

**Audited Consolidated Financial Statements of BioNTech SE
prepared in accordance with International Financial Reporting
Standards as adopted by the EU and the additional
requirements of German commercial law pursuant to Section
315e para. 3 in connection with para. 1 HGB as of and for the
Year Ended December 31, 2023**

Consolidated Statements of Profit or Loss

		Years ended December 31,		
		2023	2022	2021
<i>(in millions €, except per share data)</i>				
	Note			
Revenues				
Commercial revenues	6	3,815.5	17,194.6	18,874.0
Research & development revenues	6	3.5	116.0	102.7
Total revenues		3,819.0	17,310.6	18,976.7
Cost of sales				
Cost of sales	7.1	(599.8)	(2,995.0)	(2,911.5)
Research and development expenses	7.1	(1,783.1)	(1,537.0)	(949.2)
Sales and marketing expenses	7.1	(62.7)	(59.5)	(50.4)
General and administrative expenses ⁽¹⁾	7.1	(495.0)	(481.7)	(276.8)
Other operating expenses ⁽¹⁾	7.2	(293.0)	(410.0)	(103.4)
Other operating income	7.3	105.0	815.3	598.4
Operating income		690.4	12,642.7	15,283.8
Finance income				
Finance income	7.4	519.6	330.3	67.7
Finance expenses				
Finance expenses	7.5	(23.9)	(18.9)	(305.1)
Profit before tax		1,186.1	12,954.1	15,046.4
Income taxes				
Income taxes	8	(255.8)	(3,519.7)	(4,753.9)
Profit for the period		930.3	9,434.4	10,292.5
Earnings per share				
Basic earnings for the period per share	9	3.87	38.78	42.18
Diluted earnings for the period per share	9	3.83	37.77	39.63

⁽¹⁾ Adjustments to prior-year figures due to change in functional allocation of general and administrative expenses and other operating expenses (see Note 7.2).

The accompanying notes form an integral part of these consolidated financial statements.

Consolidated Statements of Comprehensive Income

<i>(in millions €)</i>	Note	Years ended December 31,		
		2023	2022	2021
Profit for the period		930.3	9,434.4	10,292.5
Other comprehensive income				
<i>Other comprehensive income that may be reclassified to profit or loss in subsequent periods, net of tax</i>				
Exchange differences on translation of foreign operations		(19.8)	11.2	8.4
Net other comprehensive income / (loss) that may be reclassified to profit or loss in subsequent periods		(19.8)	11.2	8.4
<i>Other comprehensive loss that will not be reclassified to profit or loss in subsequent periods, net of tax</i>				
Net gain on equity instruments designated at fair value through other comprehensive income		3.7	10.5	—
Remeasurement gain on defined benefit plans		0.3	0.6	0.3
Net other comprehensive income that will not be reclassified to profit or loss in subsequent periods		4.0	11.1	0.3
Other comprehensive income / (loss) for the period, net of tax		(15.8)	22.3	8.7
Comprehensive income for the period, net of tax		914.5	9,456.7	10,301.2

The accompanying notes form an integral part of these consolidated financial statements.

Consolidated Statements of Financial Position

<i>(in millions €)</i>		December 31, 2023	December 31, 2022
Assets	Note		
Non-current assets			
Goodwill	10	362.5	61.2
Other intangible assets	10	804.1	158.5
Property, plant and equipment	11	757.2	609.2
Right-of-use assets	20	214.4	211.9
Other financial assets	12	1,176.1	80.2
Other non-financial assets	14	83.4	6.5
Deferred tax assets	8	81.3	229.6
Total non-current assets		3,479.0	1,357.1
Current assets			
Inventories	13	357.7	439.6
Trade and other receivables	12	2,155.7	7,145.6
Contract assets	6	4.9	—
Other financial assets	12	4,885.3	189.4
Other non-financial assets	14	280.9	271.9
Income tax assets	8	179.1	0.4
Cash and cash equivalents	12	11,663.7	13,875.1
Total current assets		19,527.3	21,922.0
Total assets		23,006.3	23,279.1
Equity and liabilities			
Equity			
Share capital	15	248.6	248.6
Capital reserve	15	1,229.4	1,828.2
Treasury shares	15	(10.8)	(5.3)
Retained earnings		19,763.3	18,833.0
Other reserves	16	(984.6)	(848.9)
Total equity		20,245.9	20,055.6
Non-current liabilities			
Lease liabilities, loans and borrowings	12	191.0	176.2
Other financial liabilities	12	38.8	6.1
Income tax liabilities	8	—	10.4
Provisions	17	8.8	8.6
Contract liabilities	6	398.5	48.4
Other non-financial liabilities	19	13.1	17.0
Deferred tax liabilities	8	39.7	6.2
Total non-current liabilities		689.9	272.9
Current liabilities			
Lease liabilities, loans and borrowings	12	28.1	36.0
Trade payables and other payables	12	354.0	204.1
Other financial liabilities	12	415.2	785.1
Refund liabilities	6	—	24.4
Income tax liabilities	8	525.5	595.9
Provisions	17	269.3	367.2
Contract liabilities	6	353.3	77.1
Other non-financial liabilities	19	125.1	860.8
Total current liabilities		2,070.5	2,950.6
Total liabilities		2,760.4	3,223.5
Total equity and liabilities		23,006.3	23,279.1

The accompanying notes form an integral part of these consolidated financial statements.

Consolidated Statements of Changes in Stockholders' Equity

(in millions €)	Note	Equity attributable to equity holders of the parent					Total equity
		Share capital	Capital reserve	Treasury shares	Retained earnings	Other reserves	
As of January 1, 2021		246.3	1,514.5	(4.8)	(409.6)	25.4	1,371.8
Profit for the period		—	—	—	10,292.5	—	10,292.5
Other comprehensive income		—	—	—	—	8.7	8.7
Total comprehensive income		—	—	—	10,292.5	8.7	10,301.2
Issuance of treasury shares	15	—	162.6	1.0	—	—	163.6
Transaction costs		—	(2.7)	—	—	—	(2.7)
Share-based payments	16	—	—	—	—	59.8	59.8
As of December 31, 2021		246.3	1,674.4	(3.8)	9,882.9	93.9	11,893.7
Profit for the period		—	—	—	9,434.4	—	9,434.4
Other comprehensive income		—	—	—	—	22.3	22.3
Total comprehensive income		—	—	—	9,434.4	22.3	9,456.7
Issuance of share capital	15	0.5	67.1	—	—	—	67.6
Redemption of convertible note	12	1.8	233.2	—	—	—	235.0
Share repurchase program	15	—	(979.5)	(6.9)	—	—	(986.4)
Transaction costs		—	(0.1)	—	—	—	(0.1)
Dividends	15	—	—	—	(484.3)	—	(484.3)
Share-based payments	16	—	833.1	5.4	—	(1,519.8)	(681.3)
Deferred taxes	8	—	—	—	—	554.7	554.7
As of December 31, 2022		248.6	1,828.2	(5.3)	18,833.0	(848.9)	20,055.6
Profit for the period		—	—	—	930.3	—	930.3
Other comprehensive loss		—	—	—	—	(15.8)	(15.8)
Total comprehensive profit / (loss)		—	—	—	930.3	(15.8)	914.5
Share repurchase program	15	—	(731.6)	(6.9)	—	—	(738.5)
Share-based payments	16	—	30.2	0.3	—	(15.1)	15.4
Current and deferred taxes	8	—	—	—	—	(104.8)	(104.8)
Treasury shares used for acquisition of business combination	5	—	102.6	1.1	—	—	103.7
As of December 31, 2023		248.6	1,229.4	(10.8)	19,763.3	(984.6)	20,245.9

Consolidated Statements of Cash Flows

<i>(in millions €)</i>	Years ended December 31,		
	2023	2022	2021
Operating activities			
Profit for the period	930.3	9,434.4	10,292.5
Income taxes	255.8	3,519.7	4,753.9
Profit before tax	1,186.1	12,954.1	15,046.4
Adjustments to reconcile profit before tax to net cash flows:			
Depreciation and amortization of property, plant, equipment, intangible assets and right-of-use assets	183.4	123.3	75.2
Share-based payment expenses	51.4	108.6	93.9
Net foreign exchange differences	(298.0)	625.5	(387.5)
Loss on disposal of property, plant and equipment	3.8	0.6	4.6
Finance income excluding foreign exchange differences	(519.6)	(265.3)	(1.5)
Finance expense excluding foreign exchange differences	7.9	18.9	305.2
Movements in government grants	2.4	0.3	(89.0)
Other non-cash income / (loss)	—	—	(2.2)
Net (gain) / loss on derivative instruments at fair value through profit or loss	175.5	(241.0)	57.3
Working capital adjustments:			
Decrease / (increase) in trade and other receivables, contract assets and other assets	5,374.0	4,369.9	(11,808.1)
Decrease / (increase) in inventories	81.9	62.9	(438.4)
Increase in trade payables, other financial liabilities, other liabilities, contract liabilities, refund liabilities and provisions	118.9	85.7	1,516.1
Interest received and realized gains from cash and cash equivalents	258.2	29.3	1.2
Interest paid and realized losses from cash and cash equivalents	(5.4)	(21.5)	(12.2)
Income tax paid	(482.9)	(4,222.1)	(3,457.9)
Share-based payments	(766.2)	(51.8)	(13.4)
Net cash flows from operating activities	5,371.4	13,577.4	889.7
Investing activities			
Purchase of property, plant and equipment	(249.4)	(329.2)	(127.5)
Proceeds from sale of property, plant and equipment	(0.7)	0.6	3.4
Purchase of intangible assets and right-of-use assets	(455.4)	(34.1)	(26.5)
Acquisition of subsidiaries and businesses, net of cash acquired	(336.9)	—	(20.8)
Investment in other financial assets	(7,128.4)	(47.8)	(19.5)
Proceeds from maturity of other financial assets	1,216.3	375.2	(375.2)
Net cash flows used in investing activities	(6,954.5)	(35.3)	(566.1)
Financing activities			
Proceeds from issuance of share capital and treasury shares, net of costs	—	110.5	160.9
Proceeds from loans and borrowings	0.3	0.8	—
Repayment of loans and borrowings	(0.1)	(18.8)	(52.6)
Payments related to lease liabilities	(40.3)	(41.1)	(14.1)
Share repurchase program	(738.5)	(986.4)	—
Dividends	—	(484.3)	—
Net cash flows from / (used in) financing activities	(778.6)	(1,419.3)	94.2
Net increase / (decrease) in cash and cash equivalents	(2,361.7)	12,122.8	417.8
Change in cash and cash equivalents resulting from exchange rate differences	(14.5)	60.1	64.7
Change in cash and cash equivalents resulting from other valuation effects	164.8	(0.5)	—
Cash and cash equivalents at the beginning of the period	13,875.1	1,692.7	1,210.2
Cash and cash equivalents as of December 31	11,663.7	13,875.1	1,692.7

The accompanying notes form an integral part of these consolidated financial statements.

Notes to the Consolidated Financial Statements

1 Corporate Information

BioNTech SE is a limited company incorporated and domiciled in Germany. American Depositary Shares (ADS) representing BioNTech SE's ordinary shares have been publicly traded on the Nasdaq Global Select Market since October 10, 2019. The registered office is located in Mainz, Germany (An der Goldgrube 12, 55131 Mainz). BioNTech SE is registered in the commercial register B of the Mainz Local Court under the number HRB 48720. These consolidated financial statements have been prepared in accordance with International Financial Reporting Standards (IFRS) as endorsed by the European Union (EU), and give a true and fair view of the financial position and results of operations of the Group in accordance with International Financial Reporting Standards (IFRS) and the results of operation of BioNTech SE and its subsidiaries, hereinafter also referred to as "BioNTech," the "Group," "we" or "us".

Our consolidated financial statements for the year ended December 31, 2023, were prepared by the Management Board on March 18, 2024.

2 Significant Accounting Policies

2.1 Basis of Preparation

General

The consolidated financial statements have been prepared in accordance with the International Financial Reporting Standards (IFRS) as issued by the International Accounting Standards Board (IASB).

We prepare and publish our consolidated financial statements in Euros and round numbers to thousands or millions of Euros, respectively. Accordingly, numerical figures shown as totals in some tables may not be exact arithmetic aggregations of the figures that preceded them and figures presented in the explanatory notes may not add up to the rounded arithmetic aggregations. Rounding applied may differ from rounding published in different units in the previous years.

Segment Information

Decisions with respect to business operations and resource allocations are made by our Management Board, as the chief operating decision maker (CODM) based on BioNTech as a whole. Accordingly, we operate and make decisions as a single operating segment, which is also our reporting segment.

2.2 Basis of Consolidation

The consolidated financial statements comprise the financial statements of BioNTech SE and its controlled investees (subsidiaries).

The Group controls an investee if, and only if, the Group has

- power over the investee (*i.e.*, existing rights that give it the current ability to direct the relevant activities of the investee);
- exposure, or rights, to variable returns from its involvement with the investee; and
- the ability to use its power over the investee to affect its returns.

Generally, there is a presumption that a majority of voting rights results in control.

Whether an investee is controlled is re-assessed if facts and circumstances indicate that there are changes to one or more of the three elements of control. Consolidation of a subsidiary begins when control is obtained over the subsidiary and ceases when control over the subsidiary is lost.

The profit / (loss) and each component of other comprehensive income / (loss) for the period are attributed to the equity holders of the parent of the Group and to the non-controlling interests, even if this results in the non-controlling interests having a deficit balance. When necessary, adjustments are made to the consolidated financial statements of subsidiaries to bring their accounting policies in line with the Group's accounting policies. All intra-group assets and

liabilities, equity, income, expenses and cash flows relating to transactions between members of the Group are eliminated on consolidation.

A change in the ownership interest of a subsidiary, without a loss of control, is accounted for as an equity transaction.

If control over a subsidiary is lost, the related assets (including goodwill), liabilities, non-controlling interests and other components of equity are derecognized, while any resultant gain or loss is recognized in the consolidated statements of profit or loss. Any investment retained is recognized at fair value.

2.3 Summary of Material Accounting Policies

2.3.1 Foreign Currencies

Our consolidated financial statements are presented in Euros, which is also our functional currency. For each entity, the Group determines the functional currency, and items included in the consolidated financial statements of such entities are measured using that functional currency. We use the direct method of consolidation and, on disposal of a foreign operation, the gain or loss that is reclassified to the consolidated statements of profit or loss reflects the amount that arises from using this method.

Transactions and Balances

Transactions in foreign currencies are initially recorded by the Group's entities at their respective functional currency spot rates at the date the transaction first qualifies for recognition.

Monetary assets and liabilities denominated in foreign currencies are translated at the functional currency spot rates of exchange at the reporting date.

Non-monetary items that are measured in terms of historical cost in a foreign currency are translated using the exchange rates at the dates of the initial transactions.

In determining the spot exchange rate to use on initial recognition of the related asset, expense or income (or part of it) on the derecognition of a non-monetary asset or non-monetary liability relating to advance consideration, the date of the transaction is the date on which the Group initially recognizes the non-monetary asset or non-monetary liability arising from the advance consideration. If there are multiple payments or receipts in advance, the Group determines the transaction date for each payment or receipt of advance consideration.

Foreign Currency Translation

Foreign currency translation effects from the translation of operating activities include foreign exchange differences arising on operating items such as trade receivables and trade payables and are either shown as other operating income or expenses on a cumulative basis. Foreign currency translation effects presented within finance income and expenses include foreign exchange differences arising on financing items such as loans and borrowings as well as foreign exchange differences arising on cash and cash equivalents and are either shown as finance income or expenses on a cumulative basis.

Foreign Currency Translation on Consolidation

Upon consolidation, the assets and liabilities of foreign operations are translated into Euros at the rate of exchange prevailing at the reporting date and the transactions recorded in their consolidated statements of profit or loss are translated at exchange rates prevailing at the dates of the transactions.

The exchange differences arising on translation for consolidation are recognized in other comprehensive income. On disposal of a foreign operation, the component of other comprehensive income relating to that particular foreign operation is reclassified to profit or loss.

Any goodwill arising on the acquisition of a foreign operation and any fair value adjustments to the carrying amounts of assets and liabilities arising upon the acquisition are treated as assets and liabilities of the foreign operation and translated at the spot rate of exchange at the reporting date.

2.3.2 Current versus Non-Current Classifications

Assets and liabilities in the consolidated statements of financial position are presented based on current or non-current classification.

An asset is current when it is either: (i) expected to be realized or intended to be sold or consumed in the normal operating cycle, (ii) held primarily for the purpose of trading, (iii) expected to be realized within twelve months after the reporting period, or (iv) cash or cash equivalents, unless it is restricted from being exchanged or used to settle a liability for at least twelve months after the reporting period. All other assets are classified as non-current.

A liability is current when it is either: (i) expected to be settled in the normal operating cycle, (ii) held primarily for the purpose of trading, (iii) due to be settled within twelve months after the reporting period, or (iv) there is no unconditional right to defer the settlement of the liability for at least twelve months after the reporting period. The terms of the liability that could, at the option of the counterparty, result in its settlement by the issue of equity instruments do not affect its classification. The Group classifies all other liabilities as non-current.

Deferred tax assets and liabilities are classified as non-current assets and liabilities, respectively.

2.3.3 Revenue from Contracts with Customers

Revenue

Identification of the Contract

We generate revenues from collaboration and license agreements, which contain multiple elements, including licenses to use, research, develop, manufacture and commercialize candidates and products, research and development services as well as obligations to develop and manufacture preclinical and clinical material and products. We determined that those collaboration and license agreements qualify as contracts with customers. A contract is an agreement between two or more parties that establishes enforceable rights and obligations.

Identification of Performance Obligations

Our customer contracts often include bundles of licenses, goods and services. If the granting of a license is bundled together with delivering of goods and or the rendering of services, it is assessed whether these agreements are comprised of more than one performance obligation. A performance obligation is only accounted for as the grant of a license if the grant of a license is the sole or the predominant promise of the performance obligation.

Determining Transaction Prices

We apply judgment when determining the consideration that is expected to be received. If the consideration in an agreement includes a variable amount, we estimate the amount of consideration to which we will be entitled in exchange for transferring the goods to the customer. At contract inception, the variable consideration is estimated based on the most likely amount of consideration expected from the transaction and constrained until it is highly probable that a significant revenues reversal in the amount of cumulative revenues recognized will not occur when the associated uncertainty with respect to the variable consideration is subsequently resolved. The estimated revenues are updated at each reporting date to reflect the current facts and circumstances.

Allocation of Transaction Prices

If a contract with a customer contains more than one performance obligation, the transaction price is allocated to each performance obligation based on relative standalone selling prices. We have established the following hierarchy to determine the standalone selling prices.

- Where standalone selling prices for offered licenses, goods or services are observable and reasonably consistent across customers, our standalone selling price estimates are derived from our respective pricing history. However, due to the limited number of customers and the limited company history, this approach can rarely be used.
- Where sales prices for an offering are not directly observable or highly variable across customers, we follow a cost-plus-margin approach.
- For offerings that have highly variable pricing and lack substantial direct costs to estimate based on a cost-plus-margin approach, we allocate the transaction price by applying a residual approach.

Judgment is required when estimating standalone selling prices.

Recognition of Revenues

For each separate performance obligation, it is evaluated whether control is transferred either at a point in time or over time. For performance obligations that are satisfied over time, revenues are recognized based on a measure of progress,

which depicts the performance in transferring control to the customer. Under the terms of our licensing arrangements, we provide the licensee with a research and development license, which represents a right to access our intellectual property as it exists throughout the license period (as our intellectual property is still subject to further research). Therefore, the promise to grant a license is accounted for as a performance obligation satisfied over time as our customers simultaneously receive and consume the benefits from our performance.

Revenues based on the collaboration partners' gross profit, which is shared under the respective collaboration agreements, are recognized based on the sales-based or usage-based royalty exemption; i.e., when the underlying sales occur, which is when the performance obligation has been satisfied. As described further in Note 3, judgment is applied to certain aspects when accounting for the collaboration agreements.

Revenue arrangements that involve two or more partners who contribute to the provision of a specific good or service to a customer are assessed in terms of principal-agent considerations in order to determine the appropriate treatment for the transactions between us and the collaborator and the transactions between us and other third parties. The classification of transactions under such arrangements is determined based on the nature and contractual terms of the arrangement along with the nature of the operations of the participants. Any consideration related to activities in which we are considered the principal, which includes being in control of the good or service before such good or service is transferred to the customer, is accounted for as gross revenues. Any consideration related to activities in which we are considered the agent is accounted for as net revenues.

Revenues from the sale of pharmaceutical and medical products (e.g., COVID-19 vaccine sales and other sales of peptides and retroviral vectors for clinical supply) are recognized when we transfer control of the product to the customer. Control of the product normally transfers when the customer gains physical possession and we have not retained any significant risks of ownership or future obligations with respect to the product. In general, payments from customers are due within 30 days after invoice. However, with respect to our collaboration with Pfizer Inc., or Pfizer, there is a significant time lag between when revenues are recognized and the payments are received. The contractual settlement of the gross profit share has a temporal offset of more than one calendar quarter. As Pfizer's financial quarter for subsidiaries outside the United States differs from ours, it creates an additional time lag between the recognition of revenues and the payment receipt.

For certain contracts, the finished product may temporarily be stored at our location under a bill-and-hold arrangement. Revenues from bill-and-hold arrangements are recognized at the point in time when the customer obtains control of the product and all of the following criteria have been met: (i) the arrangement is substantive; (ii) the product is identified separately as belonging to the customer; (iii) the product is ready for physical transfer to the customer; and (iv) we do not have the ability to use the product or direct it to another customer. In determining when the customer obtains control of the product, we consider certain indicators, including whether title and significant risks and rewards of ownership have transferred to the customer and whether customer acceptance has been received.

Contract Balances

Contract Assets

A contract asset is the right to consideration in exchange for goods or services transferred to the customer. If we transfer goods or services to a customer before the customer pays the respective consideration or before payment is due, a contract asset is recognized for the earned consideration that is conditional.

Trade Receivables

A receivable represents our right to an amount of consideration that is unconditional (i.e., only the passage of time is required before payment of the consideration is due).

Contract Liabilities

A contract liability is the obligation to transfer goods or services to a customer for which we have received consideration (or an amount of consideration is due) from the customer. If a customer pays consideration before we transfer goods or services to the customer, a contract liability is recognized when the payment is made or when the payment is due (whichever is earlier). Contract liabilities are recognized as revenue when we fulfill our performance obligations under the contract.

Refund Liabilities

A refund liability is a consideration which has been received but which will need to be refunded to the customer in the future as it represents an amount to which we are ultimately not entitled under the contract. A refund liability is

measured at the amount of consideration received (or receivable) to which we do not expect to be entitled (i.e., amounts not included in the transaction price). We update our estimates of refund liabilities (and the corresponding change in the transaction price) at the end of each reporting period.

2.3.4 Research and Development Expenses

Research and development costs are expensed in the period in which they are incurred. Regarding internal projects, we consider that regulatory approval and other uncertainties inherent in the development of new products preclude the capitalization of internal development expenses as an intangible asset until marketing approval from a regulatory authority is obtained. Payments made to third parties, such as contract research and development organizations as compensation for subcontracted research and development, that are deemed not to transfer intellectual property are expensed as internal research and development expenses in the period in which they are incurred. Such payments are only capitalized if they meet the criteria for recognition of an internally generated intangible asset, usually when marketing approval has been received from a regulatory authority. We have entered into agreements under which third parties grant licenses to us, which are known as in-license agreements. If in-licensing results in consideration for the acquisition of intellectual property that meets the definition of an identifiable asset, this is capitalized as an intangible asset unless the respective intellectual property is mainly used as part of our general ongoing research and development activities without any intent to market the respective product as such. If the transaction also includes research and development services to be provided by the licensor, the share of consideration attributable to these services is recognized in research and development expenses in line with the performance of the services. Sales-based milestone or royalty payments incurred under license agreements after the approval date of the respective pharmaceutical product are recognized as expenses in cost of sales as incurred.

Subsequent internal research and development costs in relation to intellectual property rights are expensed because the technical feasibility of the internal research and development activity can only be demonstrated by the receipt of marketing approval for a related product from a regulatory authority in a major market.

Prior to the second quarter of 2023, we had assessed that inventory produced prior to successful regulatory approval did not meet the criteria for capitalization as an asset, and accordingly expensed the costs of pre-launch inventory as research and development costs. Based on the experience of the past years and the developments since our COVID-19 vaccine was first authorized or approved for emergency or temporary use, our assessment regarding the potential to produce economic benefits changed. Beginning with the second quarter of 2023, pre-launch products from the Comirnaty product family with their potential for economic benefit fulfill the recognition criteria for an asset under the IFRS Conceptual Framework. At each reporting date, the respective inventory is measured at the lower of cost and net realizable value. However, because it is not probable until regulatory approval is obtained, we consider the net realizable value to be zero, as this is the probable amount expected to be realized from its sale until approval is obtained. The write-down is recognized in the statements of profit or loss as research and development expenses. If regulatory approval for a product candidate is obtained, the relevant write-down would be reversed to a maximum of the original cost. Subsequently, inventory is recognized as cost of sales. This reassessment has been treated as a change in estimate and the impacts on current period inventories, cost of sales and research and development expenses are described in Note 7.1.

2.3.5 Government Grants

Government grants and similar grants which are accounted for in accordance with IAS 20 are recognized where there is reasonable assurance that the grant will be received and all attached conditions will be complied with. When the grant relates to an expense item, it is recognized as other income on a systematic basis over the periods that the related costs for which the grant is intended to compensate are expensed. When the grant relates to an asset, it is recognized as deferred income within the consolidated statements of financial position. Other income is subsequently recognized in our consolidated statements of profit or loss over the useful life of the underlying asset subject to funding.

2.3.6 Taxes

Current Income Tax

Current income tax assets and liabilities are measured at the amount expected to be recovered from or paid to the taxation authorities. The tax rates and tax laws used to compute the amount are those that are enacted or substantively enacted at the reporting date in the countries where the Group operates and generates taxable income.

In addition, current income taxes presented for the period include adjustments for uncertain tax payments or tax refunds for periods not yet finally assessed by tax authorities, excluding interest expenses and penalties on the underpayment of

taxes. In the event that amounts included in the tax return are considered unlikely to be accepted by the tax authorities (uncertain tax positions), a provision for income taxes is recognized.

Management periodically evaluates positions taken in the tax returns with respect to situations in which applicable tax regulations are subject to interpretation and establishes provisions where appropriate.

Deferred Tax

Deferred tax is provided using the liability method on temporary differences between the tax bases of assets and liabilities and their carrying amounts for financial reporting purposes at the reporting date.

Deferred tax liabilities are recognized for all taxable temporary differences, except:

- when the deferred tax liability arises from the initial recognition of goodwill or an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss; or
- in respect of taxable temporary differences associated with investments in subsidiaries, when the timing of the reversal of the temporary differences can be controlled and it is probable that the temporary differences will not reverse in the foreseeable future.

Deferred tax assets are recognized for all deductible temporary differences, the carry forward of unused tax credits and any unused tax losses. Deferred tax assets are recognized to the extent that it is probable that taxable profit will be available against which the deductible temporary differences, the carry forward of unused tax credits and unused tax losses can be utilized, except:

- when the deferred tax asset relating to the deductible temporary difference arises from the initial recognition of an asset or liability in a transaction that is not a business combination and, at the time of the transaction, affects neither the accounting profit nor taxable profit or loss; or
- in respect of deductible temporary differences associated with investments in subsidiaries, deferred tax assets are recognized only to the extent that it is probable that the temporary differences will reverse in the foreseeable future and taxable profit will be available against which the temporary differences can be utilized.

Deferred tax assets and liabilities are measured at the tax rates that are expected to apply in the year in which the asset is realized, or the liability is settled, based on tax rates (and tax laws) that have been enacted or substantively enacted at the reporting date.

Unrecognized deferred tax assets are re-assessed at each reporting date and are recognized to the extent that it has become probable that future taxable profits will allow the deferred tax asset to be recovered.

Recognition of Taxes

Current and deferred tax items are recognized similarly to the underlying transaction either in profit or loss, other comprehensive income or directly in equity.

Current tax assets and current tax liabilities are offset if, and only if, we have a legally enforceable right to set off the recognized amounts and intend either to settle on a net basis, or to realize the asset and settle the liability simultaneously. Deferred tax assets and deferred tax liabilities are only offset when we have a legally enforceable right to set off current tax assets and current tax liabilities and the deferred tax assets and deferred tax liabilities relate to income taxes levied by the same taxation authority on either (i) the same taxable entity or (ii) different taxable entities, which intend either to settle current tax liabilities and assets on a net basis, or to realize the assets and settle the liabilities simultaneously, in each future period in which significant amounts of deferred tax liabilities or assets are expected to be settled or recovered.

Sales Tax

Expenses and assets are recognized net of sales tax, except when the sales tax incurred on a purchase of assets or services is not recoverable from the taxation authority.

The net amount of sales tax recoverable from, or payable to, the taxation authority is included as part of receivables or payables in the consolidated statements of financial position.

Future Tax Legislation

Based on the Organisation for Economic Co-operation and Development (OECD) Base Erosion and Profit Shifting (BEPS) project to tackle tax avoidance, the OECD/G20 Inclusive Framework (an association of about 140 countries) decided to introduce a global minimum taxation for large multinational groups (known as Pillar 2). The Global Anti-Base Erosion Rules are intended to ensure that large multinational groups pay a minimum level of tax on the income arising in each jurisdiction where they operate. In December 2021, the OECD published its Model Rules, which serve as a draft bill for implementation into national domestic law, followed by guidelines and commentaries published in March 2022. In December 2022, the EU adopted a corresponding directive (EU 2022/2523) that obliges EU member states to transpose the rules into national domestic law. If the effective tax rate in any jurisdiction is below the minimum rate (15%), the Group may be subject to the so-called top-up tax or a so-called qualified domestic minimum top-up tax.

Several jurisdictions in which the Group operates have transposed the OECD Model Rules into national domestic law and brought them into force. In addition, the Group is closely following the progress of the legislative process in each country in which the Group operates. As of the balance sheet date, the BEPS Pillar 2 regulations (MinBestRL UmsG) had already been transposed into German law (MinStG). The date of application of the law in Germany is for financial years beginning after December 30, 2023. Subsequently, as the OECD Model Rules have entered into force in Germany, the Group is obliged to file top-up tax information returns for all entities which are part of the Group, beginning in financial year 2024. The Group falls within the scope of these regulations. The Group carried out an analysis as of the reporting date to determine the fundamental impact and the jurisdictions in which the Group is exposed to possible effects in connection with a Pillar 2 top-up tax.

Based on this analysis, no countries were identified in which the Group would be materially affected by a Pillar 2 top-up tax. Consequently, the average effective Group tax rate would not have changed if the Pillar 2 legislation had already been in force on the balance sheet date. BioNTech applies the exception in IAS 12, according to which no deferred tax assets and liabilities in connection with the second income taxes of the second pillar of the OECD are recognized and no disclosures are made.

2.3.7 Business Combinations and Goodwill

Business combinations are accounted for using the acquisition method. The cost of an acquisition is measured as the aggregate of the consideration transferred, which is measured at acquisition date fair value, and the amount of any non-controlling interests in the acquiree.

Goodwill is initially measured at cost as the excess of the aggregate of the consideration transferred and the amount recognized for non-controlling interests and any previous interest held over the net identifiable assets acquired and liabilities assumed.

Costs related to executing business combinations are recognized when they are incurred and are classified as general and administrative expenses.

After initial recognition, goodwill is tested at least annually or when there is an indication for impairment. See Note 2.3.10. For the purpose of impairment testing, goodwill acquired in a business combination is, from the acquisition date, allocated to each of the cash-generating units that are expected to benefit from the combination, irrespective of whether other assets or liabilities of the acquiree are assigned to those units.

Where goodwill has been allocated to a cash-generating unit (CGU) and part of the operation within that unit is disposed of, the goodwill associated with the operation disposed of is included in the carrying amount of the operation when determining the gain or loss on disposal. Goodwill disposed of in these circumstances is measured based on the relative values of the operation disposed of and the portion of the cash-generating unit retained.

2.3.8 Intangible Assets

Intangible assets acquired separately are measured on initial recognition at cost. The cost of intangible assets acquired in a business combination is their fair value at the date of acquisition. Following initial recognition, intangible assets are carried at cost less any accumulated amortization and accumulated impairment losses.

The portion of the consideration in in-licensing agreements paid by us to acquire intellectual property is recognized as an intangible asset. If in-licensing includes research and development services, the share of consideration attributable to these services is deferred and recognized in research and development expenses according to the utilization thereof. Payments depending on the achievement of specific milestones as part of the purchase of intangible assets, except for

intangible assets acquired in a business combination, are recognized as subsequent acquisition cost of the intangible asset and as a financial liability once the milestone is reached.

The useful lives of intangible assets are assessed as either finite or indefinite.

Intangible assets with finite lives are amortized generally on a straight-line basis over the useful life and assessed for impairment whenever there is an indication that the intangible asset may be impaired. The amortization period and the amortization method for an intangible asset with a finite useful life are reviewed at the end of each reporting period at the least. The amortization expense on intangible assets with finite lives is recognized in the consolidated statements of profit or loss in the expense category that is consistent with the function of the intangible assets.

A summary of the useful lives applied to the Group's intangible assets is as follows:

Intangible assets	Useful life (years)
Intellectual property rights	8-20
Licenses	3-20
Software	3-8

Intangible assets with indefinite useful lives are tested for impairment at least annually, or when there is an indication for impairment, either individually or at the level of a cash-generating unit (see Note 2.3.10 for further details). In the case of intangible assets not yet available for use, the point in time from which a capitalized asset can be expected to generate economic benefit for the Group cannot be determined. Such assets are not amortized, and therefore classified as having an indefinite useful life. The intangible assets not yet available for use are tested for impairment annually, or when there is an indication for impairment on an individual basis. The assessment of indefinite life is reviewed annually to determine whether the indefinite life continues to be supportable. If not, the change in useful life from indefinite to finite is made on a prospective basis.

We have classified advanced payments on intangible assets as intangible assets that are not yet ready for use. Advanced payments on intangible assets are tested for impairment on an annual basis.

An intangible asset is derecognized upon disposal (i.e., at the date the recipient obtains control) or when no future economic benefits are expected from its use or disposal. Any gain or loss arising upon derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in the consolidated statements of profit or loss.

See Note 2.3.4 for further details in connection with our accounting of internally generated intangible assets.

2.3.9 Property, Plant and Equipment

Construction in progress is stated at cost. Property, plant and equipment are stated at cost, net of accumulated depreciation and accumulated impairment losses, if any. Such cost includes the cost of replacing part of the property, plant and equipment if the recognition criteria are met. All other repair and maintenance costs are expensed as incurred.

Depreciation is calculated on a straight-line basis over the estimated useful lives of the assets, as follows:

Property, plant and equipment	Useful life (years)
Buildings	10-33
Equipment, tools and installations	7-18

Operating and business equipment has a useful life of 1-10 years and is reported under equipment, tools and installations due to immateriality.

An item of property, plant and equipment initially recognized is derecognized upon disposal (i.e., at the date the recipient obtains control) or when no future economic benefits are expected from its use or disposal. Any gain or loss arising on derecognition of the asset (calculated as the difference between the net disposal proceeds and the carrying amount of the asset) is included in the consolidated statements of profit or loss when the asset is derecognized.

The residual values, useful lives and methods of depreciation of property, plant and equipment are reviewed at each financial year-end and adjusted prospectively, if appropriate.

2.3.10 Impairment of Non-Financial Assets

At each reporting date, we assess whether there is an indication that a non-financial asset may be impaired. Goodwill is tested for impairment at least annually. Impairment is determined for goodwill by assessing the recoverable amount of each cash-generating unit (or group of CGUs) to which the goodwill relates. If any indication exists, or when annual impairment testing is performed, we estimate the asset's or CGU's recoverable amount. The recoverable amount is the higher of an asset's or CGU's fair value less costs of disposal and its value in use. The recoverable amount is determined for an individual asset, unless the asset does not generate cash inflows that are largely independent of those from other assets or groups of assets. If the asset does not generate independent cash inflows, the impairment test is performed for the smallest group of assets that generate largely independent cash inflows from other assets (CGU). When the carrying amount of an asset or cash-generating unit exceeds its recoverable amount, the asset or the non-current assets of the CGU are considered impaired and written down to their recoverable amount.

Impairment losses are recognized in the consolidated statements of profit or loss in expense categories consistent with the function of the impaired asset.

Intangible assets with an indefinite useful life are tested for impairment annually at the CGU level, as appropriate, and when circumstances indicate that the carrying value may be impaired.

Intangible assets not yet available for use are not amortized, but rather tested for impairment when a triggering event arises or at least once a year. The identification of triggering events takes place on a quarterly or on an ad hoc basis with the involvement of the responsible departments, taking internal and external information sources into consideration. The impairment test is performed annually or if there are indications of impairment by determining the asset's value in use. In assessing value in use, the estimated discounted future cash flows are based on long-term forecast calculations reflecting the asset's estimated product life cycles. The assumptions are based on internal estimates along with external market studies. The result of the valuation depends to a large extent on the estimates by the management of the future cash flows of the assets and the discount rate applied, and is therefore subject to uncertainty.

2.3.11 Financial Instruments

A financial instrument is any contract that gives rise to a financial asset of one entity and a financial liability or equity instrument of another entity.

i) Financial Assets

Initial Recognition and Measurement

Financial assets mainly include money market funds, bank deposits and reverse repos, security investments, trade receivables, cash at banks as well as equity investments. Financial assets are initially measured at fair value as of the trade date and – depending on their classification – subsequently measured at amortized cost, fair value through other comprehensive income (OCI) or fair value through profit or loss.

Subsequent Measurement

The measurement of financial assets depends on their classification, as described below.

Financial Assets Measured at Amortized Cost

Financial assets measured at amortized cost include trade receivables and other financial assets are generally measured using the effective interest rate (EIR) method. With respect to trade receivables, we applied the practical expedient, which means that they are measured at the transaction price determined in accordance with IFRS 15. Refer to the accounting policies in Note 2.3.3. Other financial assets measured at amortized cost are held to collect contractual cash flows, which are solely payments of principal and interest. Gains and losses are recognized in our consolidated statements of profit or loss when the financial asset is derecognized, modified or impaired.

Financial Assets Designated at Fair Value through OCI (Equity Instruments)

Upon initial recognition, we can irrevocably elect to classify equity investments as equity instruments designated at fair value through OCI if they meet the definition of equity under IAS 32 and are not held for trading. The classification is determined on an instrument-by-instrument basis. Gains and losses on these financial assets are never recycled to profit

or loss. Dividends are recognized as other income in the consolidated statements of profit or loss when the right of payment has been established. Equity instruments designated at fair value through OCI are not subject to impairment assessment. We elected to irrevocably classify our non-listed and listed equity investments under this category. They are recognized using trade date accounting.

Financial Assets at Fair Value through Profit or Loss

Derivatives not designated as hedging instruments are measured at fair value through profit or loss. A financial asset exists if the derivative has a positive fair value.

Derecognition

A financial asset (or, where applicable, a part of a financial asset or part of a group of similar financial assets) is primarily derecognized (i.e., removed from the consolidated statements of financial position) when the rights to receive cash flows from the asset have expired or have been transferred in terms of fulfilling the derecognition criteria.

Impairment of Financial Assets

An allowance for expected credit losses (ECLs) is considered for all non-derivative financial debt investments, including cash, time deposits and debt securities of the Group. ECLs are based on the difference between the contractual cash flows due in accordance with the contract and all of the cash flows that the Group expects to receive, discounted at an approximation of the original effective interest rate. The expected cash flows will include cash flows from the sale of collateral held or other credit enhancements that are integral to the contractual terms.

Since our financial debt investments are considered to be investments with low risk, the expected credit loss in the upcoming twelve months is used to determine the impairment loss. Wherever a considerable increase in the default risk is assumed, the lifetime expected credit loss of the financial asset is considered.

For trade receivables and contract assets, the Group applies a simplified approach in calculating ECLs. This means that the Group does not track changes in credit risk, but instead recognizes a loss allowance based on lifetime ECLs at each reporting date. We have established an ECL model that is based on the probability of default (PD), considers the respective country default probabilities and takes the maturities into account. In order to determine the PD of companies, we use the maturities of the trade receivables and the score of the companies.

If there is objective evidence that certain trade receivables or contract assets are fully or partially impaired, additional loss allowances are recognized to account for expected credit losses. A debtor's creditworthiness is assumed to be impaired if there are objective indications that the debtor is in financial difficulties, such as the disappearance of an active market for its products or impending insolvency.

ii) Financial Liabilities

Financial liabilities are generally measured at amortized cost using the effective interest rate (EIR) method. Derivatives with negative fair values not designated as hedging instruments and liabilities for contingent consideration in business combinations are measured at fair value.

All financial liabilities are recognized initially at fair value and, in the case of loans and borrowings and payables, net of directly attributable transaction costs.

Financial liabilities measured at amortized cost include loans and borrowings, trade payables and other financial liabilities. They are measured at amortized cost using the EIR method. Gains and losses are recognized in the consolidated statements of profit or loss when the liabilities are derecognized as well as through the EIR amortization process.

Amortized cost is calculated by taking into account any discount or premium on acquisition and fees or costs that are an integral part of the EIR. The EIR amortization is included as finance costs in the consolidated statements of profit or loss.

Derecognition

A financial liability is derecognized when the obligation under the liability is discharged or cancelled or expires. When an existing financial liability is replaced by another from the same lender on substantially different terms, or the terms of an existing liability are substantially modified, such an exchange or modification is treated as the derecognition of

the original liability and the recognition of a new liability. The difference in the respective carrying amounts is recognized in the consolidated statements of profit or loss.

iii) Expenses and Income from Exchange Forward Contracts

Effects from foreign exchange forward contracts, which are measured at fair value through profit or loss, are shown as either other operating income or other operating expenses on a cumulative basis and might switch between those two items during the year-to-date reporting periods.

2.3.12 Fair Value Measurement

Fair value is a market-based measurement. For some assets and liabilities, observable market transactions or market information is available. For other assets and liabilities, observable market transactions or market information might not be available. When a price for an identical asset or liability is not observable, another valuation technique is used. To increase consistency and comparability in fair value measurements, there are three levels of the fair value hierarchy:

- Level 1 contains the use of quoted prices in active markets for identical assets or liabilities.
- Level 2 inputs are inputs other than quoted prices included within Level 1 that are observable for the asset or liability either directly or indirectly.
- Level 3 inputs are unobservable.

Within this hierarchy, estimated values are made by management based on reasonable assumptions, including other fair value methods.

For assets and liabilities that are recognized in the financial statements at fair value on a recurring basis, we determine whether transfers have occurred between levels in the fair value hierarchy by re-assessing categorization (based on the lowest level input that is significant to the fair value measurement as a whole) at the end of each reporting period.

For the purpose of fair value disclosures, classes of assets and liabilities have been determined on the basis of the nature, characteristics and risks of the asset or liability and the level of the fair value hierarchy, as explained above.

2.3.13 Inventories

Inventories are valued at the lower of cost and net realizable value.

Costs incurred in bringing each product to its present location and condition are accounted for as follows:

- raw materials and supplies: purchase cost on a first-in / first-out basis; or
- unfinished goods and finished goods: cost of direct materials and labor, including both internal manufacturing and third-party contract manufacturing organizations, or CMOs, and a proportion of manufacturing overheads based on the normal operating capacity, but excluding borrowing costs.

Net realizable value is the estimated selling price in the ordinary course of business less estimated costs of completion and the estimated costs necessary to make the sale. Write-offs are recorded if inventories are expected to be unsaleable, do not fulfill the specification defined by our quality standards or if their shelf-life has expired. For our inventories subject to the collaboration partners' gross profit share mechanism, we consider the contractual compensation payments in the estimate of the net realizable value.

Beginning with the second quarter of 2023, pre-launch products from the Comirnaty product family with their potential for economic benefit fulfill the recognition criteria for an asset under the IFRS Conceptual Framework. At each reporting date, the respective inventory is measured at the lower of cost and net realizable value. However, because it is not probable until regulatory approval is obtained, we consider the net realizable value to be zero, as this is the probable amount expected to be realized from its sale until approval is obtained (see also Note 2.3.4 for further information on our assessment regarding the potential of our pre-launch products to produce economic benefits).

2.3.14 Cash and Cash Equivalents

Cash and cash equivalents comprise cash at banks and on hand and short-term investments that we consider to be highly liquid (including deposits, money market funds and reverse repos) with an original maturity of three months or less that are readily convertible to a known amount of cash and subject to an insignificant risk of changes in value. Deposits with an original maturity of more than three months are recognized as other financial assets.

2.3.15 Treasury Shares

We apply the par value method to our repurchases of outstanding American Depositary Shares, or ADSs. Accordingly, the nominal value of acquired treasury shares is deducted from equity and shown in the separate item “Treasury shares”. Any premium paid in excess of the nominal value of a repurchased ADS is deducted from the capital reserve. On the trade date, we recognize a liability, and on the settlement date, we settle in cash. We recognize the foreign exchange differences that may occur between the trade and settlement date as profit or loss.

2.3.16 Leases

At the inception of a contract, we assess whether the contract is, or contains, a lease. A contract is, or contains, a lease if the contract conveys the right to control the use of an identified asset for a period of time in exchange for consideration. To assess whether a contract conveys the right to control the use of an identified asset, we assess whether:

- the contract involves the use of an identified asset – this may be specified explicitly or implicitly and should be physically distinct or represent substantially all of the capacity of a physically distinct asset. If the supplier has a substantive substitution right, then the asset is not identified;
- we have the right to obtain substantially all of the economic benefits from the use of the asset throughout the period of use; and
- we have the right to direct the use of the asset. We possess this right when we hold the decision-making rights that are most relevant to changing how and for what purpose the asset is used. In rare cases where the decision about how and for what purpose the asset is used is predetermined, the Group has the right to direct the use of the asset if either:
 - we have the right to operate the asset; or
 - we designed the asset in a way that predetermines how and for what purpose it will be used.

At inception or on reassessment of a contract that contains a lease component, the consideration in the contract is allocated to each lease component on the basis of their relative standalone prices. However, for leases of land and buildings in which we are a lessee, we have elected not to separate non-lease components, and instead account for the lease and non-lease components as a single lease component.

We recognize a right-of-use asset and a lease liability at the lease commencement date.

The right-of-use asset is initially measured at cost, which comprises the initial amount of the lease liability adjusted for any lease payments made at or before the commencement date, plus any initial direct costs incurred and an estimate of the costs to dismantle and remove the underlying asset or to restore the underlying asset or the site on which it is located, less any lease incentives received by the Group.

The right-of-use asset is subsequently depreciated using the straight-line method from the commencement date to the earlier of the end of the useful life of the right-of-use asset and the end of the lease term. The estimated useful lives of right-of-use assets are determined on the same basis as those of property, plant and equipment. In addition, the right-of-use asset is periodically reduced by impairment losses, if any, and adjusted for certain remeasurements of the lease liability.

The lease liability is initially measured at the present value of the lease payments that are not paid at the commencement date, discounted using the incremental borrowing interest rate implicit in the lease or, if that rate cannot be readily determined, the Group’s incremental borrowing rate. Generally, the incremental borrowing rate is used as the discount rate.

Lease payments included in the measurement of the lease liability comprise the following:

- fixed payments, including in-substance fixed payments;
- variable lease payments that depend on an index or a rate, initially measured using the index or rate as of the commencement date;
- amounts expected to be payable under a residual value guarantee; and
- the exercise price under a purchase option that is reasonably certain to be exercised, lease payments in an optional renewal period if it is reasonably certain that the extension option is exercised, and penalties for early termination of a lease unless it is reasonably certain that the contract will not be terminated early.

The lease liability is subsequently measured at amortized cost using the EIR method. It is remeasured when there is a change in future lease payments arising from a change in an index or rate, if there is a change in the estimate of the amount expected to be payable under a residual value guarantee, or if we change our assessment of whether we will exercise a purchase, extension or termination option. When the lease liability is remeasured, a corresponding adjustment is made to the carrying amount of the right-of-use asset or is recorded in the consolidated statements of profit or loss if the carrying amount of the right-of-use asset has been reduced to zero.

Right-of-use assets are presented separately and lease liabilities are presented under “Financial liabilities” in the consolidated statements of financial position.

Depreciation is calculated on a straight-line basis over the estimated useful lives of the assets or shorter lease term, as follows:

Right-of-use assets	Useful life or shorter lease term (years)
Buildings	2-25
Equipment, tools and installations	2-5
Production facilities	2-3
Automobiles	3-4

Short-Term Leases and Leases of Low-Value Assets

We have elected not to recognize right-of-use assets and lease liabilities for short-term leases of machinery that have a lease term of 12 months or less or leases of low-value assets. We recognize the lease payments associated with these leases as an expense in the consolidated statements of profit or loss on a straight-line basis over the lease term.

2.3.17 Provisions

Provisions are recognized when there is a present obligation (legal or constructive) as a result of a past event, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and a reliable estimate can be made of the amount of the obligation. When we expect some or all of a provision to be reimbursed, for example, under an insurance contract, the reimbursement is recognized as a separate asset, but only when the reimbursement is virtually certain.

A provision is also recognized for certain contracts with suppliers for which the unavoidable costs of meeting the obligations exceed the economic benefits expected to be received. The economic benefits considered in the assessment comprise the future benefits we are directly entitled to under the contract as well as the anticipated future benefits that are the economic consequence of the contract if these benefits can be reliably determined.

The expense relating to a provision is presented in the consolidated statements of profit or loss net of any reimbursement.

2.3.18 Share-Based Payments

Employees (and others providing similar services) receive remuneration in the form of share-based payments, which are settled in equity instruments (equity-settled transactions) or in cash (cash-settled transactions).

In accordance with IFRS 2, share-based payments are generally divided into cash-settled and equity-settled. Both types of payment transactions are measured initially at their fair value as of the grant date. The fair value is determined using an appropriate valuation model, further details of which are given in Note 16. Rights granted under cash-settled transactions are remeasured at fair value at the end of each reporting period until the settlement date. The cost of share-based payment awards is recognized over the relevant service period, applying either the straight-line method or the graded vesting method, where applicable.

These costs are recognized in cost of sales, research and development expenses, sales and marketing expenses or general and administrative expenses, together with a corresponding increase in equity (other reserves) or other liabilities, over the period in which the service is provided (the vesting period). The cumulative expense recognized for cash- and equity-settled transactions at each reporting date until the vesting date reflects the extent to which the vesting period has expired, and also reflects the best estimate of the number of equity instruments expected to ultimately vest.

Service and non-market performance conditions are not taken into account when determining the grant date fair value of awards, but the likelihood of the conditions being met is assessed as part of our best estimate of the number of equity instruments that will ultimately vest. Market performance conditions are reflected within the grant date fair value. Any other conditions attached to an award, but without an associated service requirement, are considered to be non-vesting conditions. Non-vesting conditions are reflected in the fair value of an award and lead to an immediate expensing of an award unless there are also service and/or performance conditions.

If we have a choice of settling either in cash or by providing equity instruments, the rights granted are accounted for as an equity-settled transaction, unless there is a present obligation to settle in cash.

If, due to local tax regulations, an amount is withheld for the employee's tax obligations and paid directly to the tax authorities in cash on the employee's behalf, the entire share-based payment program remains an equity-settled plan based on the IFRS 2 classification. Accordingly, the amount withheld for the employee's tax obligations expected to be paid directly to the tax authorities is reclassified from "Other reserves" to "Other non-financial liabilities".

2.3.19 Cash Dividend

We recognize a liability to pay a dividend when the distribution is authorized. As per the corporate laws of Germany, a distribution is authorized when it is approved by the general shareholder meeting. A corresponding amount is recognized directly in equity.

2.4 Standards Applied for the First Time

In 2023, the following potentially relevant new and amended standards and interpretations became effective, but did not have a material impact on our consolidated financial statements:

Standards / Interpretations	Date of application
IFRS 17 Insurance Contracts	January 1, 2023
Amendments to IFRS 17 Insurance contracts: Initial Application of IFRS 17 and IFRS 9 – Comparative Information	January 1, 2023
Amendments to IAS 1 and IFRS Practice Statement 2: Disclosure of Accounting Policies	January 1, 2023
Amendments to IAS 8 Accounting policies, Changes in Accounting Estimates and Errors: Definition of Accounting Estimates	January 1, 2023
Amendments to IAS 12 Income Taxes: Deferred Tax related to Assets and Liabilities arising from a Single Transaction	January 1, 2023
Amendments to IAS 12 Income taxes: International Tax Reform – Pillar Two Model Rules	January 1, 2023

2.5 Standards Issued but Not Yet Effective

The new and amended standards and interpretations that are issued but not yet effective by the date of issuance of the financial statements and that might have an impact on our financial statements are disclosed below. We have not adopted any standards early and intend to adopt these new and amended standards and interpretations, if applicable, when they become effective.

Standards / Interpretations	Date of application
Amendments to IFRS 16 Leases: Lease Liability in a Sale and Leaseback	January 1, 2024
Amendments to IAS 7 Statement of Cash Flows and IFRS 7 Financial Instruments: Disclosures: Supplier Finance Arrangements	¹⁾ January 1, 2024
Amendments to IAS 1 Presentation of Financial Statements: Classification of Liabilities as Current or Non-Current	January 1, 2024
Amendments to IAS 1 Presentation of Financial Statements: Non-current Liabilities with Covenants	January 1, 2024
Amendments to IAS 21 The Effects of Changes in Foreign Exchange Rates: Lack of Exchangeability	¹⁾ January 1, 2025

¹⁾ Standards had not yet been endorsed in the European Union at the time of publication.

We do not expect a significant impact from the application of any of these standards and amendments.

3 Significant Accounting Judgements, Estimates and Assumptions

The preparation of the consolidated financial statements requires management to make judgments, estimates and assumptions that affect the reported amounts of revenues, expenses, assets and liabilities, the accompanying disclosures and the disclosure of contingent liabilities. Uncertainty about these assumptions and estimates could result in outcomes that require a material adjustment to the carrying amount of assets or liabilities affected in future periods.

Significant accounting judgments, as well as key assumptions concerning the future and other key sources of estimation uncertainty at the reporting date that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year, are described below. We based our assumptions and estimates on parameters available when the consolidated financial statements were prepared. Existing circumstances and assumptions about future developments, however, may change due to market changes or circumstances arising that are beyond the control of the Group. Such changes are reflected in the assumptions when they occur.

Revenues from Contracts with Customers

We applied the following judgments, estimates and assumptions that significantly affect the determination of the amount and timing of revenues from contracts with customers:

Identification and Determination of Performance Obligations

We generate revenues from collaboration and license agreements, which contain multiple elements, including licenses to use, research, develop, manufacture and commercialize candidates and products, research and development services as well as obligations to develop and manufacture preclinical and clinical material and products. We determined that those collaboration and license agreements qualify as contracts with customers. A contract is an agreement between two or more parties that establishes enforceable rights and obligations. At inception of each agreement, we apply judgment when determining which promises represent distinct performance obligations. If promises are not distinct, they are combined until the bundle of promised goods and services is distinct. For some agreements, this results in accounting for goods and services promised in a collaboration and license agreement as a single performance obligation with a single measure of progress. For these combined performance obligations, we assess which of these promises is the predominant promise to determine the nature of the performance obligation. When licenses are granted, we determined that the grant of the license is the predominant promise within the combined performance obligations. In our view, we grant our customers a right to access or a right to use our intellectual property due to the collaboration and license agreements.

Measurement of the Transaction Price

Our collaboration and license agreements often include variable consideration, which is contingent on the occurrence or non-occurrence of a future event (i.e., reaching a certain milestone). When determining deferred revenues from a collaboration and license agreement, we need to estimate the amount of consideration to which we will be entitled in exchange for transferring the promised goods or services to our customers.

As there are usually only two possible outcomes (i.e., milestone is reached or not), we have assessed that the method of the most likely amount is the best method to predict the amount of consideration to which we will be entitled. At contract inception, the most likely amount for milestone payments is estimated to be zero. We have assessed that the likelihood of achieving the respective milestone decreases depending on how far the expected date of achieving the milestone lies in the future. At each reporting date, we use judgment to determine when to include variable consideration in the transaction price in such a way that it is highly probable that a significant revenue reversal in the amount of cumulative revenue recognized will not occur when the associated uncertainty with respect to the variable consideration is subsequently resolved. We have concluded that future milestone payments are fully constrained at the end of the current financial year.

Future milestone payments would become unconstrained upon the satisfaction of the milestone event, specifically a development event, regulatory approval or achievement of a sales milestone.

Allocation of the Transaction Price to Performance Obligations and Revenue Recognition as Performance Obligations are Satisfied

We allocate the transaction price to performance obligations based on their relative standalone selling prices, which are generally based on our best estimates and interpretations of facts and circumstances of each contractual agreement and may require significant judgment to determine appropriate allocation.

Upfront payments and reimbursement for expenses are initially deferred on our consolidated statements of financial position. We assessed that no significant financing component exists within our collaboration agreements since the overall business purpose of advanced payments is to support the payment structure rather than to provide a significant benefit of financing. For performance obligations in which the costs vary based on progress, an input-based measure that takes into account cost incurred is the most reliable indicator of the progress of the related research activities. In other cases, revenue recognition on a straight-line basis may be the most reliable indicator of our performance toward complete satisfaction. If the contractual activities progress, the achievement of development milestones will be used to measure the progress toward complete satisfaction. We evaluate the measure of progress in each reporting period and, if necessary, adjust the measure of performance and related revenue recognition. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenues and net profit or loss in the period of adjustment.

Upon successfully commercializing a pharmaceutical product, the collaboration and license agreements also provide for additional profit-sharing or tiered royalties earned when customers recognize net sales of licensed products as well as sales milestone payments. Revenue is recognized based on the sales-based or usage-based royalty exemption; i.e., when, or as, the underlying sales occur, which is when the performance obligation has been satisfied.

Principal-Agent Considerations

Collaboration agreements that involve two or more partners who contribute to the provision of a specific good or service to a customer are assessed in terms of principal-agent considerations. Under our current collaboration agreements, the allocation of marketing and distribution rights defines territories in which the collaboration partner acts as a principal in each case. We recognize revenue net based on the collaboration partners' gross profit in territories where the partner is responsible for supply, and on a gross basis when directly supplying our customers in our territories when control has been transferred. Amounts paid to collaboration partners for their share of our profits earned where we are the principal in the transaction are recorded as cost of sales.

Pfizer Agreement Characteristics

With respect to our collaboration with Pfizer, commercial revenues are recognized based on our collaboration partner's gross profit from COVID-19 vaccine sales, which is shared under the respective collaboration agreement. In determining commercial revenues pursuant to this collaboration agreement, we are reliant on our collaboration partner for details regarding its gross profit for the period at hand. Some of the information which our collaboration partner provides us with to identify the gross profit is, by necessity, preliminary and subject to change.

Pfizer's gross profit share is calculated based on sales and takes into account transfer prices. The latter include manufacturing and shipping costs, which represent standard prices and include mark-ups on manufacturing costs as specified by the terms of the agreement. Manufacturing and shipping cost variances were considered as far as those have been identified. Nevertheless, those input parameters may be adjusted once actual costs are determined. The sales as reported by Pfizer have been used to estimate license obligations in terms of royalties and sales milestones. Sales milestones and royalties are recognized as they are earned by the partners. Sales milestones are shared equally, while royalty payments are borne by the partners on the basis of revenues in the territories for which the partners are responsible and subsequently deducted as cost under the gross profit shared. The estimated royalty fees applied to net sales reflect the license obligations to the extent currently identified from third-party contractual arrangements. Changes in estimates are accounted for prospectively, when determined.

Manufacturing cost variances include expenses from unused contract manufacturing capacities and overstock inventories finally scrapped. As only materialized costs – which means manufacturing capacities finally lapsed or inventories finally scrapped – are shared with the partner in a cash-effective manner, the gross profit share impact is anticipated once assessed as being highly probable to occur. Therefore, information on Pfizer's write-downs of inventories is considered. Any changes to this assessment will be recognized prospectively.

Pfizer's determination of manufacturing and shipping costs also affects the transfer prices that have been charged to COVID-19 vaccine supplies that it manufactures and supplies to us and may be subject to adjustment whenever manufacturing and shipping cost variances are identified. Likewise, our own cost of sales and the respective gross profit share owed to our partner may be adjusted prospectively, when changes are determined.

For contract balances related to the Pfizer agreement, see Note 6. Judgment is required in determining whether a right to consideration is unconditional and thus qualifies as a receivable.

Provisions and Contingencies

We are currently confronted with a number of claims and legal proceedings. They include claims from third parties demanding indemnification for alleged infringement of a third-party patent or other intellectual proprietary rights, as well as product liability claims. In respect of these matters, we assess whether provisions must be recorded and whether contingencies must be reported.

Due to uncertainties relating to these matters, provisions and contingencies are based on the best information available.

Significant judgment is required in the determination of whether and when a provision is to be recorded and what the appropriate amount for such provision should be. Notably, judgment is required in the following areas:

- Determining whether an obligation exists
- Determining the probability of an outflow of economic benefits
- Determining whether the amount of an obligation is reliably estimable
- Estimating the amount of the expenditure required to settle the present obligation

At the end of each reporting period, we reassess the potential obligations related to our pending claims and litigation and adjust our respective provisions and contingencies to reflect the current best estimate. In addition, we monitor and evaluate new information that we receive after the end of the respective reporting period, but before the consolidated financial statements are authorized for issue, in order to determine whether this provides additional information regarding conditions that existed at the end of the reporting period. Changes to estimates, assumptions and outcomes compared to previous estimates and assumptions could require material adjustments to the carrying amounts of the respective provisions recorded and additional provisions.

The expected timing or amounts of any outflows of economic benefits resulting from these lawsuits and claims are uncertain and difficult to estimate or even not estimable, as they generally depend on the duration of the legal proceedings and settlement negotiations required to resolve the litigation and claims and the unpredictability of the outcomes of legal disputes in several jurisdictions.

Disclosures in respect of third-party claims and litigation for which no provisions have been recognized are made in the form of contingent liabilities, unless a potential outflow of resources is considered remote. It is not practicable to estimate the financial impact of contingent liabilities due to the uncertainties around lawsuits and claims as outlined above.

For further disclosures and carrying amounts relating to provisions as well as contingencies, see Note 17 and Note 18.

Research and Development Expenses

The nature of our business and primary focus of our activities, including development of our platforms and manufacturing technologies, generate a significant amount of research and development expenses. Research costs are expensed as incurred. Development expenditures on an individual project are recognized as an intangible asset if, and only if, the capitalization criteria are met. Based on our assessment, we have concluded that, due to the inherent risk of failure in pharmaceutical development and the uncertainty of approval, these criteria are usually not met before regulatory approval is achieved. The related expenditure is reflected in the consolidated statements of profit or loss in the period in which the expenditure is incurred. We have entered into agreements under which third parties grant licenses to us, which are known as in-license agreements. If in-licensing results in consideration for the acquisition of intellectual property that meets the definition of an identifiable asset, this is capitalized as an intangible asset. If the transaction also includes research and development services to be provided by the licensor, the share of consideration attributable to these services is recognized in research and development expenses in line with the performance of the services. The allocation of consideration attributable to the acquisition of intellectual property and consideration attributable to the research and development services provided by the licensor requires management to make judgements and assumptions. These judgements and assumptions can materially affect our research and development expenses.

Business Combinations

In our accounting for business combinations, judgment is required in determining whether an intangible asset is identifiable and whether it should be recorded separately from goodwill. Additionally, estimating the acquisition-date fair values in conjunction with purchase price allocation involves estimation uncertainty and discretionary decisions. The necessary measurements are based on information available on the acquisition date and on expectations and assumptions that have been deemed reasonable by management. These judgments, estimates and assumptions can materially affect our financial position and profit.

Intangible Assets

Significant assumptions and estimates are required to determine the appropriate amount of amortization of intangible assets. They relate in particular to the determination of the underlying useful life. The useful life of an intangible asset is based on our estimates regarding the period over which the intangible asset is expected to generate economic benefits for us.

Significant assumptions and estimates are also required for the identification of a potential need to recognize an impairment loss. These estimates include management's assumptions regarding future cash flow projections and economic risks that require significant judgment and assumptions about future developments. They can be affected by a variety of factors, including, but not limited to, changes in business strategy, internal forecasts and the estimation of weighted average cost of capital.

Changes to the assumptions underlying our assessment of the impairment of goodwill and intangible assets could require material adjustments to the carrying amount of our recognized goodwill and intangible assets, as well as to the amounts of impairment charges recognized in profit or loss.

Share-Based Payments

Determining the fair value of share-based payment transactions requires the most appropriate valuation for the specific program, which depends on the underlying terms and conditions. We used valuation models such as a binomial or Monte Carlo simulation model for the measurement of the cash- and equity-settled transactions' fair value, taking into account certain assumptions relating to a number of factors, including the volatility of the stock price, the determination of an appropriate risk-free interest rate, expected dividends and the probability of reaching a minimum hurdle to exercise the relevant options. For awards which were granted prior to the initial public offering, at a time where no quoted market prices existed, the valuation model assumptions included the option's underlying share price. For awards which were granted after the initial public offering, the grant date's share prices on the Nasdaq Global Select Market were included in the valuation.

A fluctuation assumption is applied when estimating the number of equity instruments for which service conditions are expected to be satisfied and will be revised if material differences arise. Ultimately, a true-up to the number satisfied by the settlement date will be recorded.

For further disclosures relating to share-based payments, see Note 16.

Income Taxes

We are subject to income taxes in more than one tax jurisdiction. Due to the increasing complexity of tax laws and the corresponding uncertainty regarding the legal interpretation by the fiscal authorities, tax calculations are generally subject to an elevated amount of uncertainty. To the extent necessary, possible tax risks are taken into account in the form of provisions.

We do not recognize or we would impair deferred tax assets if it is unlikely that a corresponding amount of future taxable profit will be available against which the deductible temporary differences, tax loss carry forwards and tax credits can be utilized. The assessment whether a deferred tax asset can be recognized or is impaired requires significant judgment, as we need to estimate future taxable profits to determine whether the utilization of the deferred tax asset is probable. In evaluating our ability to utilize our deferred tax assets, we consider all available positive and negative evidence, including the level of historical taxable income and projections for future taxable income over the periods in which the deferred tax assets are recoverable. Based on the requirements in IAS 12, to not place reliance on future events that are uncertain as they for example cannot be controlled, managements assessment takes particular into account the fact that there is an inherent risk of failure in pharmaceutical development and an uncertainty of approval which is dependent on external regulatory agencies' opinions. This also includes management's assessment on the

character and amounts of taxable future profits, the periods in which those profits are expected to occur, and the availability of tax planning opportunities.

Our management continued to take the view that deferred tax assets on tax losses carried forward that relate to subsidiaries which have a loss-making history cannot be recognized. This includes the assessment that those subsidiaries have neither any taxable temporary differences nor any tax planning opportunities available that could support the recognition of deferred tax assets.

For further disclosures relating to deferred taxes, see Note 8.

4 Group Information

Information about Subsidiaries

The consolidated financial statements include the following subsidiaries:

Name	Country of incorporation	Registered office	% equity interest	
			December 31, 2023	December 31, 2022
BioNTech BioNTainer Holding GmbH	Germany	Mainz ⁽³⁾	100%	100%
BioNTech Cell & Gene Therapies GmbH	Germany	Mainz ⁽³⁾	100%	100%
BioNTech Delivery Technologies GmbH	Germany	Halle ⁽³⁾	100%	100%
BioNTech Diagnostics GmbH	Germany	Mainz ⁽³⁾	100%	100%
BioNTech Europe GmbH	Germany	Mainz ⁽³⁾	100%	100%
BioNTech Idar-Oberstein Services GmbH	Germany	Idar-Oberstein ⁽³⁾	100%	100%
BioNTech Individualized mRNA Manufacturing GmbH	Germany	Mainz ⁽³⁾	100%	100%
BioNTech Innovation and Services Marburg GmbH	Germany	Marburg ⁽³⁾	100%	100%
BioNTech Innovation GmbH	Germany	Mainz ⁽³⁾	100%	100%
BioNTech Innovative Manufacturing Services GmbH	Germany	Idar-Oberstein ⁽³⁾	100%	100%
BioNTech Manufacturing GmbH	Germany	Mainz ⁽³⁾	100%	100%
BioNTech Manufacturing Marburg GmbH	Germany	Marburg ⁽³⁾	100%	100%
BioNTech Real Estate Holding GmbH	Germany	Holzkirchen ⁽³⁾	100%	100%
BioNTech Real Estate Verwaltungs GmbH	Germany	Holzkirchen ⁽³⁾	100%	100%
InstaDeep DE GmbH	Germany	Berlin	100%	n/a ⁽²⁾
JPT Peptide Technologies GmbH	Germany	Berlin ⁽³⁾	100%	100%
NT Security and Services GmbH	Germany	Mainz ⁽³⁾	100%	100%
reSano GmbH	Germany	Mainz ⁽³⁾	100%	100%
BioNTech Australia Pty Ltd.	Australia	Melbourne	100%	100%
BioNTech R&D (Austria) GmbH	Austria	Vienna	100%	100%
BioNTech (Shanghai) Pharmaceuticals Co. Ltd.	China	Shanghai	100%	100%
InstaDeep France SAS	France	Paris	100%	n/a ⁽²⁾
Biopharma BioNTech Israel Ltd.	Israel	Tel Aviv	100%	n/a ⁽¹⁾
New Technologies Re	Luxembourg	Luxembourg	100%	n/a ⁽¹⁾
InstaDeep Nigeria Limited	Nigeria	Lagos	100%	n/a ⁽²⁾
BioNTech Rwanda Ltd.	Rwanda	Kigali	100%	100%
BioNTech Sénégal Suarl	Senegal	Dakar	100%	n/a ⁽¹⁾
BioNTech Pharmaceuticals Asia Pacific Pte. Ltd.	Singapore	Singapore	100%	100%
BioNTech Pharmaceuticals Spain S.L	Spain	Barcelona	100%	n/a ⁽¹⁾
BioNTech Switzerland GmbH	Switzerland	Basel	100%	n/a ⁽¹⁾
BioNTech Taiwan Co. Ltd.	Taiwan	Taipei	100%	n/a ⁽¹⁾
InstaDeep Tunisia SARL	Tunisia	Tunis	100%	n/a ⁽²⁾
BioNTech Turkey Tıbbi Ürünler Ve Klinik Araştırma Ticaret Anonim Şirketi	Türkiye	Istanbul	100%	100%
BioNTech UK Ltd.	United Kingdom	London	100%	100%
InstaDeep Ltd.	United Kingdom	London	100%	5.3% ⁽²⁾
BioNTech Research and Development, Inc.	United States	Cambridge	100%	100%
BioNTech USA Holding, LLC	United States	Cambridge	100%	100%
BioNTech US Inc.	United States	Cambridge	100%	100%
BioNTech Delivery Technologies (US), LLC	United States	Cambridge	100%	n/a ⁽²⁾

InstaDeep LLC	United States	Dover	100%	n/a ⁽²⁾
JPT Peptide Technologies Inc.	United States	Cambridge	100%	100%

⁽¹⁾ Included during the year ended December 31, 2023.

⁽²⁾ Fully acquired during the year ended December 31, 2023.

⁽³⁾ Subsidiary makes use of the exemption of Sections 264 para. 3 and 264b HGB for the 2023 financial year.

All entities listed above are included in our consolidated financial statements.

Parent Company

ATHOS KG, Holzkirchen, Germany, is the sole shareholder of AT Impf GmbH, Munich, Germany, and beneficial owner of the following percentage of ordinary shares in BioNTech at the dates as indicated. ATHOS KG via AT Impf GmbH has de facto control over BioNTech based on its substantial shareholding, which practically enables it to exercise the majority of voting rights to pass resolutions at our Annual General Meeting, or AGM.

Name	Country of incorporation	Registered office	Ownership of ordinary shares in BioNTech (in %)	
			December 31, 2023	December 31, 2022
AT Impf GmbH	Germany	Munich	43.77%	43.42%

Entity with Significant Influence over the Group

Medine GmbH, Mainz, Germany, owned the following percentage of ordinary shares in BioNTech at the following dates as indicated:

Name	Country of incorporation	Registered office	Ownership of ordinary shares in BioNTech (in %)	
			December 31, 2023	December 31, 2022
Medine GmbH	Germany	Mainz	17.01%	17.38%

5 Business Combinations

Acquisition of InstaDeep Ltd.

In July 2023, we acquired InstaDeep Ltd., London, United Kingdom (InstaDeep), a leading global technology company in the field of artificial intelligence (AI) and machine learning, by purchasing 100% of the remaining shares in InstaDeep not already owned by us. The acquisition is intended to create a fully integrated, enterprise-wide capability that leverages AI and machine learning technologies across our therapeutic platforms and operations. InstaDeep also continues to provide its services to clients around the world in diverse industries, including in the technology, transport and logistics, and industrial and financial services sectors.

The completion of the acquisition took place in July 2023. We performed an allocation of the total consideration and the underlying assets acquired (including certain identified intangible assets such as InstaDeep's DeepChain technology and customer relationships) and liabilities assumed based on their fair values using the information available as of the acquisition date. The total consideration and the fair values in accordance with IFRS 3 of the identified net assets acquired of InstaDeep as of July 31, 2023, are as follows:

<i>(in millions €)</i>	Fair value recognized on acquisition InstaDeep Ltd.
Assets	
Intangible assets	187.6
Property, plant and equipment	2.1
Right-of-use assets	0.7
Trade receivables	2.4
Financial assets - current	52.5
Cash and cash equivalents	21.2
Other assets non-current and current	8.7
Total assets	275.0
Liabilities	
Deferred tax liabilities	45.8
Other liabilities long-term and short-term	18.2
Total liabilities	64.0
Total identifiable net assets at fair value	211.0
Goodwill from the acquisition	306.5
Total consideration	517.5
Consideration	
Cash paid	358.1
Cash to be paid in 2024	4.0
Designated FX hedge	(8.1)
Shares transferred (approx. 1.1 million shares)	103.7
Contingent consideration	31.8
Previously held non-listed equity investment (stake of 5.3%)	27.9
Total consideration	517.5

The intangible assets acquired comprise DeepChain technology and customer relationships. Their fair values were determined based on the multi-period excess earnings method (MEEM) and amount to €176.0 million and €7.8 million respectively.

The fair value of the shares transferred is determined based on the number of shares transferred and the closing price of the ADSs as of July 31, 2023.

The acquisition of InstaDeep is a step acquisition in accordance with IFRS 3.41-3.42A since we already held a 5.3% interest prior to the acquisition. In prior reporting periods, we recognized changes in the value of this equity interest in other comprehensive income. The amount of the remeasurement to fair value that was recognized in other comprehensive income is recognized on the same basis as would be required if we disposed directly of the previously held equity interest. Based on the total consideration for the acquired shares (94.7%), the value of the already held shares is €27.9 million, which results in a loss of €2.2 million shown in other comprehensive income in the year ended December 31, 2023.

At the acquisition date, the contingent consideration was recognized at its fair value of €31.8 million based on cash flow projections in connection with performance-based future milestone cash payments to eligible shareholders after a three-year earn-out period. The lower end of the bandwidth of possible outcomes of the contingent consideration is zero; the upper limit is €124.6 million. In addition, €12.5 million of potential earn-out payments are considered

remuneration and will be recognized as personnel expense over a three-year period in which services are to be provided.

Transaction costs of €6.0 million were expensed and are included in general and administrative expenses.

The goodwill mainly comprises the value of expected synergies from including AI and machine learning technologies across our therapeutic platforms and operations and intangible assets that are not recognized separately, such as the acquired skilled workforce and its know-how. Therefore, the goodwill is allocated almost in full to the CGU immunotherapies and to a minor extent to a CGU comprising the external InstaDeep business. The goodwill is not tax deductible.

Deferred tax liabilities relating to temporary differences of the assets acquired in the business combination were recognized in an amount of €45.8 million. In line with the deferred tax liabilities assumed, deferred tax assets relating to temporary differences and tax loss carry forwards which existed as of the acquisition date were recognized. The deferred tax assets and liabilities were offset to the extent that the conditions for offsetting were fulfilled.

Since the acquisition, InstaDeep's impact on our revenue and profit for the period has been immaterial. Accordingly, hypothetical amounts for our revenue and profit for the financial year, which were calculated on the assumption that the acquisition had taken place at the beginning of the year, would not materially differ from the actual figures reported.

6 Revenues from Contracts with Customers

6.1 Disaggregated Revenue Information

Set out below is the disaggregation of the Group's revenues from contracts with customers:

<i>(in millions €)</i>	Years ended December 31,		
	2023	2022	2021
Commercial revenues	3,815.5	17,194.6	18,874.0
COVID-19 vaccine revenues	3,776.2	17,145.2	18,806.8
<i>Sales to collaboration partners</i>	275.3	1,224.3	970.9
<i>Direct product sales to customers</i>	473.6	3,184.7	3,007.2
<i>Share of collaboration partners' gross profit and sales milestones</i>	3,027.3	12,736.2	14,828.7
Other sales	39.3	49.4	67.2
Research & development revenues from collaborations	3.5	116.0	102.7
Total	3,819.0	17,310.6	18,976.7

During the year ended December 31, 2023, revenues recognized from Pfizer Inc., or Pfizer (€3,293.0 million) and the German Federal Ministry of Health (€473.6 million), each account for more than 10% of total revenues. During the year ended December 31, 2022, revenues recognized from Pfizer (€13,795.8 million) and the German Federal Ministry of Health (€3,020.5 million) represented more than 10% of total revenues. During the year ended December 31, 2021, revenues recognized from Pfizer (€15,500.0 million) and the German Federal Ministry of Health (€1,945.6 million), accounted for more than 10% of total revenues. During the year ended December 31, 2023, based on the geographic region in which our customers and collaboration partners are located, we mainly recognized revenues in the United States (€3,010.9 million) and Germany (€482.7 million). During the year ended December 31, 2022, the main geographic regions were United States (€12,709.7 million) and Germany (€3,031.0 million). During the year ended December 31, 2021, the main geographic regions were United States (€14,636.5 million), Germany (€2,241.9 million) and Belgium (€675.0 million).

Commercial Revenues

During the year ended December 31, 2023, commercial revenues were recognized from the supply and sales of our COVID-19 vaccine worldwide. During the year ended December 31, 2023, our commercial revenues decreased in line with a lower COVID-19 vaccine market demand. In addition, write-downs by our collaboration partner Pfizer Inc. (Pfizer), significantly reduced our gross profit share and hence negatively influenced our revenues for the year ended December 31, 2023. We are the marketing authorization holder in the United States, the European Union, the United Kingdom, Canada and other countries, and holder of emergency use authorizations or equivalents in the United States

(jointly with Pfizer) and other countries. Pfizer has marketing and distribution rights worldwide with the exception of China, Germany and Türkiye. Shanghai Fosun Pharmaceutical (Group) Co., Ltd, or Fosun Pharma, has marketing and distribution rights in China, Hong Kong special administrative region, or SAR, Macau SAR and the region of Taiwan. The allocation of marketing and distribution rights defines territories in which the collaboration partners act as a principal.

Sales to Collaboration Partners

Sales to collaboration partners represent sales of products manufactured by us to collaboration partners. Whenever responsibilities in the manufacturing and supply process of the COVID-19 vaccine shift and the COVID-19 vaccine is transferred, the vaccine is sold from one partner to the other. Under the collaboration with Pfizer, from time to time, those sales are significantly influenced by amounts due to write-downs of inventories as well as costs related to production capacities derived from contracts with CMOs that became redundant. Those costs represent accrued manufacturing variances and are charged to our partner once finally materialized. These manufacturing variances are reflected as transfer price adjustments once identified. The regular reassessment of these manufacturing variances may result in adjustments to the respective prior-period revenues. Sales to collaboration partners during the years ended December 31, 2023, 2022 and 2021 of €74.5 million, €850.0 million and €31.0 million, respectively, related to the aforementioned manufacturing variances.

Direct Product Sales to Customers

Direct product sales are recognized from supplying COVID-19 vaccine in our territories Germany and Türkiye. During the years ended December 31, 2023, 2022 and 2021, we recognized €473.6 million, €3,184.7 million and €3,007.2 million of revenues, respectively. The share of gross profit that we owe our collaboration partner Pfizer based on our sales is recognized as cost of sales.

Share of Collaboration Partners' Gross Profit and Sales Milestones

Based on COVID-19 vaccine sales in the collaboration partners' territories, we are eligible to receive a share of their gross profit, which represents a seasonally affected net figure and is recognized as collaboration revenue during the commercial phase, together with sales milestones. Manufacturing cost variances either reflected as transfer price adjustments as described above or resulting from costs highly probable to be incurred by the partner, were taken into account when determining the gross profit. During the year ended December 31, 2021, those revenues included €476.6 million of sales milestones.

The revenues from contracts with customers disclosed above were recognized as follows:

<i>(in millions €)</i>	Years ended December 31,		
	2023	2022	2021
Timing of revenue recognition			
<i>Goods and services transferred at a point in time</i>	776.3	4,447.2	4,034.3
<i>Goods and services transferred over time</i>	15.4	127.2	113.7
<i>Revenue recognition applying the sales-based or usage-based royalty recognition constraint model⁽¹⁾</i>	3,027.3	12,736.2	14,828.7
Total	3,819.0	17,310.6	18,976.7

⁽¹⁾ Represents sales based on the share of the collaboration partners' gross profit and sales milestones.

6.2 Contract Balances

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
Trade and other receivables	2,155.7	7,145.6
Contract liabilities	751.8	125.5
Refund liabilities	—	24.4

Trade and other receivables significantly decreased compared to the previous year and predominantly comprise trade receivables from our COVID-19 collaboration with Pfizer as well as our direct product sales to customers in our territory. The contractual settlement of the gross profit share has a temporal offset of more than one calendar quarter. As Pfizer's financial quarter for subsidiaries outside the United States differs from ours, it creates an additional time lag

between the recognition of revenues and the payment receipt. Consequently, as of December 31, 2023, our trade receivables included, in addition to the profit share for the fourth quarter of 2023, trade receivables which related to the gross profit share for the third quarter of 2023.

Contract liabilities significantly increased compared to the previous year as advance payments in connection with the amendment of the COVID-19 vaccine purchase agreement with the European Commission, or EC, were received. As of December 31, 2023, the contract liabilities included €386.4 million of such payments under our collaboration with Pfizer (COVID-19 vaccine), €302.3 million from the German Federal Ministry of Health and €62.3 million of remaining upfront fees from our collaboration agreement with Pfizer (Zoster) (as of December 31, 2022: €65.7 million of remaining upfront fees from collaboration and commercial supply agreements and €56.3 million of advance payments for future COVID-19 vaccine sales).

The refund liabilities recognized as of December 31, 2022, represented consideration which was refunded to the collaboration partner during the year ended December 31, 2023.

Set out below is the amount of revenue recognized for the periods indicated:

<i>(in millions €)</i>	Years ended December 31,		
	2023	2022	2021
Amounts included in contract liabilities at the beginning of the year	3.5	63.1	73.7

6.3 Performance Obligations

The contract liabilities allocated to the remaining performance obligations from collaboration or commercial supply agreements (unsatisfied or partially unsatisfied) as of year-end are as follows:

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
Within one year	353.3	77.1
More than one year	398.5	48.4
Total	751.8	125.5

7 Income and Expenses

7.1 General Expenses

Cost of Sales

From the year ended December 31, 2022 to the year ended December 31, 2023, cost of sales decreased by €2,395.2 million or 80% from €2,995.0 million to €599.8 million, mainly due to recognizing lower cost of sales from our decreased COVID-19 vaccine sales, which included the share of gross profit that we owe our collaboration partner Pfizer based on our sales. In addition, cost of sales was impacted by expenses arising from inventory write-offs and expenses for production capacities derived from contracts with CMOs that became redundant. The effects were driven by reducing production capacities as well as further fostering the global production network with our collaboration partners during the year ended December 31, 2023. Based on the regulatory approval obtained with respect to our Omicron XBB.1.5-adapted monovalent COVID-19 vaccine during the third quarter of 2023, we reversed the initial write-down of pre-launch inventory recorded in research and development expensed to a maximum of the original cost of €46.9 million. Thereof €27.3 million resulted in cost of sales during the year ended December 31, 2023 as the respective inventory has been either sold or written down. The remainder is presented in inventories as of December 31, 2023 and amounted to €19.6 million. With respect to the year ended December 31, 2022 the amount was nil.

Research and Development Expenses

From the year ended December 31, 2022 to the year ended December 31, 2023, our research and development expenses increased by €246.1 million or 16% from €1,537.0 million to €1,783.1 million, mainly influenced by progressing clinical studies for pipeline candidates as well as by our newly acquired product candidates and the development of variant adapted COVID-19 vaccines. The increase was further driven by an increase in wages, benefits and social security expenses resulting from a significant increase in headcount.

Sales and Marketing Expenses

From the year ended December 31, 2022 to the year ended December 31, 2023, our sales and marketing expenses increased by €3.2 million or 5% from €59.5 million to €62.7 million, mainly due to increased expenses for setup and enhancement of commercial IT platforms and an increase in wages, benefits and social security expenses resulting from an increase in headcount.

General and Administrative Expenses

From the year ended December 31, 2022 to the year ended December 31, 2023, our general and administrative expenses increased by €13.3 million or 3% from €481.7 million to €495.0 million, mainly influenced by increased expenses for IT services as well as by wages, benefits and social security expenses resulting from an increase in headcount.

7.2 Other Operating Expenses

<i>(in millions €)</i>	Years ended		
	December 31,		
	2023	2022	2021
Foreign exchange differences, net	252.0	—	—
Loss on derivative instruments at fair value through profit or loss	—	385.5	86.3
Litigation costs ⁽¹⁾	29.4	3.0	9.0
Other	11.6	21.5	8.1
Total	293.0	410.0	103.4

⁽¹⁾ Adjustments to prior-year figures relate to costs for external legal advice in connection with certain legal litigations from general and administrative expenses to other operating expense to reflect changes in internal reporting also in the external reporting.

During the year ended December 31, 2023, the other expenses increased compared to the year ended December 31, 2022, which was mainly derived from recognizing foreign exchange differences arising on operating items. The foreign exchange differences included in operating expenses primarily arose from valuing our U.S. dollar-denominated trade receivables which were mainly incurred under our COVID-19 collaboration with Pfizer, U.S. dollar-denominated trade payables as well as U.S. dollar-denominated other financial liabilities which mainly relate to obligations incurred from our license agreements.

During the year ended December 31, 2022, the other operating expenses increased compared to the year ended December 31, 2021, mainly from recording the change in fair value of foreign exchange forward contracts that were entered into during the year ended December 31, 2022, to manage some of our transaction exposures but were not designated as hedging instruments under IFRS.

7.3 Other Operating Income

<i>(in millions €)</i>	Years ended December 31,		
	2023	2022	2021
Gain on derivative instruments at fair value through profit or loss	67.6	—	5.7
Government grants	2.2	1.4	137.2
Foreign exchange differences, net	—	727.4	446.3
Other	35.2	86.5	9.2
Total	105.0	815.3	598.4

During the year ended December 31, 2023, the other income decreased compared to the year ended December 31, 2022, as foreign exchange differences arising on operating items changed from a positive effect to a negative effect, which is recorded in other operating expenses (see Note 7.2).

During the year ended December 31, 2022, the other income increased compared to the year ended December 31, 2021, which was mainly due to recognizing foreign exchange differences arising on operating items. The foreign exchange differences included in operating income primarily arose from valuing our U.S. dollar-denominated trade receivables which were mainly incurred under our COVID-19 collaboration with Pfizer, U.S. dollar-denominated trade payables as well as U.S. dollar-denominated other financial liabilities which mainly relate to obligations incurred from our license agreements.

7.4 Finance Income

<i>(in millions €)</i>	Years ended December 31,		
	2023	2022	2021
Interest income	357.6	48.5	1.5
Fair value adjustments of financial instruments measured at fair value	162.0	216.8	—
Foreign exchange differences, net	—	65.0	66.2
Total	519.6	330.3	67.7

During the year ended December 31, 2023, the finance income increased compared to the year ended December 31, 2022, mainly due to interest income earned on bank deposits and financial securities as well as fair value adjustments in relation to our money market funds.

During the year ended December 31, 2022, the finance income included the final fair value measurement adjustments of the derivative embedded within the convertible note upon the early redemption of the convertible note as of March 1, 2022, the redemption date, as well as interest income from our bank deposits and increased compared to the year ended December 31, 2021.

7.5 Finance Expenses

<i>(in millions €)</i>	Years ended		
	2023	2022	2021
Foreign exchange differences, net	16.0	—	—
Fair value adjustments of financial instruments measured at fair value	—	—	277.8
Other	7.9	18.9	27.3
Total	23.9	18.9	305.1

During the year ended December 31, 2023, the finance expenses increased compared to the year ended December 31, 2022, mainly due to exchange differences derived from our foreign exchange bank deposits and cash accounts.

During the year ended December 31, 2022, the finance expenses decreased compared to the year ended December 31, 2021, mainly due to final settlement of the derivative embedded within the convertible note which led to financial income whereas during the year ended December 31, 2021, expenses in the amount of €277.8 million were derived from the respective fair value measurement adjustment.

7.6 Employee Benefits Expense

<i>(in millions €)</i>	Years ended December 31,		
	2023	2022	2021
Wages and salaries	617.8	544.8	345.9
Social security costs	76.7	58.6	31.7
Pension costs	4.1	2.1	1.2
Total	698.6	605.5	378.8

Wages and salaries include, among other things, expenses for share-based payments.

8 Income Tax

Income tax for the years ended December 31, 2023, December 31, 2022, and December 31, 2021, comprised current income taxes, other taxes and deferred taxes. We are subject to corporate taxes, the solidarity surcharge and trade taxes. Our corporate tax rate in the reporting year remained unchanged (15.0%) as did the solidarity surcharge (5.5%) whereas the average trade tax rate changed resulting in a combined income tax rate of 27.1% in the year ended December 31, 2023 (during the years ended December 31, 2022 and 2021: 27.2% and 30.7%, respectively). Deferred taxes are calculated at a rate of 27.1%. Current taxes for Austria are calculated at a corporate tax rate of 24.0%. Austria's decrease of its corporate tax rate down to 23.0% in 2024 is to be recognized from 2023 onwards for deferred taxes. BioNTech USA Holding, LLC is subject to Federal Corporate Income Tax (21.0%) as well as State Income Tax in various state jurisdictions (effective rate of 4.5%). The deferred tax rates calculations basis remained unchanged compared to the previous period.

The following table illustrates the current and deferred taxes for the periods indicated:

<i>(in millions €)</i>	Years ended December 31,		
	2023	2022	2021
Current income taxes	243.1	3,629.6	4,535.0
Deferred taxes	12.7	(109.9)	218.9
Income taxes	255.8	3,519.7	4,753.9

The following table reconciles the expected income taxes to the income tax expenses. The expected income taxes were calculated using the combined income tax rate of BioNTech SE applicable to the Group and mentioned above which was applied to profit before taxes to calculate the expected income taxes.

<i>(in millions €)</i>	Years ended December 31,		
	2023	2022	2021
Profit before tax	1,186.1	12,954.1	15,046.4
Expected tax credit	321.8	3,529.7	4,622.5
<i>Effects</i>			
Deviation due to local tax basis	6.6	8.9	9.1
Deviation due to deviating income tax rate (Germany and foreign countries)	(0.1)	7.3	9.4
Change in valuation allowance	(14.3)	30.6	3.0
Effects from tax losses and tax credits	(66.5)	23.2	19.5
Change in deferred taxes due to tax rate change	(2.4)	(2.3)	(7.5)
Non-deductible expenses	3.1	2.5	90.5
Non tax-effective income	(0.6)	(87.9)	(0.3)
Non tax-effective share-based payment expenses	7.7	8.7	15.5
Tax-effective equity transaction costs	—	—	(1.2)
Adjustment prior year taxes	5.5	(31.5)	(2.9)
Non-tax effective bargain purchase	—	—	(0.7)
Other effects	(5.0)	30.5	(3.0)
Income taxes	255.8	3,519.7	4,753.9
Effective tax rate	21.6%	27.2%	31.6%

On November 15, 2018, we established a share option program pursuant to which we were permitted to grant selected employees and our Management Board options to receive shares in the Company. The program is designed as an Employee Stock Ownership Plan, or ESOP. We offered the participants a certain number of rights, or option rights, subject to their explicit acceptance. Grants under the ESOP took place from November 2018 until December 2019. An exercise of option rights in accordance with the terms of the ESOP gives a participant the right to obtain shares against payment of the exercise price. By way of an updated decision of the Supervisory Board at the end of September 2022 compared to the initial settlement mechanism, an ESOP settlement may be made by delivery to the participant of such number of ADSs equal to the net value of the exercised option rights after deduction of (i) the exercise price and (ii) the applicable wage taxes (including solidarity surcharge thereon and church tax, if applicable) and social security contributions resulting from such exercise. The respective number of ADS shall be settled with ADS acquired in the course of the share repurchase program. The applicable wage taxes (including solidarity surcharge thereon and church tax, if applicable) and social security contributions resulting from such exercise are paid in cash directly to the respective authorities. Expenses for taxation purposes resulting from the settlement are only recognized once the option rights have been exercised. After considering the settlements in the twelve months ended December 31, 2023 and taking into account the recognition criteria of IAS 12, a deferred tax is not recognized in our consolidated statement of financial position of €17.8 million which relates to future settlements.

The current tax savings associated with the excess were directly recognized in equity in a total amount of €19.8 million. Considering these tax amounts directly recognized in equity when calculating an effective tax rate, the tax rate would be decreased by about 1.6 percentage points.

The intended settlement mechanism of Option Rights of the Chief Executive Officer Grant (see Note 16.4 for plan details) led to a deferred tax asset in the total amount of €108.8 million as of December 31, 2023. Taking into account the recognition criteria of IAS 12 this deferred tax asset is not recognized in our consolidated statements of profit or loss neither recognized directly in equity as other reserves in our consolidated statements of changes in stockholders' equity.

Taxes

Deferred taxes for the periods indicated relate to the following:

Year ended December 31, 2023

<i>(in millions €)</i>	January 1, 2023	Recognized in P&L	Recognized in OCI	Recognized directly in equity	December 31, 2023
Fixed assets	15.8	20.2	—	(44.4)	(8.4)
Right-of-use assets	(55.8)	(0.8)	—	—	(56.6)
Inventories	148.9	(35.3)	—	—	113.6
Trade and other receivables	(162.7)	72.7	—	—	(90.0)
Lease liabilities	55.2	2.0	—	—	57.2
Contract liabilities	(10.0)	(33.0)	—	—	(43.0)
Loans and borrowings	7.6	(2.8)	—	—	4.8
Net employee defined benefit liabilities	0.7	(0.1)	—	—	0.6
Share-based payments	188.4	12.0	—	(58.3)	142.1
Other provisions	11.0	(1.2)	—	—	9.8
Other (incl. deferred expenses)	61.5	(106.4)	—	—	(44.9)
Tax losses / tax credits	99.5	(5.1)	—	—	94.4
Deferred tax assets net (before valuation adjustment)	360.1	(77.8)	—	(102.7)	179.6
Valuation adjustment	(136.7)	65.1	—	(66.4)	(138.0)
Deferred tax assets / (liabilities), net (after valuation adjustment)	223.4	(12.7)	—	(169.1)	41.6
Thereof deferred tax assets	229.6	20.8	—	(169.1)	81.3
Thereof deferred tax liability	(6.2)	(33.5)	—	—	(39.7)

Year ended December 31, 2022

<i>(in millions €)</i>	January 1, 2022	Recognized in P&L	Recognized in OCI	Recognized directly in equity	December 31, 2022
Fixed assets	(6.5)	22.3	—	—	15.8
Right-of-use assets	(47.5)	(8.3)	—	—	(55.8)
Inventories	1.8	147.1	—	—	148.9
Trade and other receivables	(95.6)	(67.1)	—	—	(162.7)
Lease liabilities	48.7	6.5	—	—	55.2
Loans and borrowings	23.1	(15.5)	—	—	7.6
Contract liabilities	10.6	(20.6)	—	—	(10.0)
Net employee defined benefit liabilities	0.9	(0.5)	0.3	—	0.7
Other provisions	6.3	4.7	—	—	11.0
Share-based payments	—	8.5	—	179.9	188.4
Other (incl. deferred expenses)	1.6	59.9	—	—	61.5
Tax losses / tax credits	70.9	28.6	—	—	99.5
Deferred tax assets net (before valuation adjustment)	14.3	165.6	0.3	179.9	360.1
Valuation adjustment	(81.0)	(55.7)	—	—	(136.7)
Deferred tax assets / (liabilities), net (after valuation adjustment)	(66.7)	109.9	0.3	179.9	223.4

As of December 31, 2023, our accumulated tax losses comprised tax losses of German entities that were incurred prior to the establishment of a tax group with BioNTech SE or by entities that are not within the tax group (as of

December 31, 2023: BioNTech Real Estate Verwaltungs GmbH; as of December 31, 2022: BioNTech BioNTainer Holding GmbH, BioNTech Idar-Oberstein Services GmbH, NT Security and Services GmbH, BioNTech Real Estate Verwaltungs GmbH and the Real Estate partnerships) or U.S. tax group. Up until the year ended December 31, 2022, our accumulated tax losses also comprised those of the German tax group. Our accumulated tax losses for the periods indicated amounted to the following:

<i>(in millions €)</i>	Years ended December 31,		
	2023	2022	2021
Corporate tax	260.7	352.3	272.0
Trade tax	140.1	204.1	170.6

<i>(in millions €)</i>	Years ended December 31,		
	2023	2022	2021
Federal tax credits	21.3	4.0	0.8
State tax credits	8.7	1.6	0.3

Up until the year ended December 31, 2023, deferred tax assets on tax losses were only partially recognized, as there was not sufficient probability in terms of IAS 12 that future taxable profits would have been available against which all the unused tax losses could have been utilized.

The amount of deductible temporary differences, unused tax losses, and unused tax credits for which no deferred tax asset is recognized in the statement of financial position as of December 31, 2023 is €531.5 million. Thus as of December 31, 2023, we have not recognized deferred tax assets for unused tax losses and temporary differences in an amount of €138.0 million (December 31, 2022: €136.7 million 31 December 2021 €81.0 million).

A reorganization of the intellectual property rights within the group became effective as of June 30, 2023 and July 1, 2023 which led to deferred tax effects in Germany, the U.S. and Austria. As a result, BioNTech SE recognized deferred tax assets and deferred tax income at the time of the transaction. In addition, this transaction led to a revaluation of previously unrecognized U.S. federal and state deferred tax assets, including unused tax losses and unused tax credits. As of December 31, 2022, there were unrecognized U.S. federal and state deferred tax assets of €128.9 million. As of December 31, 2023, it is considered highly probable that taxable profits for the U.S. tax group will be available against which the deferred tax assets can be utilized in the near future, fulfilling the requirements set out by IAS 12. Therefore we no longer continue to maintain the full non-recognition of deferred tax assets of our U.S. tax group as there will be future taxable profits available against which the unused tax losses and temporary differences can be utilized. As of December 31, 2023, we maintain the non-recognition of deferred tax assets for unused U.S. federal and state tax losses and tax credits at an amount of €31.9 million and €2.8 million, respectively, as there is not sufficient probability in terms of IAS 12 that future taxable income will be available against which these unused tax losses can be utilized. The material unrecognized U.S. federal and state tax losses and tax credits will begin to expire in 2036.

The Group does not recognize deferred tax liabilities for taxable temporary differences associated with investments in subsidiaries, in cases where the Group is able to control the timing of the reversal of the temporary difference and it is probable that the temporary differences will not reverse in the foreseeable future. The aggregate amount of temporary differences associated with investments in subsidiaries, for which deferred tax liabilities have not been recognized, is €2.8 million.

9 Earnings per Share

Basic earnings per share (EPS) is calculated by dividing the profit for the year attributable to ordinary equity holders of the parent by the weighted average number of ordinary shares outstanding during the year.

Diluted EPS is calculated by dividing the profit attributable to ordinary equity holders of the parent by the weighted average number of ordinary shares outstanding during the year, plus the weighted average number of ordinary shares that would be issued on conversion of all the dilutive potential ordinary shares into ordinary shares.

The following table reflects the income and share data used in the basic and diluted EPS calculations:

<i>(in millions €, except per share data)</i>	Years ended December 31,		
	2023	2022	2021
Profit attributable to ordinary equity holders of the parent for basic earnings	930.3	9,434.4	10,292.5
Weighted average number of ordinary shares outstanding for basic EPS	240.6	243.3	244.0
Effects of dilution from share options	2.1	6.5	15.7
Weighted average number of ordinary shares outstanding adjusted for the effect of dilution	242.7	249.8	259.7
Earnings per share			
Basic earnings for the period per share	3.87	38.78	42.18
Diluted earnings for the period per share	3.83	37.77	39.63

10 Other Intangible Assets and Goodwill

Goodwill

(in millions €)

	Goodwill
Acquisition costs	
As of January 1, 2022	57.8
Currency differences	3.4
As of December 31, 2022	61.2
As of January 1, 2023	61.2
Acquisition of subsidiaries and businesses	306.9
Currency differences	(5.6)
As of December 31, 2023	362.5

Intangible Assets with Indefinite Useful Lives

(in millions €)	CGU		External Product		External Business of		Total	
	Immunotherapies		Sales of JPT		InstaDeep			
	As of December 31, 2023	As of December 31, 2022						
Goodwill	352.2	60.7	0.5	0.5	9.8	—	362.5	61.2
Intangible assets with indefinite useful life	444.5	—	—	—	—	—	444.5	—
Total	796.7	60.7	0.5	0.5	9.8	—	807.0	61.2

For the year ended December 31, 2023, we have total goodwill of €362.5 million, which relates almost completely to the CGU immunotherapies. The CGU immunotherapies focuses on the development of therapies to address a range of rare and infectious diseases and comprises our broad pipeline that includes mRNA-based immune activators, antigen-targeting T cells and antibodies and defined immunomodulators of various immune cell mechanisms.

We performed our annual impairment test in October 2023.

The recoverable amount of the CGU immunotherapies has been determined based on a fair value less cost of disposal (FVLCD), which we derived based on our market capitalization as an observable input parameter.

The recoverable amount of the CGU JPT and the CGU external business of InstaDeep has been determined based on the value in use. In assessing value in use, the estimated future cash flows, which are derived based on the strategic business plan approved by the management, are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the assets. A long-term growth rate of 1.0% is applied to project future cash flows after the last year of the detailed planning period.

As a result of the analysis in October 2023, we did not identify an impairment for these CGUs.

Intangible assets with indefinite useful lives mainly comprised intangible assets not yet available for use of €443.5 million. Such assets are not amortized and therefore reviewed for impairment annually. An impairment test was performed on an individual basis of the assets in the fourth quarter of 2023. The recoverable amounts were determined based on value in use. The results did not give rise to any impairment losses.

Considering updated financial information regarding our COVID 19 vaccine business an additional impairment test for our CGU immunotherapies was performed as of December 31, 2023. The recoverable amount of the CGU immunotherapies was once again determined based on a fair value less cost of disposal (FVLCD), which we derived based on our market capitalization as of December 31, 2023.

As a result of the additional analysis for the CGU immunotherapies, we did not identify an impairment for the CGU immunotherapies. Even if our market capitalization had been approximately 10% lower, FVLCD would have still been above the respective carrying amount of the CGU.

The intangible assets resulting from licensing and collaboration agreements are combined into one class of assets due to their similar nature and use in our operations and are attributed to the CGU immunotherapies.

A sensitivity analysis of the key assumptions, future cash flows and weighted average cost of capital, was performed as part of the scheduled impairment testing of the intangible assets not yet available for use. The sensitivity analysis did not give rise to any impairment loss, either for a reduction of 10% in future cash flows or for a 10% increase in the weighted average cost of capital.

Other Intangible Assets

(in millions €)

Acquisition costs	Concessions, licenses, in-process R&D and similar rights	Advance payments	Total
As of January 1, 2022	191.6	7.8	199.4
Additions	22.8	11.4	34.2
Disposals	(0.1)	—	(0.1)
Reclassifications	6.1	(6.1)	—
Currency differences	1.9	—	1.9
As of December 31, 2022	222.3	13.1	235.4
As of January 1, 2023	222.3	13.1	235.4
Additions	489.2	15.8	505.0
Acquisition of subsidiaries and businesses	187.4	—	187.4
Disposals	(1.6)	(1.6)	(3.2)
Reclassifications	4.9	(4.9)	—
Currency differences	(3.6)	—	(3.6)
As of December 31, 2023	898.6	22.4	921.0

(in millions €)

Cumulative amortization and impairment charges	Concessions, licenses, in-process R&D and similar rights	Advance payments	Total
As of January 1, 2022	54.8	—	54.8
Amortization	22.0	—	22.0
Disposals	(0.1)	—	(0.1)
Currency differences	0.2	—	0.2
As of December 31, 2022	76.9	—	76.9
As of January 1, 2023	76.9	—	76.9
Amortization	40.5	—	40.5
Disposals	(0.3)	—	(0.3)
Currency differences	(0.2)	—	(0.2)
As of December 31, 2023	116.9	—	116.9

(in millions €)

Carrying amount	Concessions, licenses, in-process R&D and similar rights	Advance payments	Total
As of December 31, 2022	145.4	13.1	158.5
As of December 31, 2023	781.7	22.4	804.1

The increase in other intangible assets by €645.6 million from December 31, 2022 to December 31, 2023 was mainly related to the acquisition of InstaDeep (see Note 5) and licenses fulfilling the definition of identifiable assets acquired. We entered into license and collaboration agreements in which we work together with partners to develop pharmaceutical products and, provided regulatory approval is granted, commercialize them. The upfront payments in connection with the license and collaboration agreements described below resulted in the recognition of intangible assets not yet available for use in the amount of €443.5 million and a prepayment for future development activities recognized in the other non-financial assets (€22.5 million as at December 31, 2023, see also Note 14).

In March 2023, we entered into license and collaboration agreements with Duality Biologics (Suzhou) Co. Ltd., Shanghai, China, or Duality, for exclusive licenses to two investigational ADC assets (BNT323/DB-1303 and BNT324/DB-1311) directed against targets expressed in a broad range of human cancers. In August 2023, we signed another exclusive agreement with Duality to develop, manufacture and commercialize an additional ADC, BNT325/DB-1305. Duality received upfront payments totaling \$220.0 million (€203.7 million) and is eligible to receive future milestone payments as well as tiered royalties.

In April 2023, we entered into a licensing and collaboration agreement with OncoC4 Inc., Rockville (Maryland), United States, or OncoC4, which includes joint development of BNT316/ONC-392 in a range of solid tumor indications, with the parties equally sharing development costs for such joint development studies. BioNTech holds the exclusive worldwide commercialization rights for this product candidate. OncoC4 received an upfront payment of \$200.0 million (€181.5 million, thereof €125.2 million paid for the acquisition of an intangible asset) and is eligible to receive future milestone payments as well as tiered royalties.

In November 2023, we entered into a strategic research collaboration and worldwide license agreement with MediLink Therapeutics (Suzhou) Co., Ltd., or MediLink Therapeutics, for the development of a next-generation ADC, BNT326/YL202, against Human Epidermal Growth Factor Receptor 3 (HER3). MediLink Therapeutics received an upfront payment of \$70.0 million (€64.1 million) and is eligible to receive future milestone payments as well as tiered royalties.

In December 2023, we entered into an exclusive global license and collaboration with Biotheus Inc., or Biotheus, under which we will be developing, manufacturing and commercializing Biotheus' bispecific antibody candidate BNT327/PM8002 globally ex-Greater China. We agreed to an upfront payment of \$55.0 million (€50.6 million) plus future milestone and royalty payments.

In July 2023, in connection with the acquisition of InstaDeep we acquired DeepChain technology. As of December 31, 2023 the book value of DeepChain technology amounted to €163.3 million with a remaining useful life of 6.6 years.

11 Property, Plant and Equipment

<i>(in millions €)</i>				
Acquisition and production costs	Land and buildings	Equipment, tools and installations	Construction in progress and advance payments	Total
As of January 1, 2022	104.1	198.3	94.3	396.7
Additions	100.2	46.7	182.3	329.2
Disposals	—	(1.1)	(0.5)	(1.6)
Reclassifications	12.0	28.2	(40.2)	—
Currency differences	0.7	0.9	(0.4)	1.2
As of December 31, 2022	217.0	273.0	235.5	725.5
As of January 1, 2023	217.0	273.0	235.5	725.5
Additions	9.7	50.3	189.4	249.4
Acquisition of subsidiaries and businesses	—	2.1	—	2.1
Disposals	—	(2.4)	(0.2)	(2.6)
Reclassifications	9.3	22.3	(31.6)	—
Currency differences	(0.6)	(1.2)	(3.6)	(5.4)
As of December 31, 2023	235.4	344.1	389.5	969.0

<i>(in millions €)</i>				
Cumulative depreciation and impairment charges	Land and buildings	Equipment, tools and installations	Construction in progress and advance payments	Total
As of January 1, 2022	14.2	60.0	—	74.2
Depreciation	7.8	34.6	—	42.4
Disposals	—	(0.4)	—	(0.4)
Currency differences	—	0.1	—	0.1
As of December 31, 2022	22.0	94.3	—	116.3
As of January 1, 2023	22.0	94.3	—	116.3
Depreciation	14.4	83.3	—	97.7
Disposals	—	(1.7)	—	(1.7)
Currency differences	(0.2)	(0.3)	—	(0.5)
As of December 31, 2023	36.2	175.6	—	211.8

<i>(in millions €)</i>				
Carrying amount	Land and buildings	Equipment, tools and	Construction in progress and	Total
As of December 31, 2022	195.0	178.7	235.5	609.2
As of December 31, 2023	199.2	168.5	389.5	757.2

Non-Current Assets by Region

As of December 31, 2023, non-current assets comprised €158.2 million in other intangible assets, goodwill, property, plant and equipment, right-of-use assets and other assets of our subsidiaries incorporated in the United States (as of December 31, 2022: €188.0 million) as well as €511.7 million in the United Kingdom (as of December 31, 2022: nil), respectively. The remaining non-current assets of €1,469.0 million (as of December 31, 2022: €871.9 million) mainly relate to entities incorporated in Germany.

12 Financial Assets and Financial Liabilities

12.1 Capital Risk Management

Our capital management objectives are designed primarily to finance our growth strategy.

Our treasury committee reviews the total amount of cash and cash equivalents on a regular basis. As part of this review, the committee considers total cash and cash equivalents, cash outflow, currency translation differences and refinancing activities. We monitor cash using a burn rate. The cash burn rate is defined as the average monthly net cash flow from operating and investing activities during a financial year.

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
Cash at banks and on hand	453.1	1,325.2
Cash equivalents	11,210.6	12,549.9
Bank deposits	2,589.5	9,401.0
Money market funds	7,446.1	3,148.9
Reverse Repo	1,175.0	—
Total	11,663.7	13,875.1

In general, the aim is to protect and maximize the financial resources available for further research and development projects.

Since December 1, 2021, we have an investment and asset management policy in place that contains policies and processes for managing cash and cash equivalents. Under this policy, our investment portfolio is to be maintained in a manner that minimizes risks to the invested capital. These risks include mainly credit risk and concentration risk. The portfolio must provide liquidity in a timely manner to accommodate operational and capital needs. The portfolio is managed by the Treasury department.

We are not subject to externally imposed capital requirements. Our capital management objectives were achieved in the years ended December 31, 2023, and 2022.

12.2 Categories of Financial Instruments

Financial Assets and Liabilities at Amortized Cost and at Fair Value through OCI and Profit or Loss

Set out below is an overview of financial assets and liabilities at amortized cost and at fair value through OCI and profit or loss, as of the dates indicated:

December 31, 2023

<i>(in millions €)</i>	Category⁽¹⁾	Carrying amount	Level 1 (Fair value)	Level 2 (Fair value)	Level 3 (Fair value)	Total
Financial assets measured at fair value						
Money market funds	FVTPL	7,446.1	7,446.1	—	—	7,446.1
Non-listed equity investments	FVTOCI	27.1	—	—	27.1	27.1
Listed equity investments	FVTOCI	26.0	26.0	—	—	26.0
Financial assets not measured at fair value						
Trade and other receivables	AC	2,155.7	—	—	—	2,155.7
Security investments	AC	5,989.7	—	—	—	5,989.7
Other financial assets	AC	18.6	—	—	—	18.6
Bank deposits	AC	2,589.5	—	—	—	2,589.5
Reverse Repo	AC	1,175.0	—	—	—	1,175.0
Cash at banks and on hand	AC	453.1	—	—	—	453.1
Financial liabilities measured at fair value						
Foreign exchange forward contracts	FVTPL	0.4	—	0.4	—	0.4
Contingent consideration	FVTPL	38.8	—	—	38.8	38.8
Financial liabilities not measured at fair value						
Lease liabilities	n/a	216.7	—	—	—	216.7
Loans and borrowings	AC	2.3	—	—	—	2.3
Trade payables and other payables	AC	354.0	—	—	—	354.0
Other financial liabilities	AC	414.9	—	—	—	414.9

(1) Financial assets and liabilities categorized at amortized costs mainly correspond to fair value. Fair values are not disclosed because the book values represent a reasonable approximation of fair value. We do not make a disclosure for cash and cash equivalents, trade receivables and trade payables.

December 31, 2022

<i>(in millions €)</i>	Category ⁽¹⁾	Carrying amount	Level 1 (Fair value)	Level 2 (Fair value)	Level 3 (Fair value)	Total
Financial assets measured at fair value						
Foreign exchange forward contracts	FVTPL	183.7	—	183.7	—	183.7
Money market funds	FVTPL	3,148.9	3,148.9	—	—	3,148.9
Non-listed equity investments	FVTOCI	57.1	—	57.1	—	57.1
Listed equity investments	FVTOCI	20.0	20.0	—	—	20.0
Financial assets not measured at fair value						
Trade and other receivables	AC	7,145.6	—	—	—	7,145.6
Other financial assets	AC	8.8	—	—	—	8.8
Bank deposits	AC	9,401.0	—	—	—	9,401.0
Cash at banks and on hand	AC	1,325.2	—	—	—	1,325.2
Financial liabilities measured at fair value						
Contingent consideration	FVTPL	6.1	—	—	6.1	6.1
Financial liabilities not measured at fair value						
Lease liabilities	n/a	210.1	—	—	—	210.1
Loans and borrowings	AC	2.1	—	—	—	2.1
Trade payables and other payables	AC	204.1	—	—	—	204.1
Other financial liabilities	AC	785.1	—	—	—	785.1

(1) Financial assets and liabilities categorized at amortized costs mainly correspond to fair value. We do not make a disclosure for cash and cash equivalents, trade receivables and trade payables. Fair values are disclosed because the book values represent a reasonable approximation of fair value.

Equity investments designated at Fair Value through OCI

Financial investments in equity securities measured at fair value through other comprehensive income comprise the following effects:

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
Net gain on equity instruments designated at fair value through other comprehensive income	3.7	10.5
Total	3.7	10.5

Measurement of fair values

The following table shows the valuation techniques used in measuring fair values for financial instruments in our consolidated statements of financial position, as well as the significant unobservable inputs used.

Type	Valuation technique	Significant unobservable inputs
Forward exchange contracts	Discounted cash flow using par method. Expected future cash flows based on foreign exchange forwards discounted over the respective remaining term of the contracts using the respective deposit interest rates and spot rates.	n/a
Non-listed equity investments	Quantitative and qualitative factors such as actual and forecasted results, cash position and financing round valuations.	<ul style="list-style-type: none"> • Actual and forecasted results • Cash position • Nature and pricing indication of latest financing round
Listed equity investments	Stock prices of the listed companies and applicable exchange rates, if the listing is in a foreign currency.	n/a
Money market funds	Quoted prices on an active market	n/a
Contingent consideration	Present value of expected future payments and reflecting changes in expected achievement of underlying performance parameters and compounding effects.	<ul style="list-style-type: none"> • Expected future payments • Applied cost of capital

12.3 Recurring Fair Values (Level 3)

The following table shows the recurring fair value measurement of the contingent considerations and the effect of the measurements on our consolidated statements of profit or loss for the current period.

<i>(in millions €)</i>	Contingent consideration
As of January 1, 2022	6.1
As of January 1, 2023	6.1
Purchases	31.8
Net effect on profit or loss	
Net change in fair value	0.9
As of December 31, 2023	38.8

The sensitivity of the fair values of contingent considerations in fair value level 3 to the significant, unobservable, variable input factors, with all other factors remaining constant, is shown in the following table:

Contingent consideration

Input factor	Change in assumptions	Change in fair value with increasing input factor (in millions €)	Change in fair value with decreasing input factor (in millions €)
Cash flow projections	10%	3.4	(3.4)
Discount rate	1%	(0.8)	0.8

The estimated fair value of non-listed equity investments would, for example, increase (decrease) if price of latest financing round were to increase (decrease) and the overall company value were higher (lower).

12.4 Financial Instruments Risk Management Objectives and Policies

Our financial liabilities mainly comprise obligations derived from license agreements, trade and other payables, lease liabilities, contingent consideration, loans and borrowings, hedging liabilities as well as other financial liabilities. The main purpose of these financial liabilities is to enable our operations. Our principal financial assets include mainly cash, security investments and trade receivables that derive directly from our operations.

We are exposed to market risk, credit risk and liquidity risk. Our Management Board oversees the management of these risks.

The treasury committee provides assurance to our Management Board that our financial risk activities are governed by appropriate policies and procedures and that financial risks are identified, measured and managed in accordance with our policies and risk objectives. The Management Board reviews and agrees policies for managing each of these risks, which are summarized below.

12.5 Market Risks

Market risks address the risks that the fair value or future cash flows of a financial instrument will fluctuate due to changes in market prices. Market risks comprise three types of risk: interest risks, foreign currency risks and other price risks. Financial instruments affected by market risks include financial assets such as security investments, trade and other receivables, cash and cash equivalents as well as financial liabilities such as trade payables and other financial liabilities. We do not consider interest risks as well as other price risks as material risks to us.

There were no material changes in the way the risks were managed and valued during the years ended December 31, 2023, and 2022. Because of the significantly higher cash balance and security investments – the market risk exposure on counterparty risk increased compared to the previous period.

Foreign Currency Risks

Foreign currency risks address the risks that the fair value or future cash flows of an exposure will fluctuate because of changes in foreign exchange rates. We are subject to currency risks, as our income and expenditures are denominated in Euro and the U.S. dollar. As such, we are exposed to exchange rate fluctuations between these currencies. Cash inflows denominated in U.S. dollar mainly result from generating proceeds under our collaboration agreements. Our commercial revenues are primarily collaboration revenues from earnings based on our partners' gross profit, which is shared under the respective collaboration agreements and represents payments we receive in U.S. dollar. Cash outflows dominated in U.S. dollar mainly result from amounts spent on research and development activities and license obligations as well as expanding our global footprint further. With the aim of preserving capital, surplus liquidity is mainly invested in domestic currency investments as exchange rate fluctuations can reduce the value of our financial positions. We limit the effects of the identified risks by means of a coordinated and consistently implemented risk strategy. Besides applying natural hedging relationships where possible, foreign exchange forward contracts are concluded, as a matter of principle, as instruments to mitigate foreign currency exchange risk associated with foreign currency-denominated payments. However, the foreign exchange forward contracts which we entered into were not designated as hedging instruments under IFRS.

The carrying amount of the monetary assets and liabilities denominated in U.S. dollar at the dates indicated are as follows:

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
Cash and cash equivalents in U.S. dollar	122.6	1,487.4
Monetary assets in U.S. dollar	1,191.9	7,098.5
Monetary liabilities and provisions in U.S. dollar	567.3	1,527.8
Total	747.2	7,058.1

The following tables demonstrate the sensitivity to a reasonable, possible change in U.S. dollar exchange rates or U.S. dollar forward rates, with all other variables held constant. The impact on our profit before tax is due to changes in the fair value of monetary assets and liabilities. The exposure to foreign currency changes for all other currencies is not material.

Currency	Country	Closing rate		Average rate	
		2023	2022	2023	2022
U.S. dollar	United States	1.1050	1.0666	1.0813	1.0530

(in millions €)	Change in U.S. dollar rate	Effect on profit / (loss) before tax	Effect on pre-tax equity
2023	+5 %	(35.5)	(35.5)
	-5 %	39.2	39.3
2022	+5 %	(195.2)	(191.5)
	-5 %	215.7	211.7

12.6 Credit Risk Management

Credit risks address the risks that a counterparty will not meet its obligations under a financial instrument or customer contract, leading to a financial loss. We are exposed to credit risks from our operating activities, including security investments, bank deposits, reverse repos, foreign exchange transactions, trade and other receivables and cash at banks. The maximum exposure to credit risk for the components of the consolidated statements of financial position as of December 31, 2023, and December 31, 2022, are the carrying amounts as illustrated in Note 12.1 and Note 12.2.

Security Investments, Bank Deposits, Reverse Repos and Cash at banks

Our financial management is dedicated predominantly to the goal of capital preservation. Thus, all our financial activities are focused towards avoiding risks and, where they cannot be avoided, actively managing and minimizing them. Credit risks from balances with security investments, bank deposits, reverse repos and cash at banks are managed by our Treasury department in accordance with our investment and asset management policy.

Our security investments are solely invested in the highest-quality liquid assets (e.g. core European sovereign, supranational and agency bonds) and bank deposits with a maturity of more than 3 months (held at selected banks, exclusively rated as investment grade). They do not bear any currency risks or material credit risks. The bank deposits are held at selected banks, exclusively rated as investment grade. We limit our investment engagements individually and track each credit risk continuously. For reverse repos, only investment-grade counterparties qualify as our business partners and even secured investments are solely collateralized by high-quality liquid assets.

Accordingly, credit risks from these financial assets are limited. Before entering into new business relationships and during ongoing business relationships, we evaluate our business partners with regard to their individual default risk. Therefore, we do not presume an increased credit risk as of the balance sheet date and determine the impairment loss based on the upcoming twelve months.

The calculated expected credit losses were not material as of December 31, 2023, and December 31, 2022.

Trade and Other Receivables

Our exposure to credit risks of trade and other receivables is primarily related to transactions with corporate customers in the biopharma / biotech industry that operate in the United States or Germany, as well as governments which are customers, in connection with fulfilling our commercial obligations in our territories as defined in our contracts with customers. An analysis of the aging of receivables and the creditworthiness of customers is used to evaluate this risk at each reporting date. We follow risk control procedures to assess the credit quality of our customers taking into account their financial position, past experience and other factors.

As of December 31, 2023, outstanding trade and other receivables were mainly due from our collaboration partner Pfizer. Besides well-established pharmaceutical companies and governmental institutions, our other customers – to a smaller extent – are medical universities, other public institutions and peers in the biopharma industry, which have good credit ratings. Due to this customer portfolio, the credit risk on trade and other receivables is generally very low. We have not incurred material bad debt expense and do not expect that this will change with respect to the trade and other receivables outstanding as of December 31, 2023.

The expected credit risk on trade and other receivables derived from applying the simplified approach in calculating expected credit losses was not material as of December 31, 2023, and December 31, 2022.

12.7 Liquidity Risk

We plan to invest heavily in R&D as we make a strong drive to build out our global development organization and diversify our therapeutic area footprint. Additionally, we plan to enhance capabilities through complementary acquisitions, technologies, infrastructure and manufacturing. Our liquidity management ensures the availability of cash and cash equivalents, short term financial instruments for operational activities and further investments through appropriate budget planning. In addition, a sufficient level of cash and cash equivalents, which are managed centrally, is always maintained to finance the operational activities.

We monitor liquidity risks using a liquidity planning tool.

Ultimately, the responsibility for liquidity risk management lies with our Management Board, which has established an appropriate approach to managing short-, medium- and long-term financing and liquidity requirements. We manage liquidity risks by holding appropriate reserves based on our COVID-19 sales, as well as by monitoring forecasted and actual cash flows and reconciling the maturity profiles of financial assets and liabilities. Significant reserves currently exist and were generated during the Covid-19 pandemic.

Risk Concentration

Concentrations arise when the number of counterparties is small or when a larger number of counterparties is engaged in similar business activities, or activities in the same geographical region, or has economic features that would cause their ability to meet contractual obligations to be affected similarly by changes in economic, political or other conditions. Concentrations indicate the relative sensitivity of our performance to developments affecting a particular industry. We only have a limited number of customers mainly comprising pharmaceutical companies and governmental institutions.

The maturity profile of our financial liabilities based on contractual undiscounted payments is summarized as follows:

Year ended December 31, 2023

<i>(in millions €)</i>	Less than 1 year	1 to 5 years	More than 5 years	Total
Loans and borrowings	—	2.3	—	2.3
Trade and other payables	354.0	—	—	354.0
Lease liabilities	34.1	136.6	73.7	244.4
Contingent consideration	—	57.5	0.3	57.8
Foreign exchange forward contracts	0.4	—	—	0.4
Other financial liabilities	414.9	—	—	414.9
Total	803.4	196.4	74.0	1,073.8

Year ended December 31, 2022

<i>(in millions €)</i>	Less than 1 year	1 to 5 years	More than 5 years	Total
Loans and borrowings	—	2.1	—	2.1
Trade and other payables	204.1	—	—	204.1
Lease liabilities	40.5	112.9	79.1	232.5
Contingent consideration	—	—	6.1	6.1
Other financial liabilities	785.1	—	—	785.1
Total	1,029.7	115.0	85.2	1,229.9

12.8 Changes in Liabilities Arising from Financing Activities

**Year ended December
31, 2023**

<i>(in millions €)</i>	January 1, 2023	Cash flows	New leases and disposals	Reclassifi- cation	Other	December 31, 2023
Current obligations under lease contracts	36.0	(40.3)	(0.6)	34.1	(1.1)	28.1
Non-current obligations under lease contracts	174.1	—	51.1	(34.1)	(2.5)	188.6
Loans and borrowings	2.1	0.2	—	—	—	2.3
Total	212.2	(40.1)	50.5	—	(3.6)	219.0

**Year ended December
31, 2022**

<i>(in millions €)</i>	January 1, 2022	Cash flows	New leases and disposals	Reclassifi- cation	Other	December 31, 2022
Current obligations under lease contracts	27.9	(41.1)	14.8	33.3	1.1	36.0
Non-current obligations under lease contracts	153.7	—	52.6	(33.3)	1.1	174.1
Loans and borrowings	119.9	(18.0)	—	—	(99.8) ⁽¹⁾	2.1
Convertible note – embedded derivative	308.7	—	—	—	(308.7) ⁽¹⁾	—
Total	610.2	(59.1)	67.4	—	(406.3)	212.2

⁽¹⁾ Related to the early redemption of our convertible note during the year ended December 31, 2023, as further described in Note 15.

13 Inventories

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
Raw materials and supplies	347.5	409.7
Unfinished goods	4.0	21.0
Finished goods	6.2	8.9
Total	357.7	439.6

During the year ended December 31, 2023 expenses from inventory write-downs to net realizable value due to inventories expected to be unsellable, not fulfilling the specification defined by our quality standards, shelf-life expiry or disposals resulted in €94.5 million, compared to €484.6 million in the previous period. The inventories valued at net realizable value in our consolidated statements of financial position as of December 31, 2023, take contractual compensation payments into consideration. We have not pledged any inventories as securities for liabilities. During the years ended December 31, 2023, and 2022, costs of inventories in the amount of €354.4 million and €1,550.6 million, respectively, were recognized as cost of sales.

14 Other Non-Financial Assets

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
Deferred expenses	313.2	120.0
Sales tax receivable	5.2	93.8
Prepayments related to CRO and CMO contracts	—	35.3
Other	45.9	29.3
Total	364.3	278.4
Total current	280.9	271.9
Total non-current	83.4	6.5

Deferred expenses mainly comprise prepayments for future expenses of €151.1 million (nil as of December 31, 2022) for the settlement fee of the European Commission to our collaboration partner and prepayments for our collaborations with OncoC4 Inc., Rockville, USA, €22.5 million (nil as of December 31, 2022), Ryvu Therapeutics S.A., Krakau, Poland, €15.7 million (€19.7 million as of December 31, 2022) and Medigene Immunotherapies GmbH, Planegg/Martinsried, €5.1 million (€9.4 million as of December 31, 2022). Prior year deferred expenses mainly comprise service contracts and insurance obligations.

15 Issued Capital and Reserves

As of December 31, 2023, the number of shares outstanding was 237,725,735. This amount excludes 10,826,465 shares held in treasury. For the year ended December 31, 2022, the number of shares outstanding was 243,215,169, excluding 5,337,031 shares held in treasury.

Capital Transactions During the Year Ended December 31, 2023

In March 2022, our Management Board and Supervisory Board authorized the 2022 share repurchase program of ADSs, pursuant to which we were permitted to repurchase ADSs, each representing one ordinary share, with a value of up to \$1.5 billion a two-year period, commencing on May 2, 2022. The first tranche of our 2022 share repurchase program of ADSs, with a value of up to \$1.0 billion, concluded on October 10, 2022. The second tranche with a value of up to \$0.5 billion commenced on December 7, 2022 and concluded on March 17, 2023.

The following repurchases under the programs occurred:

2022 Program first tranche (\$1.0 billion)

Period	Number of ADSs purchased	Average price paid per ADS	Net amount spent (in millions)
May 2022	917,988	\$151.76 (€143.99)	\$139.3 (€132.2)
June 2022	1,160,219	\$140.82 (€133.35)	\$163.4 (€154.7)
July 2022	519,320	\$162.03 (€159.40)	\$84.1 (€82.8)
August 2022	1,666,515	\$149.08 (€148.24)	\$248.4 (€247.0)
September 2022	2,280,988	\$135.95 (€137.66)	\$310.1 (€314.0)
October 2022	400,483	\$136.37 (€139.09)	\$54.6 (€55.7)
Total	6,945,513		\$999.9 (€986.4)

2022 Program second tranche (\$0.5 billion)

Period	Number of ADSs purchased	Average price paid per ADS	Net amount spent (in millions)
January 2023	618,355	\$142.26 (€131.12)	\$88.0 (€81.1)
February 2023	857,620	\$138.05 (€129.06)	\$118.4 (€110.7)
March 2023	745,196	\$128.49 (€121.08)	\$95.7 (€90.2)
Total	2,221,171		\$302.1 (€282.0)

In March 2023, our Management Board and Supervisory Board authorized the 2023 share repurchase program, under which we were permitted to purchase ADSs, each representing one ordinary share, with a value of up to \$0.5 billion, which started June 2, 2023 and concluded on September 18, 2023.

The following repurchases under the programs occurred:

Program 2023 (\$0.5 billion)

Period	Number of ADSs purchased	Average price paid per ADS	Net amount spent (in millions)
June 2023	1,532,685	\$108.92 (€100.45)	\$166.9 (€154.0)
July 2023	1,738,061	\$107.92 (€97.57)	\$187.6 (€169.6)
August 2023	1,261,706	\$105.07 (€95.85)	\$132.6 (€120.9)
September 2023	114,513	\$112.22 (€105.07)	\$12.9 (€12.0)
Total	4,646,965		\$500.0 (€456.5)

Capital Transactions During the Year Ended December 31, 2022

In January 2022, we announced a new research, development and commercialization collaboration with Pfizer to develop potentially the first mRNA-based vaccine for the prevention of shingles (herpes zoster virus, or HZV). In connection with this collaboration, Pfizer agreed to make an equity investment in us, acquiring 497,727 ordinary shares paying a total amount of €110.6 million. The issuance of 497,727 ordinary shares with the nominal amount of €0.5 million was registered with the commercial register (Handelsregister) on March 24, 2022. The equity investment, which was issued in a foreign currency, represents a derivative from the date of signing until the date of closing of the transaction. From the fair value measurement of this derivative, €43.0 million were recognized in finance income in our consolidated statements of profit or loss during the year ended December 31, 2022. At the closing date, in February 2022, this derivative and the agreed investment amount were recognized in our capital reserve and, taking an increase in share capital of €0.5 million into account, led to a net increase of the capital reserve of €67.1 million in our consolidated statements of financial position.

In March 2022, we redeemed our convertible note by exercising our early redemption option (see Note 12), which was fulfilled in April 2022, by issuing 1,744,392 ordinary shares. The nominal amount of €1.8 million was recorded in share

capital and, finally, as a result of the transaction, the capital reserve increased by €233.2 million in our consolidated statements of financial position. The declaratory registration with the commercial register (Handelsregister) was made on May 20, 2022.

In June 2022, at the Annual General Meeting, our shareholders approved the proposed special cash dividend of €2.00 per ordinary share (including those held in the form of ADSs), which led to an aggregate payment of €484.3 million.

In November and December 2022, the ESOP 2018 and LTI-plus awards were settled by transferring ordinary shares previously held in treasury to the entitled employees and Management Board members (see Note 16).

16 Share-Based Payments

During the years ended December 31, 2023, 2022, and 2021, our share-based payment arrangements led to the following expenses:

(in millions €)	Note	Years ended December 31,		
		2023	2022	2021
Expense arising from equity-settled share-based payment arrangements		44.1	46.5	61.0
Employee Stock Ownership Plan	16.5	—	13.8	20.2
Chief Executive Officer Grant	16.4	1.2	3.1	5.9
Management Board Grant ⁽¹⁾	16.3	3.2	4.3	2.4
BioNTech 2020 Employee Equity Plan for Employees Based Outside North America	16.1	36.3	25.3	32.5
InstaDeep Employee Incentive Plan ⁽²⁾		3.4	—	—
Expense / (Income) arising from cash-settled share-based payment arrangements		7.3	61.5	32.7
Employee Stock Ownership Plan	16.5	(0.9)	53.4	6.3
Management Board Grant ⁽¹⁾	16.3	(2.4)	—	3.6
BioNTech Restricted Stock Unit Plan for North America Employees	16.1	10.6	8.1	22.8
Total		51.4	108.0	93.7
Cost of sales		6.5	3.0	7.0
Research and development expenses		33.4	84.6	60.5
Sales and marketing expenses		1.0	0.8	0.5
General and administrative expenses		10.5	19.6	25.7
Total		51.4	108.0	93.7

⁽¹⁾ In May 2021 and 2022, phantom options were granted under the Management Board Grant for the years 2021 and 2022 which led to a modification from an equity-settled to cash-settled share-based payment arrangement and a reclassification of €1.1 million and €3.3 million between equity and non-current other liabilities, respectively. Expenses incurred before and after the modification dates have been disclosed as equity-settled or cash-settled share-based payment arrangement, respectively. The amount includes expenses incurred with respect to a one-time signing bonus granted to Jens Holstein as of his appointment to the Management Board (see Note 21.2).

⁽²⁾ As part of the acquisition of InstaDeep (see Note 5), it was agreed to issue long-term equity awards with a total target incentive value of €15.0 million, each for options and RSUs. The allocation shall be made in a manner consistent with BioNTech's existing share-based payment arrangements. The arrangement was communicated to the employees as part of the acquisition but relates to future services. Following the rules of IFRS 2, starting with the service commencement date during the year ended December 31, 2023 and in advance of the grant date, expenses were recorded based on the estimated grant date fair values and numbers of equity instruments.

During the years ended December 31, 2023, 2022 and 2021, our share-based payment arrangements led to a cash outflow of €766.2 million, €51.8 million and €13.4 million, respectively. We expect to settle the equity-settled share-based payment arrangements of our 2020 Management Board Grant (see Note 16.3), the Chief Executive Officer Grant (see Note 16.4) and the Employee Stock Ownership Plan (see Note 16.5) on a net basis by delivering to the participant

a number of ADSs equal to the net value of the exercised option rights after deduction of (i) the exercise price and (ii) the applicable wage taxes (including solidarity surcharge thereon and church tax, if applicable) and social security contributions resulting from such exercise. This reduces the dilutive impact of the respective rights compared to an all-equity settlement. If all of the equity-settled rights outstanding as of December 31, 2023, were to be exercised accordingly, the cash outflow to the tax authority in 2024 would amount to approximately €213.0 million (based on the share price as of December 31, 2023).

16.1 BioNTech Employee Equity Plan

BioNTech 2020 Employee Equity Plan for Employees Based Outside North America (Equity-Settled)

Description of Share-Based Payments

In December 2020, we approved the BioNTech 2020 Employee Equity Plan for employees based outside North America, or the European Plan. Under the European Plan, Restricted Stock Units, or RSUs, are offered to our employees.

Award agreements were entered as of the respective grant dates in February 2021 (LTI 2020 and LTI-plus program), January 2022 (LTI 2021 program) and December 2022 (LTI 2022 program). RSUs issued under the LTI 2020, LTI 2021 and LTI 2022 programs vest annually in equal installments over respective waiting periods of four years, commencing in December 2020, December 2021 and December 2022, respectively. RSUs issued under the LTI-plus program vested annually in equal installments over the waiting period of two years, which elapsed in December 2022. Hence, during the year ended December 31, 2022, the LTI-plus awards were settled by transferring shares previously held in treasury, see Note 15. All programs were classified as equity-settled as we have the ability to determine the method of settlement.

Measurement of Fair Values

The fair values of the awards issued under the European Plan were based upon the price of our ADSs representing ordinary shares at the grant date.

Reconciliation of Outstanding Share-Options

	LTI-plus program	LTI 2020 program	LTI 2021 program	LTI 2022 program
As of January 1, 2022	372,011	242,416	110,036	—
Forfeited / Modified	(7,932)	(7,111)	(5,428)	—
Granted / Allocated	—	—	—	396,110
Settled ⁽¹⁾	(364,079)	—	—	—
As of December 31, 2022	—	235,305	104,608	396,110
As of January 1, 2023	—	235,305	104,608	396,110
Forfeited / Modified	—	(4,400)	(3,497)	(16,141)
As of December 31, 2023	—	230,905	101,111	379,969
<i>thereof vested</i>	—	175,523	51,905	96,466
<i>thereof unvested</i>	—	55,382	49,206	283,503

⁽¹⁾ The closing price of an American Depositary Share of BioNTech on Nasdaq on December 15, 2022, the settlement date, converted from USD to Euro using the exchange rate published by the German Central Bank (Deutsche Bundesbank) on the same day was €171.40.

Inputs Used in Measurement of the Fair Values at Grant Dates

	LTI-plus program	LTI 2020 program	LTI 2021 program	LTI 2022 program
Weighted average fair value	87.60	92.21	203.22	165.03
Waiting period (in years)	2.0	4.0	4.0	4.0

BioNTech 2020 Restricted Stock Unit Plan for North America Employees (Cash-Settled)

Description of Share-Based Payments

In December 2020, we approved the BioNTech 2020 Restricted Stock Unit Plan for North America Employees, or the North American Plan. Under the North American Plan, RSUs are offered to our employees. These RSUs vest over four years, with 25% vesting one year after the service commencement date and the remainder vesting in equal quarterly installments thereafter. The first awards under the North American Plan were granted in February 2021. The service date for these awards is the date as of which the employee became employed by BioNTech US. During the years ended December 31, 2023, and 2022, further awards were granted under the North American Plan, which included awards granted to new-hire employees and ongoing, recurring awards to existing employees on the approximate anniversary of each employee's start date of employment with BioNTech US. As these RSUs are intended to be cash-settled upon vesting, the awards were defined as a cash-settled share-based payment arrangement. During the years ended December 31, 2023, 2022 and 2021, the exercise of RSUs resulted in a cash outflow of €10.0 million, €9.4 million and €10.1 million, respectively.

As of December 31, 2023, the liability related to these awards amounted to €14.4 million (€13.4 million as of December 31, 2022).

16.2 Management Board Grant – Short-Term Incentive (Cash-Settled)

Management Board's service agreements also include a short-term incentive compensation component, which is an annual performance-related bonus for the years of their respective service periods.

50% of those yearly awards are paid out one year after the achievement of the performance targets for the respective bonus year has been determined, subject to an adjustment relative to the performance of the price of the American Depositary Shares representing our ordinary shares during that year (second installment). The second installments represent cash-settled share-based payment arrangements. The fair values of the liabilities are recognized over the awards' vesting periods beginning when entering or renewing service agreements, i.e., the service commencement date, until each separate determination date and are remeasured until the settlement date. As of December 31, 2023, the liability related to these awards amounted to €2.1 million (€2.3 million as of December 31, 2022).

16.3 Management Board Grant Long-Term Incentive (Partly Equity-Settled, Partly Cash-Settled)

Description of Share-Based Payments

Our Management Board's service agreements provide for long-term incentive compensation (Management Board Grant - LTI) through an annual grant of options to acquire BioNTech shares during their respective service periods. The options granted each year are subject to the terms and conditions of the respective authorizations of the Annual General Meeting creating our Employee Stock Ownership Plan (ESOP) and the applicable option agreements thereunder.

The options vest annually in equal installments over four years commencing on the first anniversary of the allocation date and are exercisable four years after the allocation date. The vested options can only be exercised if each of the following performance criteria has been achieved: (i) at the time of exercise, the current price is equal to or greater than the threshold amount (that is, the exercise price, provided that such amount increases by seven percentage points on each anniversary of the allocation date); (ii) at the time of exercise, the current price is at least equal to the target price (that is, (a) for the twelve-month period starting on the fourth anniversary of the allocation date, \$8.5 billion divided by the total number of the ordinary shares outstanding immediately following the initial public offering (other than ordinary shares owned by BioNTech), and (b) for each twelve-month period starting on the fifth or subsequent anniversary of the allocation date, 107% of the target share price applicable for the prior twelve-month period); and (iii) the closing price for the fifth trading day prior to the start of the relevant exercise window is higher than the exercise price by at least the same percentage by which the Nasdaq Biotechnology Index or a comparable successor index as of such time is higher than such index was as of the last trading day before the allocation date. Following the expiry of the waiting period, option rights may be exercised during the exercise windows as set out in the ESOP agreement. The option rights can be exercised up to ten years after the allocation date. If they have not been exercised by that date, they will be forfeited without compensation.

The right to receive options generally represents an equity-settled share-based payment arrangement. The allocation of the number of issued options in 2020 occurred in February 2020. In May 2021 and May 2022, the Management Board received phantom options equivalent to the number of options the Management Board members would have been entitled to receive for 2021 and 2022, which led to a modification from equity-settled to cash-settled share-based payment arrangement and a reclassification of €1.1 million and €3.3 million between equity and non-current other liabilities as of the respective allocation dates. During 2023, options were granted in May 2023.

Measurement of Fair Values

A Monte-Carlo simulation model has been used to measure the fair values at the (estimated) allocation dates of the Management Board Grant. This model incorporates the impact of the performance criteria regarding share price and index development described above. The parameters used for measuring the fair values as of the respective (estimated) allocation dates were as follows:

	Allocation date February 2020	Allocation date May 12, 2021 ⁽¹⁾	Allocation date May 17, 2021 ⁽¹⁾	Allocation date May 2022 ⁽¹⁾
Weighted average fair value	€10.83	€29.05	€27.64	€38.88
Weighted average share price	€28.20	€168.44	€179.46	€147.84
Exercise price ⁽²⁾	€28.32	€167.63	€169.08	€137.65
Expected volatility	36.6%	49.7%	49.7%	49.7%
Expected life (years)	4.8	4.6	4.6	5.8
Risk-free interest rate	1.6%	3.9%	3.9%	3.9%

⁽¹⁾ Classified as cash-settled share-based payment arrangement; all other share-based payment arrangements are classified as equity-settled.

⁽²⁾ The share options allocated as of February 2020 and May 2023 as well as the phantom share options allocated as of May 2021 and 2022 are subject to an effective exercise price cap.

	Allocation date May 2023	Estimated allocation date 2024	Estimated allocation date 2025	Estimated allocation date 2026
Weighted average fair value ⁽¹⁾	€46.29	€43.67	€39.97	€32.86
Weighted average share price ⁽¹⁾	€98.93	€95.51	€95.51	€95.51
Exercise price ⁽¹⁾	€105.42	€96.82	€99.74	€105.13
Expected volatility	47.2%	47.7%	43.0%	36.8%
Expected life (years) ⁽¹⁾	5.8	5.8	5.8	5.8
Risk-free interest rate	3.7%	3.9%	3.9%	3.9%

⁽¹⁾ Valuation parameter for estimated allocation dates derived from the Monte-Carlo simulation model.

For the awards with estimated allocation dates, the exercise prices of options expected to be allocated have been derived from the Monte-Carlo simulation model. Those will be adjusted until the actual allocation has occurred and the exercise price has ultimately been determined.

All options are subject to an effective exercise price cap, which means that the exercise price shall be adjusted to ensure that the current price of an ADS as of the exercise date does not exceed 800% of the exercise price. With respect to the LTI 2020 agreement, the maximum economic benefit receivable in respect of any exercised option is capped at \$246.24, with the effective exercise price being capped at a Euro amount equivalent to \$30.78. With respect to the phantom share options issued under the LTI 2021 and 2022 as well as the options issued under the LTI 2023 programs, the maximum compensation that the Management Board members are entitled to receive under such programs, together with other compensation components received by each such board member in the respective grant year, shall not exceed €20.0 million for Ugur Sahin as Chief Executive Officer (CEO) and €10.0 million for all other Management Board members.

Expected volatility was based on an evaluation of the historical volatilities of comparable companies over the historical period commensurate with the expected option term. The expected term was based on general option holder behavior for employee options.

Reconciliation of Outstanding Share-Options

The (phantom) share options allocated and expected to be allocated to our Management Board as of December 31, 2023, are presented in the table below.

	Allocation date February 2020	Allocation date May 12, 2021⁽¹⁾	Allocation date May 17, 2021⁽¹⁾	Allocation date May 2022⁽¹⁾
(Phantom) share options outstanding	248,096	45,279	6,463	86,118
<i>thereof allocated and vested but subject to performance and waiting requirements</i>	186,072	22,640	3,232	21,531
<i>thereof allocated and unvested</i>	62,024	22,639	3,231	64,587
Weighted average exercise price (€)	28.32	167.63	169.08	137.65

⁽¹⁾ Classified as cash-settled share-based payment arrangement; all other share-based payment arrangements are classified as equity-settled.

	Allocation date May 2023⁽¹⁾	Estimated allocation date 2024⁽¹⁾	Estimated allocation date 2025⁽¹⁾	Estimated allocation date 2026⁽¹⁾
Share options outstanding / expected to be allocated	130,586	164,148	118,312	93,561
<i>thereof allocated and unvested</i>	130,586	—	—	—
Weighted average exercise price (€)	105.42	96.82	99.74	105.13

⁽¹⁾ Valuation parameter derived from the Monte-Carlo simulation model.

For the awards with estimated allocation dates, the numbers of options expected to be allocated have been derived from a Monte-Carlo simulation model. Those will be adjusted until the actual allocation has occurred and the number of options granted has ultimately been determined.

As of December 31, 2023, the share options allocated and expected to be allocated under our equity-settled share-based payment arrangements had a remaining weighted average expected life of 4.1 years (as of December 31, 2022: 4.0 years).

As of December 31, 2023, the liability related to the phantom option awards amounted to €3.6 million (€5.6 million as of December 31, 2022).

16.4 Chief Executive Officer Grant (Equity-Settled)

Description of Share-Based Payments

In September 2019, we granted Ugur Sahin an option to purchase 4,374,963 of our ordinary shares, subject to Sahin's continuous employment with us. The options' exercise price per share is the Euro translation of the public offering price from our initial public offering, €13.60 (\$15.00), which is subject to the effective exercise price cap and the maximum cap mechanism. Under the exercise price cap the exercise price shall be adjusted to ensure that the current price of an ADS as of the exercise date does not exceed 800% of the exercise price. Under the maximum cap mechanism the maximum economic benefit receivable in respect of any exercised option is capped at \$240.00 with the effective exercise price being capped at a Euro amount equivalent to \$30.00.

The options vest annually in equal installments after four years commencing on the first anniversary of the initial public offering and have a waiting period of four years after the initial public offering. The vested option rights can only be exercised if and to the extent that each of the following performance criteria has been achieved: (i) at the time of exercise, the current price is equal to or greater than the threshold amount (that is, the exercise price, provided that such amount increases by seven percentage points on each anniversary of the allocation date); (ii) at the time of exercise, the current price is at least equal to the target price (that is, (a) for the twelve-month period starting on the fourth anniversary of the allocation date, \$8.5 billion divided by the total number of the shares outstanding immediately following the initial public offering (other than shares owned by us), and (b) for each twelve-month period starting on the fifth or subsequent anniversary of the allocation date, 107% of the target share price applicable for the prior twelve-month period); and (iii) the closing price for the fifth trading day prior to the start of the relevant exercise window is higher than the exercise price by at least the same percentage by which the Nasdaq Biotechnology Index or a comparable successor index as of such time is higher than such index was as of the last trading day before the allocation date. Following the expiry of the waiting period, option rights may be exercised during the exercise windows as defined by our ESOP. The option rights can be exercised up to ten years after the allocation date. If they have not been exercised by that date, they will be forfeited without compensation.

Measurement of Fair Values

A Monte-Carlo simulation model has been used to measure the fair value at the grant date of the Chief Executive Officer Grant. This model incorporates the impact of the performance criteria regarding share price and index development described above in the calculation of the award's fair value at the grant date. The inputs used in the measurement of the fair value at the grant date of the Chief Executive Officer Grant were as follows:

	Grant date October 9, 2019
Weighted average fair value	€5.63
Weighted average share price	€13.60
Exercise price	€13.60
Expected volatility	41.4%
Expected life (years)	5.4
Risk-free interest rate	1.5%

Expected volatility was based on an evaluation of the historical volatilities of comparable companies over the historical period commensurate with the expected term. The expected term was based on general option holder behavior for employee options.

Reconciliation of Outstanding Share-Options

On October 9, 2023, with the final installment vesting, all 4,374,963 options became exercisable under the rules of the ESOP and the ESOP agreement. During the year ended December 31, 2023, no options were exercised.

As of December 31, 2023, the share options outstanding had a remaining weighted average expected life of 1.1 years (as of December 31, 2022: 2.1 years).

16.5 Employee Stock Ownership Plan (Partly Equity-Settled, Partly Cash-Settled)

Description of Share-Based Payments

Based on an authorization of the general meeting on August 18, 2017, we established a share option program under which we granted selected employees options to receive our shares. The program is designed as an Employee Stock Ownership Plan, or ESOP. We offered participants a certain number of option rights by their explicit acceptance of an option rights agreement. The exercise of option rights in accordance with the agreement gives the participants the right to obtain shares against payment of the exercise price. With respect to the Management Board members serving at the time of allocation, the options are subject to the effective exercise price cap and maximum cap mechanisms. Under the exercise price cap, the exercise price shall be adjusted to ensure that the current price of an ADS as of the exercise date does not exceed 800% of the exercise price. Under the maximum cap mechanism, the maximum economic benefit receivable in respect of any exercised option, is capped at \$240, with the effective exercise price being capped at a Euro amount equivalent to \$30.00. Under the ESOP, the option rights (other than Özlem Türeci's, and Ryan Richardson's options) fully vest after four years and can be exercised if: (i) the waiting period of four years has elapsed; and (ii) at the time of exercise, the average closing price of the shares of the Company or the average closing price of the right or certificate to be converted into an amount per share on the previous ten trading days preceding the exercise of the option right exceeds the strike price by a minimum of 32%, with this percentage increasing by eight percentage points as of the fifth anniversary of the respective issue date and as of each subsequent anniversary date. Following the expiry of the waiting period, option rights may be exercised within a period of four weeks from the date of the Annual General Meeting or the publication of the annual financial statements, the semi-annual report or our most recent quarterly report or interim report (exercise windows). The option rights can be exercised up to eight years after the allocation date. If they have not been exercised by that date, they will be forfeited without compensation.

By way of a shareholders' resolution of the general meeting on August 19, 2019, the authorization to issue such option rights was amended such that, in order for the options to be exercisable, the average closing price of the Company's shares or the average closing price of the right or certificate to be converted into an amount per share on the ten trading days immediately preceding the exercise must exceed the strike price by a minimum of 28%, with this percentage increasing by seven percentage points as of the fifth anniversary of the issue date and as of each subsequent anniversary date. Furthermore, in addition to the aforementioned requirements, the exercise is only possible if the share price (calculated by reference to the price of the ordinary share underlying the ADS) has performed similar to or better than the Nasdaq Biotechnology Index. The changes made do not affect option rights already issued.

Measurement of Fair Values

The fair value of the ESOP has been measured using a binomial model. Service conditions attached to the arrangement were not taken into account in measuring the fair value.

The share options can only be exercised by the grantee if the price of the share is equal or greater to the threshold amount as defined in the arrangement. Moreover, the option rights can only be exercised if the IPO has occurred. Both conditions have been incorporated into the fair value at the grant date.

The inputs used in the measurement of the fair values at the grant date of the ESOP were as follows:

	Grant date November 15, 2018	Grant dates between February 21 and April 3, 2019	Grant dates between April 29 and May 31, 2019	Grant date December 1, 2019
Weighted average fair value	€7.41	€6.93	€7.04	€9.49
Weighted average share price	€14.40	€15.72	€16.03	€19.84
Exercise price ⁽¹⁾	€10.14	€15.03	€15.39	€15.82
Expected volatility	46.0	46.0	46.0	46.0
Expected life (years)	5.8	6.0	6.0	5.5
Risk-free interest rate	0.1	0.1	0.1	0.1

⁽¹⁾ With respect to the Management Board members appointed as such at the time the options were granted, the options are subject to the effective exercise price cap as well as the maximum cap mechanism.

Expected volatility has been based on an evaluation of the historical and the implied volatilities of comparable companies over the historical period commensurate with the expected term. The expected term has been based on general option holder behavior for employee options.

Reconciliation of Outstanding Share-Options (Equity-Settled)

Set out below is an overview of changes to share options outstanding and number of ordinary shares underlying these options that occurred during the periods indicated:

	Share options outstanding	Number of ordinary shares underlying options	Weighted average exercise price (€) ⁽¹⁾
As of January 1, 2022	642,007	11,556,124	10.23
Modified ⁽²⁾	(1,040)	(18,720)	10.14
Exercised ⁽³⁾	(583,383)	(10,500,890)	10.14
As of December 31, 2022	57,584	1,036,514	11.10
As of January 1, 2023	57,584	1,036,514	11.10
Exercised ⁽³⁾	(39,785)	(716,121)	11.04
As of December 31, 2023	17,799	320,393	11.24
<i>thereof vested</i>	<i>17,799</i>	<i>320,393</i>	<i>11.24</i>
<i>thereof unvested</i>	<i>—</i>	<i>—</i>	<i>—</i>

⁽¹⁾ With respect to the Management Board members appointed as such at the time the options were granted, the options are subject to the effective exercise price cap as well as the maximum cap mechanism.

⁽²⁾ Rights have been modified to cash-settled rights, all other terms remained unchanged.

⁽³⁾ The average closing price of an American Depositary Share of BioNTech on Nasdaq weighted over the various dates immediately preceding the settlement dates, converted from USD to Euro using the exchange rate published by the German Central Bank (Deutsche Bundesbank) on the same days was €96.49 and €160.44 for all settlements during the years ended December 31, 2023 and 2022, respectively.

In September 2022, the Supervisory Board determined the ESOP settlement by the delivery of treasury shares (in the form of ADSs) equal to the net value of the exercised option rights after deduction of (i) the exercise price and (ii) the applicable wage taxes (including solidarity surcharge thereon and church tax, if applicable) and social security contributions resulting from such exercise. The settlement was applied during the exercise windows in 2022 and 2023. The applicable wage taxes (including solidarity surcharge thereon and church tax, if applicable) and social security contributions resulting from and withheld upon the exercise amounted to €724.0 million and were paid in January 2023 in cash directly to the respective authorities. The settlement mechanism decision did not change the rights as such, neither did it change the classification as equity-settled option rights.

As of December 31, 2023, the share options outstanding under our equity-settled share-based payment arrangements had a remaining weighted average expected life of 0.8 years (as of December 31, 2022: 1.7 years).

Development of Share-Options (Cash-Settled)

Phantom options which were granted under the ESOP mainly during the year ended December 31, 2022 each give the participants the right to receive a cash payment equal to the difference between an exercise closing price (average closing price of an American Depositary Share of BioNTech on Nasdaq over the last ten trading days preceding the exercise date) and the exercise price. The majority of options have an exercise price of €10.14. During the years ended December 31, 2023, and 2022, 52,100 and 289,168 cash-settled phantom option rights were exercised and resulted in a cash outflow of €4.5 million and €42.2 million, respectively. The average closing prices (10-day averages) of an American Depositary Share of BioNTech on Nasdaq weighted over the various settlement dates converted from USD to Euro using the exchange rate published by the German Central Bank (Deutsche Bundesbank) on the same days was €96.25 and €155.39. As of December 31, 2023, 109,651 cash-settled option rights remained outstanding. As of December 31, 2023, the liability related to cash-settled share-based payment option rights amounted to €8.5 million (€14.5 million as of December 31, 2022), of which €8.3 million (€11.2 million as of December 31, 2022) related to rights already vested (partly subject to performance and waiting requirements). The liability is based on the fair value of the respective rights. The fair value is measured using a binomial model consistent with the grant date fair value measurement of the equity-based option rights described above, which is updated on every reporting date.

17 Provisions

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
Contractual disputes	118.2	88.9
Obligations from onerous CMO contracts	80.2	235.5
Other	79.7	51.4
Total	278.1	375.8
Total current	269.3	367.2
Total non-current	8.8	8.6

As of December 31, 2023, our current provisions included €118.2 million in contractual disputes mainly related to purported obligations arising out of certain contractual disputes unrelated to the below-mentioned patent proceedings (€88.9 million as of December 31, 2022). Acknowledging an increase in obligations identified as contractual disputes, the change of €29.3 million compared to the previous period related mainly to additions.

As of December 31, 2023, our current provisions included €80.2 million (€235.5 million as of December 31, 2022) of obligations for production capacities derived from contracts with Contract Manufacturing Organizations, or CMOs, that became redundant. The effects were driven by reducing production capacities as well as further fostering the global production network with our collaboration partners during the year ended December 31, 2023. The related expenses were recognized in cost of sales in our consolidated statements of profit or loss. The change of €(155.3) million compared to the previous period related to addition (€45.1 million), to release (€126.0 million) and usage (€74.5 million).

As of December 31, 2023, our current provisions included €79.7 million in other obligations mainly comprising inventor remunerations as well as customs and duties (€51.4 million as of December 31, 2022, mainly comprising inventor remunerations as well as customs and duties). The change of €28.3 million compared to the previous period related mainly to additions.

18 Contingencies and other financial commitments

Contingencies

Our contingencies include, but are not limited to, intellectual property disputes and product liability and other product-related litigation. From time to time, in the normal course and conduct of our business, we may be involved in discussions with third parties about considering, for example, the use and/or remuneration for use of such third party's intellectual property. As of December 31, 2023, none of such intellectual property-related considerations that we have been notified of, and for which potential claims could be brought against us or our subsidiaries in the future, fulfill the criteria for recording a provision. We are subject to an increasing number of product liability claims. Such claims often involve highly complex issues related to medical causation, correctness and completeness of product information (Summary of Product Characteristics/package leaflet) as well as label warnings and reliance thereon, scientific evidence and findings, actual and provable injury, and other matters. These complexities vary from matter to matter. As of December 31, 2023, none of these claims fulfill the criteria for recording a provision. Substantially all of our contingencies are subject to significant uncertainties and, therefore, determining the likelihood of a loss and/or the measurement of any loss can be complex. Consequently, we are unable to estimate the range of reasonably possible loss. Our assessments, which result from a complex series of judgments about future events and uncertainties, are based on estimates and assumptions that have been deemed reasonable by management, but that may prove to be incomplete or inaccurate, and unanticipated events and circumstances may occur that might cause us to change those estimates and assumptions. We currently do not believe that any of these matters will have a material adverse effect on our financial position, and will continue to monitor the status of these and other claims that may arise. However, we could incur judgments, enter into settlements or revise our expectations regarding the outcome of matters, which could have a material adverse effect on our results of operations and/or our cash flows in the period in which the amounts are accrued or paid. We will continue to evaluate whether, if circumstances were to change in the future, the recording of a provision may be needed and whether potential indemnification entitlements exist against any such claim.

Certain pending matters to which we are a party are discussed below.

Alnylam Proceedings

In March 2022, Alnylam Pharmaceuticals, Inc., or Alnylam, filed a lawsuit against Pfizer and Pharmacia & Upjohn Co. LLC in the U.S. District Court for the District of Delaware alleging that an existing patent owned by Alnylam, U.S. Patent No. 11,246,933, or the '933 Patent, is infringed by the cationic lipid used in Comirnaty, and seeking monetary relief, which is not specified in their filings. We filed a counterclaim to become party to the Alnylam proceeding, and in June 2022, Alnylam added to its claims allegations that we induced infringement of the '933 Patent. Additionally, in July 2022, Alnylam filed a lawsuit against us, our wholly owned subsidiary, BioNTech Manufacturing GmbH, Pfizer and Pharmacia & Upjohn Co. LLC in the U.S. District Court for the District of Delaware alleging that we also induced infringement of a newly issued patent, U.S. Patent No. 11,382,979, or the '979 Patent, which is a continuation of the '933 Patent. The two lawsuits were consolidated on July 28, 2022. In May 2023, Alnylam filed a third lawsuit against Pfizer Inc. and Pharmacia & Upjohn Co. LLC in the U.S. District Court for the District of Delaware alleging infringement of U.S. Patent Nos. 11,633,479; 11,633,480; 11,612,657; and 11,590,229, all of which are continuations of the '933 Patent. We filed a counterclaim to become party to the new proceeding, and in July 2023, Alnylam added to its claims allegations that we induced infringement of the four new patents. All of the proceedings have been consolidated and are currently pending.

We believe we have strong defenses against the allegations claimed relative to each of the patents and intend to vigorously defend ourselves in the proceedings mentioned above. However, our analysis of Alnylam's claims is ongoing and complex, and we believe the outcome of the suit remains substantially uncertain. Taking into account discussions with our external lawyers, we do not consider the probability of an outflow of resources to be sufficient to recognize a provision at the balance sheet date. In our opinion, these matters constitute contingent liabilities as of the balance sheet date. However, it is currently impractical for us to estimate with sufficient reliability the respective contingent liabilities.

CureVac Proceedings

Germany

Infringement Proceedings – EP'122, DE'961, DE'974, DE'575, and EP'668

In July 2022, CureVac AG, or CureVac, filed a lawsuit against us and our wholly owned subsidiaries, BioNTech Manufacturing GmbH and BioNTech Manufacturing Marburg GmbH, in the Düsseldorf Regional Court, alleging Comirnaty's infringement of one European patent, EP1857122B1, or the EP'122 Patent, and three Utility Models DE202015009961U1, DE202015009974U1, and DE202021003575U1. In August 2022, CureVac added European Patent EP3708668B1, or the EP'668 Patent, to its German lawsuit.

On August 15, 2023, the Düsseldorf Regional Court held a hearing on infringement with respect to all five IP rights. At the hearing, the Court suspended its infringement ruling with respect to EP'122 until December 28, 2023. On September 28, 2023, the Court issued orders suspending its infringement rulings with respect to the remaining four IP rights (DE'961, DE'974, DE'575, and EP'668) pending validity decisions in the DE'961, DE'974, and DE'575 cancellation proceedings before the German Patent and Trademark Office and in the EP'668 opposition proceedings before the Opposition Division of the European Patent Office. In the September 28th orders, the Court explained that it was suspending its infringement rulings until validity decisions are reached, while contemporaneously noting concerns regarding the validity of DE'961, DE'974, DE'575, and EP'668. On December 28, 2023, the Düsseldorf Regional Court stayed the infringement proceedings as to EP'122 until a final appellate decision is rendered as to the validity of EP 122 by the Federal Court of Justice.

Infringement Proceedings – EP'755, DE'123, and DE'130

In July 2023, CureVac SE filed a second lawsuit against us and our wholly owned subsidiaries, BioNTech Manufacturing GmbH and BioNTech Manufacturing Marburg GmbH, in the Düsseldorf Regional Court, alleging Comirnaty's infringement of one European patent, EP4023755B1, or the EP'755 Patent, and two Utility Models DE202021004123U1, and DE202021004130U1.

Nullity Proceedings – EP'122

In September 2022, we filed a nullity action in the Federal Patent Court of Germany seeking a declaration that the EP'122 Patent is invalid. In April 2023, the Federal Patent Court of Germany issued a preliminary opinion in the EP'122 nullity action in support of the validity of the EP'122 Patent. The preliminary opinion did not address any infringement of the EP'122 Patent. The preliminary opinion is a preliminary assessment by the court of the merits of a claim, and is non-binding. On December 19, 2023, the Federal Patent Court held an oral hearing, after which it nullified EP'122.

Cancellation Proceedings – DE'961, DE'974, and DE'575

In November 2022, we filed cancellation actions seeking the cancellation of the three German Utility Models in the German Patent and Trademark Office. On December 27, 2023, the German Patent Office issued a preliminary opinion that DE'974 is likely to be cancelled based on invalidity pursuant to para. 1 (2) no. 5 Utility Model Act.

United States

In July 2022, we and Pfizer filed a complaint for a declaratory judgment in the U.S. District Court for the District of Massachusetts, seeking a judgment of non-infringement by Comirnaty of U.S. Patent Nos. 11,135,312, 11,149,278 and 11,241,493. In May 2023, the action in the U.S. District Court for the District of Massachusetts was transferred to the U.S. District Court for the Eastern District of Virginia, where CureVac filed counterclaims asserting infringement of six additional U.S. patents, U.S. Patent Nos. 10,760,070; 11,286,492; 11,345,920; 11,471,525; 11,576,966; and 11,596,686. In July 2023, CureVac filed amended counterclaims to assert an additional U.S. patent, U.S. Patent No. 11,667,910.

United Kingdom

In September 2022, we and Pfizer filed a declaration of non-infringement and revocation action against the EP'122 Patent and the EP'668 Patent in the Business and Property Courts of England and Wales. In October 2022, CureVac responded by filing a counterclaim alleging infringement of the EP'122 and EP'668 patents in the Business And Property Courts of England and Wales. On December 18, 2023, we amended our pleadings to further allege non-infringement and invalidity against EP'755.

All of the above proceedings are currently pending.

We believe we have strong defenses against the allegations claimed relative to each of the patents and utility models and intend to vigorously defend ourselves in the proceedings mentioned above. However, our analysis of CureVac's claims is ongoing and complex, and we believe the ultimate outcomes remain substantially uncertain. Taking into account discussions with our external lawyers, we do not consider the probability of an outflow of resources to be sufficient to recognize a provision at the balance sheet date. In our opinion, these matters constitute contingent liabilities as of the balance sheet date. However, it is currently impractical for us to estimate with sufficient reliability the respective contingent liabilities.

Moderna Proceedings

Germany

Infringement Proceedings – EP'949 and EP'565

In August 2022, Moderna filed a lawsuit against us and Pfizer and our wholly owned subsidiaries, BioNTech Manufacturing GmbH, BioNTech Europe GmbH and BioNTech Manufacturing Marburg GmbH, Pfizer Manufacturing Belgium NV, Pfizer Ireland Pharmaceuticals and Pfizer Inc. in the Düsseldorf Regional Court alleging Comirnaty's infringement of two European Patents, 3590949B1, or the EP'949 Patent, and 3718565B1, or the EP'565 Patent. On November 7, 2023, the European Patent Office ("EPO") Opposition Division revoked EP'565 after a one-day oral hearing. The Opposition Division issued a preliminary opinion on December 8, 2023 noting that it believes EP'949 is likely invalid. As a result of these EPO proceedings, the Düsseldorf Regional Court postponed its hearing on infringement, originally scheduled for December 12, 2023, to January 21, 2025.

United Kingdom

In August 2022, Moderna filed a lawsuit asserting Comirnaty's infringement of the EP'949 Patent and EP'565 Patent against us and our wholly owned subsidiaries, BioNTech Manufacturing GmbH, BioNTech Europe GmbH and BioNTech Manufacturing Marburg GmbH, Pfizer Limited, Pfizer Manufacturing Belgium NV and Pfizer Inc. in the Business and Property Courts of England and Wales. In September 2022, we and Pfizer filed a revocation action in the Business and Property Courts of England and Wales requesting revocation of the EP'949 Patent and EP'565 Patent.

United States

U.S. District Court Litigation

In August 2022, Moderna filed a lawsuit in the United States District Court for the District of Massachusetts against us and our wholly owned subsidiaries BioNTech Manufacturing GmbH and BioNTech US Inc. and Pfizer Inc. alleging Comirnaty's infringement of U.S. Patent Nos. 10,898,574, 10,702,600 and 10,933,127 and seeking monetary relief.

Inter Partes Review

In August 2023, Pfizer and we filed petitions seeking inter partes review of U.S. Patent Nos. 10,702,600 and 10,933,127 before the United States Patent Trial and Appeal Board.

Netherlands

In September 2022, Moderna filed a lawsuit against us and our wholly owned subsidiary BioNTech Manufacturing GmbH and Pfizer B.V., Pfizer Export B.V., C.P. Pharmaceuticals International C.V. and Pfizer Inc. in the District Court of The Hague alleging Comirnaty's infringement of the EP '949 Patent and the EP '565 Patent. The District Court of the Hague held a hearing on October 6, 2023 on infringement and validity with respect to the EP '949 Patent. On December 6, 2023, the Court found EP'949 to be invalid. The EP'565 case has been stayed pending Moderna's appeal of the Opposition Division's revocation of EP'565.

Ireland

In May 2023, Moderna filed a lawsuit against us and our wholly owned subsidiary BioNTech Manufacturing GmbH, Pfizer Inc., Pfizer Healthcare Ireland, Pfizer Ireland Pharmaceuticals, and C.P. Pharmaceuticals International C.V. alleging Comirnaty's infringement of the EP'949 Patent and EP'565 Patent in the High Court of Ireland.

Belgium

In May 2023, Moderna filed a lawsuit against us, our wholly owned subsidiary BioNTech Manufacturing GmbH, Pfizer Inc. and Pfizer Manufacturing Belgium alleging Comirnaty's infringement of the EP'949 Patent and the EP'565 Patent in the Brussels Dutch-speaking Enterprise Court.

All of the above proceedings are currently pending.

We believe we have strong defenses against the allegations claimed relative to each of the patents and intend to vigorously defend ourselves in the proceedings mentioned above. However, our analysis of Moderna's claims is ongoing and complex, and we believe the outcome of the suit remains substantially uncertain. Taking into account discussions with our external lawyers, we do not consider the probability of an outflow of resources to be sufficient to recognize a provision at the balance sheet date. In our opinion, these matters constitute contingent liabilities as of the balance sheet date. However, it is currently impractical for us to estimate with sufficient reliability the respective contingent liabilities.

Arbutus and Genevant Proceedings

In April 2023, Arbutus Biopharma Corp., or Arbutus, and Genevant Sciences GmbH, or Genevant, filed a lawsuit against Pfizer and us in the U.S. District Court for the District of New Jersey alleging that Pfizer and we have infringed the following patents owned by Arbutus: U.S. Patent Nos. 9,504,651; 8,492,359; 11,141,378; 11,298,320; and 11,318,098, through the use of Genevant's lipid nanoparticle technology and methods for producing such lipids in Comirnaty, and seeking monetary relief. This proceeding is currently pending.

We believe we have strong defenses against the allegations claimed relative to each of the patents and intend to vigorously defend ourselves in the lawsuit mentioned above. However, our analysis of Arbutus and Genevant's claims is ongoing and complex, and we believe the outcome of the suit remains substantially uncertain. Taking into account discussions with our external lawyers, we do not consider the probability of an outflow of resources to be sufficient to recognize a provision at the balance sheet date. In our opinion, these matters constitute contingent liabilities as of the balance sheet date. However, it is currently impractical for us to estimate with sufficient reliability the respective contingent liabilities.

Promosome Proceedings

In June 2023, Promosome LLC filed a lawsuit against Pfizer, us, and BioNTech Manufacturing GmbH in the U.S. District Court for the Southern District of California alleging that Pfizer and our Comirnaty vaccine has infringed U.S. Patent No. 8,853,179, and seeking monetary relief. On October 4, 2023, the parties filed a joint stipulation of dismissal, dismissing the lawsuit with prejudice. As part of this stipulation of dismissal, Promosome agreed to a covenant not to assert U.S. Patent No. 8,853,179 against Pfizer and us or any of their products, including Comirnaty. This matter is considered closed.

Other financial commitments

The other financial commitments were as follows:

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
Commitments under purchase agreements for property, plant and equipment	154.4	105.2
Contractual obligation to acquire intangible assets	1,721.1	—
Total	1,875.5	105.2

Contractual obligations to acquire intangible assets exist in connection with in-licensing and research and development collaborations. We have entered into obligations to make milestone payments once specific targets have been reached. Provided that all of the milestone events are achieved, we would be obligated to pay up to €1,721.1 million as of December 31, 2023 (nil as of December 31, 2022) in connection with the acquisition of intangible assets. The amounts shown represent the maximum payments to be made, and it is unlikely that they will all fall due. The amounts and the dates of the actual payments may both vary considerably from those stated in the table, since the achievement of the conditions for payment is possible but uncertain. Other financial obligations from possible future sales-based milestone and license payments were not included in the table above.

The expected maturities of payment obligations under purchase agreements for property, plant and equipment and contractual obligations to acquire intangible assets are as follows:

Year ended December 31, 2023

<i>(in millions €)</i>	Less than 1 year	1 to 5 years	More than 5 years	Total
Commitments under purchase agreements for property, plant and equipment	152.5	1.9	—	154.4
Contractual obligation to acquire intangible assets	249.4	954.9	516.8	1,721.1
Total	401.9	956.8	516.8	1,875.5

Other financial obligations were recognized at nominal value.

19 Other Non-Financial Liabilities

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
Liabilities to employees	73.3	50.6
Liabilities from share-based payment arrangements	29.0	36.2
Liabilities from wage taxes and social securities expenses	15.1	761.8
Other	20.8	29.2
Total	138.2	877.8
Total current	125.1	860.8
Total non-current	13.1	17.0

20 Leases

20.1 Amounts Recognized in the Consolidated Statements of Financial Position

Right-of-Use Assets

The following amounts are presented as right-of-use assets within the consolidated statements of financial position as of the dates indicated:

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
Buildings	209.8	206.5
Production facilities	—	3.0
Other operating equipment	4.6	2.4
Total	214.4	211.9

Additions to the right-of-use assets during the year ended December 31, 2023, were €66.4 million (during the year ended December 31, 2022: €118.3 million).

Lease Liability

The following amounts are included in lease liabilities, loans and borrowings as of the dates indicated:

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
Current	28.1	36.0
Non-current	188.6	174.1
Total	216.7	210.1

20.2 Amounts Recognized in the Consolidated Statements of Profit or Loss

Depreciation Charge of Right-of-Use Assets

<i>(in millions €)</i>	Years ended December 31,		
	2023	2022	2021
Buildings	40.7	35.2	14.7
Production facilities	3.0	23.1	14.0
Other operating equipment	1.5	0.5	0.3
Total depreciation charge	45.2	58.8	29.0
Interest on lease liabilities	5.7	5.1	2.9
Expense related to short-term leases and leases of low-value assets	58.9	27.1	9.5
Total amounts recognized in profit or loss	109.8	91.0	41.4

20.3 Amounts Recognized in the Consolidated Statements of Cash Flows

During the year ended December 31, 2023, the total cash outflow for leases amounted to €46.0 million (during the year ended December 31, 2022: €46.2 million; during the year ended December 31, 2021: €17.0 million).

20.4 Extension Options

The Group has several lease contracts that include extension options. These options are negotiated by management to provide flexibility in managing the leased asset portfolio and align with the Group's business needs. Management exercises judgment in determining whether these extension options are reasonably certain to be exercised. The undiscounted potential future lease payments, which relate to periods after the exercise date of renewal options and are not included in lease liabilities, amount to up to €157.2 million as of December 31, 2023, considering terms up until 2049 (as of December 31, 2022: €163.1 million considering terms up until 2049).

21 Related Party Disclosures

21.1 Parent and Ultimate Controlling Party

ATHOS KG, Holzkirchen, Germany is the sole shareholder of AT Impf GmbH, Munich, Germany and beneficial owner of our ordinary shares. ATHOS KG via AT Impf GmbH has de facto control over BioNTech based on its substantial shareholding, which practically enables it to exercise the majority of voting rights to pass resolutions at our Annual General Meeting, or AGM.

21.2 Transactions with Key Management Personnel

In May 2023, at the Annual General Meeting, our shareholders reappointed Ulrich Wandschneider and Michael Motschmann as members of the Supervisory Board. In addition, Nicola Blackwood was appointed to our Supervisory Board. She succeeded Christoph Huber, who left the Supervisory Board after reaching the applicable retirement age limit.

Key Management Personnel Compensation

Our key management personnel has been defined as the members of the Management Board and the Supervisory Board. Key management personnel compensation is comprised of the following:

<i>(in millions €)</i>	Years ended		
	2023	December 31, 2022	2021
Management Board	8.3	15.0	20.4
Fixed compensation	3.9	2.9	2.2
Short-term incentive – first installment	0.7	0.6	0.6
Short-term incentive – second installment ⁽¹⁾	1.0	0.7	1.2
Other variable compensation ⁽²⁾	0.8	0.1	—
Share-based payments (incl. long-term incentive) ⁽³⁾	1.9	10.7	16.4
Supervisory Board	0.6	0.5	0.4
Total compensation paid to key management personnel	8.9	15.5	20.8

⁽¹⁾ The fair value of the second installment of the short-term incentive compensation which has been classified as a cash-settled share-based payment arrangement was determined pursuant to the regulations of IFRS 2 “Share-based Payments.” This table shows the pro-rata share of personnel expenses for the respective financial year that are recognized over the award’s vesting period beginning as of the service commencement date (date when entering or renewing service agreements) until each separate determination date and are remeasured until settlement date.

⁽²⁾ Includes a one-time signing and retention cash payment agreed when renewing the service agreement agreed with Sean Marett.

⁽³⁾ The fair value of the share-based payments was determined pursuant to the regulations of IFRS 2 “Stock-based Payments.” This table shows the pro-rata share of personnel expenses resulting from stock-based compensation for the respective financial year. During the years ended December 31, 2023, 2022, and 2021, the amounts included expenses derived from a one-time signing bonus granted to Jens Holstein as of his appointment to the Management Board in the form of 4,246 phantom shares.

Management Board members participated in our ESOP program (see Note 16). Out of the 5,152,410 option rights granted to our Management Board under the ESOP 2018 program 4,921,630 options were exercised during the year ended December 31, 2022. The remaining 230,780 option rights were exercised by Sean Marett in May 2023. As of December 31, 2023, no further options issued to our Management Board members are outstanding.

21.3 Related Party Transactions

The total amount of transactions with ATHOS KG or entities controlled by it was as follows for the periods indicated:

<i>(in millions €)</i>	Years ended		
	2023	December 31, 2022	2021
Purchases of various goods and services from entities controlled by ATHOS KG	0.3	0.3	0.9
Purchases of property and other assets from entities controlled by ATHOS KG	—	62.5	—
Total	0.3	62.8	0.9

On December 22, 2022, we entered into a purchase agreement with Santo Service GmbH, pursuant to which we acquired the real estate property An der Goldgrube 12 and the existing laboratory and office building including any

movable assets for a total consideration of €62.5 million. The purchase price was paid during the year ended December 31, 2022. Santo Service GmbH is wholly owned by AT Impf GmbH, that is controlled by ATHOS KG.

The outstanding balances of transactions with ATHOS KG or entities controlled by them were as follows as of the periods indicated:

<i>(in millions €)</i>	December 31, 2023	December 31, 2022
ATHOS KG	0.4	—
Total	0.4	—

None of the balances are secured and no bad debt expense has been recognized in respect of amounts owed by related parties.

22 Numbers of Employees

The average number of employees is:

<i>Quarterly average number of employees by function</i>	Years ended December 31,		
	2023	2022	2021
Clinical Research & Development	434	243	137
Scientific Research & Development	1,871	1,302	875
Operations	1,469	1,240	863
Quality	470	383	322
Support Functions	1,217	828	431
Commercial & Business Development	179	108	66
Total	5,640	4,104	2,694

The average number of employees as of the reporting date is:

<i>Number of employees by function as of the reporting date</i>	Years ended December 31,		
	2023	2022	2021
Clinical Research & Development	592	274	153
Scientific Research & Development	2,080	1,512	1,026
Operations	1,562	1,365	1,036
Quality	474	413	301
Support Functions	1,390	983	539
Commercial & Business Development	194	145	83
Total	6,292	4,692	3,138

23 Fees for Auditors

The following fees were recognized for the services provided by EY GmbH & Co. KG Wirtschaftsprüfungsgesellschaft for the fiscal years ended December 31, 2023 and December 31, 2022:

<i>(in millions €)</i>	Years ended December 31,	
	2023	2022
Audit fees	3.2	2.9
Audit-related fees	0.3	0.4
Tax fees	0.1	0.2
All other fees	—	0.2
Total fees for professional audit services and other services	3.6	3.7

24 Corporate Governance

The declaration of conformity pursuant to Section 161 para. 1 of the German Stock Corporation Act (*Aktiengesetz*) is issued in accordance with the Corporate Governance Code in connection with the corporate governance declaration pursuant to Section 315d in conjunction with Section 289f HGB and can be found in the combined management report of BioNTech SE.

25 Events After the Reporting Period

On February 8, 2024, we and Autolus Therapeutics plc, or Autolus, a clinical-stage biopharmaceutical company developing next-generation programmed T cell therapies, announced a strategic collaboration aimed at advancing both companies' autologous CAR-T programs towards commercialization. We have entered into a license and option agreement and a securities purchase agreement under which we purchased \$200.0 million of Autolus' American Deposit Shares in a private placement closed on February 13, 2024 resulting in a stake in Autolus ordinary shares of 12.5%. Under the terms of the license and option agreement, we made a \$50.0 million upfront payment in exchange for the right to receive royalties on net sales of Autolus' lead asset obe-cel, co-commercialization options for Autolus' AUTO1/22 and AUTO6NG programs as well as an exclusive license and exclusive options to certain technologies owned by Autolus.

The Supervisory Board has appointed Annemarie Hanekamp to the Management Board as Chief Commercial Officer (CCO), effective as of July 1, 2024. She will take over the role from Sean Marett, who will retire as planned from the Management Board as of June 30, 2024.

The following English language translation of the German language independent auditor's report (Bestätigungsvermerk des unabhängigen Abschlussprüfers) refers to the consolidated financial statements, prepared in accordance with International Financial Reporting Standards as adopted by the EU, and the additional requirements of German commercial law pursuant to Sec. 315e (3) in conjunction with (1) HGB ("Handelsgesetzbuch": German Commercial Code), as well as the group management report, which is combined with the management report of the Company (combined management report), prepared on the basis of German commercial law (HGB), of BioNTech SE, Mainz, as of and for the year ended December 31, 2023 as a whole and not solely to the consolidated financial statements presented in this Prospectus on the preceding pages. The group management report is not part of this Prospectus.

Independent Auditor's Report

To BioNTech SE

Opinions

We have audited the consolidated financial statements of BioNTech SE, Mainz, and its subsidiaries (the Group), which comprise the consolidated balance sheet as at 31 December 2023, and the consolidated income statement, consolidated statement of other comprehensive income, consolidated statement of changes in equity and consolidated statement of cash flows for the fiscal year from 1 January to 31 December 2023, and notes to the financial statements, including a summary of significant accounting policies. In addition, we have audited the combined group management report of BioNTech SE for the fiscal year from 1 January to 31 December 2023. In accordance with the German legal requirements, we have not audited the group statement on Group corporate governance declaration pursuant to Secs. 315d HGB ["Handelsgesetzbuch": German Commercial Code] in section 5 of the combined group management report. In addition, we have not audited the content of the non-management report disclosures contained in sections 4.2.3 and 4.2.4 based on recommendation A.5 of the German Corporate Governance Code (GCGC 2022) and the non-financial report contained in section 7 of the combined group management report, which contains non-management report disclosures.

In our opinion, on the basis of the knowledge obtained in the audit,

- the accompanying consolidated financial statements comply, in all material respects, with the IFRSs as adopted by the EU, and the additional requirements of German commercial law pursuant to Sec. 315e (3) in conjunction with (1) HGB and, in compliance with these requirements, give a true and fair view of the assets, liabilities and financial position of the Group as at 31 December 2023 and of its financial performance for the fiscal year from 1 January to 31 December 2023, and
- the accompanying group management report as a whole provides an appropriate view of the Group's position. In all material respects, this group management report is consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. We do not express an opinion on the content of the statement on corporate governance or on the sections 4.2.3, 4.2.4 and 7 of the combined management report referred to above.

Pursuant to Sec. 322 (3) Sentence 1 HGB, we declare that our audit has not led to any reservations relating to the legal compliance of the consolidated financial statements and of the group management report.

Basis for the opinions

We conducted our audit of the consolidated financial statements and of the group management report in accordance with Sec. 317 HGB and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer [Institute of Public Auditors in Germany] (IDW). Our responsibilities under those requirements and principles are further described in the "Auditor's responsibilities for the audit of the consolidated financial statements and of the group management report" section of our auditor's report. We are independent of the Group entities in accordance with the requirements of German commercial and professional law, and we have fulfilled our other German professional responsibilities in accordance with these requirements. We believe that

the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinions on the consolidated financial statements and on the group management report.

Other information

The Supervisory Board is responsible for the report of the Supervisory Board in the “Report of the Supervisory Board” section. The executive directors and the Supervisory Board are responsible for the declaration pursuant to Sec. 161 AktG [“Aktengesetz”: German Stock Corporation Act] on the German Corporate Governance Code, which is part of the Group corporate governance declaration. In all other respects, the executive directors are responsible for the other information. The other information comprises the aforementioned corporate governance declaration and the sections 4.2.3, 4.2.4 and 7 of the Group management report. The other information also comprises parts to be included in the annual report, of which we received a version prior to issuing this auditor’s report, in particular:

- Sustainability Report,
- Report of the Supervisory Board,
- Remuneration report,

but not the consolidated financial statements, not the management report disclosures whose content is audited and not our auditor’s report thereon.

Furthermore, the other information includes other components intended for the annual report which are expected to be made available to us after the audit opinion has been issued, in particular:

- the letter from the Executive Board to the shareholders,
- the multi-year overview of business development.

Our opinions on the consolidated financial statements and on the combined group management report do not cover the other information, and consequently we do not express an opinion or any other form of assurance conclusion thereon.

In connection with our audit, our responsibility is to read the other information and, in so doing, to consider whether the other information

- is materially inconsistent with the consolidated financial statements, with the group management report or our knowledge obtained in the audit, or
- otherwise appears to be materially misstated.

If, based on the work we have performed, we conclude that there is a material misstatement of this other information, we are required to report that fact. We have nothing to report in this regard.

Responsibilities of the executive directors and the supervisory board for the consolidated financial statements and the group management report

The executive directors are responsible for the preparation of the consolidated financial statements that comply, in all material respects, with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Sec 315e (3) in conjunction with (1) HGB and that the consolidated financial statements, in compliance with these requirements, give a true and fair view of the assets, liabilities, financial position and financial performance of the Group. In addition, the executive directors are responsible for such internal control as they have determined necessary to enable the preparation of consolidated financial statements that are free from material misstatement, whether due to fraud (i.e., fraudulent financial reporting and misappropriation of assets) or error.

In preparing the consolidated financial statements, the executive directors are responsible for assessing the Group’s ability to continue as a going concern. They also have the responsibility for disclosing, as applicable, matters related to going concern. In addition, they are responsible for financial reporting based on the going concern basis of accounting, unless there is an intention to liquidate the Group or to cease operations, or there is no realistic alternative but to do so.

Furthermore, the executive directors are responsible for the preparation of the group management report that, as a whole, provides an appropriate view of the Group's position and is, in all material respects, consistent with the consolidated financial statements, complies with German legal requirements and appropriately presents the opportunities and risks of future development. In addition, the executive directors are responsible for such arrangements and measures (systems) as they have considered necessary to enable the preparation of a group management report that is in accordance with the applicable German legal requirements, and to be able to provide sufficient appropriate evidence for the assertions in the group management report.

The supervisory board is responsible for overseeing the Group's financial reporting process for the preparation of the consolidated financial statements and of the group management report.

Auditor's responsibilities for the audit of the consolidated financial statements and of the group management report

Our objectives are to obtain reasonable assurance about whether the consolidated financial statements as a whole are free from material misstatement, whether due to fraud or error, and whether the group management report as a whole provides an appropriate view of the Group's position and, in all material respects, is consistent with the consolidated financial statements and the knowledge obtained in the audit, complies with the German legal requirements and appropriately presents the opportunities and risks of future development, as well as to issue an auditor's report that includes our opinions on the consolidated financial statements and on the group management report.

Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with Sec. 317 HGB and in compliance with German Generally Accepted Standards for Financial Statement Audits promulgated by the Institut der Wirtschaftsprüfer (IDW) will always detect a material misstatement. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these consolidated financial statements and this group management report.

We exercise professional judgment and maintain professional skepticism throughout the audit. We also:

- Identify and assess the risks of material misstatement of the consolidated financial statements and of the group management report, whether due to fraud or error, design and perform audit procedures responsive to those risks, and obtain audit evidence that is sufficient and appropriate to provide a basis for our opinions. The risk of not detecting a material misstatement resulting from fraud is higher than the risk of not detecting a material misstatement resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- Obtain an understanding of internal control relevant to the audit of the consolidated financial statements and of arrangements and measures (systems) relevant to the audit of the group management report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of these systems.
- Evaluate the appropriateness of accounting policies used by the executive directors and the reasonableness of estimates made by the executive directors and related disclosures.
- Conclude on the appropriateness of the executive directors' use of the going concern basis of accounting and, based on the audit evidence obtained, whether a material uncertainty exists related to events or conditions that may cast significant doubt on the Group's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in the auditor's report to the related disclosures in the consolidated financial statements and in the group management report or, if such disclosures are inadequate, to modify our respective opinions. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause the Group to cease to be able to continue as a going concern.
- Evaluate the overall presentation, structure and content of the consolidated financial statements, including the disclosures, and whether the consolidated financial statements present the underlying transactions and events in a manner that the consolidated financial statements give a true and fair view of the assets, liabilities, financial position and financial performance of the Group in compliance with IFRSs as adopted by the EU and the additional requirements of German commercial law pursuant to Sec. 315e (3) in conjunction with (1) HGB.

- Obtain sufficient appropriate audit evidence regarding the financial information of the entities or business activities within the Group to express opinions on the consolidated financial statements and on the group management report. We are responsible for the direction, supervision and performance of the group audit. We remain solely responsible for our opinions.
- Evaluate the consistency of the group management report with the consolidated financial statements, its conformity with law, and the view of the Group's position it provides.
- Perform audit procedures on the prospective information presented by the executive directors in the group management report. On the basis of sufficient appropriate audit evidence we evaluate, in particular, the significant assumptions used by the executive directors as a basis for the prospective information, and evaluate the proper derivation of the prospective information from these assumptions. We do not express a separate opinion on the prospective information and on the assumptions used as a basis. There is a substantial unavoidable risk that future events will differ materially from the prospective information.

We communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that we identify during our audit.

Cologne, March 20, 2024

EY GmbH & Co. KG
Wirtschaftsprüfungsgesellschaft

Schlebusch
Wirtschaftsprüfer
[German Public Auditor]

Weigel
Wirtschaftsprüfer
[German Public Auditor]