Item 3. Key Information

3.A Selected financial data

Not applicable.

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 competitive products could significantly affect the revenue from our products and our results of operations. This impact could also be compounded to the extent such competition results in us making significant additional investments in research and development, marketing or sales.

Pricing, reimbursement and access

Risk description
Pricing and reimbursement pressure, including access to healthcare

Context and potential impact
Our businesses experience 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; management of the COVID-19 pandemic and its impact on healthcare spending; 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, including government-imposed industrywide price reductions, mandatory pricing systems, reference pricing systems, payers limiting access to treatments based on cost-benefit analyses, importation of drugs from lower-cost countries to higher-cost countries, shifting of the payment burden to patients through higher co-payments and co-pay accumulator programs, limiting physicians' ability to choose among competing medicines, 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."

These challenges are expected to intensify in 2022 and beyond as political and budget pressures mount, and healthcare payers around the globe, including government-controlled health authorities, insurance companies and managed care organizations, step up initiatives to reduce the overall cost of healthcare, restrict access to higher-priced new medicines, increase the use of generics, and impose overall price cuts. These factors may materially affect our ability to achieve value-based prices 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, which 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.

Research and development

Risk description

Failure or delay in the research and development of new products or new indications for existing products

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 are commercially successful. Our ability to grow our business; 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 upon the success of these efforts.

Research and development of new products of our Innovative Medicines Division, including the research and development of our cell and gene therapies, is a costly, lengthy and uncertain process. Because intellectual property protections are limited in scope and duration, the longer it takes to develop a product, the less time there may be for us to recoup our research and development costs before loss of exclusivity. Failure can occur at any point in the process, including in later stages after substantial investment. In spite of such substantial investment, there can be no guarantee that our research and development activities will produce commercially successful new products that will enable us to replace revenue and income lost to competition and to grow our business. 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.

New products must undergo intensive preclinical and clinical testing, and must be approved by means of a highly complex, lengthy and expensive approval processes that can vary from country to country. Further, regulatory authorities continue to establish new and increasingly rigorous and time-consuming requirements for approval and reimbursement of new products and new indications. 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. This is primarily due to challenges related to recruiting, enrolling and treating patients in clinical trials. In addition, travel restrictions resulting from pandemics make it more difficult for regulatory authorities to inspect sites. For a further description of the research and development 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 intended for sale as bioequivalent or "biosimilar" versions of currently marketed biotechnology products. While the development of such products typically is 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. See also "Item 4. Information on the Company—Item 4.B Business overview—Sandoz—Development and registration" with regards to the research and development efforts of our Sandoz Division. In addition, many countries do not yet have fully developed legislative or regulatory pathways to facilitate

the development of biosimilars and permit their sale in a manner in which 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.” Further, 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, 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 could have no benefit to the Group. Research to find new targets for drug discovery and the therapeutic agents to treat unmet medical needs is made more difficult during pandemics, such as the COVID-19 pandemic. This is primarily due to safety-related restrictions on the ability of laboratory scientists to work in research laboratories, and impacts our ability to collaborate with academic and commercial research organizations facing similar challenges and restrictions.

Alliances, acquisitions and divestments

Risk description
Failure to identify external business opportunities or realize the expected benefits from our strategic acquisitions or divestments

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 2021, we closed the in-licensing of tislelizumab from an affiliate of BeiGene, Ltd. for North America, Europe and Japan. This strategy depends in part on our ability to identify strategic external business opportunities and to move forward with such opportunities on acceptable terms.

Once a strategic transaction is agreed upon 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, 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, as a result of 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 remedy. Also, 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 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 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 col-

laborators and consultants who may have 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 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, including, 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."

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 companies' performance. An inability to successfully perform on ESG matters and meet societal expectations can result in negative impacts to our reputation, recruitment, retention, operations, financial results and share price.

A variety of organizations measure the performance of companies on ESG topics, and the results of these assessments are widely publicized. In addition, investment 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. Topics taken into account in such assessments include, among others, the unintentional costs or benefits of our actions on third parties not involved in such actions, which may impact society and the environment, such as with respect to climate change, the degradation of biodiversity, and inequality in society. In particular, the resulting costs of such actions may in the long term impact our operations and ability to achieve our strategic goals, ultimately resulting in broader negative impacts on the value of Novartis. Therefore, the role of our Board of Directors and executive officers in supervising various sustainability issues is becoming increasingly important. In addition to the topics typically considered in such assessments in the healthcare industry, the public's ability to access our medicines is particularly important. If our advocacy and lobbying efforts are not aligned with our publicly stated ESG targets, our purpose statement or societal expectations, our performance on ESG assessments may be negatively impacted.

We actively manage a broad range of such 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 recently created an ESG Management Office, which is tasked with developing our ESG strategy and tracking our performance against our ESG targets. However, in light of investors' increasing focus on ESG matters and rapidly changing views on acceptable levels of action across a range of topics, there can be no certainty that we will manage such issues successfully, that the ESG standards we use to create our ESG targets and currently use to measure our performance against will remain the same, or that we will successfully meet society's or investors' expectations.

Sandoz business transformation

Risk description

Inability to drive sustainable growth mid-term by pursuing biosimilars and inorganic growth opportunities

Context and potential impact

Our Sandoz Division operates in a challenging generics and biosimilars market, where it faces intense competition and continued pricing pressures as it seeks to increase its market share and achieve sustainable and profitable growth mid-term. To achieve this objective, we are implementing a strategy for Sandoz focused on several goals, including accelerating biosimilars growth in the long term, rebuilding the Sandoz US business, and achieving inorganic growth by identifying and successfully executing on merger and acquisition and strategic in-licensing partnership opportunities on acceptable terms. There is no guarantee that we will achieve our strategic goals for Sandoz within the expected time

frame, or at all. Concurrently with implementing this strategy, in October 2021 we announced the commencement of a strategic review of our Sandoz Division. This review will explore all options, ranging from retaining the business to separation, to determine how best to maximize value for our shareholders. As a result, our inability to achieve these strategic goals or to successfully implement any proposed actions arising out of the strategic review could have a material adverse effect on the success of the Sandoz Division and the Group as a whole, and may have a material adverse effect on our results of operations and financial condition. In addition, the strategic review itself will utilize additional employee and management time as well as Company resources that could be allocated to other areas of our business, which may negatively impact our overall Company performance. See also "—Pricing, reimbursement and access" with regards to the price competition for our Sandoz Division, "—Research and development" with regards to our research and development efforts related to the biosimilars market, and "—Alliances, acquisitions and divestments."

Emerging business models

Risk description
Missed opportunities in digitalization and emerging business models

Context and potential impact
Rapid progress in medical and digital technologies and in the development of new business models is substantially transforming our industry and is creating new businesses and new opportunities for improving patient care and increasing revenue and profit, while sometimes quickly rendering established businesses uncompetitive or obsolete. Such transformations, both positive and negative, may impact the healthcare industry overall. Numerous tech companies are seeking to enter into the healthcare field, from research and development to pharmaceutical distribution and the delivery of care, which generates opportunities for technology partnerships that may accelerate innovation and complement our capabilities. However, this may also potentially disrupt our relationships with patients, healthcare professionals, customers, distributors and suppliers, with potentially negative consequences for us.

To take advantage of these opportunities, we have embarked upon a digital transformation strategy, with the goal of becoming an industry leader in leveraging advanced analytics and digital technologies, which was accelerated by the COVID-19 pandemic. We expect to invest substantial resources into efforts to improve the way we use data in drug discovery and development; to gain insights into customer preferences and behaviors via data science; to improve the ways we engage with patients, doctors and other stakeholders; and to automate business processes. Our success in these efforts will depend on many factors, including data quality, technology architecture, partnering with the right technology companies, training our employees to fully capitalize on the new capabilities, attracting and retaining employees with appropriate skills and mindsets, and successfully innovating across a variety of technology fields. Our efforts in some of these initiatives have started to gain significant traction. However, we do not yet know if these changes will be sustainable as we scale and make them part of our ways of working. As a result, we may ultimately fail to either create innovative new products, tools or techniques in an adequate time frame, or fail to differentiate our products and business models via digital technologies.

Furthermore, our increasing use of social media and other digital engagement platforms carries risks related to potential violations of rules regulating the promotion of prescription medicines and the potential disclosure of confidential information, trade secrets, or loss of other intellectual property. As a result of the COVID-19 pandemic, the use of social media and other digital engagement platforms has increased and is expanding into new uses. There continue to be uncertainties as to the rules that apply to such communications and as to the interpretations that health authorities will apply in this context, and as a result, despite our efforts to comply with applicable rules, there is a risk that our use of social media and other digital engagement platforms may cause us to be found in violation of applicable regulations.

In addition, the market for our products is evolving rapidly with frequent changes in scientific evidence, significant advances in availability and utilization of real-world evidence (RWE), and the acceleration in the adoption of virtual and social media and other digital engagement platforms by customers, patients and other stakeholders, which may allow us to (i) better understand the appropriate utilization of our products through RWE, (ii) engage and appropriately educate customers, patients and other stakeholders about the benefits and risks associated with our products, and (iii) increase the efficiency of our engagement with customers. Failure to effectively utilize these increasingly important channels and sources of evidence can result in the inadequate education of customers regarding the benefits and risks of our products and the loss of market share. In addition, there is risk of inappropriate utilization of this data and these channels by our employees or vendors.

Operational risks

Cybersecurity and IT systems

Risk description
Cybersecurity breaches 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 also have 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 or lost data; 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 the third-party provider. 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.

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 to third parties, and invest a significant amount of effort and resources into doing so, including to manage and oversee such third parties. Such outsourced functions include research and development collaborations, manufacturing operations, warehousing and distribution activities, certain finance functions, sales and marketing activities, data management and others. Some of these third parties, particularly those in developing countries, do not have internal compliance systems comparable to those within our organization.

Our reliance on outsourcing and third parties for the research and development, sales or manufacturing of our products poses certain risks, including misappropriation of our intellectual property, failure of the third party to comply with regulatory and quality assurance requirements, unexpected supply disruptions, breach of the research and development or manufacturing agreement by the third party, and the unexpected termination or nonrenewal of the agreement by the third party.

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

Ultimately, if third parties fail to meet their obligations to us, we may lose our investment in the collaborations 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 in the course of their performance of 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 upon us.

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.

Fragmented IT landscape and Enterprise Resource Planning (ERP) and Enterprise Data Management (EDM) implementation

Risk description
Fragmented business processes and unclear data ownership may impact future digital opportunities, including the implementation of the new ERP system and EDM governance

Context and potential impact
We rely on various information and other business systems to leverage data in order to operate our complex global business. Historically, while there are highly overlapping data strategy and architectural needs across our business units, we have taken the approach of building distinct solutions across both business units and geographies, which may cause disruptions to our operational stability. We are currently in the design and planning phase for the implementation of a new global ERP system that seeks to simplify, standardize and digitize processes in our commercial and finance functions and our Novartis Technical Operations unit to help ensure efficient and compliant business operations across business units 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 second half of 2023, with full implementation by 2028, when our current system is out of maintenance by the software provider. Implementing and operating a new ERP system involves certain risks, including a failure of the new system to operate as expected, a failure to properly integrate with other systems we use, potential loss of data or information, compliance issues, cost overruns and delays, and operational disruptions. Any disruptions or malfunctions of our new ERP system could cause critical information we use to be delayed, defective, corrupted, inadequate or inaccessible. In addition, if the design or implementation of our new ERP system is deficient, it could adversely affect our operations, and could negatively impact the effectiveness of our internal controls.

Talent management

Risk description
Inability to attract, integrate and retain key personnel and qualified individuals

Context and potential impact
We rely on a diverse, highly skilled workforce across our businesses and functions. Novartis invests in attracting, integrating and retaining talented individuals to achieve our business objectives. If we are unable to sufficiently attract, integrate and retain key personnel – including senior members of our scientific and management teams, high-quality researchers and development specialists, and skilled personnel in key markets – our ability to achieve our major business objectives may be adversely affected, our brand and reputation could be negatively impacted, and the diversity of our workforce may decline.

Our future growth will depend on our ability to retain key talent and leaders while also recruiting new talent who bring new skills and perspectives. The market for skilled talent has become increasingly competitive. We are experiencing challenges in attracting and retaining skilled talent in several areas, including biology, chemistry, clinical development, drug manufacturing, IT and, in particular, our Oncology business unit and advanced technology platforms (i.e., our chimeric antigen receptor T-cell (CAR-T) therapies, gene therapies and radioligand therapies). In addition, biotechnology companies have seen and continue to see a significant inflow of capital, and are not only competing with us to attract the same skilled talent but are also aggressively pursuing our experienced talent, threatening our ability to sustain a skilled talent supply to deliver on our business priorities.

The constraints associated with lockdowns during the COVID-19 pandemic accelerated the need for more flexible working models. We addressed this need through our program called Choice with Responsibility, which now gives many employees the flexibility to determine, in consultation with their teams, where, when and how they work, while remaining in compliance with any tax, legal and other limitations. Our transition toward a more flexible working model accelerated our efforts to expand our recruitment of talent from an increasingly global pool. However, the external supply of new talent is especially limited in many of the geographies that are expected to be sources of growth for Novartis, particularly China and the US. In China, the US and several other markets, the geographic mobility of talent is decreasing, with ample career opportunities available closer to home for talented individuals, who often have increasing expectations that they may choose where they work.

The risks associated with drawing from the external supply of talent will be exacerbated if we are unable to retain and effectively develop our key personnel and maintain a sustainable pipeline of talent and senior leaders with the critical skills and experiences necessary to deliver on our business priorities. As a result, our ability to retain critical talent, reward performance, incentivize our employees, pay competitive compensation and successfully implement our key personnel succession plans is essential. Our inability to integrate, engage and motivate employees, in particular those in leadership positions, may jeopardize our succession plans and our ability to achieve our business priorities.

Legal, ethics and compliance

Risk description
Challenges in keeping up with legal and regulatory requirements, and evolving societal expectations regarding ethical behavior

Context and potential impact
We are obligated to comply with the laws of all countries in which we operate and sell products with respect to an

extremely 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 and are subject to change and 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 upon evolving government enforcement and private party litigation priorities, and could include matters pertaining to pricing; bribery and corruption; trade regulation and embargo legislation; product liability; commercial disputes; employment and wrongful discharge; antitrust; 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 activities can involve 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 where 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. As a consequence, 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. As a result, having taken into account 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, in order 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 contingencies.”

New requirements may also be imposed on us as a result of 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, as a company 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 help us in 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 our business is conducted in a lawful and publicly acceptable manner. Despite our efforts, an actual or alleged failure to comply with law or with heightened public expectations could lead to substantial liabilities that may not be covered by insurance, or to other significant losses.

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. Also, the operation of our business requires data to flow freely across borders of numerous countries in which there are different, and potentially conflicting, frequently changing data privacy laws in effect. For example, 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, impose stringent requirements on how we and third parties with whom we contract collect, share, export or oth-

erwise 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.

Any event 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 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.

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 involving 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. Because the production process for some of our products is complex, there is a risk of production failures, which may result in supply interruptions or product recalls due to defective products being distributed to the market.

In addition, due to the inherent complexities of our production processes, we are required to plan our production activities 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 like the COVID-19 pandemic, and could lead to (i) a sudden increase in demand for selected medicinal products, resulting in the short-term unavailability of raw material; (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, which can impact transportation and warehousing costs; or (iii) our inability to properly operate a production site due to restrictions imposed as the result of a pandemic.

Our or our third-party suppliers' inability to manage such issues could lead to shutdowns, to product shortages, or to our being entirely unable to supply products to patients for an extended period of time. Further, because 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.

Falsified medicines

Risk description
Impact 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 under the definition of the World Health Organization. The COVID-19 pandemic has substantially increased the presence of falsified medicines in the markets affected and on the internet. 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 our 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, which are then not properly stored and are later sold through unauthorized channels, could adversely impact patient safety, our reputation and our business. Further, there is a direct financial loss when, for example, falsified medicines replace sales of genuine medicines, or genuine medicines are recalled following discovery of falsified products.

Emerging risks

Geo-political and socio-economic threats

Risk description
Impact of geo- and socio-political threats and macroeconomic developments

Context and potential impact
Unpredictable political conditions currently exist in various parts of the world, including a backlash in certain areas against free trade; anti-immigrant sentiment; anti-corporatist sentiment; social unrest; fears of terrorism; risk of direct conflicts between nations; a global pandemic; and economic downturn.

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 between the US and other countries, could have a material negative impact on our business. Given that the status of trade negotiations remains subject to change, we cannot be certain of 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 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.

In addition, local economic conditions may 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 these third parties' financial condition and their liquidity, 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.

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

At the same time, significant changes and potential future volatility in the financial markets, in the consumer and business environment, in the competitive landscape, and in 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 turn out to be inaccurate. Though we endeavor to give reasonable estimates of future revenues and earnings at the time we give such guidance, based on then-current knowledge and conditions, there is a risk that such guidance or outlook will turn out to be incorrect.

Financial market issues may also result in a lower return on our financial investments, and a lower value on some of our assets. Alternatively, inflation could accelerate, which could lead to higher interest rates, increasing our costs of raising capital. Uncertainties around future central bank and other economic policies in the US and EU, as well as high debt levels in certain other countries, could also impact world trade. Sudden increases in economic, currency or financial market volatility in different countries have also impacted, and may continue to unpredictably impact, 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 of 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."

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 and also introduces 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. The OECD expects that the implementation of these new principles will begin globally in 2023. The EU also adopted a new Directive on Administrative Cooperation (DAC6) in 2018, which seeks additional reporting as of July 2020. During 2021, all EU member states implemented this EU directive as part of their respective local laws and regulations. In 2020, the EU announced it will introduce new centralized taxation powers to address the financial impact of the COVID-19 pandemic, which has not yet occurred. In addition, the European Commission continues to extend the application of its policies seeking to limit fiscal aid by member states to particular companies, and the related investigation of the 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 like that of the OECD and the EU, and 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, 2021, we had USD 22.9 billion of non-current financial debt, and USD 6.3 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 The Medicines Company, *Xiidra*, Endocyte, Novartis Gene Therapies, AAA, and certain oncology products from GSK. 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 2021, for example, we recorded intangible asset impairment charges of USD 403 million.

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 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, because 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. Further, 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
Increasingly, 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 17%, 11% and 6%, respectively, of net sales in 2021. The largest trade receivables outstanding were for these three customers, amounting to 16%, 12% and 7%, respectively, of the Group's trade receivables at December 31, 2021. The trend has been toward further consolidation among 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 particularly impact our Sandoz Division, 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."

Climate change

Risk description
Climate change and increased risk of major natural disasters

Context and potential impact
Novartis is exposed to climate risks such as physical risks (e.g., heat, water scarcity, sea level rise, flooding from severe weather events) and transition risks (e.g., regulatory frameworks, carbon pricing, cost of and access to capital), which could vary in magnitude and impact country by country.

For example, 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 places that, because of increasingly violent weather events, sea level rise, or both, are increasingly at risk of substantial flooding. In regions where this risk is present, it impacts not only our own operations but also our distributed supply chain. Such events may result in increased costs, business interruptions, destruction of facilities, loss of life, and disruption to healthcare systems that patients use to access our medicines.

Climate change may trigger the adoption of new regulatory requirements across the globe. Such legislation could include increased requirements to invest in technology to reduce energy use, water use and greenhouse gas emissions, beyond what we expect to invest in our existing plans. In addition, legislation could include carbon pricing, climate risk disclosure mandates, and changes in zoning or building codes to increase climate resilience. The combined impact of these transition risks could increase our direct operating costs and result in the same impact across our supply chain. 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 to our reputation, our operations, and the price of our shares.

Furthermore, our corporate headquarters, the headquarters of our Innovative Medicines and Sandoz Divisions, and certain of our 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. In the event of a major earthquake, we could experience business interruptions, destruction of facilities, and loss of life.

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 pro-

vide our management with historical statistical information, such as withdrawal and mortality rates in connection with these estimates.

Assumptions and estimates 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 associates.”