financial Statements—Note 20. Provisions and other non-current liabilities."

In August 2022, Novartis announced its intention to separate the Sandoz business to create a standalone company by way of a 100% spin-off, concluding the Strategic Review announced in October 2021. The Strategic Review determined that a 100% spin-off would be in the best interests of shareholders as it would create two standalone companies focused on their respective growth strategies. The new company is planned to be incorporated in Switzerland and to be listed on the SIX Swiss Exchange, with an American Depositary Receipt (ADR) program in the US. Completion of the transaction is subject to certain conditions, including consultation with works councils and employee representatives (as required), general market conditions, tax rulings and opinions, final Board of Directors endorsement and shareholder approval in line with Swiss corporate law. The transaction is expected to be generally tax neutral to Novartis, with completion expected in the second half of 2023.

## Key marketed products

The Sandoz global portfolio covers a wide range of therapeutic areas. The following are some of the Sandoz key marketed products in each of its franchises (availability varies by market):

### Retail Generics

| Product | Originator drug | Description |
|---|---|---|
| Amoxicillin/clavulanic acid | Augmentin® | Antibiotic |
| Zoledronic acid | *Aclasta* | Osteoporosis treatment |
| Acetylcysteine | Various | Mucolytic agent |
| Tacrolimus | Various | Immunosuppressive agent |

### Anti-Infectives

| Active ingredients | Description |
|---|---|
| Oral and sterile penicillins | Anti-infectives |
| Oral and sterile cephalosporins | Anti-infectives |
| Clavulanic acid and mixtures with clavulanic acid | Beta-lactam inhibitors |
| Classical and semisynthetic macrolides | Anti-infectives |

| Intermediates | Description |
|---|---|
| Various cephalosporin intermediates | Anti-infectives |
| Macrolide base intermediates | Anti-infectives |
| Various crude compounds produced by fermentation | Cyclosporine, ascomycin, rapamycin, mycophenolic acid, etc. |

### Biopharmaceuticals

| Product | Originator drug | Description |
|---|---|---|
| *Omnitrope* | Genotropin® | Recombinant human growth hormone to treat growth disorders and growth hormone deficiency |
| *Binocrit* and Epoetin alfa *Hexal* | Eprex®/Erypo® | Recombinant protein (erythropoiesis-stimulating) agent to treat anemia |
| *Zarzio*, *Zarxio* and Filgrastim *Hexal* | Neupogen® | Recombinant protein (granulocyte colony-stimulating factor, short-acting) used in oncology |
| *Glatopa* | Copaxone® | Treatment for relapsing forms of multiple sclerosis |
| *Erelzi*[1] | Enbrel® | Fusion protein (TNF-alpha receptor) to treat multiple immune-mediated inflammatory diseases |
| *Rixathon* | MabThera® | Chimeric monoclonal antibody (directed against CD20 protein on B-cells) to treat blood cancers and immunological diseases |
| *Hyrimoz* | Humira® | Monoclonal antibody (TNF-alpha antibody) to treat multiple immune-mediated inflammatory diseases |
| *Zessly* | Remicade® | Monoclonal antibody (TNF-alpha antibody) to treat multiple immune-mediated inflammatory diseases |
| *Ziextenzo* | Neulasta® | PEGylated form of a recombinant human granulocyte colony-stimulating factor (long-acting) to reduce duration of chemotherapy-induced neutropenia and incidence of chemotherapy-induced febrile neutropenia |

[1] Approved in the US in 2016. In patent litigation with Amgen, which markets Enbrel®, the US District Court of New Jersey ruled against Sandoz in August 2019, which was upheld on appeal. The decision is final and Sandoz cannot launch its *Erelzi* product in the US until 2029.

## Selected development projects – biosimilars in Phase III development and registration

The following table describes Sandoz biosimilar projects that are in registration trial or in registration with a regulatory agency (including filing preparation):

| Project/ product | Common name (INN) | Mechanism of action | Potential indication/indications | Therapeutic areas | Route of administration | Current phase |
|---|---|---|---|---|---|---|
| GP2411 | denosumab | Anti-RANKL monoclonal antibody | Osteoporosis (same as originator) | Endocrinology, Neurology | Subcutaneous | Phase III |
| SOK583 | aflibercept | Recombinant fusion protein that blocks VEGF-A | Ophthalmology indication (same as originator) | Ophthalmology | Intravitreal | Phase III |
| EGI014A1[1] | trastuzumab | Anti-HER2 recombinant IgG1, humanized monoclonal antibody | HER2+ cancer tumors | Oncology | Intravenous | Registration |
| DST356A1[2] | natalizumab | Anti-alpha4 integrin monoclonal antibody | Multiple sclerosis and Crohn's disease | Neurology, Immunology (US only) | Intravenous | Registration |
| HFT896, SMQ969, PYB106[3] | insulin glargine, lispro, aspart | Long-acting (HFT896)/ rapid-acting insulin | Diabetes | Endocrinology, Diabetology | Subcutaneous | Phase III/ Phase I |
| VVF379[4] | bevacizumab | Recombinant humanized monoclonal antibody that blocks VEGF | Solid tumors | Oncology | Intravenous | Registration |

[1] Development in collaboration with EirGenix, Inc.
[2] Development in collaboration with Polpharma Biologics
[3] Development in collaboration with Gan & Lee
[4] Development in collaboration with Bio-Thera Solutions

## Principal markets

The two largest generics markets in the world – the US and Europe – are the principal markets for Sandoz. The following table sets forth the aggregate 2022 net sales of Sandoz by region:

**Sandoz**

| | 2022 net sales to third parties | |
|---|---|---|
| | USD millions | % |
| Europe | 4 913 | 53 |
| United States | 1 754 | 19 |
| Asia, Africa, Australasia | 1 613 | 17 |
| Canada and Latin America | 969 | 11 |
| **Total** | **9 249** | **100** |
| Of which in Established Markets [1] | 6 460 | 70 |
| Of which in Emerging Growth Markets [1] | 2 789 | 30 |

[1] Emerging Growth Markets comprise all markets other than the Established Markets of the US, Canada, Western Europe, Japan, Australia and New Zealand.

Many Sandoz products are used for chronic conditions that require patients to consume the product over long periods of time, from months to years. Sales of our anti-infective products and over-the-counter cough and cold products are subject to material changes in seasonal demand, while sales of the vast majority of our other products are not. The COVID-19 pandemic has substantially impacted seasonal variation in recent years.

## Production

For information on the production of our products, see "—Item 4.B Business overview—Innovative Medicines—Production."

In September 2020, as part of a broader reorganization of Novartis Technical Operations (NTO), we established the Sandoz Technical Operations (STO) platform within NTO. STO focuses on producing generic medicines for Sandoz, as well as related external supply operations and supply chain. In October 2021, Sandoz created a new position, Global Head, Sandoz Operations. This new, broader role, includes full operational and financial accountability for manufacturing and supply as of January 1, 2023, and was established in anticipation of the intended Sandoz 100% spin-off.

Due to impurities found in the active ingredient batches sourced from third-party manufacturers, we recalled Sandoz valsartan, losartan and irbesartan products in the second half of 2018 and the first quarter of 2019, and ranitidine film-coated tablets in the second half of 2019, from several markets, in line with our quality standards for all of our marketed products. The discovery of nitrosamines in some types of drug products led several health regulators (e.g., EMA, FDA and others) to conduct a detailed analysis of these impurities in affected medicinal products. Novartis works with health authorities around the world to continuously review all chemical and biological human medicines for the possible presence of nitrosamines. The EMA, FDA and other health authorities have provided guidance to the pharmaceutical industry to prevent unacceptable levels of nitrosamines in medicines. The EMA review concluded in March 2021 for chemical human medicines and in July 2021 for biological human medicines. Based on guidance from health authorities, any chemical and/or biological human medicines products identified with a potential risk for nitrosamines will undergo further testing. For these products, we have provided initial testing and potential control strategy updates to the EMA and other health authorities. Due to constant and rapidly evolving health authority requirements, the risk assessment and related testing that we may be required to perform may increase. We will submit and communicate the final outcome of any risk assessment and related testing to the relevant health authorities within their expected time frame, and make changes to the control strategy update, if necessary.

Beginning in September 2021, we initiated a voluntary recall of all finished product batches of losartan and losartan HCT products exceeding or potentially exceeding acceptable regulatory limits of the losartan azide impurity in the losartan drug substance. This impurity, which is viewed as an industrywide issue, was initially considered a mutagen that may increase the risk of cancer over time if allowed to rise above certain levels. This recall was unrelated to the nitrosamine-related recalls described above, and supply was re-established in March 2022. Since the voluntary recall, further information has been provided to the EMA by Novartis and other companies in the industry, and the EMA has concluded that the losartan azide impurity is to be classified as a non-mutagenic impurity.

## Marketing and sales

Sandoz sells a broad portfolio of products, including the products of our Retail Generics franchise and biosimilars, to wholesalers, pharmacies, hospitals and other healthcare outlets. Sandoz adapts its marketing and sales approach to local decision-making processes, depending on the structure of the market in each country.

In response to rising healthcare costs, many governments and private medical care providers, such as health

maintenance organizations, have instituted reimbursement schemes that favor the substitution of bioequivalent generic versions of originator pharmaceutical products, such as those sold by our Retail Generics franchise. In the US, statutes have been enacted by all states that permit or require pharmacists to substitute a less expensive generic product for the brand-name version of a drug that has been prescribed to a patient. Generic use is growing in Europe, but penetration rates in many EU countries (as a percentage of volume) remain well below those in the US.

Recent trends have been toward continued consolidation among distributors and retailers of Sandoz products, both in the US and internationally, which has increased our customers' purchasing leverage.

Legislative or regulatory changes can have a significant impact on our business in a country. For more information on such changes, see "—Item 4.B Business overview—Innovative Medicines—Price controls."

Our Anti-Infectives franchise supplies active pharmaceutical ingredients and intermediates – mainly antibiotics – for internal use by Retail Generics and for sale to the pharmaceutical industry worldwide.

Our Biopharmaceuticals franchise operates in an already mature market framework in Europe and some other markets, while the business environment is rapidly evolving in the US and many international markets. Regulatory pathways for approving biosimilar products are at various stages of maturity by market, but in some cases are still relatively new or still in development. Policies have not yet been fully defined or implemented regarding the substitution and reimbursement of biosimilars in many markets, including the US.

## Competition

The market for generic products is characterized by increasing demand for high-quality pharmaceuticals that can be marketed at lower costs due to comparatively minimal initial research and development investments. Increasing pressure on healthcare expenditure and numerous patent and data exclusivity period expirations have encouraged more generic product launches, resulting in increased competition among the companies selling generic pharmaceutical products, leading to ongoing price pressure. In particular, Sandoz faces increased industrywide pressure on prices for generic products, particularly in the US, driven by factors including customer consolidation and growing competition from other manufacturers of generic medicines. These factors contributed to a decline in industrywide US sales that began in 2017 and continued through 2022.

## Development and registration

Development of Sandoz Biopharmaceuticals is jointly overseen by Sandoz and GDD, and is governed by the IMB. Development and registration activities for Retail Generics products, and registration activities for Biopharmaceuticals products, are also overseen by Sandoz.

Before a generic pharmaceutical may be marketed, intensive technical and clinical development work must be performed to demonstrate, in bioavailability studies, the bioequivalence of the generic product to the reference product. Nevertheless, research and development costs associated with generic pharmaceuticals are generally much lower than those of the originator pharmaceuticals, as no original drug discovery, preclinical studies or clinical trials on dose finding, safety and efficacy are typically performed by the generics company. As a result, the different focus and lower costs of the generic pharmaceutical model ultimately allow generic pharmaceutical products to be offered at lower prices, which support and contribute to the cost containment goals of healthcare systems.

While generic pharmaceuticals are follow-on versions of chemically synthesized molecules, biosimilar products contain a version of the active substance of an already approved biological reference medicine. Due to the inherent variability and complexity of biologic products, including batch-to-batch differences and variations following manufacturing changes, the development and the regulatory pathway of biosimilars differ significantly from that of generics.

The development of a biosimilar product is much more technically challenging than the development of a typical generic small-molecule pharmaceutical. While generic pharmaceuticals normally do not require clinical studies in patients, regulators worldwide do still require such targeted studies for biosimilar products. International regulators are nonetheless increasingly discussing the potential for "tailored development" (which refers to proposals that seek to implement a more efficient and expedited biosimilar development process that eliminates the current need for comparative clinical efficacy and safety studies of biosimilars, without any resulting compromise on quality, safety or efficacy) for certain molecules. Biosimilars are engineered to match the reference medicine in quality, safety and efficacy. This is achieved by systematically defining the target range of the reference medicine and then comparing the biosimilar to the reference medicine at various development stages to confirm biosimilarity and to establish that there are no clinically meaningful differences between the proposed biosimilar and the reference biologic. Because the purpose of a biosimilar clinical development program is to confirm biosimilarity and not to establish efficacy and safety de novo, the clinical studies required are less than those required for a reference biologic. Therefore, the cost of development for a biosimilar is usually less than that of a reference biologic.

The development and registration staff employed by affiliates of the Sandoz Division are based worldwide, including at facilities in Holzkirchen, Germany; Hyderabad, India; Kundl, Austria; Ljubljana, Slovenia; and Rudolstadt, Germany. In November 2020, Sandoz completed (i) the previously announced closure of the Holzkirchen, Germany, development and registration site, with the exception of patch development and the project management group, and (ii) the closure of the product development and registration site as well as the maintenance and development regulatory centers in Unterach, Austria. We conduct an ongoing review of our global development and regulatory network to consolidate and streamline operations and optimize our network structure to enable Sandoz to compete sustainably in an increasingly challenging generics environment. In 2021, Sandoz completed the previously announced closures of its maintenance regulatory center in Barleben, Germany, its Fougera development center located in

Melville, New York, as well as its product development center in Boucherville, Canada.

## Regulation

### Generics

The Hatch-Waxman Act in the US (and similar legislation in the EU and in other countries) eliminated the requirement that manufacturers of generic pharmaceuticals repeat the extensive clinical trials required for reference products, so long as the generic version could be shown to be therapeutically equivalent to the reference product.

In the US, the decision on whether a generic pharmaceutical is therapeutically equivalent to the original product is made by the FDA based on an Abbreviated New Drug Application (ANDA) filed by the generic product's manufacturer. An ANDA is generally permitted to be filed four years after the initial approval of the reference product and generally cannot be fully approved by the FDA until any regulatory exclusivity of the reference product has expired. The process typically takes nearly two years from the filing of the ANDA until FDA approval. However, delays can occur if issues arise, for example, regarding the interpretation of bioequivalence study data, labeling requirements for the generic product, or qualifying the supply of active ingredients. In addition, the Hatch-Waxman Act requires a generic manufacturer to certify in certain situations that the generic product does not infringe on any current applicable patents on the product held by the holder of the marketing authorization for the reference product, or to certify that such patents are invalid. This certification often results in a patent infringement lawsuit being brought against the generics company. In the event of such a lawsuit, the Hatch-Waxman Act imposes an automatic 30-month stay in the approval of the ANDA to allow the parties to resolve the intellectual property issues. For generic applicants who are the first to file their ANDA containing a certification claiming non-infringement or patent invalidity, the Hatch-Waxman Act generally provides those applicants with 180 days of marketing exclusivity, enabling such generic applicants to exclusively market their product alongside the reference product at a certain point in time, which is generally after any intellectual property issues have been resolved. However, after such point in time, the generic applicants must launch their products within certain time frames or risk losing the marketing exclusivity that they had gained by being a first-to-file applicant.

In the EU, decisions on the granting of a marketing authorization are made either by the European Commission based on a positive recommendation by the EMA under the centralized procedure, or by a single member state under the national or decentralized procedure. See "—Innovative Medicines—Regulation—European Union." Companies may submit abridged applications for approval of a generic medicinal product based upon its "essential similarity" to a medicinal product authorized and marketed in the EU following the expiration of the product's data exclusivity period. In such cases, the generics company is able to submit its abridged application based on the data submitted by the innovator company for the reference product, without the need to conduct extensive Phase III clinical trials of its own. For all products that received a marketing authorization in the EU after late 2005, the abridged application can be submitted throughout the EU. However, the data submitted by the innovator company in support of its application for a marketing authorization for the reference product is generally protected for 10 years after the first grant of marketing authorization in all member states, and can be extended for an additional year if, during the initial eight-year data exclusivity period, the innovator company registers a new therapeutic indication with "significant clinical benefit." In the case of orphan drugs, it may be extended with a two-year pediatric extension. See "—Item 4.B Business overview—Innovative Medicines—Intellectual property."

### Biosimilars

The regulatory pathways for approval of biosimilar medicines are still being developed and established in many countries of the world. A regulatory framework for the approval of biosimilars has been established in the EU, Japan, Canada and the US, while the World Health Organization (WHO) has issued guidance. Sandoz has successfully registered and launched the first biosimilar (or biosimilar-type) medicine in Europe, the US, Canada, Japan, Taiwan, Australia, and many countries in Latin America and Asia. Sandoz was the first company to secure approval for and launch a biosimilar under the US biosimilar pathway that was established as part of the Biologics Price Competition and Innovation Act (BPCIA). The approval of biosimilars in Europe follows a process similar to that followed for small molecules. However, biosimilars usually have to be approved through the centralized procedure because they are manufactured using recombinant DNA technology. As part of the approval process in the EU, biosimilars have to demonstrate comparability to the reference medicine in terms of safety, efficacy and quality through an extensive comparability exercise, based on strict guidelines set by the authorities. Regulators will only approve a biosimilar based on data that allows the regulators to conclude that there are no clinically meaningful differences between the reference medicine and the biosimilar.

In the US, under the BPCIA, a biosimilar must be highly similar with no clinically meaningful differences compared to the reference medicine. Approval of a biosimilar in the US requires the submission of a BLA to the FDA, including an assessment of immunogenicity and pharmacokinetics; an efficacy study; and possibly a pharmacodynamics study. The BLA for a biosimilar can be submitted as soon as four years after the initial approval of the reference biologic, but can only be approved 12 years after the initial approval of the reference biologic.

## Intellectual property

We take all reasonable steps to ensure that our products do not infringe valid intellectual property rights held by others, including taking steps to proactively challenge intellectual property rights that we believe should not have been granted. Nevertheless, competing companies

commonly assert patent and other intellectual property rights. As a result, we can become involved in significant litigation regarding our products. If we are unsuccessful in defending these suits, we could be subject to injunctions preventing us from selling our products and to potentially substantial damages.

Wherever possible, our products are protected by our own patents. Among other things, patents may cover the products themselves, including the product's formulation, or the processes for manufacturing a product. However, there can be no assurance that our intellectual property will protect our products or that we will be able to avoid adverse effects from the loss of intellectual property protection in the future.

# 4.C Organizational structure

## Organizational structure

See "Item 4. Information on the Company—Item 4.A History and development of Novartis" and "Item 4. Information on the Company—Item 4.B Business overview—Overview."

## Significant subsidiaries

See "Item 18. Financial Statements—Note 31. Principal Group subsidiaries and associated companies."

# 4.D Property, plants and equipment

Our principal executive offices are located in Basel, Switzerland. Our divisions operate through a number of affiliates that have offices, research and development facilities, and production sites throughout the world.

We generally own our facilities or have entered into long-term lease arrangements for them. Some of our principal facilities are subject to mortgages and other security interests granted to secure certain debts.

Novartis Operations manages the production, supply chains and quality of our Innovative Medicines and Sandoz Division products through a network of 55 manufacturing sites, as well as through external suppliers, and warehouse and distribution centers. In addition, Novartis Operations also manages non-production real estate owned or leased by Novartis around the world.

The following table sets forth our major headquarters and most significant production, research and development, and administrative facilities. See also "—Item 4.B Business overview—Innovative Medicines—Production" and "—Item 4.B Business overview—Sandoz—Production" for a discussion of our manufacturing processes.

### Major facilities

| Location | Size of site (in square meters) | Major activity |
|---|---|---|
| Basel, Switzerland – St. Johann | 589 000 | Global Group headquarters; global Innovative Medicines Division headquarters; global Sandoz Division headquarters; research and development; production of drug substances and drug intermediates |
| Kundl and Schaftenau, Austria | 480 000 | Production of biotechnological products, drug products and finished products, anti-infectives, active drug substances and nucleic acids; product development |
| East Hanover, New Jersey | 391 000 | Innovative Medicines Division US headquarters; research and development |
| Barleben, Germany | 340 000 | Production of broad range of generics finished dosage forms |
| Cambridge, Massachusetts | 201 800 | Research and development |
| Menges, Slovenia | 133 763 | Production of drug substances and drug intermediates |
| Shanghai, China | 106 500 | Research and development |
| Stein, Switzerland | 64 700 | Production of sterile vials, pre-filled syringes and ampoules; inhalation capsules, tablets and transdermals; active pharmaceutical ingredients; and cell and gene therapies |
| Holzkirchen, Germany | 64 200 | Sandoz Division production of transdermal delivery systems and certain international and global service functions. |
| Huningue, France | 35 000 | Production of drug substances for clinical and commercial supply |
| Durham, North Carolina | 15 794 | Manufacture, package and release commercial Zolgensma product and certain clinical development activities |
| Princeton, New Jersey | 14 300 | Sandoz Division US headquarters |
| Schweizerhalle, Switzerland | 8 880 | Manufacture of small-interfering RNA (siRNA) drug substance for Leqvio |

As our product portfolio evolves, Novartis Operations is adapting our manufacturing capacity and capabilities to meet our changing needs, shifting from high-volume products toward lower-volume, customized and personalized medicines. As of December 31, 2022, we have closed, exited or sold 19 manufacturing sites since 2019 and have announced the closure, exit or sale of seven additional manufacturing sites. We have continued to invest in new technologies implemented at our sites, such as the new targeted radioligand therapy production facility in Indianapolis, Indiana, which is currently under construction (with an expected size of approximately 67 thousand square meters), the FDA-approved *Zolgensma* production site in Durham, North Carolina, and the small-interfering RNA (siRNA) oligonucleotide manufacturing facility in Schweizerhalle, Switzerland. We are leveraging innovation to increase the reliability and productivity of our manufacturing network, including using data and digital technologies. We continue to seek opportunities to manage our production facilities as efficiently as possible, optimize external spend, and simplify and standardize across our manufacturing network to help us increase our cost competitiveness and optimize the value of our products. At the same time, we are working to improve our environmental sustainability, for example by reducing energy, waste disposal and water consumption at our sites by making our manufacturing processes more efficient, introducing new technologies, and switching to clean and renewable energy solutions.

For a description of the impact of environmental matters, see "Item 3. Key Information—Item 3.D Risk factors—Environmental, social and governance matters—Failure to meet increasingly challenging environmental, social and governance expectations," "Item 3. Key Information—Item 3.D Risk factors—Environmental matters—Impact of environmental liabilities," and "Item 3. Key Information—Item 3.D Risk factors—Climate change—Climate change and increased risk of major natural disasters." See also "Item 18. Financial Statements—Note 20. Provisions and other non-current liabilities."

# Item 4A. Unresolved Staff Comments

Not applicable.

# Item 5. Operating and Financial Review and Prospects

## 5.A Operating results

This operating and financial review should be read with the Group's consolidated financial statements in this Annual Report, which have been prepared in accordance with International Financial Reporting Standards (IFRS) as published by the International Accounting Standards Board (see "Item 18. Financial Statements"). "Item 5. Operating and Financial Review and Prospects" with the sections on compounds in development and selected development projects of our divisions (see "Item 4. Information on the Company—Item 4.B Business overview") constitute the Operating and Financial Review (Lagebericht), as defined by the Swiss Code of Obligations.

The discussion and analysis of the financial condition and results of operations of certain items from fiscal year ended December 31, 2020, and year-to-year comparison between fiscal year ended December 31, 2021, and December 31, 2020, that are not included in this Form 20-F can be found in "Item 5. Operating and Financial Review and Prospects" of our Form 20-F for the fiscal year ended December 31, 2021, which is incorporated by reference herein.

## Overview

Our purpose is to reimagine medicine to improve and extend people's lives. We use innovative science and technology to address some of society's most challenging healthcare issues. We discover and develop breakthrough treatments and find new ways to deliver them to as many people as possible. We also aim to reward those who invest their money, time and ideas in our Company. Our vision is to become the most valued and trusted medicines company in the world.

The businesses of Novartis are divided operationally on a worldwide basis into two identified reporting segments:

- Innovative Medicines: innovative patent-protected prescription medicines
- Sandoz: generic pharmaceuticals and biosimilars

In addition, we separately report the results of Corporate activities. The financial results of our Corporate activities include the costs of the Group headquarters and those of corporate coordination functions in major countries. Corporate also includes other items of income and expense that are not attributable to specific segments, such as certain revenues from intellectual property rights and certain expenses related to post-employment benefits, environmental remediation liabilities, charitable activities, donations and sponsorships.

In April 2022, we announced a new, integrated organizational structure and operating model designed to support our innovation, growth, and productivity ambitions as a focused medicines company. For information about this new organizational structure, see "Item 4. Information on the Company—Item 4.B Overview." Under this new organizational structure, our divisions are supported by the following organizational units: the Novartis Institutes for BioMedical Research, Global Drug Development, and Novartis Operations. The financial results of these organizational units are included in the results of the divisions for which their work is performed.

Significant transactions are discussed in "Item 18. Financial Statements—Note 2. Significant transactions," and "Item 18. Financial Statements—Note 3. Segmentation of key figures 2022, 2021 and 2020."

### Our business environment

Medical technology continues to accelerate, with new advanced treatments emerging to meet the growing need for high-quality healthcare. At the same time, aging populations are putting pressure on healthcare resources, while access to healthcare remains a challenge around the world. As a result, we see challenges and opportunities in our business environment: the need for continuous innovation in healthcare, increasing access to medicines, the adoption of new working practices and the growing use of data science and technology. The following are some major trends currently shaping our business environment.

- *Spending on healthcare continues to grow.* The need for high-quality healthcare is more critical than ever. Over the next five years, global spending on medicines is forecast to rise faster than GDP in many developed countries. The price of medicines remains a key issue as increased healthcare spending and a more uncertain economic outlook weigh on government budgets.
- *Aging populations are fueling a rise in chronic illness.* Aging and lifestyle changes are triggering an increase in noncommunicable diseases, such as cancer, heart disease and diabetes, causing millions of preventable deaths and putting further pressure on healthcare resources.
- *Medical science continues to accelerate.* Scientific innovation is advancing at an unprecedented pace. In recent years, new types of treatments have been approved, including RNA therapies, gene and cell therapies, and radioligand therapies, which offer targeted approaches to treating serious diseases. Because these medicines are complex, they require focused investment and expertise to bring them to reality for patients.
- *Access to healthcare remains a formidable challenge.* Worldwide, millions of patients struggle to access the medicines they need. This may be because of cost, inequity, or structural issues in healthcare systems. While access to medicines remains an acute issue in lower-income countries, it is a problem in developed

countries too, where the COVID-19 pandemic highlighted that deep health inequities remain entrenched.
- *Patients are moving to the center of healthcare*. Patients are demanding more say over their treatment through patient representative groups and other means. In response, healthcare systems and pharmaceutical companies are adapting, moving toward a more integrated, end-to-end approach, with an increased focus on patient engagement in drug development and other areas. At the same time, patients are becoming more important as data owners – as personal data allows more targeted treatments and supports development of new medicines.
- *Economic uncertainty is growing, post-COVID-19 pandemic*. The global economy is facing considerable uncertainty, driven by concerns over rising energy prices and geopolitical instability. Forecasts suggest the current economic slowdown is likely to continue in 2023. In our own industry, the COVID-19 pandemic put strain on supply chains and highlighted the importance of resilient supplies of active pharmaceutical ingredients – the raw materials used to make finished medicines. See "Item 3. Key Information—Item 3.D Risk factors—Pricing, reimbursement and access—Pricing and reimbursement pressure, including pricing transparency and access to healthcare," and "Item 3. Key Information—Item 3.D Risk factors—Macroeconomic developments—Impact of macroeconomic developments."
- *Biopharma searches for more efficiency*. At a time of growing economic uncertainty, investors are looking for sustainable growth in margins and earnings. To remain competitive, pharmaceutical companies are moving to more agile, cost-efficient business models, particularly as they invest to build specialized capabilities in research and development (R&D) and manufacturing. Meanwhile, rates of return on R&D are increasing for the first time in several years, largely because of emergency approvals during the COVID-19 pandemic and faster innovation cycles.
- *New technologies are reshaping our industry*. The use of data science and technology is increasing across the industry in everything from R&D to manufacturing and marketing. This has brought greater efficiency, but it also requires new investment and skills. Importantly, new technologies are helping close gaps between companies, healthcare systems and patients – for example, by providing insights into the social determinants of heart health enabling the development of new prevention measures.
- *Working practices are changing*. Working practices are changing in many countries. Demand for new skills is increasing, especially in areas such as data science. Workforces are becoming more flexible and more diverse, allowing companies to tap into new talent pools – important at a time of skills shortages in many parts of the economy.
- *Climate change is increasingly affecting human health*. Climate change could undermine decades of progress in improving human health at a time when antimicrobial resistance is also rising. At the same time, more governments are looking to decarbonize their economies over the long-term, while companies also face increased scrutiny over the sustainability of their operations and supply chains. See "Item 3. Key Information—Item 3.D Risk factors—Climate change—Impact of climate change and increased risk of major natural disasters."

## Our strategy

Our strategy as a focused medicines company is to deliver high-value medicines that alleviate society's greatest disease burdens through technology leadership in R&D and novel access approaches.

We have made significant progress in transforming Novartis from a diversified healthcare conglomerate into a focused medicines company. In doing so, we have divested or spun off non-core businesses and made targeted acquisitions to focus on our core business: discovering and developing new medicines and finding new ways to deliver them to as many people as possible.

In 2022, we continued to execute on our strategy by putting in place a new organizational structure to support innovation, growth and productivity. We also updated our strategic priorities and announced our intention to spin-off our Sandoz business, which paves the way for Novartis to advance as a company focused fully on innovative medicines. See "Item 4. Information on the Company—Item 4.B Overview" and "Item 4. Information on the Company—Item 4.B Sandoz."

Our strategy has clear focus areas and priorities to meet the challenges and opportunities we see in our business environment, and ensure we continue to create value for our stakeholders and society.

Our focus areas determine where we invest most of our time, energy and resources and include:
- **Core therapeutic areas** with high unmet patient needs: cardiovascular; immunology; neuroscience; solid tumors; and hematology.
- **Technology platforms** where we have the depth and scale to discover, develop and commercialize new therapies: Chemistry; biotherapeutics; xRNA; radioligand therapy; and gene and cell therapy.
- **Priority geographies** which, taken together, account for the majority of the forecast growth in global healthcare spending: US, China, Germany and Japan. While these are our priority countries, we will continue to invest in other markets worldwide.

Our focus areas are supported by three strategic priorities, which determine how we implement our strategy. These three strategic priorities are:
- ***Deliver high-value medicines to accelerate growth***. Delivering new medicines for major diseases is at the core of our purpose and value creation as a company. We focus on high-value innovative medicines with the potential to transform the treatment of diseases across our five core therapeutic areas. To do this, we seek to maximize the potential of our key in-market and launch medicines, while finding new ways to deliver them to as many people as possible and investing in R&D to deliver the next generation of high-value therapies for patients over the longer term. As part of our efforts, we continue our longstanding commitment to reduce the burden of infectious and tropical diseases that predominantly affect underserved populations in low- and middle-income countries.

- ***Embed operational excellence to deliver returns***. We aim to drive efficiency and free up resources to invest in innovation for patients. This also underpins our financial performance and makes us more agile; better able to take quick decisions and scale the use of new technologies, with effective cooperation across our business. In everything we do, we maintain high standards of product quality and patient safety, while also working to reduce our environmental footprint.
- ***Strengthen our foundations by***:
  *Unleashing the power of our people.* We continue to focus on culture as a key enabler of our strategy to drive innovation and long-term performance. For us, this is about building an agile, diverse workforce and making sure we attract and retain the right talent for the future.
  *Scaling data science and technology.* We are investing in data science and technology to increase efficiency, support innovation, better respond to the needs of patients and healthcare professionals, and ultimately improve the way we develop and deliver our medicines.
  *Building trust with society.* We aim to increase access to our medicines for underserved populations around the world and follow high standards of ethical behavior wherever we operate.

# Results of operations

## Financial year 2022 compared with 2021

### Key figures[1]

| (USD millions unless indicated otherwise) | **Year ended Dec 31, 2022** | Year ended Dec 31, 2021 | Change in USD % | Change in constant currencies %[1] |
|---|---|---|---|---|
| **Net sales to third parties** | **50 545** | **51 626** | **– 2** | **4** |
| Other revenues | 1 283 | 1 251 | 3 | 4 |
| Cost of goods sold | – 15 486 | – 15 867 | 2 | – 4 |
| **Gross profit** | **36 342** | **37 010** | **– 2** | **4** |
| Selling, general and administration | – 14 253 | – 14 886 | 4 | – 1 |
| Research and development | – 9 996 | – 9 540 | – 5 | – 9 |
| Other income | 805 | 1 852 | – 57 | – 54 |
| Other expense | – 3 701 | – 2 747 | – 35 | – 43 |
| **Operating income** | **9 197** | **11 689** | **– 21** | **– 13** |
| % of net sales to third parties | 18.2 | 22.6 | | |
| (Loss)/income from associated companies | – 9 | 15 339 | nm | nm |
| Interest expense | – 837 | – 811 | – 3 | – 5 |
| Other financial income and expense | 20 | – 80 | nm | nm |
| **Income before taxes** | **8 371** | **26 137** | **– 68** | **– 64** |
| Income taxes | – 1 416 | – 2 119 | 33 | 25 |
| **Net income** | **6 955** | **24 018** | **– 71** | **– 67** |
| *Attributable to:* | | | | |
| *Shareholders of Novartis AG* | *6 955* | *24 021* | *– 71* | *– 67* |
| *Non-controlling interests* | *0* | *– 3* | *nm* | *nm* |
| **Basic earnings per share (USD)** | **3.19** | **10.71** | **– 70** | **– 66** |
| **Net cash flows from operating activities** | **14 236** | **15 071** | **– 6** | |
| **Free cash flow** [1] | **11 945** | **13 282** | **– 10** | |

[1] For an explanation of non-IFRS measures and reconciliation tables, see "—Non-IFRS measures as defined by Novartis."
nm = not meaningful

## Group overview

Net sales to third parties for Novartis were USD 50.5 billion, down 2% in USD reported terms and up 4% measured in constant currencies (cc) to remove the impact of exchange rate movements. Sales growth was driven by volume growth of 11 percentage points, mainly driven by continued strong growth from *Entresto*, *Kesimpta*, *Kisqali, Pluvicto* and *Cosentyx*. Generic competition had a negative impact of 3 percentage points, mainly due to *Gilenya, Afinitor/Votubia, and Gleevec/Glivec.* Pricing had a negative impact of 4 percentage points. Sales in the US were USD 17.7 billion (+5%) and in the rest of the world USD 32.8 billion (–6%, +4% cc).

By division, Innovative Medicines delivered net sales of USD 41.3 billion (–2%, +4% cc) and Sandoz net sales were USD 9.2 billion (–4%, +4% cc).

In Emerging Growth Markets, which comprise all markets excluding the US, Canada, Western Europe, Japan, Australia and New Zealand, sales to third parties were USD 13.5 billion (+2%, +9% cc) driven by China (USD 3.1 billion) growing 2% (+6% cc).

Operating income was USD 9.2 billion (–21%, –13% cc), mainly due to higher restructuring costs (USD 1.2 billion) primarily related to the implementation of the previously announced streamlined organizational model, higher impairments (USD 1.0 billion), and lower divestment gains (USD 0.6 billion). Operating income margin was 18.2% of net sales, decreasing by 4.4 percentage points (-3.8 percentage points cc).

Net income was USD 7.0 billion compared with USD 24.0 billion in the prior year, impacted by Roche income in the prior year. Excluding the impact of Roche income, net income declined –9% (cc). Earnings per share were USD 3.19 compared with USD 10.71 in the prior year. Excluding the impact of Roche income, EPS declined –7% (cc).

Net cash flows from operating activities amounted to USD 14.2 billion, compared with USD 15.1 billion in 2021. This decrease was mainly due to unfavorable changes in working capital and lower dividends from associated companies (2021 included the USD 0.5 billion dividends received from our investment in Roche, which was divested in the fourth quarter of 2021), partly offset by lower income taxes paid and favorable hedging results.

Free cash flow amounted to USD 11.9 billion (–10% USD), compared with USD 13.3 billion in 2021, mainly due to a decrease in net cash flows from operating activities and lower divestment proceeds, partly offset by lower purchases of property, plant and equipment.

We also present our core results[1], which exclude the impact of amortization, impairments, disposals, acquisitions, restructurings and other significant items, to help investors understand our underlying performance.

Core operating income was USD 16.7 billion (0%, +8% cc), benefiting from higher sales, partly offset by higher research and development (R&D) investments. Core operating income margin was 33.0% of net sales, increasing by 0.9 percentage points (+1.3 percentage points cc).

Core net income was USD 13.4 billion (–5%, +3% cc) as growth in core operating income was partly offset by the loss of Roche core income. Excluding the impact of Roche core income, core net income grew +11% (cc).

[1] For an explanation of non-IFRS measures and reconciliation tables, see "—Non-IFRS measures as defined by Novartis."

## Net sales to third parties by segment

The following table provides an overview of net sales to third parties by segment:

| (USD millions) | **Year ended Dec 31, 2022** | Year ended Dec 31, 2021 | Change in USD % | Change in constant currencies % |
|---|---|---|---|---|
| Innovative Medicines | 41 296 | 41 995 | – 2 | 4 |
| Sandoz | 9 249 | 9 631 | – 4 | 4 |
| **Net sales to third parties** | **50 545** | **51 626** | **– 2** | **4** |

## Innovative Medicines

The Innovative Medicines Division delivered net sales of USD 41.3 billion (–2%, +4% cc) with volume contributing 12 percentage points to growth. Generic competition had a negative impact of 4 percentage points. Pricing had a negative impact of 4 percentage points. Sales in the US were USD 15.9 billion (+6%) and in the rest of the world USD 25.4 billion (–6%, +3% cc).

Sales growth was mainly driven by continued strong growth from *Entresto* (USD 4.6 billion, +31%, +37% cc), *Kesimpta* (USD 1.1 billion, +194%, +200% cc), *Kisqali* (USD 1.2 billion, +31%, +38% cc), *Pluvicto* (USD 271 million) and *Cosentyx* (USD 4.8 billion, +1%, +5% cc), partly offset by generic competition mainly for *Gilenya*, *Afinitor/Votubia* and *Gleevec/Glivec*.

In the US (USD 15.9 billion +6%), sales growth was mainly driven by *Entresto*, *Kesimpta* and *Pluvicto*, partly offset by the impact of generic competition on *Afinitor/Votubia* and *Gilenya*. In Europe (USD 13.6 billion, –9%, +1% cc) sales growth was driven by *Entresto*, *Kisqali* and *Kesimpta*, partly offset by increased generic competition for *Gilenya*. Emerging Growth Markets grew +2% (+9% cc), with China sales USD 2.9 billion (+3%, +7% cc) driven by *Cosentyx*.

The following table provides an overview of net sales to third parties by core therapeutic area; other promoted brands; and established brands in the Innovative Medicines Division:

| (USD millions) | **Year ended Dec 31, 2022** | Year ended Dec 31, 2021[1] | Change in USD % | Change in constant currencies % |
|---|---|---|---|---|
| Cardiovascular | 4 756 | 3 560 | 34 | 40 |
| Immunology | 7 287 | 7 205 | 1 | 7 |
| Neuroscience | 5 051 | 5 007 | 1 | 5 |
| Solid Tumors | 4 723 | 4 101 | 15 | 21 |
| Hematology | 6 452 | 6 430 | 0 | 7 |
| Other Promoted Brands | 3 127 | 3 451 | – 9 | – 1 |
| **Total Promoted Brands** | **31 396** | **29 754** | **6** | **12** |
| Established Brands | 9 900 | 12 241 | – 19 | – 13 |
| **Total Innovative Medicines** | **41 296** | **41 995** | **– 2** | **4** |

[1] Reclassified to reflect the new Innovative Medicines divisional structures announced on April 4, 2022

The following table provides the top 20 Innovative Medicines Division product net sales to third parties in 2022 as well as the change compared with 2021:

| | | | US | | Rest of world | | | **Total** | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Brands** | **Brand classification by therapeutic area, other promoted brands or established brands** | **Key indications** | USD m | % change USD/cc[2] | USD m | % change USD | % change cc[2] | USD m | % change USD | % change cc[2] |
| *Cosentyx* | Immunology | Psoriasis (PsO), ankylosing spondylitis (AS), psoriatic arthritis (PsA), non-radiographic axial spondyloarthritis (nr-axSPA) | 2 770 | – 4 | 2 018 | 10 | 20 | 4 788 | 1 | 5 |
| *Entresto* | Cardiovascular | Chronic heart failure, hypertension | 2 354 | 38 | 2 290 | 25 | 37 | 4 644 | 31 | 37 |
| *Promacta/Revolade* | Hematology | Immune thrombocytopenia (ITP), severe aplastic anemia (SAA) | 1 083 | 14 | 1 005 | – 6 | 5 | 2 088 | 4 | 9 |
| *Gilenya* | Neuroscience | Relapsing multiple sclerosis (RMS) | 1 153 | – 19 | 860 | – 37 | – 29 | 2 013 | – 28 | – 24 |
| *Tasigna* | Hematology | Chronic myeloid leukemia (CML) | 877 | – 1 | 1 046 | – 11 | – 2 | 1 923 | – 7 | – 1 |
| *Lucentis* | Other Promoted Brands | Age-related macular degeneration (AMD), diabetic macular edema (DME), retinal vein occlusion (RVO) | | | 1 874 | – 13 | – 4 | 1 874 | – 13 | – 4 |
| *Tafinlar + Mekinist* | Solid Tumors | BRAF V600+ metastatic adjuvant melanoma, advanced non-small cell lung cancer (NSCLC), tumor agnostic with BRAF mutation indication | 678 | 12 | 1 092 | 0 | 10 | 1 770 | 5 | 11 |
| *Jakavi* | Hematology | Myelofibrosis (MF), polycytomia vera (PV), graft-versus-host disease (GvHD) | | | 1 561 | – 2 | 9 | 1 561 | – 2 | 9 |
| *Zolgensma* | Neuroscience | Spinal muscular atrophy (SMA) | 434 | – 7 | 936 | 6 | 12 | 1 370 | 1 | 5 |
| *Xolair*[1] | Immunology | Severe allergic asthma (SAA), chronic spontaneous urticaria (CSU), nasal polyps | | | 1 365 | – 4 | 6 | 1 365 | – 4 | 6 |
| *Sandostatin* | Established Brands | Carcinoid tumors, acromegaly | 800 | – 5 | 438 | – 23 | – 16 | 1 238 | – 12 | – 10 |
| *Kisqali* | Solid Tumors | HR+/HER2- metastatic breast cancer | 472 | 39 | 759 | 27 | 38 | 1 231 | 31 | 38 |
| *Ilaris* | Immunology | Auto-inflammatory (CAPS, TRAPS, HIDS/MKD, FMF, SJIA, AOSD, gout) | 570 | 14 | 563 | 1 | 16 | 1 133 | 7 | 15 |
| *Kesimpta* | Neuroscience | Relapsing-remitting multiple sclerosis (RRMS) | 921 | 165 | 171 | nm | nm | 1 092 | 194 | 200 |
| *Galvus* Group | Established Brands | Type 2 diabetes | | | 859 | – 21 | – 12 | 859 | – 21 | – 12 |
| *Gleevec/Glivec* | Established Brands | Chronic myeloid leukemia (CML), gastrointestinal stromal tumors (GIST) | 205 | – 22 | 540 | – 29 | – 23 | 745 | – 27 | – 22 |
| *Exforge* Group | Established Brands | Hypertension | 14 | 0 | 729 | – 18 | – 12 | 743 | – 18 | – 12 |
| *Diovan* Group | Established Brands | Hypertension | 55 | 8 | 597 | – 17 | – 10 | 652 | – 16 | – 9 |
| *Kymriah* | Hematology | r/r pediatric and young adults acute lymphoblastic leukemia (ALL), diffuse large B-cell lymphoma (DLBCL), follicular lymphoma (FL) | 196 | – 15 | 340 | – 5 | 7 | 536 | – 9 | – 2 |
| *Afinitor/Votubia* | Established Brands | Breast cancer/ tuberous sclerosis complex (TSC) | 171 | – 67 | 341 | – 18 | – 8 | 512 | – 45 | – 41 |
| **Top 20 brands total** | | | **12 753** | **6** | **19 384** | **– 5** | **5** | **32 137** | **– 1** | **5** |
| Rest of portfolio | | | 3 146 | 6 | 6 013 | – 9 | 0 | 9 159 | – 4 | 2 |
| **Total division net sales to third parties** | | | **15 899** | **6** | **25 397** | **– 6** | **3** | **41 296** | **– 2** | **4** |

[1] Net sales to third parties reflect *Xolair* sales for all indications.

[2] For an explanation of non-IFRS measures and reconciliation tables, see "—Non-IFRS measures as defined by Novartis."

nm = not meaningful

For the table providing the top 20 Innovative Medicines Division product net sales to third parties in 2021, see "Item 18. Financial statements—Note 3. Segmentation of key figures 2022, 2021 and 2020."

For information about the approved indications for certain products described, see "Item 4. Information on the Company—Item 4.B Business overview—Innovative Medicines— Innovative Medicines Division products."

## CARDIOVASCULAR

Sales in the Cardiovascular therapeutic area were USD 4.8 billion (+34%, +40% cc), sales growth mainly driven by *Entresto*.

*Entresto* (USD 4.6 billion, +31%, +37% cc) sustained robust demand-led growth, with increased patient share across all geographies. Guidelines position *Entresto* as the first choice RASi versus ACEi/ARB in patients with HFrEF. *Entresto* benefits from the adoption of guideline directed medical therapy for these patients in all geographies. In the US, *Entresto* benefits from being added to guidelines for patients with HFpEF (with LVEF below normal). In China, *Entresto* has been listed in the National Reimbursement Drug List (NRDL) for both HFrEF and hypertension, effective January 2022. In China and Japan, *Entresto* volume growth is fueled by increased penetration in hypertension in addition to growth in heart failure. It is estimated that around 10 million patients are on treatment with *Entresto*.

*Leqvio* (USD 0.1 billion) launch in the US and other markets is ongoing, with focus on patient on-boarding, removing access hurdles and enhancing medical education. *Leqvio* is the first and only small interfering RNA (siRNA) therapy to lower low-density lipoprotein cholesterol approved in the US and was launched in January 2022. In the US, *Leqvio* is covered at or near label for 76% of patients eleven months after launch. *Leqvio* in the US has been assigned a unique Healthcare Common Procedure Coding System code (J-code) and average sales price. *Leqvio* is now approved in 70 countries. Novartis obtained global rights to develop, manufacture and commercialize *Leqvio* under a license and collaboration agreement with Alnylam Pharmaceuticals.

## IMMUNOLOGY

Sales in the Immunology therapeutic area reached USD 7.3 billion (+1%, +7% cc), sales growth was mainly driven by *Cosentyx* and *Ilaris*.

*Cosentyx* (USD 4.8 billion, +1%, +5% cc) sales grew in Emerging Growth Markets, Europe and Japan, partly offset by decline in the US due to higher revenue deductions. In China, *Cosentyx* growth was fueled by increased biologic uptake and inclusion in approximately 1,900 hospital listings. Since initial approval in 2015, *Cosentyx* has proven its sustained efficacy and consistent safety profile across five systemic inflammatory conditions and has treated more than 960,000 patients worldwide.

*Xolair* (USD 1.4 billion, –4%, +6% cc) sales grew (cc) in Emerging Growth Markets, Europe and Japan. Novartis co-promotes *Xolair* with Genentech in the US and shares a portion of revenue as operating income but does not record any US sales.

*Ilaris* (USD 1.1 billion, +7%, +15% cc) showed continued growth across all geographies. Contributors to growth include the adult-onset Still's disease indication, together with the other adult rheumatology indications in the US and Europe, as well as strong performance for the Periodic Fevers Syndrome indications in Japan.

## NEUROSCIENCE

Sales in the Neuroscience therapeutic area were USD 5.1 billion (+1%, +5% cc), sales growth (cc) mainly driven by *Kesimpta*, which was partly offset by sales decline of *Gilenya*.

*Gilenya* (USD 2.0 billion, –28%, –24% cc) sales declined mainly in Europe and in the US due to generic pressure.

*Zolgensma* (USD 1.4 billion, +1%, +5% cc) has been approved in 47 countries to date. As this represents most major markets, sales growth is now mainly driven by the Incident patient population where we've seen double digit growth in 2022. Access pathways are now in place in 35 countries with negotiations ongoing in additional markets.

*Kesimpta* (USD 1.1 billion, +194%, +200% cc) showed strong sales growth driven by launch momentum across all geographies. *Kesimpta* is a targeted B-cell therapy that can deliver powerful and sustained high efficacy, with a favorable safety and tolerability profile and the flexibility of an at home self-administration for a broad population of RMS patients. *Kesimpta* is now approved in 80 countries with more than 36,000 patients treated.

*Mayzent* (USD 0.4 billion, +27%, +32% cc) sales grew across all geographies in MS patients showing signs of progression despite being on other treatments. *Mayzent* is the first and only oral disease-modifying therapy studied and proven to delay disease progression in a broad SPMS patient population.

*Aimovig* (USD 0.2 billion, +1%, +11% cc) sales grew in Europe and Emerging Growth Markets. *Aimovig* is reimbursed in 32 markets and has been prescribed to over 759,000 patients worldwide. Earlier this year, *Aimovig* was submitted for approval in China. In October 2022, Novartis reached an agreement in Germany by which *Aimovig* is reimbursed as a 1st line prophylactic migraine treatment based on the HER-MES trial.

## SOLID TUMORS

Sales in the Solid Tumors therapeutic area were USD 4.7 billion (+15%, +21% cc), sales growth mainly driven by *Kisqali*, *Pluvicto* and *Tafinlar* + *Mekinist*.

*Tafinlar* + *Mekinist* (USD 1.8 billion, +5%, +11% cc) sales grew across all geographies, driven by demand in BRAF+ adjuvant melanoma and NSCLC indications, while maintaining demand in the highly competitive BRAF+ metastatic melanoma market. *Tafinlar* + *Mekinist* remains the worldwide targeted therapy leader in BRAF+ melanoma. Following FDA approval in late June, *Tafinlar* + *Mekinist* is the first and only therapy with a tumor-agnostic indication for adult and pediatric patients with solid tumors that have a BRAF V600E mutation, which drives tumor growth in more than 20 different tumor types.

*Kisqali* (USD 1.2 billion, +31%, +38% cc) sales grew strongly across all geographies, based on increasing recognition of its overall survival and quality of life benefits in HR+/HER2- advanced breast cancer. It is a CDK4/6

inhibitor with proven overall survival benefit across all three Phase III trials of the MONALEESA program regardless of menopausal status, line of therapy, site and number of metastases, endocrine resistance, or endocrine partner.

*Votrient* (USD 0.5 billion, –18%, –13% cc) declined due to increased competition, especially from immuno-oncology agents in metastatic renal cell carcinoma.

*Lutathera* (USD 0.5 billion, –1%, +3% cc) sales grew (cc) in Europe and Japan, partly offset by decline in the US. There are approximately 500 centers actively treating patients globally. In the second quarter of 2022, there was a temporary suspension in manufacturing during the quarter; production and deliveries of patient doses resumed in early June.

*Piqray* (USD 0.4 billion, +13%, +14% cc) sales grew mainly in the US, benefiting from indication expansion into PIK3CA-related overgrowth spectrum (PROS). *Piqray* is the first and only therapy specifically developed for the approximately 40% of HR+/HER2- advanced breast cancer patients who have a PIK3CA mutation, which is associated with a worse prognosis.

*Pluvicto* (USD 0.3 billion) launch is progressing well, with more than 160 active centers ordering. *Pluvicto* is the first and only radioligand therapy approved by the FDA for the treatment of progressive, PSMA-positive metastatic castration-resistant prostate cancer, who have already been treated with other anticancer treatments (ARPI and taxane-based chemotherapy).

*Tabrecta* (USD 0.1 billion, +48%, +48% cc) sales grew across all geographies, as the first therapy approved by the FDA to specifically target metastatic NSCLC with a mutation that leads to MET exon 14 skipping (METex14).

## HEMATOLOGY

Sales in the Hematology therapeutic area were USD 6.5 billion (0%, +7% cc), sales growth (cc) mainly driven by *Promacta/Revolade*, *Jakavi* and *Scemblix*.

*Promacta/Revolade* (USD 2.1 billion, +4%, +9% cc) growth was driven by the US, Europe and Emerging Growth Markets, partly offset by decline in Japan. Sales growth was driven by increased use in second-line persistent and chronic immune thrombocytopenia and as first-line and/or second-line treatment for severe aplastic anemia.

*Tasigna* (USD 1.9 billion, –7%, –1% cc) sales declined in Europe, Japan and the US, partly offset by growth in Emerging Growth Markets.

*Jakavi* (USD 1.6 billion, –2%, +9% cc) sales grew (cc) in Europe, Emerging Growth Markets, Japan, driven by strong demand in both the myelofibrosis and polycythemia vera indications. In May, EC approved *Jakavi* for the treatment of patients aged 12 years and older with acute or chronic GvHD who have inadequate response to corticosteroids or other systemic therapies.

*Kymriah* (USD 0.5 billion, –9%, –2% cc) sales declined in the US and Europe due to lower DLBCL demand in both geographies and was partly offset by growth in Emerging Growth Markets and Japan. In May, EC and FDA approved *Kymriah* for the treatment of adult patients with relapsed or refractory (r/r) follicular lymphoma (FL) after two or more lines of systemic therapy.

*Adakveo* (USD 0.2 billion, +18%, +19% cc) continued to grow worldwide, reaching more than 11,800 patients with vaso-occlusive crises caused by sickle cell disease to date.

*Scemblix* (USD 0.1 billion) continued its strong launch uptake in the US, with launches underway in EU and Japan, demonstrating the high unmet need in CML, particularly patients previously treated with 2 or more tyrosine kinase inhibitors, or with the T315I mutation. In October 2022, US FDA converted the accelerated approval of *Scemblix* to a full approval, confirming the clinical benefit after longer exposure.

## OTHER PROMOTED BRANDS

Sales for Other Promoted Brands were USD 3.1 billion (–9%, –1% cc).

*Lucentis* (USD 1.9 billion, –13%, –4% cc) sales declined in Japan and Europe mainly due to competition, which was partly offset by growth in Emerging Growth Markets.

*Xiidra* (USD 0.5 billion, +4%, +4% cc) sales grew mainly in the US.

*Ultibro* Group (USD 0.5 billion, –18%, –9% cc) sales declined in Europe and Emerging Growth Markets due to competition and was partly offset by growth in Japan. *Ultibro* Group consists of *Ultibro Breezhaler*, *Seebri Breezhaler* and *Onbrez Breezhaler*.

*Beovu* (USD 0.2 billion, +9%, +18% cc) sales grew in Europe, Emerging Growth Markets and Japan, partly offset by decline in the US. *Beovu* received approval for diabetic macular edema (DME) in the EU in the first quarter of 2022, and in the US in the second quarter of 2022.

## ESTABLISHED BRANDS

The Established Brands had sales of USD 9.9 billion (–19%, –13% cc).

*Sandostatin* (USD 1.2 billion, –12%, –10% cc) declined across all geographies due to ongoing competitive pressure, including generic competition ex-US.

*Galvus* Group (USD 0.9 billion, –21%, –12% cc) declined in Japan, Europe and Emerging Growth Markets.

*Gleevec/Glivec* (USD 0.7 billion, –27%, –22% cc) declined due to increased generic competition.

*Exforge* Group (USD 0.7 billion, –18%, –12% cc) declined across all geographies.

*Diovan* Group (USD 0.7 billion, –16%, –9% cc) declined in Emerging Growth Markets, Japan and Europe.

*Afinitor/Votubia* (USD 0.5 billion, –45%, –41% cc) declined in the US and Europe driven by generic competition.

*Voltaren/Cataflam* (USD 0.3 billion, –10%, 0% cc) sales were stable (cc).

*Zortress/Certican* (USD 0.3 billion, –24%, –14% cc) declined in the US and Japan.

*Exjade/Jadenu* (USD 0.3 billion, –43%, –38% cc) declined due to pressure from generic competition.

*Neoral/Sandimmun(e)* (USD 0.3 billion, –16%, –8% cc) declined across all geographies.

# Sandoz

Sandoz net sales were USD 9.2 billion (–4%, +4% cc) with volume contributing 10 percentage points to growth. Pricing had a negative impact of 6 percentage points.

Sales in Europe were USD 4.9 billion (–7%, +4% cc), in the US USD 1.8 billion (–4%) in Asia/Africa/Australasia USD 1.6 billion (–3%, +6% cc) and in Canada and Latin America USD 969 million (+11%, +15% cc) driven by volume increases and tender wins.

The following table provides an overview of net sales to third parties by business franchise in the Sandoz Division:

| (USD millions) | Year ended Dec 31, 2022 | Year ended Dec 31, 2021 | Change in USD % | Change in constant currencies % |
|---|---|---|---|---|
| Retail Generics[1] | 6 776 | 7 092 | – 4 | 4 |
| Biopharmaceuticals | 2 093 | 2 116 | – 1 | 9 |
| Anti-Infectives (partner label/API)[1] | 380 | 423 | – 10 | – 5 |
| **Total Sandoz** | **9 249** | **9 631** | **– 4** | **4** |

[1] Sandoz total anti-infectives net sales to third parties amounted to USD 1.2 billion (2021: USD 1.1 billion; 2020: USD 1.2 billion), of which USD 777 million (2021: USD 707 million; 2020: USD 694 million) is sold through the Retail Generics business franchise and USD 380 million (2021: USD 423 million; 2020: USD 474 million) is sold to other third-party companies through the Anti-Infectives business franchise.

### Retail Generics

In Retail Generics, Sandoz develops, manufactures and markets finished dosage forms of small molecule pharmaceuticals for sale to third parties across a broad range of therapeutic areas, including finished dosage form of anti-infectives sold to third parties.

Retail sales were USD 6.8 billion (–4%, +4% cc), growing across all regions ex-US.

### Biopharmaceuticals

In Biopharmaceuticals, Sandoz develops, manufactures and markets protein- and other biotechnology-based products, including biosimilars, and provides biotechnology manufacturing services to other companies. The Biopharmaceuticals business also includes *Glatopa*, a generic version of Copaxone®, which treats relapsing forms of multiple sclerosis and is marketed in the US.

Global sales of Biopharmaceuticals (biosimilars, biopharmaceutical contract manufacturing and *Glatopa*) grew to USD 2.1 billion (–1%, +9% cc), growing across all regions.

### Anti-Infectives

In Anti-Infectives, Sandoz manufactures and supplies active pharmaceutical ingredients and intermediates, mainly antibiotics, for internal use by Retail Generics and for sale to third-party customers.

Total Anti-Infectives sales were USD 1.2 billion (+2%, +10% cc) of which USD 777 million were sold through the Retail Generics business franchise and USD 380 million were sold to other third-party companies through the Anti-Infectives business franchise. The sales of the Anti-Infectives business franchise declined mainly due to product discontinuations and supply challenges.

## Operating income

The following table provides an overview of operating income by segment:

| (USD millions) | Year ended Dec 31, 2022 | % of net sales to third parties | Year ended Dec 31, 2021 | % of net sales to third parties | Change in USD % | Change in constant currencies % |
|---|---|---|---|---|---|---|
| **Innovative Medicines** | **8 786** | **21.3** | **10 688** | **25.5** | **– 18** | **– 9** |
| **Sandoz** | **1 448** | **15.7** | **1 600** | **16.6** | **– 10** | **– 2** |
| Corporate | – 1 037 | | – 599 | | – 73 | – 84 |
| **Operating income** | **9 197** | **18.2** | **11 689** | **22.6** | **– 21** | **– 13** |

Operating income was USD 9.2 billion (–21%, –13% cc), mainly due to higher restructuring (USD 1.2 billion) primarily related to the implementation of the previously announced streamlined organizational model, higher impairments (USD 1.0 billion) and lower divestment gains (USD 0.6 billion). Operating income margin was 18.2% of net sales, decreasing by 4.4 percentage points (-3.8 percentage points cc).

## Core operating income key figures[1]

| (USD millions unless indicated otherwise) | Year ended Dec 31, 2022 | Year ended Dec 31, 2021 | Change in USD % | Change in constant currencies % |
|---|---|---|---|---|
| **Core gross profit** | **40 392** | **41 097** | **– 2** | **4** |
| Selling, general and administration | – 14 190 | – 14 815 | 4 | – 1 |
| Research and development | – 9 088 | – 9 041 | – 1 | – 5 |
| Other income | 384 | 421 | – 9 | – 2 |
| Other expense | – 833 | – 1 074 | 22 | 17 |
| **Core operating income** | **16 665** | **16 588** | **0** | **8** |
| As % of net sales to third parties | 33.0 | 32.1 | | |

[1] For an explanation of non-IFRS measures and reconciliation tables, see "—Non-IFRS measures as defined by Novartis."

The adjustments made to operating income to arrive at core operating income amounted to USD 7.5 billion (compared with USD 4.9 billion in the prior year). For details, please see "—Non-IFRS measures as defined by Novartis—2022 and 2021 reconciliation from IFRS results to core results."

Core operating income was USD 16.7 billion (0%, +8% cc) benefiting from higher sales, partly offset by higher R&D investments. Core operating income margin was 33.0% of net sales, increasing by 0.9 percentage points (+1.3 percentage points cc).

The following table provides an overview of core operating income by segment:

| (USD millions) | Year ended Dec 31, 2022 | % of net sales to third parties | Year ended Dec 31, 2021 | % of net sales to third parties | Change in USD % | Change in constant currencies % |
|---|---|---|---|---|---|---|
| **Innovative Medicines** | **15 237** | **36.9** | **15 215** | **36.2** | **0** | **8** |
| **Sandoz** | **1 903** | **20.6** | **2 064** | **21.4** | **– 8** | **– 1** |
| Corporate | – 475 | | – 691 | | 31 | 28 |
| **Core operating income** | **16 665** | **33.0** | **16 588** | **32.1** | **0** | **8** |

### Innovative Medicines

Operating income was USD 8.8 billion (–18%, –9% cc), driven by higher impairments, restructuring, lower divestment gains and higher R&D expenses, partly offset by higher gross margin. Operating income margin was 21.3% of net sales, decreasing 4.2 percentage points (-3.4 percentage points in cc).

Core adjustments were USD 6.5 billion, mainly due to amortization, impairments and restructuring, compared to USD 4.5 billion in prior year. Core adjustments increased compared to prior year, mainly due to higher impairments and restructuring.

Core operating income was USD 15.2 billion (0%, +8% cc), mainly driven by higher gross margin, partly offset

by higher R&D investments. Core operating income margin was 36.9% of net sales, increasing 0.7 percentage points (+1.3 percentage points cc). Revenues as a percentage of sales increased by 0.1 percentage points (cc). Core cost of goods sold as a percentage of sales was in line with the prior year. Core R&D expenses as a percentage of net sales increased by 0.2 percentage points (cc). Core selling, general and administration (SG&A) expenses as a percentage of net sales decreased by 1.4 percentage points (cc). Core other income and expense as a percentage of net sales was in line with the prior year.

**Sandoz**

Operating income was USD 1.4 billion (–10%, –2% cc), with the decline mainly due to higher SG&A investments to drive higher sales and inflationary pressures on input costs, which were partly offset by higher sales. Operating income margin was 15.7% of net sales, decreasing by 0.9 percentage points (-1.0 percentage points in cc).

Core adjustments were USD 455 million, including USD 221 million of amortization. Prior year core adjustments were USD 464 million, including USD 236 million of amortization.

Core operating income was USD 1.9 billion (–8%, –1% cc), with the decline mainly due to higher SG&A, partly offset by higher sales. Core operating margin was 20.6% of net sales, decreasing by 0.8 percentage points (-1.1 percentage points cc). Core gross margin as a percentage of sales decreased by 0.3 percentage points (cc), due to higher inflation and input costs. Core R&D expenses as a percentage of net sales decreased by 0.5 percentage points (cc). Core SG&A expenses increased by 0.9 percentage points (cc). Core other income and expense decreased the margin by 0.4 percentage points (cc).

**Corporate income and expense, net**

Corporate income and expense, which includes the cost of Group headquarter and coordination functions, amounted to an expense of USD 1.0 billion, compared to an expense of USD 599 million in 2021, mainly driven by higher restructuring costs, lower contributions from the Novartis Venture Fund and prior year income from a fair value adjustment on contingent receivables related to intellectual property rights, partly offset by prior year adjustments to provisions on M&A transactions.

## Innovative Medicines Division research and development

The following table provides an overview of the reported and core research and development expense of the Innovative Medicines Division:

| (USD millions unless indicated otherwise) | **Year ended Dec 31, 2022** | Year ended Dec 31, 2021 | Change in USD % | Change in constant currencies % |
|---|---|---|---|---|
| Research and exploratory development | – 2 938 | – 3 209 | 8 | 6 |
| Confirmatory development | – 6 234 | – 5 432 | – 15 | – 20 |
| **Total Innovative Medicines Division research and development expense** | **– 9 172** | **– 8 641** | **– 6** | **– 10** |
| As % of Innovative Medicines net sales to third parties | 22.2 | 20.6 | | |
| Core research and exploratory development[1] | – 2 784 | – 2 809 | 1 | – 1 |
| Core confirmatory development[1] | – 5 483 | – 5 341 | – 3 | – 7 |
| **Total core Innovative Medicines Division research and development expense** | **– 8 267** | **– 8 150** | **– 1** | **– 5** |
| As % of Innovative Medicines net sales to third parties | 20.0 | 19.4 | | |

[1] Core results exclude impairments, amortization and certain other items. For an explanation of non-IFRS measures and reconciliation tables, see "—Non-IFRS measures as defined by Novartis."

Innovative Medicine Division research and exploratory development expense decreased by 8% (+6% cc) to USD 2.9 billion. Confirmatory development expense amounted to USD 6.2 billion, increasing by 15% (–20% cc) versus prior year mainly due to higher impairment charges and higher investments in development to support recently acquired assets.

Total core research and development expense in the Innovative Medicine Division as a percentage of sales increased by 0.6 percentage points (+0.2 percentage points cc) to 20.0% of net sales, mainly driven by higher investments in recently acquired assets.

## Non-operating income and expense

The term "non-operating income and expense" includes all income and expense items outside operating income. The following table provides an overview of non-operating income and expense:

| (USD millions unless indicated otherwise) | **Year ended Dec 31, 2022** | Year ended Dec 31, 2021 | Change in USD % | Change in constant currencies % |
|---|---|---|---|---|
| **Operating income** | **9 197** | **11 689** | **– 21** | **– 13** |
| (Loss)/income from associated companies | – 9 | 15 339 | nm | nm |
| Interest expense | – 837 | – 811 | – 3 | – 5 |
| Other financial income and expense | 20 | – 80 | nm | nm |
| **Income before taxes** | **8 371** | **26 137** | **– 68** | **– 64** |
| Income taxes | – 1 416 | – 2 119 | 33 | 25 |
| **Net income** | **6 955** | **24 018** | **– 71** | **– 67** |
| *Attributable to:* | | | | |
| *Shareholders of Novartis AG* | *6 955* | *24 021* | *– 71* | *– 67* |
| *Non-controlling interests* | *0* | *– 3* | *nm* | *nm* |
| **Basic earnings per share (USD)** | **3.19** | **10.71** | **– 70** | **– 66** |

nm = not meaningful

### Income from associated companies

Income from associated companies was a loss of USD 9 million compared to an income of USD 15.3 billion in prior year. This decrease was due to the divestment of our investment in Roche that closed in the fourth quarter of 2021 where a gain of USD 14.6 billion was recognized.

### Interest expense and other financial income and expense

Interest expense amounted to USD 837 million, broadly in line with prior year.

Other financial income and expense amounted to an income of USD 20 million compared to an expense of USD 80 million in the prior year, as higher interest income was partly offset by financial expenses and currency losses.

### Income taxes

The tax rate was 16.9% compared to 8.1% in the prior year period. In the prior year, the tax rate was impacted by the Roche income from associated companies (including the divestment gain recognized on the sale of our investment in Roche in December 2021), the impact of increases in uncertain tax positions and prior-year items. For comparability, excluding these impacts, the prior year tax rate would have been 16.8%, broadly in line with 16.9% in the current year.

### Net income

Net income was USD 7.0 billion (–71%, –67% cc), impacted by Roche income in the prior year. Excluding the impact of Roche income, net income declined –9% (cc).

### Earnings per share

Basic earnings per share were USD 3.19 compared with USD 10.71 in the prior year, mainly due to prior year Roche income. Excluding the impact of Roche income, EPS declined –7% (cc).

## Core non-operating income and expense[1]

The following table provides an overview of core non-operating income and expense:

| (USD millions unless indicated otherwise) | **Year ended Dec 31, 2022** | Year ended Dec 31, 2021 | Change in USD % | Change in constant currencies % |
|---|---|---|---|---|
| **Core operating income** | **16 665** | **16 588** | **0** | **8** |
| Core (loss)/income from associated companies | – 9 | 993 | nm | nm |
| Core interest expense | – 837 | – 811 | – 3 | – 5 |
| Core other financial income and expense | 141 | – 41 | nm | nm |
| **Core income before taxes** | **15 960** | **16 729** | **– 5** | **3** |
| Core income taxes | – 2 608 | – 2 635 | 1 | – 7 |
| **Core net income** | **13 352** | **14 094** | **– 5** | **3** |
| **Core basic earnings per share (USD)** | **6.12** | **6.29** | **– 3** | **6** |

nm = not meaningful

### Core income from associated companies

Core income from associated companies was a loss of USD 9 million compared with an income of USD 993 million in prior year. This decrease was due to the divestment of our investment in Roche that closed in the fourth quarter of 2021.

### Core interest expense and other financial income and expense

Core interest expense amounted to USD 837 million, broadly in line with prior year.

Core other financial income and expense amounted to an income of USD 141 million compared to an expense of USD 41 million in the prior year as higher interest income was only partly offset by currency losses.

### Core income taxes

The core tax rate (core taxes as a percentage of core income before tax) was 16.3% compared to 15.8% in the prior year. For comparability, excluding Roche Income from associated companies (divested in December 2021), the prior year core tax rate would have been 16.7% compared to 16.3% in the current year, decreasing mainly as a result of a change in core profit mix.

### Core net income

Core net income was USD 13.4 billion (–5%, +3% cc) as growth in core operating income was partly offset by the loss of Roche core income. Excluding the impact of Roche core income, core net income grew +11% (cc).

### Core earnings per share

Core EPS was USD 6.12 (–3%, +6% cc), benefiting from lower weighted average number of shares outstanding. Excluding the impact of Roche core income, core EPS grew +14% (cc).

[1] For an explanation of non-IFRS measures and reconciliation tables, see "—Non-IFRS measures as defined by Novartis."

## Results of operations excluding Roche investment impacts

To enhance investors' understanding of the Group's performance in comparison with the prior year, the following table provides a comparison of our 2022 published IFRS results and non-IFRS measures core results and free cash flow with the 2021 results, excluding the impacts related to our Roche investment, due to its divestment.

| | | Excluding Roche investment impacts[2] | | |
|---|---|---|---|---|
| | **Year ended Dec 31, 2022** | Year ended Dec 31, 2021 | % change USD | % change cc[1] |
| **Operating income** | **9 197** | **11 689** | **– 21** | **– 13** |
| Loss from associated companies | – 9 | – 2 | nm | nm |
| Interest expense | – 837 | – 811 | – 3 | – 5 |
| Other financial income and expense | 20 | – 96 | nm | nm |
| Income taxes | – 1 416 | – 2 119 | 33 | 25 |
| **Net income** | **6 955** | **8 661** | **– 20** | **– 9** |
| **Basic earnings per share (USD)** | **3.19** | **3.86** | **– 17** | **– 7** |
| **Net cash flows from operating activities** | **14 236** | **14 549** | **– 2** | |
| **Free cash flow [1]** | **11 945** | **12 760** | **– 6** | |
| | | | | |
| **Core [1]** | | | | |
| **Core operating income** | **16 665** | **16 588** | **0** | **8** |
| **Core net income** | **13 352** | **13 099** | **2** | **11** |
| **Core basic earnings per share (USD)** | **6.12** | **5.84** | **5** | **14** |

[1] For an explanation of non-IFRS measures and reconciliation tables, see "—Non-IFRS measures as defined by Novartis."

[2] For a reconciliation of 2021 IFRS results and non-IFRS measures core results and free cash flow to exclude the impacts of the 2021 divestment of our Roche investment, see "—Non-IFRS measures as defined by Novartis."

nm = not meaningful

# Factors affecting comparability of year-on-year results of operations

## Significant transactions in 2022 and 2021

The comparability of the year-on-year results of our operations for the total Group can be significantly affected by acquisitions and divestments. As part of our long-term strategy to focus Novartis as a leading medicines company, we announced and/or completed several acquisitions and divestments during 2022 and 2021.

A detailed description of significant transactions in 2022 and 2021, can be found in "Item 18. Financial Statements—Note 2. Significant transactions."

# Internal control over financial reporting

The Group's management has assessed the effectiveness of internal control over financial reporting. The Group's independent statutory auditor also issued an opinion on the effectiveness of internal control over financial reporting. Both the Group's management and its external auditors concluded that the Group maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022. For more details, see "Item 15. Controls and Procedures."

# Approach to risk management

See "Item 6. Directors, Senior Management and Employees—Item 6.C Board practices—Corporate governance—Information and control systems—Risk management" and "Item 18. Financial Statements—Note 29. Financial instruments – additional disclosures."

# Non-IFRS measures as defined by Novartis

Novartis uses certain non-IFRS metrics when measuring performance, especially when measuring current-year results against prior periods, including core results, constant currencies and free cash flow.

Despite the use of these measures by management in setting goals and measuring the Group's performance, these are non-IFRS measures that have no standardized meaning prescribed by IFRS. As a result, such measures have limits in their usefulness to investors.

Because of their non-standardized definitions, the non-IFRS measures (unlike IFRS measures) may not be comparable to the calculation of similar measures of other companies. These non-IFRS measures are presented solely to permit investors to more fully understand how the Group's management assesses underlying performance. These non-IFRS measures are not, and should not be viewed as, a substitute for IFRS measures, and should be viewed in conjunction with IFRS financials.

As an internal measure of Group performance, these non-IFRS measures have limitations, and the Group's performance management process is not solely restricted to these metrics.

## Core results

The Group's core results – including core operating income, core net income and core earnings per share – exclude fully the amortization and impairment charges of intangible assets, excluding software, net gains and losses on fund investments and equity securities valued at fair value through profit and loss, and certain acquisition- and divestment-related items. The following items that exceed a threshold of USD 25 million are also excluded: integration- and divestment-related income and expenses; divestment gains and losses; restructuring charges/releases and related items; legal-related items; impairments of property, plant and equipment, software, and financial assets, and income and expense items that management deems exceptional and that are or are expected to accumulate within the year to be over a USD 25 million threshold.

Novartis believes that investor understanding of the Group's performance is enhanced by disclosing core measures of performance, since core measures exclude items that can vary significantly from year to year, they enable better comparison of business performance across years. For this same reason, Novartis uses these core measures in addition to IFRS and other measures as important factors in assessing the Group's performance.

The following are examples of how these core measures are utilized:

- In addition to monthly reports containing financial information prepared under International Financial Reporting Standards (IFRS), senior management receives a monthly analysis incorporating these core measures.
- Annual budgets are prepared for both IFRS and core measures.

As an internal measure of Group performance, the core results measures have limitations, and the Group's performance management process is not solely restricted to these metrics. A limitation of the core results measures is that they provide a view of the Group's operations without including all events during a period, such as the effects of an acquisition, divestment, or amortization/impairments of purchased intangible assets, impairments to property, plant and equipment and restructurings and related items.

## Constant currencies

Changes in the relative values of non-US currencies to the US dollar can affect the Group's financial results and financial position. To provide additional information that may be useful to investors, including changes in sales volume, we present information about our net sales and various values relating to operating and net income that are adjusted for such foreign currency effects.

Constant currency calculations have the goal of eliminating two exchange rate effects so that an estimate can be made of underlying changes in the consolidated income statement excluding the impact of fluctuations in exchanges rates:

- The impact of translating the income statements of consolidated entities from their non-USD functional currencies to USD
- The impact of exchange rate movements on the major transactions of consolidated entities performed in currencies other than their functional currency.

We calculate constant currency measures by translating the current year's foreign currency values for sales and other income statement items into USD (excluding the IAS 29 "Financial Reporting in Hyperinflationary Economies" adjustments to the local currency income statements of subsidiaries operating in hyperinflationary economies), using the average exchange rates from the prior year and comparing them to the prior year values in USD.

We use these constant currency measures in evaluating the Group's performance, since they may assist us in evaluating our ongoing performance from year to year. However, in performing our evaluation, we also consider equivalent measures of performance that are not affected by changes in the relative value of currencies.

## Growth rate calculation

For ease of understanding, Novartis uses a sign convention for its growth rates such that a reduction in operating expenses or losses compared with the prior year is shown as a positive growth.

## Free cash flow

Novartis defines free cash flow as net cash flows from operating activities and cash flows from investing activities associated with purchases and sales of property, plant and equipment, of intangible assets, of financial assets and of other non-current assets. Excluded from free cash flow are cash flows from investing activities associated with acquisitions and divestments of businesses and of interests in associated companies, purchases and sales of marketable securities, commodities, time deposits and net cash flows from financing activities.

Free cash flow is a non-IFRS measure and is not intended to be a substitute measure for net cash flows from operating activities as determined under IFRS. Free cash flow is presented as additional information because management believes it is a useful supplemental indicator of the Group's ability to operate without reliance on additional borrowing or use of existing cash. Free cash flow is a measure of the net cash generated that is available for investment in strategic opportunities, returning to shareholders and for debt repayment. Free cash flow is a non-IFRS measure, which means it should not be interpreted as a measure determined under IFRS.

# Additional information

## NET DEBT

Novartis calculates net debt as current financial debts and derivative financial instruments plus non-current financial debt less cash and cash equivalents and marketable securities, commodities, time deposits and derivative financial instruments.

Net debt is presented as additional information because it sets forth how management monitors net debt or liquidity and management believes it is a useful supplemental indicator of the Group's ability to pay dividends, to meet financial commitments, and to invest in new strategic opportunities, including strengthening its balance sheet.

For the table that shows the Group's net debt, see "— Item 5.B Liquidity and capital resources — Group liquidity, financial debts and net debt."

## EBITDA

Novartis defines earnings before interest, tax, depreciation and amortization (EBITDA) as operating income, excluding depreciation of property, plant and equipment, depreciation of right-of-use assets, amortization of intangible assets, and impairments of property, plant and equipment, right-of-use assets and of intangible assets.

| (USD millions) | **2022** | 2021 |
|---|---|---|
| **Operating income** | **9 197** | **11 689** |
| Depreciation of property, plant and equipment | 1 163 | 1 208 |
| Depreciation of right-of-use assets | 300 | 318 |
| Amortization of intangible assets | 3 982 | 3 903 |
| Impairments of property, plant and equipment, right-of-use assets and intangible assets [1] | 1 736 | 684 |
| **EBITDA** | **16 378** | **17 802** |

[1] There were no impairments of right-of-use assets in 2021.

## ENTERPRISE VALUE

Enterprise value represents the total amount that shareholders and debt holders have invested in Novartis, less the Group's liquidity.

| (USD millions) | **Dec 31, 2022** | Dec 31, 2021 |
|---|---|---|
| Market capitalization | 191 530 | 196 107 |
| Non-controlling interests | 81 | 167 |
| Non-current financial debts | 20 244 | 22 902 |
| Current financial debts and derivative financial instruments | 5 931 | 6 295 |
| Marketable securities, commodities, time deposits and derivative financial instruments | – 11 413 | – 15 922 |
| Cash and cash equivalents | – 7 517 | – 12 407 |
| **Enterprise value** | **198 856** | **197 142** |

## Reconciliation from IFRS results to core results

The following tables provide an overview of the reconciliation from IFRS results to core results:

### 2022 and 2021 reconciliation from IFRS results to core results

| | Innovative Medicines | | Sandoz | | Corporate | | Group | |
|---|---|---|---|---|---|---|---|---|
| (USD millions unless indicated otherwise) | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 | **2022** | 2021 |
| **IFRS operating income** | **8 786** | **10 688** | **1 448** | **1 600** | **– 1 037** | **– 599** | **9 197** | **11 689** |
| **Amortization of intangible assets** | **3 585** | **3 528** | **221** | **236** | | | **3 806** | **3 764** |
| Impairments | | | | | | | | |
| Intangible assets | 1 291 | 360 | 25 | 27 | 2 | | 1 318 | 387 |
| Property, plant and equipment related to the Group-wide rationalization of manufacturing sites | 286 | 219 | – 2 | 7 | | | 284 | 226 |
| Other property, plant and equipment | 85 | 40 | | | | | 85 | 40 |
| **Total impairment charges** | **1 662** | **619** | **23** | **34** | **2** | | **1 687** | **653** |
| Acquisition or divestment of businesses and related items | | | | | | | | |
| - Income | | – 2 | | | – 4 | – 64 | – 4 | – 66 |
| - Expense | 8 | 1 | | | | 106 | 8 | 107 |
| **Total acquisition or divestment of businesses and related items, net** | **8** | **– 1** | | | **– 4** | **42** | **4** | **41** |
| Other items | | | | | | | | |
| Divestment gains | – 161 | – 649 | | – 4 | – 5 | – 75 | – 166 | – 728 |
| Financial assets – fair value adjustments | 134 | – 43 | | | 126 | 5 | 260 | – 38 |
| Restructuring and related items | | | | | | | | |
| - Income | – 33 | – 32 | – 14 | – 36 | – 1 | – 6 | – 48 | – 74 |
| - Expense | 1 572 | 833 | 167 | 193 | 449 | 32 | 2 188 | 1 058 |
| Legal-related items | | | | | | | | |
| - Income | – 51 | | | – 11 | | | – 51 | – 11 |
| - Expense | 364 | 170 | 56 | 53 | | | 420 | 223 |
| Additional income | – 692 | – 139 | – 6 | – 1 | – 6 | – 138 | – 704 | – 278 |
| Additional expense | 63 | 241 | 8 | | 1 | 48 | 72 | 289 |
| **Total other items** | **1 196** | **381** | **211** | **194** | **564** | **– 134** | **1 971** | **441** |
| **Total adjustments** | **6 451** | **4 527** | **455** | **464** | **562** | **– 92** | **7 468** | **4 899** |
| **Core operating income** | **15 237** | **15 215** | **1 903** | **2 064** | **– 475** | **– 691** | **16 665** | **16 588** |
| *as % of net sales* | *36.9%* | *36.2%* | *20.6%* | *21.4%* | | | *33.0%* | *32.1%* |
| (Loss)/income from associated companies | – 2 | 5 | 2 | 2 | – 9 | 15 332 | – 9 | 15 339 |
| Core adjustments to income from associated companies, net of tax | | | | | | – 14 346 | | – 14 346 |
| Interest expense | | | | | | | – 837 | – 811 |
| Other financial income and expense | | | | | | | 20 | – 80 |
| Core adjustments to other financial income and expense | | | | | | | 121 | 39 |
| Income taxes, adjusted for above items (core income taxes) | | | | | | | – 2 608 | – 2 635 |
| **Core net income** | | | | | | | **13 352** | **14 094** |
| **Core net income attributable to shareholders of Novartis AG** | | | | | | | **13 352** | **14 097** |
| **Core basic EPS (USD)** [1] | | | | | | | **6.12** | **6.29** |

[1] Earnings per share (EPS) is calculated on the amount of net income attributable to shareholders of Novartis AG.

## 2022 and 2021 reconciliation from IFRS results to core results – Group

| 2022 (USD millions unless indicated otherwise) | IFRS results | Amortization of intangible assets[1] | Impairments[2] | Acquisition or divestment of businesses and related items[3] | Other items[4] | Core results |
|---|---|---|---|---|---|---|
| **Gross profit** | **36 342** | **3 648** | **338** | | **64** | **40 392** |
| **Operating income** | **9 197** | **3 806** | **1 687** | **4** | **1 971** | **16 665** |
| **Income before taxes** | **8 371** | **3 806** | **1 687** | **4** | **2 092** | **15 960** |
| Income taxes[5] | – 1 416 | | | | | – 2 608 |
| **Net income** | **6 955** | | | | | **13 352** |
| **Basic EPS (USD)**[6] | **3.19** | | | | | **6.12** |
| **The following are adjustments to arrive at core gross profit** | | | | | | |
| Other revenues | 1 283 | | | | – 86 | 1 197 |
| Cost of goods sold | – 15 486 | 3 648 | 338 | | 150 | – 11 350 |
| **The following are adjustments to arrive at core operating income** | | | | | | |
| Selling, general and administration | – 14 253 | | | | 63 | – 14 190 |
| Research and development | – 9 996 | 158 | 954 | | – 204 | – 9 088 |
| Other income | 805 | | – 3 | – 4 | – 414 | 384 |
| Other expense | – 3 701 | | 398 | 8 | 2 462 | – 833 |
| **The following are adjustments to arrive at core income before taxes** | | | | | | |
| Other financial income and expense | 20 | | | | 121 | 141 |

[1] Amortization of intangible assets: cost of goods sold includes the amortization of acquired rights to currently marketed products and other production-related intangible assets; research and development includes the amortization of acquired rights for technologies

[2] Impairments: cost of goods sold, research and development and other expense include impairment charges related to intangible assets; other income and other expense include net impairment charges related to property, plant and equipment

[3] Acquisition or divestment of businesses and related items, including restructuring and integration charges: other income and other expense include transitional service fee income and charges related to divestments; other income also includes adjustments to provisions; other expense includes stamp duties related to an acquisition

[4] Other items: other revenues includes a net income from an outlicensing agreement; cost of goods sold, selling, general and administration, research and development, other income and other expense include restructuring income and charges related to the restructuring initiative to implement a new streamlined organizational model, the Sandoz strategic review, the Group-wide rationalization of manufacturing sites and other net restructuring charges and related items; cost of goods sold, selling, general and administration, research and development and other expense include adjustments to provisions and related items; cost of goods sold and research and development also include contingent consideration adjustments; other income and other expense include fair value adjustments and divestment gains and losses on financial assets and legal-related items; other income also includes gains from the divestment of products and property, curtailment gains and an adjustment to an environmental provision; other expense includes a reversal of an accrual and other costs and items; other financial income and expense includes the monetary loss on the restatement of non-monetary items for subsidiaries in hyperinflationary economies and a revaluation impact of a financial liability incurred through the Alcon distribution

[5] Taxes on the adjustments between IFRS and core results take into account, for each individual item included in the adjustment, the tax rate that will finally be applicable to the item based on the jurisdiction where the adjustment will finally have a tax impact. Generally, this results in amortization and impairment of intangible assets and acquisition-related restructuring and integration items having a full tax impact. There is usually a tax impact on other items, although this is not always the case for items arising from legal settlements in certain jurisdictions. Adjustments related to income from associated companies are recorded net of any related tax effect. Due to these factors and the differing effective tax rates in the various jurisdictions, the tax on the total adjustments of USD 7.6 billion to arrive at the core results before tax amounts to USD 1.2 billion. The average tax rate on the adjustments is 15.7% since the full year core tax charge of 16.3% has been applied to the pre-tax income of the period.

[6] Earnings per share (EPS) is calculated on the amount of net income attributable to shareholders of Novartis AG.

| 2021 (USD millions unless indicated otherwise) | IFRS results | Amortization of intangible assets[1] | Impairments[2] | Acquisition or divestment of businesses and related items[3] | Other items[4] | Core results |
|---|---|---|---|---|---|---|
| **Gross profit** | **37 010** | **3 655** | **18** | | **414** | **41 097** |
| **Operating income** | **11 689** | **3 764** | **653** | **41** | **441** | **16 588** |
| **Income before taxes** | **26 137** | **3 974** | **653** | **– 14 531** | **496** | **16 729** |
| Income taxes[5] | – 2 119 | | | | | – 2 635 |
| **Net income** | **24 018** | | | | | **14 094** |
| **Basic EPS (USD)**[6] | **10.71** | | | | | **6.29** |
| **The following are adjustments to arrive at core gross profit** | | | | | | |
| Cost of goods sold | – 15 867 | 3 655 | 18 | | 414 | – 11 780 |
| **The following are adjustments to arrive at core operating income** | | | | | | |
| Selling, general and administration | – 14 886 | | | | 71 | – 14 815 |
| Research and development | – 9 540 | 109 | 369 | | 21 | – 9 041 |
| Other income | 1 852 | | – 100 | – 66 | – 1 265 | 421 |
| Other expense | – 2 747 | | 366 | 107 | 1 200 | – 1 074 |
| **The following are adjustments to arrive at core income before taxes** | | | | | | |
| Income from associated companies | 15 339 | 210 | | – 14 556 | | 993 |
| Other financial income and expense | – 80 | | | – 16 | 55 | – 41 |

[1] Amortization of intangible assets: cost of goods sold includes the amortization of acquired rights to currently marketed products and other production-related intangible assets; research and development includes the amortization of acquired rights for technologies; income from associated companies includes USD 210 million for the Novartis share of the estimated Roche core items

[2] Impairments: cost of goods sold and research and development include impairment charges related to intangible assets; other income and other expense include reversals of impairment charges and impairment charges related to property, plant and equipment

[3] Acquisition or divestment of businesses and related items, including restructuring and integration charges: other income includes adjustments to portfolio transformation and Alcon spin-off accruals; other income and other expense include transitional service-fee income and expenses related to the Alcon distribution; other expense also includes adjustments to provisions; income from associated companies includes the gain related to the divestment of our investment in Roche; other financial income and expense includes other financial gains related to the divestment of our investment in Roche

[4] Other items: cost of goods sold, research and development, other income and other expense include net restructuring and other charges related to the Group-wide rationalization of manufacturing sites; cost of goods sold, selling, general and administration, other income and other expense include other restructuring income and charges and related items; cost of goods sold, research and development, other income and other expense also include adjustments to contingent consideration; selling, general and administration, research and development, other income and other expense include adjustments to provisions; other income and other expense also include gains and losses from the divestment of products and financial assets and fair value adjustments on financial assets, adjustments to environmental provisions and legal-related items; other financial income and expense includes a charge related to the monetary loss due to hyperinflation in Argentina and Venezuela and a revaluation impact of a financial liability incurred through the Alcon distribution

[5] Taxes on the adjustments between IFRS and core results take into account, for each individual item included in the adjustment, the tax rate that will finally be applicable to the item based on the jurisdiction where the adjustment will finally have a tax impact. Generally, this results in amortization and impairment of intangible assets and acquisition-related restructuring and integration items having a full tax impact. There is usually a tax impact on other items, although this is not always the case for items arising from legal settlements in certain jurisdictions. Adjustments related to income from associated companies are recorded net of any related tax effect. Due to these factors and the differing effective tax rates in the various jurisdictions, the tax on the total adjustments of USD 9.4 billion to arrive at the core results before tax amounts to USD 516 million. Excluding the gain on the divestment of our investment in Roche, the tax on the total adjustments of USD 5.2 billion to arrive at the core results before tax amounts to USD 516 million and the average tax rate on the adjustments was 10.0%.

[6] Earnings per share (EPS) is calculated on the amount of net income attributable to shareholders of Novartis AG.

## 2022 and 2021 reconciliation from IFRS results to core results – Innovative Medicines

| 2022 (USD millions) | IFRS results | Amortization of intangible assets[1] | Impairments[2] | Acquisition or divestment of businesses and related items[3] | Other items[4] | Core results |
|---|---|---|---|---|---|---|
| **Gross profit** | **31 801** | **3 427** | **314** | | **– 29** | **35 513** |
| **Operating income** | **8 786** | **3 585** | **1 662** | **8** | **1 196** | **15 237** |
| **The following are adjustments to arrive at core gross profit** | | | | | | |
| Other revenues | 1 249 | | | | – 86 | 1 163 |
| Cost of goods sold | – 11 569 | 3 427 | 314 | | 57 | – 7 771 |
| **The following are adjustments to arrive at core operating income** | | | | | | |
| Selling, general and administration | – 11 679 | | | | 50 | – 11 629 |
| Research and development | – 9 172 | 158 | 953 | | – 206 | – 8 267 |
| Other income | 531 | | – 1 | | – 311 | 219 |
| Other expense | – 2 695 | | 396 | 8 | 1 692 | – 599 |

[1] Amortization of intangible assets: cost of goods sold includes the amortization of acquired rights to currently marketed products and other production-related intangible assets; research and development includes the amortization of acquired rights for technologies

[2] Impairments: cost of goods sold, research and development and other expense include impairment charges related to intangible assets; other income and other expense include net impairment charges related to property, plant and equipment

[3] Acquisition or divestment of businesses and related items, including restructuring and integration charges: other expense includes stamp duties related to an acquisition and transitional service fee charges related to divestments

[4] Other items: other revenues includes a net income from an outlicensing agreement; cost of goods sold, selling, general and administration, research and development, other income and other expense include restructuring income and charges related to the initiative to implement a new streamlined organizational model, the Group-wide rationalization of manufacturing sites and other net restructuring charges and related items; cost of goods sold and research and development also include contingent consideration adjustments and adjustments to provisions and related items; other income and other expense include fair value adjustments and divestment gains and losses on financial assets and legal-related items; other income also includes gains from the divestment of products and property, curtailment gains and an adjustment to an environmental provision; other expense includes a reversal of an accrual and other costs and items

| 2021 (USD millions) | IFRS results | Amortization of intangible assets[1] | Impairments[2] | Acquisition or divestment of businesses and related items[3] | Other items[4] | Core results |
|---|---|---|---|---|---|---|
| **Gross profit** | **32 218** | **3 419** | | | **344** | **35 981** |
| **Operating income** | **10 688** | **3 528** | **619** | **– 1** | **381** | **15 215** |
| **The following are adjustments to arrive at core gross profit** | | | | | | |
| Cost of goods sold | – 11 751 | 3 419 | | | 344 | – 7 988 |
| **The following are adjustments to arrive at core operating income** | | | | | | |
| Selling, general and administration | – 12 306 | | | | 71 | – 12 235 |
| Research and development | – 8 641 | 109 | 360 | | 22 | – 8 150 |
| Other income | 1 149 | | – 45 | – 2 | – 837 | 265 |
| Other expense | – 1 732 | | 304 | 1 | 781 | – 646 |

[1] Amortization of intangible assets: cost of goods sold includes the amortization of acquired rights to currently marketed products and other production-related intangible assets; research and development includes the amortization of acquired rights for technologies

[2] Impairments: research and development includes impairment charges related to intangible assets; other income and other expense include reversals of impairment charges and impairment charges related to property, plant and equipment

[3] Acquisition or divestment of businesses and related items, including restructuring and integration charges: other income and other expense include transitional service fee income and expenses related to the Alcon distribution

[4] Other items: cost of goods sold, research and development, other income and other expense include net restructuring and other charges related to the Group-wide rationalization of manufacturing sites; cost of goods sold, selling, general and administration, other income and other expense include other restructuring income and charges and related items; cost of goods sold, research and development and other expense include adjustments to contingent consideration; selling, general and administration, research and development and other expense include adjustments to provisions; other income and other expense include gains and losses from the divestment of products and financial assets and fair value adjustments on financial assets; other expense also includes legal-related items and adjustments to environmental provisions

## 2022 and 2021 reconciliation from IFRS to core results – Sandoz

| 2022 (USD millions) | IFRS results | Amortization of intangible assets[1] | Impairments[2] | Acquisition or divestment of businesses and related items | Other items[3] | Core results |
|---|---|---|---|---|---|---|
| **Gross profit** | **4 504** | **221** | **24** | | **93** | **4 842** |
| **Operating income** | **1 448** | **221** | **23** | | **211** | **1 903** |
| **The following are adjustments to arrive at core gross profit** | | | | | | |
| Cost of goods sold | – 4 978 | 221 | 24 | | 93 | – 4 640 |
| **The following are adjustments to arrive at core operating income** | | | | | | |
| Selling, general and administration | – 2 062 | | | | 9 | – 2 053 |
| Research and development | – 824 | | 1 | | 2 | – 821 |
| Other income | 103 | | – 2 | | – 14 | 87 |
| Other expense | – 273 | | | | 121 | – 152 |

[1] Amortization of intangible assets: cost of goods sold includes the amortization of acquired rights to currently marketed products and other production-related intangible assets
[2] Impairments: cost of goods sold and research and development include impairment charges related to intangible assets; other income includes a reversal of an impairment charge related to property, plant and equipment
[3] Other items: cost of goods sold, selling, general and administration, research and development, other income and other expense include charges related to the Sandoz strategic review, the Group-wide rationalization of manufacturing sites and other net restructuring charges and related items; other expense also includes legal-related items; cost of goods sold and selling, general and administration include adjustments to provisions and related items

| 2021 (USD millions) | IFRS results | Amortization of intangible assets[1] | Impairments[2] | Acquisition or divestment of businesses and related items | Other items[3] | Core results |
|---|---|---|---|---|---|---|
| **Gross profit** | **4 725** | **236** | **18** | | **70** | **5 049** |
| **Operating income** | **1 600** | **236** | **34** | | **194** | **2 064** |
| **The following are adjustments to arrive at core gross profit** | | | | | | |
| Cost of goods sold | – 5 147 | 236 | 18 | | 70 | – 4 823 |
| **The following are adjustments to arrive at core operating income** | | | | | | |
| Research and development | – 899 | | 9 | | – 1 | – 891 |
| Other income | 233 | | – 55 | | – 51 | 127 |
| Other expense | – 397 | | 62 | | 176 | – 159 |

[1] Amortization of intangible assets: cost of goods sold includes the amortization of acquired rights to currently marketed products and other production-related intangible assets
[2] Impairments: cost of goods sold and research and development include impairment charges related to intangible assets; other income and other expense include reversals of impairment charges and impairment charges related to property, plant and equipment
[3] Other items: cost of goods sold, other income and other expense include net restructuring and other charges related to the Group-wide rationalization of manufacturing sites and other restructuring income and charges and related items; research and development includes adjustments to provisions; other income includes net gains from the divestment of a product; other income and other expense include legal-related items

## 2022 and 2021 reconciliation from IFRS results to core results – Corporate

| 2022<br>(USD millions) | IFRS results | Amortization of intangible assets | Impairments[1] | Acquisition or divestment of businesses and related items[2] | Other items[3] | Core results |
|---|---|---|---|---|---|---|
| **Gross profit** | **37** | | | | | **37** |
| **Operating loss** | **– 1 037** | | **2** | **– 4** | **564** | **– 475** |
| **The following are adjustments to arrive at core operating loss** | | | | | | |
| Selling, general and administration | – 512 | | | | 4 | – 508 |
| Other income | 171 | | | – 4 | – 89 | 78 |
| Other expense | – 733 | | 2 | | 649 | – 82 |

[1] Impairments: other expense includes impairment charges related to intangible assets

[2] Acquisition or divestment of businesses and related items, including restructuring and integration charges: other income includes adjustments to provisions and transitional service fee income related to divestments

[3] Other items: selling, general and administration, other income and other expense include restructuring income and charges related to the initiative to implement a new streamlined organizational model, the Sandoz strategic review and other net restructuring charges and related items; other income and other expense also include fair value adjustments and divestment gains and losses on financial assets; other income also includes a curtailment gain

| 2021<br>(USD millions) | IFRS results | Amortization of intangible assets | Impairments | Acquisition or divestment of businesses and related items[1] | Other items[2] | Core results |
|---|---|---|---|---|---|---|
| **Gross profit** | **67** | | | | | **67** |
| **Operating loss** | **– 599** | | | **42** | **– 134** | **– 691** |
| **The following are adjustments to arrive at core operating loss** | | | | | | |
| Other income | 470 | | | – 64 | – 377 | 29 |
| Other expense | – 618 | | | 106 | 243 | – 269 |

[1] Acquisition or divestment of businesses and related items, including restructuring and integration charges: other income includes adjustments to portfolio transformation and Alcon spin-off accruals; other income and other expense include transitional service fee income and expenses related to the Alcon distribution; other expense also includes adjustments to provisions

[2] Other items: other income includes an adjustment to a contingent consideration receivable; other income and other expense include fair value adjustments and divestment gains and losses on financial assets, adjustments to environmental provisions and restructuring income and charges and related items

## Reconciliation of 2021 IFRS results and non-IFRS measures core results and free cash flow to exclude the impacts of the 2021 divestment of our Roche investment

To enhance investor understanding of the Group's performance in comparison with the prior year, we presented the 2021 IFRS results and non-IFRS measures core results and free cash flow excluding the impacts related to our Roche investment, due to its divestment in the fourth quarter of 2021.

The following tables provide a reconciliation of our 2021 published IFRS results and non-IFRS measures core results and free cash flow to the 2021 results, excluding the impacts related to our Roche investment, due to its divestment.

| | 2021 | | | |
|---|---|---|---|---|
| (USD millions unless indicated otherwise) | Results as published | Our Roche investment impacts excluding the divestment gain | Gain on divestment of our investment in Roche | Results excluding impacts from the divestment of our Roche investment |
| **Operating income** | **11 689** | | | **11 689** |
| Income from associated companies | 15 339 | – 785 | – 14 556 | – 2 |
| Interest expense and other financial income and expense | – 891 | | – 16 | – 907 |
| **Income before tax** | **26 137** | **– 785** | **– 14 572** | **10 780** |
| Income taxes | – 2 119 | | | – 2 119 |
| **Net income** | **24 018** | **– 785** | **– 14 572** | **8 661** |
| **Basic earnings per share (USD)** | **10.71** | **– 0.35** | **– 6.50** | **3.86** |
| *Effective tax rate* [1] | *8.1%* | | | *19.7%* |
| | | | | |
| **Core operating income** | **16 588** | | | **16 588** |
| Core income from associated companies | 993 | – 995 | | – 2 |
| Core interest expense and core other financial income and expense | – 852 | | | – 852 |
| **Core income before tax** | **16 729** | **– 995** | | **15 734** |
| Core income taxes | – 2 635 | | | – 2 635 |
| **Core net income** | **14 094** | **– 995** | | **13 099** |
| **Core basic earnings per share (USD)** | **6.29** | **– 0.45** | | **5.84** |
| *Core effective tax rate* [2] | *15.8%* | | | *16.7%* |
| | | | | |
| **Free cash flow** [3] | **13 282** | **– 522** | | **12 760** |

[1] Effective tax rate is calculated as Income taxes divided by Income before tax.
[2] Core effective tax rate is calculated as Core income taxes divided by Core income before tax.
[3] The free cash flow impact represents the dividend received in Q1 2021 from Roche in relation to the distribution of its 2020 net income.

| (USD millions) | 2021 Free cash flow as published | 2021 Dividends received from Roche in relation to the distribution of its 2020 net income[1] | 2021 Free cash flow excluding dividends received from Roche |
|---|---|---|---|
| **Operating income** | **11 689** | | **11 689** |
| Adjustments for non-cash items | 7 030 | | 7 030 |
| **Operating income adjusted for non-cash items** | **18 719** | | **18 719** |
| Dividends received from associated companies and others | 525 | – 522 | 3 |
| Interest and other financial payments, net | – 953 | | – 953 |
| Income taxes paid | – 2 342 | | – 2 342 |
| Other operating cash flow items, net | – 878 | | – 878 |
| **Net cash flows from operating activities** | **15 071** | **– 522** | **14 549** |
| Net purchases of property, plant and equipment, intangible assets, financial assets and other non-current assets | – 1 789 | | – 1 789 |
| **Free cash flow** | **13 282** | **– 522** | **12 760** |

[1] In 2021, the dividend received from Roche in relation to the distribution of its 2020 net income was received in Q1 2021.

The following table provides a summary of the percentage point impact from excluding the effect of the divestment of our investment in Roche (in the fourth quarter of 2021) on the USD and constant currencies % change on key Group figures.

| | In USD | | | In constant currencies | | |
|---|---|---|---|---|---|---|
| | % change as published 2022 | % change excluding impacts from the divestment of our Roche investment 2022 | Percentage point impact 2022 | % change as published 2022 | % change excluding impacts from the divestment of our Roche investment 2022 | Percentage point impact 2022 |
| Net income | – 71 | – 20 | – 51 | – 67 | – 9 | – 58 |
| Basic earnings per share (USD) | – 70 | – 17 | – 53 | – 66 | – 7 | – 59 |
| Free cash flow | – 10 | – 6 | – 4 | | | |
| Core net income | – 5 | 2 | – 7 | 3 | 11 | – 8 |
| Core basic earnings per share (USD) | – 3 | 5 | – 8 | 6 | 14 | – 8 |

# 5.B Liquidity and capital resources

The following tables summarize the Group's cash flows and net debt:

| (USD millions) | 2022 | 2021 |
|---|---|---|
| Net cash flows from operating activities | 14 236 | 15 071 |
| Net cash flows from investing activities | 1 468 | 4 208 |
| Net cash flows used in financing activities | – 20 562 | – 16 264 |
| Effect of exchange rate changes on cash and cash equivalents | – 32 | – 266 |
| **Net change in cash and cash equivalents** | **– 4 890** | **2 749** |
| Change in marketable securities, commodities, time deposits and derivative financial instruments | – 4 509 | 14 017 |
| Change in current and non-current financial debts and derivative financial instruments | 3 022 | 6 847 |
| **Change in net debt** | **– 6 377** | **23 613** |
| Net debt at January 1 | – 868 | – 24 481 |
| **Net debt at December 31** | **– 7 245** | **– 868** |

# Cash flow

**Financial year 2022 compared with 2021**

Net cash flows from operating activities amounted to USD 14.2 billion, compared with USD 15.1 billion in 2021. This decrease was mainly due to unfavorable changes in working capital and lower dividends from associated companies (2021 included the USD 0.5 billion dividends received from our investment in Roche, which was divested in the fourth quarter of 2021), partly offset by lower income taxes paid and favorable hedging results.

Net cash inflows from investing activities amounted to USD 1.5 billion, compared with USD 4.2 billion in 2021.

The current year cash inflows were driven by net proceeds of USD 4.7 billion from the sale of marketable securities, commodities and time deposits; USD 0.5 billion from the sale of intangible assets, financial assets and property, plant and equipment. These cash inflows were partly offset by cash outflows of USD 1.5 billion for purchases of intangible assets; USD 1.2 billion for purchases of property, plant and equipment; USD 0.1 billion for purchases of financial assets; and USD 0.9 billion for acquisitions and divestments of businesses, net (primarily the acquisition of Gyroscope Therapeutics Holdings plc for USD 0.8 billion).

In 2021, net cash inflows from investing activities of USD 4.2 billion were driven by proceeds of USD 20.7 billion from the divestment of our investment in Roche; USD 2.3 billion from the sale of marketable securities, commodities and time deposits; and USD 1.4 billion from the sale of intangible assets, financial assets and property, plant and equipment. These cash inflows were partly offset by USD 16.4 billion cash outflows for purchases of marketable securities and time deposits, mainly due to the investment of a portion of the proceeds from the divestment of our investment in Roche; USD 1.6 billion for purchases of intangible assets (including the upfront payment to in-license tislelizumab from an affiliate of BeiGene, Ltd); USD 1.4 billion for purchases of property, plant and equipment; USD 0.6 billion for acquisitions and divestments of businesses, net (including the acquisition of GSK's cephalosporin antibiotics business for USD 351 million); and USD 0.2 billion for purchases of financial assets.

Net cash outflows used in financing activities amounted to USD 20.6 billion, compared with USD 16.3 billion in 2021.

The current year cash outflows were mainly driven by USD 10.6 billion for net treasury share transactions; USD 7.5 billion for the dividend payment; USD 2.5 billion in aggregate for the repayment of two US dollar bonds; and USD 0.3 billion payments of lease liabilities. These cash outflows were partly offset by cash inflows of USD 0.3 billion from the net increase in current financial debts.

In 2021, net cash outflows used in financing activities of USD 16.3 billion were driven by USD 7.4 billion for the dividend payment; USD 3.0 billion for net treasury share transactions; USD 3.5 billion net decrease in current financial debts; and USD 2.2 billion for the repayment of two bonds denominated in euro (notional amount of EUR 1.25 billion and of EUR 0.6 billion) at maturity. Payments of lease liabilities and other financing cash flows resulted in a net cash outflow of USD 0.2 billion.

# Free cash flow

Free cash flow is a non-IFRS measure, see "—Item 5.A Operating results—Non-IFRS measures as defined by Novartis—Free cash flow" for further information.

The following table is a reconciliation of the three major categories of the IFRS consolidated statements of cash flows to free cash flow:

| | 2022 | | | 2021 | | |
|---|---|---|---|---|---|---|
| (USD millions) | IFRS cash flow | Adjustments | Free cash flow | IFRS cash flow | Adjustments | Free cash flow |
| **Net cash flows from operating activities** | **14 236** | | **14 236** | **15 071** | | **15 071** |
| **Net cash flows from/(used in) investing activities** [1] | **1 468** | **– 3 759** | **– 2 291** | **4 208** | **– 5 997** | **– 1 789** |
| **Net cash flows used in financing activities** [2] | **– 20 562** | **20 562** | **0** | **– 16 264** | **16 264** | **0** |
| **Free cash flow** | | | **11 945** | | | **13 282** |

[1] Excluded from the free cash flow are cash flows from investing activities associated with acquisitions and divestments of businesses and of interest in associated companies, purchases and sales of marketable securities, commodities and time deposits.

[2] Net cash flows used in financing activities are excluded from the free cash flow.

The following table is a summary of the free cash flow:

| (USD millions) | 2022 | 2021 |
|---|---|---|
| **Operating income** | **9 197** | **11 689** |
| Adjustments for non-cash items | | |
| Depreciation, amortization and impairments | 7 441 | 6 075 |
| Change in provisions and other non-current liabilities | 1 403 | 896 |
| Other | 460 | 59 |
| **Operating income adjusted for non-cash items** | **18 501** | **18 719** |
| Dividends received from associated companies and others | 1 | 525 |
| Interest and other financial receipts | 325 | 13 |
| Interest and other financial payments | – 728 | – 966 |
| Income taxes paid | – 1 975 | – 2 342 |
| Payments out of provisions and other net cash movements in non-current liabilities | – 885 | – 1 119 |
| Change in inventories and trade receivables less trade payables | – 1 467 | – 329 |
| Change in other net current assets and other operating cash flow items | 464 | 570 |
| **Net cash flows from operating activities** | **14 236** | **15 071** |
| Purchases of property, plant and equipment | – 1 198 | – 1 378 |
| Proceeds from sale of property, plant and equipment | 167 | 240 |
| Purchases of intangible assets | – 1 473 | – 1 593 |
| Proceeds from sale of intangible assets | 202 | 748 |
| Purchases of financial assets | – 121 | – 191 |
| Proceeds from sale of financial assets | 133 | 442 |
| Purchases of other non-current assets | – 1 | – 61 |
| Proceeds from sale of other non-current assets | | 4 |
| **Free cash flow** | **11 945** | **13 282** |

### Financial year 2022 compared with 2021

Free cash flow amounted to USD 11.9 billion (–10% USD), compared with USD 13.3 billion in 2021, mainly due to a decrease in net cash flows from operating activities and lower divestment proceeds, partly offset by lower purchases of property, plant and equipment.

# Condensed consolidated balance sheets

| (USD millions) | Dec 31, 2022 | Dec 31, 2021 |
|---|---|---|
| **Assets** | | |
| Property, plant and equipment | 10 764 | 11 545 |
| Right-of-use assets | 1 431 | 1 561 |
| Goodwill | 29 301 | 29 595 |
| Intangible assets other than goodwill | 31 644 | 34 182 |
| Investments in associated companies | 143 | 205 |
| Deferred tax assets | 3 739 | 3 743 |
| Financial assets and other non-current assets | 3 521 | 5 246 |
| **Total non-current assets** | **80 543** | **86 077** |
| Inventories | 7 175 | 6 666 |
| Trade receivables | 8 066 | 8 005 |
| Other current assets and income tax receivables | 2 739 | 2 718 |
| Marketable securities, commodities, time deposits and derivative financial instruments | 11 413 | 15 922 |
| Cash and cash equivalents | 7 517 | 12 407 |
| **Total current assets** | **36 910** | **45 718** |
| **Total assets** | **117 453** | **131 795** |
| **Equity and liabilities** | | |
| **Total equity** | **59 423** | **67 822** |
| **Liabilities** | | |
| Financial debts | 20 244 | 22 902 |
| Lease liabilities | 1 538 | 1 621 |
| Deferred tax liabilities | 2 686 | 3 070 |
| Provisions and other non-current liabilities | 4 906 | 6 172 |
| **Total non-current liabilities** | **29 374** | **33 765** |
| Trade payables | 5 146 | 5 553 |
| Financial debts and derivative financial instruments | 5 931 | 6 295 |
| Lease liabilities | 251 | 275 |
| Provisions and other current liabilities and current income tax liabilities | 17 328 | 18 085 |
| **Total current liabilities** | **28 656** | **30 208** |
| **Total liabilities** | **58 030** | **63 973** |
| **Total equity and liabilities** | **117 453** | **131 795** |

## Assets

Total non-current assets of USD 80.5 billion at December 31, 2022, decreased by USD 5.5 billion compared to December 31, 2021.

Intangible assets other than goodwill decreased by USD 2.5 billion as additions (including the acquisition of Gyroscope Therapeutics Holdings plc) were more than offset by amortization, impairments and unfavorable currency translation adjustments.

Goodwill decreased by USD 0.3 billion, mainly due to unfavorable currency translation adjustments.

Property, plant and equipment decreased by USD 0.8 billion, as net additions were more than offset by depreciation, unfavorable currency translation adjustments and impairments.

Financial and other non-current assets decreased by USD 1.7 billion, driven by the decrease of the prepaid post-employment benefit plans of USD 0.9 billion, resulting mainly from the pension accounting effects from increases in actuarial discount rates and of USD 0.6 billion from fair value losses on listed equity and fund investments.

Right-of-use assets, investments in associated companies and deferred tax assets were broadly in line with December 31, 2021.

Total current assets of USD 36.9 billion at December 31, 2022, decreased by USD 8.8 billion compared to December 31, 2021.

Cash and cash equivalents decreased by USD 4.9 billion, mainly due to the dividend payment, the purchase of treasury shares and net repayments of financial debt, partly offset by the cash generated from operating activities and from investing activities, which includes the net proceeds from the sales of marketable securities, commodities and time deposits.

Marketable securities, commodities, time deposits and derivative financial instruments decreased by USD 4.5 billion mainly driven by the net sales of marketable securities, commodities and time deposits.

Inventories increased by USD 0.5 billion and trade receivables and other current assets and income tax receivables were broadly in line with December 31, 2021.

We consider our provisions for doubtful trade receivables to be adequate. We particularly monitor the level of trade receivables in countries deemed to have an

elevated credit risk. We consider macroeconomic environment, historical experience, country and political risk, in addition to other relevant information when assessing risk. These risk factors are monitored regularly to determine any adjustments in risk classification. The majority of the past due trade receivables from elevated credit risk countries are due from local governments or from government-funded entities. Deteriorating credit and economic conditions as well as other factors in these elevated credit risk countries have resulted in, and may continue to result in, an increase in the average length of time that it takes to collect these trade receivables and may require the Group to re-evaluate the expected credit loss amount of these trade receivables in future periods. At December 31, 2022, amounts past due for more than one year were not significant in elevated credit risk countries.

For a table showing an overview of the aging analysis of total trade receivables and the total amount of the provision for doubtful trade receivables as of December 31, 2022, and 2021, see "Item 18. Financial Statements—Note 15. Trade receivables."

There is also a risk that certain countries could devalue their currency. Currency exposures are described in more detail in "—Effects of currency fluctuations."

### Liabilities

Total non-current liabilities of USD 29.4 billion decreased by USD 4.4 billion compared to December 31, 2021.

Non-current financial debts decreased by USD 2.7 billion, mainly due to the reclassification of USD 2.3 billion from non-current to current financial debts of two EUR denominated bonds with notional amounts of EUR 750 million and EUR 1.25 billion maturing in 2023 and favorable currency translation adjustments of USD 0.4 billion.

Provisions and other non-current liabilities decreased by USD 1.3 billion, mainly driven by decreases in accrued liabilities for employee benefits of USD 1.2 billion (primarily due to a decrease in accrued liabilities for defined benefit pension plans of USD 0.9 billion, resulting from the pension accounting effects from increases in actuarial discount rates), and in contingent consideration of USD 0.3 billion, a reclassification of non-current legal matters provisions to current portion of USD 0.2 billion, partly offset by the increase in other non-current liabilities of USD 0.4 billion.

Deferred tax liabilities decreased by USD 0.4 billion and non-current lease liabilities were broadly in line with December 31, 2021.

Total current liabilities of USD 28.7 billion decreased by USD 1.6 billion compared to December 31, 2021.

Provisions and other current liabilities and current income tax liabilities decreased by USD 0.8 billion, mainly driven by the decrease in the commitment for repurchase of own shares liability of USD 2.8 billion, partly offset by increases in restructuring provisions of USD 0.8 billion (primarily due to the initiative announced in April 2022, to implement a new streamlined organizational model), in provisions for legal matters of USD 0.5 billion, including a USD 0.2 billion reclassification from non-current provisions for legal matters, and in provisions for revenue deductions of USD 0.3 billion.

Current financial debts and derivative financial instruments decreased by USD 0.4 billion, mainly due to the repayment of two US dollar bonds of USD 1.0 billion and USD 1.5 billion, the closure during the third quarter of 2022 of the interest-bearing accounts of employees payable on demand, which amounted to USD 1.8 billion at December 31, 2021, and favorable currency translation adjustments, partly offset by the reclassification from non-current to current financial debts of USD 2.3 billion and an increase of USD 1.9 billion in commercial paper.

Trade payables decreased by USD 0.4 billion and current lease liabilities were broadly in line with December 31, 2021.

In our key countries, Switzerland and the United States, assessments have been agreed by the tax authorities up to 2017 in Switzerland and up to 2014 in the United States, with the exception of one open United States position related to the 2007 tax filing. Uncertainties also exist on the application of a taxing right based on a German non-resident tax regulation for specific revenues derived from German registered intellectual property rights.

Novartis believes that its total provisions are adequate based upon currently available information. However, given the inherent difficulties in estimating liabilities in this area, Novartis may incur additional costs beyond the amounts provided. Management believes that such additional amounts, if any, would not be material to the Group's financial condition but could be material to the results of operations or cash flows in a given period.

### Equity

The Group`s equity decreased by USD 8.4 billion to USD 59.4 billion at December 31, 2022, compared to December 31, 2021.

This decrease was mainly due to the cash-dividend payment of USD 7.5 billion, purchase of treasury shares of USD 10.9 billion, unfavorable currency translation differences of USD 0.5 billion and fair value adjustments on equity securities of USD 0.4 billion. This was partially offset by the net income of USD 7.0 billion, decrease of the treasury share repurchase obligation of USD 2.8 billion, and equity-based compensation of USD 0.9 billion.

## Summary of equity movements attributable to Novartis AG shareholders

| | Number of outstanding shares (in millions) | | Equity attributable to Novartis AG shareholders | |
|---|---|---|---|---|
| | **2022** | 2021 | **2022 USD millions** | 2021 USD millions |
| **Balance at beginning of year** | **2 234.9** | **2 256.8** | **67 655** | **56 598** |
| Shares acquired to be canceled | – 126.2 | – 30.7 | – 10 787 | – 2 775 |
| Other share purchases | – 1.4 | – 1.5 | – 123 | – 145 |
| Exercise of options and employee transactions | 1.9 | 0.6 | 88 | 39 |
| Equity-based compensation | 10.4 | 9.6 | 854 | 745 |
| Shares delivered to Alcon employees as a result of the Alcon spin-off | 0.0 | 0.1 | 5 | 17 |
| Taxes on treasury share transactions | | | 14 | 1 |
| Decrease/(increase) of treasury share repurchase obligation under a share buyback trading plan | | | 2 809 | – 1 040 |
| Transaction costs, net of taxes | | | | 12 |
| Dividends | | | – 7 506 | – 7 368 |
| Net income of the year attributable to shareholders of Novartis AG | | | 6 955 | 24 021 |
| Other comprehensive income attributable to shareholders of Novartis AG | | | – 839 | – 2 493 |
| Impact of change in ownership of consolidated entities | | | | – 5 |
| Other movements [1] | | | 217 | 48 |
| **Balance at end of year** | **2 119.6** | **2 234.9** | **59 342** | **67 655** |

[1] Impact of hyperinflationary economies (see "Item 18. Financial Statements—Note 1. Significant accounting policies").

In 2022, Novartis repurchased a total of 126.2 million shares for USD 10.8 billion on the SIX Swiss Exchange second trading line, including 115.3 million shares (USD 9.9 billion) under the up-to USD 15 billion share buyback announced in December 2021 and 10.9 million shares (USD 0.9 billion) to mitigate dilution related to participation plans of associates. In addition, 1.4 million shares (USD 0.1 billion) were repurchased from associates. In the same period, 12.3 million shares (for an equity value of USD 0.9 billion) were delivered as a result of option exercises and share deliveries related to participation plans of associates. Consequently, the total number of shares outstanding decreased by 115.3 million versus December 31, 2021. These treasury share transactions resulted in a decrease in equity of USD 10.0 billion and a net cash outflow of USD 10.6 billion.

In 2021, Novartis repurchased a total of 30.7 million shares for USD 2.8 billion on the SIX Swiss Exchange second trading line, including 19.6 million shares (USD 1.8 billion) under the up-to USD 2.5 billion share buyback announced in November 2020, 8.6 million shares (USD 0.8 billion) to mitigate dilution related to participation plans of associates and 2.5 million shares (USD 0.2 billion) under the up-to USD 15 billion share buyback announced in December 2021. In addition, 1.5 million shares (USD 0.1 billion) were repurchased from associates. In the same period, 10.3 million shares (for an equity value of USD 0.8 billion) were delivered as a result of options exercised and share deliveries related to participation plans of associates. Consequently, the total number of shares outstanding decreased by 21.9 million versus December 31, 2020. These treasury share transactions resulted in a decrease in equity of USD 2.1 billion and a net cash outflow of USD 3.0 billion.

### Treasury shares

At December 31, 2022, our holding of treasury shares amounted to 284.1 million shares, or approximately 12% of the total number of issued shares. Approximately 99.0 million treasury shares were held in entities that restrict their availability for use.

At December 31, 2021, our holding of treasury shares amounted to 199.5 million shares, or approximately 8% of the total number of issued shares. Approximately 102.5 million treasury shares were held in entities that restrict their availability for use.

# Effects of currency fluctuations

We transact our business in many currencies other than the US dollar, our reporting currency.

The following table provides an overview of net sales and operating expenses based on IFRS values for 2022 and 2021, for currencies most important to the Group:

| | 2022 | | 2021 | |
|---|---|---|---|---|
| Currency | Net sales % | Operating expenses %[1] | Net sales % | Operating expenses %[1] |
| US dollar (USD) | 37 | 36 | 35 | 35 |
| Euro (EUR) | 27 | 24 | 29 | 26 |
| Swiss franc (CHF) | 2 | 20 | 2 | 18 |
| Chinese yuan (CNY) | 6 | 4 | 6 | 3 |
| Japanese yen (JPY) | 4 | 2 | 5 | 3 |
| Canadian dollar (CAD) | 3 | 1 | 3 | 2 |
| British pound (GBP) | 2 | 2 | 3 | 2 |
| Russian ruble (RUB) | 2 | 1 | 2 | 1 |
| Brazilian real (BRL) | 2 | 1 | 1 | 1 |
| Australian dollar (AUD) | 1 | 1 | 1 | 1 |
| Other currencies | 14 | 8 | 13 | 8 |

[1] Operating expenses include cost of goods sold; selling, general and administration; research and development; other income and other expense.

We prepare our consolidated financial statements in US dollars. As a result, fluctuations in the exchange rates between the US dollar and other currencies can have a significant effect on both the Group's results of operations as well as the reported value of our assets, liabilities and cash flows. This in turn may significantly affect reported earnings (both positively and negatively) and the comparability of period-to-period results of operations.

For purposes of our consolidated balance sheets, we translate assets and liabilities denominated in other currencies into US dollars at the prevailing market exchange rates as of the relevant balance sheet date. For purposes of the Group's consolidated income and cash flow statements, revenue, expense and cash flow items in local currencies are translated into US dollars at average exchange rates prevailing during the relevant period. As a result, even if the amounts or values of these items remain unchanged in the respective local currency, changes in exchange rates have an impact on the amounts or values of these items in our consolidated financial statements.

Because our expenditure in Swiss francs is significantly higher than our revenue in Swiss francs, volatility in the value of the Swiss franc can have a significant impact on the reported value of our earnings, assets and liabilities, and the timing and extent of such volatility can be difficult to predict.

The Group manages its global currency exposure by engaging in hedging transactions where management deems appropriate, after taking into account the natural hedging afforded by our global business activity. In 2022 and 2021, we entered into various contracts that change in value with movements in foreign exchange rates, to preserve the value of assets, commitments and expected transactions. We use forward contracts and foreign currency options to hedge. For more information on how these transactions affect our consolidated financial statements and on how foreign exchange rate exposure is managed, see "Item 18. Financial Statements—Note 1. Significant accounting policies," "Item 18. Financial Statements—Note 5. Interest expense and other financial income and expense," "Item 18. Financial Statements—Note 15. Trade receivables," "Item 18. Financial Statements—Note 28. Commitments and contingent liabilities" and "Item 18. Financial Statements—Note 29. Financial instruments – additional disclosures."

The following table sets forth the foreign exchange rates of the US dollar against key currencies used for foreign currency translation when preparing the Group's consolidated financial statements:

| | Average for year | | | Year-end | | |
|---|---|---|---|---|---|---|
| USD per unit | **2022** | 2021 | Change in % | **2022** | 2021 | Change in % |
| Australian dollar (AUD) | 0.695 | 0.752 | – 8 | 0.678 | 0.726 | – 7 |
| Brazilian real (BRL) | 0.194 | 0.186 | 4 | 0.189 | 0.180 | 5 |
| Canadian dollar (CAD) | 0.769 | 0.798 | – 4 | 0.738 | 0.785 | – 6 |
| Swiss franc (CHF) | 1.048 | 1.094 | – 4 | 1.081 | 1.093 | – 1 |
| Chinese yuan (CNY) | 0.149 | 0.155 | – 4 | 0.144 | 0.157 | – 8 |
| Euro (EUR) | 1.054 | 1.183 | – 11 | 1.065 | 1.131 | – 6 |
| British pound (GBP) | 1.237 | 1.376 | – 10 | 1.207 | 1.351 | – 11 |
| Japanese yen (JPY (100)) | 0.766 | 0.912 | – 16 | 0.757 | 0.868 | – 13 |
| Russian ruble (RUB (100)) | 1.481 | 1.357 | 9 | 1.380 | 1.336 | 3 |

The following table provides a summary of the currency impact on key Group figures due to their conversion into US dollars, the Group's reporting currency. For additional information on the constant currency calculation ("cc"), see "—Item 5.A Operating results—Non-IFRS measures as defined by Novartis—Constant currencies".

## Currency impact on key figures

| | Change in USD % 2022 | Change in constant currencies % 2022 | Percentage point currency impact 2022 | Change in USD % 2021 | Change in constant currencies % 2021 | Percentage point currency impact 2021 |
|---|---|---|---|---|---|---|
| **Total Group** | | | | | | |
| Net sales to third parties | – 2 | 4 | – 6 | 6 | 4 | 2 |
| Operating income | – 21 | – 13 | – 8 | 15 | 13 | 2 |
| Net income | – 71 | – 67 | – 4 | 198 | 195 | 3 |
| Basic earnings per share (USD) | – 70 | – 66 | – 4 | 202 | 200 | 2 |
| Core operating income | 0 | 8 | – 8 | 8 | 6 | 2 |
| Core net income | – 5 | 3 | – 8 | 7 | 5 | 2 |
| Core basic earnings per share (USD) | – 3 | 6 | – 9 | 9 | 7 | 2 |
| **Innovative Medicines** | | | | | | |
| Net sales to third parties | – 2 | 4 | – 6 | 8 | 6 | 2 |
| Operating income | – 18 | – 9 | – 9 | 17 | 15 | 2 |
| Core operating income | 0 | 8 | – 8 | 12 | 10 | 2 |
| **Sandoz** | | | | | | |
| Net sales to third parties | – 4 | 4 | – 8 | 0 | – 2 | 2 |
| Operating income | – 10 | – 2 | – 8 | 53 | 48 | 5 |
| Core operating income | – 8 | – 1 | – 7 | – 12 | – 14 | 2 |
| **Corporate** | | | | | | |
| Operating loss | – 73 | – 84 | 11 | nm | nm | nm |
| Core operating loss | 31 | 28 | 3 | – 23 | – 20 | – 3 |

nm = not meaningful

For additional information on the effects of currency fluctuations, see "Item 18. Financial Statements—Note 29. Financial instruments – additional disclosures."