QIAGEN N.V.

Financial Report 2022

QIAGEN N.V.

Financial Report 2022

Content

This document contains detailed financial information about QIAGEN prepared under generally accepted accounting standards in the U.S. (U.S. GAAP) and included in our Form 20-F annual report filed with the U.S. Securities and Exchange Commission. QIAGEN also publishes an Annual Report under IFRS accounting standards, which is available on our website at www.QIAGEN.com.

We help advance science and improve outcomes

Our Mission

Enabling access to valuable insights from molecular research to clinical healthcare

Our Vision

Making improvements in life possible

QIAGEN at a glance

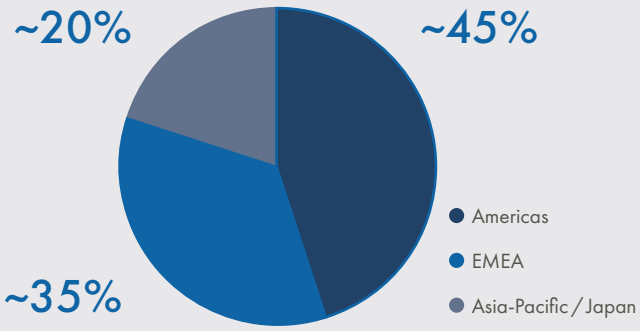
Our products support scientists and clinicians to advance scientific discovery and improve patient outcomes

A global company with scale

$2.1 billion
(2022 sales)

QGEN
LISTED
NYSE

Sales



~6,200
employees known as QIAGENers

Highly recurring revenues

~88 %
Consumables and related revenues

~12 %
Instruments

Balanced customer markets

~50%
Molecular Diagnostics

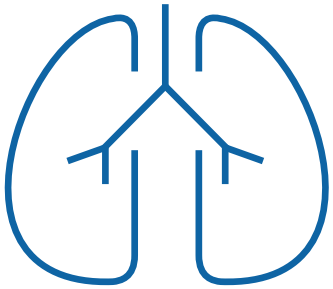
~50%
Life Sciences

> 500,000
customers worldwide

There is an unprecedented need for molecular research and testing to tackle the health challenges of our time

Our knowledge about the building blocks of life – DNA, RNA and proteins – is growing

The challenge is to make the most of this information

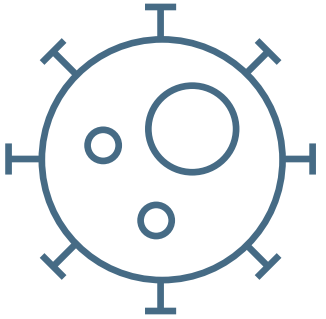


Tuberculosis is still one of the world's most significant infectious killers

In 2020, TB killed 1.5 million people

Cancer remains a leading cause of death worldwide despite progress

Cancer accounted for nearly 10 million deaths in 2020



Infectious diseases have been – and will remain – a truly global health risk

Six major pandemics over the past 20 years

Researchers rely on QIAGEN to advance scientific discovery

"Targeting metabolism is an important way of sensitizing tumors and making them more responsive to chemotherapy... and it's not restricted to one particular type of cancer."

Asha Palat, Doctoral Student at the University of Houston, Texas

Physicians rely on QIAGEN to improve clinical outcomes

"As long as we don't have an answer about the respiratory virus status, we can't admit a patient for hospitalization."

Dr. Benoit Visseaux, Bichat-Claude Bernard Hospital, Paris

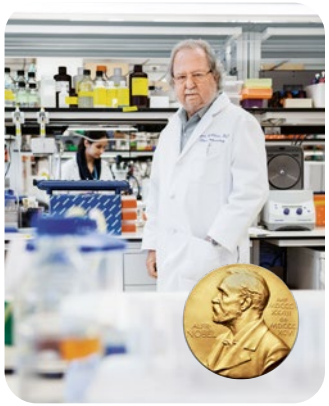
We help over

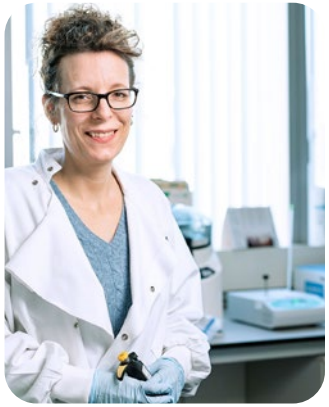
500,000

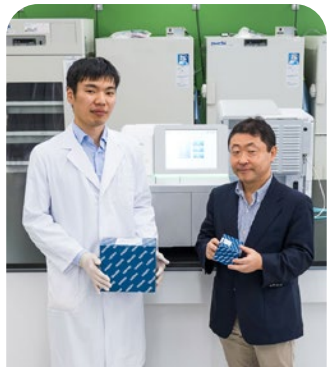
customers unlock molecular insights that address healthcare challenges. That's how we help make improvements in life possible.

We are known for the highest quality products

Our products are found in laboratories worldwide – from young scientists to Nobel laureates







We provide solutions to uncover molecular insights – faster, better and more efficiently – from Sample to Insight

Biological sample ▸

Sample to Insight solutions ▸

- Sample Technologies
- Assay Technologies
- Automation Systems
- Bioinformatics

Valuable molecular insights

- Advancing knowledge about the building blocks of life – DNA, RNA and proteins
- Faster and better drug R&D
- Better disease diagnosis
- Ensuring public safety
- Better outcomes with precision medicine

And we are ready to serve public health needs across the globe

Determined to leave no country behind with a portfolio of dedicated tests and strategic partnerships

- TB testing for low-resource high-burden regions with QIAreach QuantiFERON-TB
- Testing for high-risk human papillomavirus (HPV) using the *care*HPV test
- Sample technologies supporting detection of many infectious diseases

We are well positioned to support our customers with their rapidly evolving scientific and testing needs

Overview

Overview

Supervisory Board Report

Message from the Chair

Dear Stakeholders:

The Supervisory Board continues to be very pleased with how our more than 6,000 employees – known as QIAGENers – are addressing the opportunities, as well as challenges, presented by the accelerating pace of knowledge about the biology of life through DNA and RNA. Their efforts are improving the lives of people around the world every day.

Under the leadership of our management, our QIAGENers have embraced with determination to succeed in addressing the events of recent years. We thank all of them for their tremendous efforts to making 2022 another solid year for QIAGEN.

We would also like to thank our many stakeholders – in particular our customers, business partners and shareholders – for their confidence and loyalty. Their continued collaboration and trust are fundamental to QIAGEN being well-positioned to provide a portfolio of Sample to Insight solutions that unlock valuable molecular insights for over 500,000 customers worldwide.

It is through this joint collaborative effort that QIAGEN can achieve the vision we have set to help to "make improvements in life possible."

2022: Solid non-COVID performance while supporting global COVID response

Our performance in 2022 reflected another year of solid growth in the non-COVID product groups contrasted with lower sales of COVID-19 product groups, as testing demand waned from earlier levels seen during the pandemic. Total net sales declined 5% to $2.14 billion due to adverse currency movements against the U.S. dollar, our reporting currency, but were largely unchanged from 2021 on a constant exchange rate basis.

Sales in the non-COVID product groups rose at a double-digit rate and represented about 80% of total sales. However, these gains were largely offset by the significant decline in COVID-19 product group sales, as QIAGEN continued to be "COVID relevant, but not COVID dependent" in support testing and surveillance needs around the world.

We fully support the decisions of the Managing Board to make important investments into research and development and commercialization. Likewise, we responded to the high-inflation environment and provided one-time payments to support our employees. The Russian invasion of Ukraine prompted our decision to suspend business operations in Russia and Belarus. The decline in net income and earnings per share (EPS) reflected these macro trends.

Advancing our strategy with a balanced business driven by focus and execution

QIAGEN is emerging from the COVID-19 pandemic with a renewed position of strength. Our teams are disciplined in implementing a strategy that involves "focus" and builds on the balance of our customer base and broad geographic presence in targeting growth opportunities in an annual market opportunity estimated at over $11 billion.

This strategy, anchored by our focus on "Five Pillars of Growth," has proven its value in recent years. The foundation are our leadership positions in two portfolios that together represent more than half our sales: Sample technologies, which are used to isolate and purify DNA and RNA from any biological sample, while the QuantiFERON franchise involves the QuantiFERON-TB test as the modern gold standard for tuberculosis detection. Another key element of this strategy is to gain share in highly attractive markets where QIAGEN has a differentiated offering. In the remaining three pillars, we are pleased with the performance of our newer systems with QIAstat-Dx for syndromic testing, the integrated clinical PCR testing platform NeuMoDx and our entry into digital PCR with QIAcuity.

At the same time, we have seen tremendous contributions from our core portfolio. These are other areas where QIAGEN has strong market positions – such as genomics, bioinformatics with our QIAGEN Digital Insights business, and our human identification / forensics franchise. To note the significance of QIAGEN in this last field, it is estimated that about every 10 seconds a crime scene or casework to identify a missing person around the world is investigated using QIAGEN products.

This strategy is also driven by developing a business with "balance" in terms of supporting customers across the continuum from basic research in the Life Sciences to the use of Molecular Diagnostics in clinical healthcare. The vast majority of our products can be used in both customer classes and many end markets – a testament to the utility and value created by our R&D and commercialization efforts.

Complementing this strategy is our determination to develop a balanced global presence. QIAGEN is strengthening its presence in established markets, while also building up our activities in fast-growing emerging markets. QIAGEN has a balanced presence across the world as evidenced by our ability to support customers in over 130 countries.

Key to developing and implementing this strategy are our QIAGENers. My Supervisory Board colleagues and I continue to be impressed by our interactions with employees across the Company. The progress to develop a more empowered culture has been successful and impressive. Internal survey data has shown an increasing level of employee satisfaction, which is reflected in our ability to attract and retain top talent. QIAGEN is increasingly developing a culture focused on accountability, ownership and agility combined with a commitment to increasingly bring decision-making closer to our customers. This progress shows we have a highly motivated group of QIAGENers ready to move ahead in these challenging times.

Integral to our strategy is our disciplined capital allocation with a focus on value creation. It has proven successful over the last decade. QIAGEN continues to make significant internal investments into research and development, which is approximately 9-10% of annual sales. This is complemented through targeted business combinations to enhance our portfolio. The recent acquisitions of BLIRT S.A., which added important enzyme manufacturing capacity, and Verogen Inc. in the field of human identification and forensics, are just the latest examples.

We also continue to view share repurchases as a way to increase returns and create value. At the same time, during our discussions during 2022, we decided to also maintain our strategic flexibility and contribute to earnings through higher interest income on cash holdings compared to recent years. The Managing Board and Supervisory Board will continue to review market conditions during 2023 for both value-creating M&A opportunities as well as share repurchase programs.

Enhancing the capabilities of the Supervisory Board

As noted in the Supervisory Board report for 2021, we have been going through a period of renewal of our Supervisory Board through new members who offer additional capabilities and bring us closer to the optimal profile we are targeting.

We greatly appreciate the contributions of our new colleague, Dr. Eva Pisa, who joined us in 2022. We believe the Board has a very good balance of skills and capabilities in terms of expertise in the Life Science and diagnostics industry, international management experience and scientific acumen. Together this team has created a stronger and more collaborative spirit in recent years that has contributed greatly to our discussions, decision-making and our interactions with the Managing Board.

The appointments in recent years underscore our commitment to creating a Supervisory Board with qualified, experienced and independent members. We have a holistic understanding of diversity that brings together age, gender, qualifications, international experience, cultural backgrounds, sector experience and tenure. These factors should support the structure, nature and strategy of QIAGEN in order to make optimal decisions.

The search for new members is an ongoing process for our Board as part of our commitment to attracting the profiles that we believe will complement and strengthen our overall profile and to prepare for succession in the future. In particular, this involves reviewing new members in light of skills and experience that are becoming increasingly more relevant, in particular the areas of digitization and its impact on customer engagement. QIAGEN will continue to recruit the best talent for our Supervisory Board in compliance with our Gender Diversity Policy and without compromising QIAGEN's commitment to hiring the best individuals.

Valuable contributions from our Scientific Advisory Board

The creation of our Scientific Advisory Board, a decision implemented in 2021, is designed to keep QIAGEN at the cutting edge of advances in Life Sciences and Molecular Diagnostics. This Board, chaired by Prof. Dr. Ross Levine from our Supervisory Board, has a mandate to provide early evaluation of market and technology developments that could have an influence on our position in these highly attractive markets.

This group involves renowned scientific leaders, each providing unique expertise but joined together by a commitment to helping QIAGEN to advance science and improve clinical outcomes for patients. The discussions in this group, and the insights they have provided to the Managing Board and Supervisory Board, have proven their value to QIAGEN in supporting our internal research and development activities, as well as in evaluating possible acquisitions. The SAB recently welcomed a new member with the appointment of Dr. Rick Bright, an American immunologist, an expert in vaccine, drugs and diagnostic development, and a former public health official.

Materiality assessment for our commitment to sustainability

For QIAGEN, sustainability means operating our business in a way that ensures it is viable for the long-term. We take into consideration the views of our stakeholders – employees, customers, regulators, suppliers and shareholders – in making decisions about our business.

Our shareholders expect us to make good decisions that contribute to the long-term sustainability and value creation in our business. This involves a commitment – aligned with the interests of our other stakeholders – to deliver the best possible portfolio of products and services to our customers.

Attracting and retaining the best talent is essential to making this possible. In addition, through effective governance we conduct business with the highest ethical standards. Creating a vibrant workforce is essential for QIAGEN to operate in a sustainable manner while ensuring long-term profitability.

Our discussions in the Nomination & ESG Committee, as well as in Supervisory Board meetings, have focused on how QIAGEN can advance the ESG strategy in light of a materiality analysis completed in 2022. This included a review of the United Nations' Sustainability Development Goals (SDGs). The 17 SDGs identify starting points to tackle the major challenges of our time.

Looking at the impact of QIAGEN's business activities on sustainable development, five SDGs were identified where QIAGEN can make the greatest contribution:

- SDG 3 Good Health and Well-being
- SDG 5 Gender Equality
- SDG 8 Decent Work and Economic Growth
- SDG 12 Responsible Consumption and Production
- SDG 13 Climate Action

We are monitoring our progress toward these SDG goals in our meetings with the Managing Board and experts within QIAGEN on these topics. Together with external ratings and rankings and successful execution of agreed action plans, the progress we have seen in recent years provide reassurance that QIAGEN is on the right track.

Extensive Supervisory Board evaluation completed

In 2022, the Supervisory Board worked with an international consulting company to undertake a benchmarking and evaluation of the composition of the Supervisory Board and the Managing Board and the and the way the Boards operate. This assessment showed QIAGEN ranked among the top five companies in Germany's DAX-40 index of the leading publicly listed companies in terms diversity and independence, range of experience, age and tenure.

The benchmarking was based on extensive interviews with each member of the Supervisory Board and Managing Board, as well as a joint session to review the outcomes. All members felt heard, valued and trusted, and appreciated the distinctive strengths of the individual members. Some areas for improvement were identified and action plans have been developed.

The results underscored the effective committee work and Board processes, and the progress we have made in coming together as a stronger team with a commitment to self-reflection and continuous improvement. Based on this review, the Supervisory Board concluded that both the Supervisory Board and the Managing Board, as well as their individual members and committees, were functioning properly and effectively, especially in view of the regulations set forth in the Dutch Corporate Governance Code, and should continue in pursing the same objectives and with a commitment to continuous improvement.

Ready to navigate a challenging environment in 2023

In closing, QIAGEN is moving ahead in 2023 from a position of strength to capture growth opportunities in attractive markets, anchored by our vision to help our customers make improvements in life possible for people around the world. This is due above all to the commitment, talent and skills of our QIAGENers during these turbulent times facing societies worldwide.

The macro environment we see in 2023 has become increasingly challenging. We are in the midst of an inflationary environment not seen in over 40 years, while the need to attract and retain top talent remains at the forefront in light of historically low unemployment rates. This has been prompted above all by the lingering global effects of the COVID-19 pandemic on the lives of people around the world and the economic aftershocks from unprecedented economic lockdowns and supply chain disruptions. An additional factor is obviously the political, economic and social turmoil created by the Russian invasion of Ukraine in early 2022, which unfortunately continues into this year.

As we noted in our report for 2021, the macro challenges we are seeing are bringing out the best in our employees. In fact, it is heartwarming to see how they responded energetically to support refugees from the war in Ukraine. But the same goes for the outpouring of support for others in need around the world – such as after the devastating earthquake in Turkey.

Against this backdrop, the Supervisory Board believes QIAGEN has the right strategy to create value for all stakeholders, including our shareholders. We will continue to monitor the progress of the Managing Board and our QIAGENers to seek out further value enhancing opportunities in the Life Sciences and Molecular Diagnostics market segments.

In closing, the performance of QIAGEN in 2022 is further testament to our resilience in tackling the challenges of our world. We in the Supervisory board greatly appreciate our progress so far and look forward to more success in this new year, and the years to come, as we position QIAGEN to achieve our vision of "making improvements in life possible."

Lawrence A. Rosen

Chair of the Supervisory Board

Supervisory Board Report

Supervisory Board composition

The composition of our Supervisory Board is diverse in gender, nationality, background, knowledge and experience. As of March 2023, the Board was comprised of five men and three women. Three members are American, two are German, one is U.K.-American, one is German-Swiss and one is Swedish. Many have spent considerable time during their careers living and working outside their home countries.

The following table outlines the current members in 2022:

	Lawrence A. Rosen (Chair)	Dr. Metin Colpan	Thomas Ebeling	Dr. Toralf Haag	Prof. Dr. Ross Levine	Prof. Dr. Elaine Mardis	Dr. Eva Pisa	Elizabeth E. Tallett
Age	65	68	63	56	51	60	68	73
Gender	Male	Male	Male	Male	Male	Female	Female	Female
Nationality	U.S.	German	Swiss / German	German	U.S.	U.S.	Swedish / Swiss	U.S. / British
Date of initial appointment*	2013	2004	2021	2021	2016	2014	2022	2011

*Supervisory Board members are reappointed annually, for one-year terms.

Please refer to the discussion below under "Supervisory Board committees" for information on the principal positions and relevant other positions held by members of the Supervisory Board. Further detailed information is also available on the company website at www.qiagen.com.

Following best practice 2.1.10 of the Dutch Corporate Governance Code, the Supervisory Board establishes that its members are able to act critically and independently of one another and of the Managing Board. To safeguard this, the Supervisory Board is composed in such a way that all its members are independent in the meaning of best practice 2.1.8 of the Dutch Corporate Governance Code. As a result, the Supervisory Board confirms being of the opinion that the independence requirements referred to in best practice 2.1.7 to 2.1.9 inclusive of the Dutch Corporate Governance Code have been fulfilled. The targeted profile of the Supervisory Board is reflected in its regulations, which are published on our website under “Supervisory Board.”

In terms of members who have a tenure of at least eight years, Dr. Metin Colpan joined the Supervisory Board in 2004, Ms. Elizabeth Tallett has been a member since 2011, Mr. Lawrence A. Rosen since 2013 and Prof. Dr. Elaine Mardis since 2014.

Dr. Colpan brings extensive contributions to the Supervisory Board based on his in-depth scientific and commercial experience, and above all his role as a co-founder of QIAGEN. He has also served as a board member for various other healthcare industry companies, which provides unique perspectives and valuable contributions to the discussions of our Board.

Ms. Tallett has executive- and board-level experience at a number of international companies, in particular in the pharmaceutical and biotechnology industries. Areas of expertise include international operations, mergers and acquisitions, strategic planning, marketing, product development, talent management and executive compensation.

Mr. Rosen is a highly experienced executive who has served at the highest levels of various publicly-listed multinational companies, including Deutsche Post AG, Fresenius

Medical Care AG & Co. KGaA and Aventis SA. He contributes to the profile of the Supervisory Board with his knowledge and cross-border expertise developed during a career working primarily in Europe and outside his home country of the United States. Key areas in which Mr. Rosen contributes his expertise include finance, strategy, mergers and acquisitions, investor relations, corporate governance and engagement with the capital markets.

Prof Dr. Mardis is an internationally recognized scientist, and an important contributor to our Science and Technology Committee and the Compensation and Human Resources Committee. Dr. Mardis is the Co-Executive Director of the Institute for Genomic Medicine at Nationwide Children's Hospital in Columbus, Ohio. She also is Professor of Pediatrics at the Ohio State University College of Medicine. Dr. Mardis has research interests in the application of genomic technologies to improving the understanding of human disease and toward improving the precision of medical diagnosis, prognosis and treatment. She is also the immediate past President of the American Association for Cancer Research, and also serves the U.S. government as a scientific advisor to the Veteran's Administration for the Million Veterans Program.

QIAGEN highly values and appreciates the full engagement of Dr. Colpan, Ms. Tallett, Mr. Rosen and Prof. Dr. Mardis to the success of our Company, and strongly supports their re-appointment. The following table outlines the skills and experience of the current Supervisory Board members:

Key competencies	Lawrence A. Rosen (Chair)	Dr. Metin Colpan	Thomas Ebeling	Dr. Toralf Haag	Prof. Dr. Ross L. Levine	Prof. Dr. Elaine Mardis	Dr. Eva Pisa	Elizabeth E. Tallett
Required								
Integrity	•	•	•	•	•	•	•	•
Ethics	•	•	•	•	•	•	•	•
Health	•	•	•	•	•	•	•	•
English language skills	•	•	•	•	•	•	•	•
Experience	•	•	•	•	•	•	•	•
Recommended								
U.S. background	•				•	•		•
Entrepreneur		•	•		•		•	•
Corporate management multinational	•	•	•	•			•	•
Currently full-time employed / active				•	•	•		
Public reputation	•	•	•	•	•	•	•	•
Academic research		•			•	•		
Industrial research		•						
Diagnostics markets		•		•		•	•	
Capital markets	•	•	•	•				•
Financial management	•			•				•
M&A, business development	•	•	•	•			•	•
Commercial operations		•	•	•			•	•
Public management (e.g., universities)		•			•	•		
Regulatory / operations		•	•	•			•	•

Supervisory Board meetings in 2022

The Supervisory Board held seven meetings in 2022, with each member attending all meetings for which they were eligible to attend. Of these meetings, five were held in person and two were held virtually. All Managing Board members were also present for these Supervisory Board meetings in 2022.

The Supervisory Board meetings and the Supervisory Board committee meetings are held over a number of days, ensuring there is time for review and discussion. At each meeting, the members discuss among themselves the goals and outcome of the meeting, as well as topics such as the functioning and composition of the Supervisory Board and the Managing Board.

Members of senior management are also regularly invited to provide updates on topics within their area of expertise.

This gives the Supervisory Board the opportunity to get acquainted with a variety of managers across QIAGEN, which the Supervisory Board considers very useful in connection with its talent management and succession planning activities.

The Supervisory Board also reviewed and discussed agenda items in the absence of the Managing Board members in each meeting, such as performance and strategy as well as to discuss compensation matters.

Supervisory Board committees

The Board has four Committees to cover key areas in greater detail:

- Audit Committee
- Compensation & Human Resources Committee
- Nomination & ESG (Environment, Social and Governance) Committee
- Science & Technology Committee

The charters for the committees are published on our website under "Supervisory Board."

The committees were comprised of the following members in 2022:

Supervisory Board Member	Audit Committee	Compensation & Human Resources Committee	Nomination & ESG Committee	Science & Technology Committee
Lawrence A. Rosen	•	•	• (Chair)	
Dr. Metin Colpan			•	• (Chair)
Thomas Ebeling			•	
Dr. Toralf Haag	• (Chair)			
Dr. Ross L. Levine				•
Dr. Elaine Mardis		•		•
Dr. Eva Pisa		•		
Elizabeth E. Tallett	•	• (Chair)	•	

The following table outlines the committee membership and meetings attended in 2022:

	Meeting Attendance				
	Supervisory Board	**Audit Committee**	**Compensation & Human Resources Committee**	**Nomination & ESG Committee**	**Science & Technology Committee**
Lawrence A. Rosen	7/7	6/7	4/4	5/5 (Chair)	
Dr. Metin Colpan	7/7			4/5	4/4 (Chair)
Thomas Ebeling	7/7			5/5	
Dr. Toralf Haag	7/7	7/7 (Chair)			
Dr. Ross L. Levine	7/7				4/4
Dr. Elaine Mardis	7/7		4/4		4/4
Dr. Eva Pisa[1]	4/4		2/2		
Elizabeth E. Tallett	7/7	7/7	4/4 (Chair)	5/5	

(1) Dr. Eva Pisa joined the Supervisory Board in June 2022.

Audit Committee

The Audit Committee consists of three members appointed annually by the Supervisory Board for one-year terms and met at least quarterly during 2022. We believe that all members of this Committee meet the independence requirements as set forth in Rule 10A-3 of the Securities Exchange Act of 1934, as amended, and the New York Stock Exchange Listed Company Manual.

The Board has designated Dr. Haag as an "Audit Committee Financial Expert" as that term is defined in the U.S. Securities and Exchange Commission rules adopted pursuant to the Sarbanes-Oxley Act of 2002 and as referred to in the Dutch Decree on Audit Committees (Besluit instelling auditcommissie).

The Committee performs a self-evaluation of its activities on an annual basis. The Committee's primary duties and responsibilities include, among other things, to serve as an independent and objective party to monitor QIAGEN's accounting and financial reporting process, control and compliance systems and internal risk management, including cyber security. This Committee also is directly responsible for proposing the external auditor to the Supervisory Board, which then proposes the appointment of the external auditor to the Annual General Meeting.

Further, this Committee is responsible for the compensation and oversight of QIAGEN's external auditor and for providing an open avenue of communication among the external auditor as well as the Managing Board and the Supervisory Board. Our Internal Audit and Compliance functions operate under the direct responsibility of the Audit Committee. Additionally, this Committee is responsible for establishing procedures to allow for the confidential and or anonymous submission by employees of concerns, including the receipt, retention and treatment of submissions received regarding accounting, internal accounting controls, or auditing matters.

The Audit Committee met seven times in 2022, and also met with the external auditor excluding members of the Managing Board in November 2022. The Committee discussed, among other matters, the following topics, and provided updates to the Supervisory Board:

- the adequacy of our internal accounting, financial and operating controls and procedures with the external auditor and management;
- consideration and approval of recommendations regarding changes to our accounting policies and processes;

- review with management and the external auditor our quarterly earnings reports prior to their public release;
- review the quarterly and annual reports furnished or filed with the Netherlands Authority for the Financial Markets, the U.S. Securities and Exchange Commission (reported on Forms 6-K and 20-F) and the Deutsche Boerse in Germany; and
- review major risk exposures (including cyber security) and various legal and compliance matters.

Compensation & Human Resources Committee

The Compensation & Human Resources Committee consists of four members appointed annually by the Supervisory Board for one-year terms.

Its primary duties and responsibilities include, among other things, oversight of the Company's programs, policies and practices related to management of human capital resources including talent management, culture, diversity and inclusion; the preparation of a proposal to the Supervisory Board regarding the Remuneration Policy for the Managing Board and Supervisory Board and proposal for adoption by shareholders at the General Meeting; preparation of a proposal concerning the individual compensation for Managing Board members to be adopted by the Supervisory Board, and preparation of the Remuneration Report that outlines compensation for the Managing Board members and Supervisory Board members to be adopted by the Supervisory Board, and submitted to the Annual General Meeting for an advisory vote in accordance with Dutch law.

The Remuneration Report outlines the implementation of the Remuneration Policies for the most recent year. This Committee engaged during 2022 with external consultants to ensure that the overall remuneration levels are benchmarked regularly against a selected group of companies and key markets in which QIAGEN operates.

The Compensation & Human Resources Committee met four times in 2022. The Committee discussed, among other matters, the following topics, and provided updates to the Supervisory Board:

- policies and practices related to management of human capital resources including talent management and diversity;
- review and approve all share-based compensation;
- review and approve the annual salaries, bonuses and other benefits of the Executive Committee; and
- review general policies relating to employee compensation and benefits.

Nomination & ESG Committee

The Nomination & ESG Committee consists of four members appointed by the Supervisory Board annually for one-year terms.

Its primary responsibilities include, among other things, preparing the selection criteria and appointment procedures for members of the Supervisory Board and Managing Board; periodically evaluating the scope and composition of the Managing Board and Supervisory Board; periodically evaluating the functioning of individual members of the Managing Board and Supervisory Board, and reporting these results to the Supervisory Board; proposing (re-)appointments of members of the Supervisory Board and Managing Board; conducting periodic evaluations of QIAGEN's ESG (Environmental, Social and Governance) policies and related public disclosures; and periodically reviewing the Company's Corporate Governance structure in line with applicable legal requirements and recommend changes to the Supervisory Board.

The Nomination & ESG Committee met five times in 2022. The Committee discussed, among other matters, the following topics, and provided updates to the Supervisory Board:

- the nomination of Dr. Eva Pisa as a new member of the Supervisory Board;
- an annual evaluation on the scope and composition of the Managing Board and the Supervisory Board, including the profile of the Supervisory Board as well as the functioning of individual members of Boards;
- proposals for the (re-)appointment of members of the Managing Board and Supervisory Board, and supervised the Managing Board in relation to the selection and appointment criteria for senior management;
- undertake the search and selection process for new members and succession planning considerations for the Supervisory Board, Managing Board, Executive Committee and other senior management positions, taking into account short-, medium- and longer-term perspectives;
- lead the preparation of the Supervisory Board self-evaluation process, which involved an external consultant; and
- receive regular updates on the progress of the company's ESG programs, including a review and discussion of the company's Gender Diversity Policy.

Science & Technology Committee

The Science & Technology Committee consists of three members appointed annually by the Supervisory Board for one-year terms. The Committee works with the Scientific Advisory Board, which was established in 2021 to provide early evaluation of market and technology developments that could have an influence on QIAGEN's development and positioning in the Life Sciences and Molecular Diagnostics.

The Committee's primary responsibilities include, among other things, reviewing and monitoring research and development projects, programs, budgets, infrastructure management; and overseeing the management risks related to our portfolio and information technology platforms.

This Committee met four times in 2022. The Committee discussed, among other matters, the following topics, and provided updates to the Supervisory Board:

- discussions to gain understanding, clarification and validation of the fundamental technical basis of our businesses in order to enable the Supervisory Board to make informed, strategic business decisions and vote on related matters; and
- guided the Managing Board to ensure that QIAGEN can develop and leverage powerful, world-class science to create value for our stakeholders, including shareholders.

Stakeholder management as a central responsibility

The Supervisory Board acts in accordance with the interests of the company and the business connected with it, taking into consideration the interests of our stakeholders. The Chair of the Supervisory Board is in regular close contact with the Managing Board members, and the same applies to the Chair of the Audit Committee.

The Supervisory Board recognizes that the pandemic has created new ways to interact using digital channels and welcomes how these new approaches proved beneficial to ensuring a high level of engagement and interaction in recent years. At the same time, the Supervisory Board held many in-person meetings during 2022, and in particular at QIAGEN sites that provided the opportunity to interact with QIAGEN employees. These meetings also enabled the Supervisory Board to receive information on relevant topics from senior leaders and experts, both internally and externally, during committee meetings, full Supervisory Board meetings, and also as part of their ongoing professional education.

Direct, one-to-one contact between Supervisory Board members and Managing Board and Executive Committee members generally builds on the topics discussed in the meetings of the Supervisory Board. These discussions draw on the expertise of individual Supervisory Board members, whose advice is sought on a wide range of topics.

The Supervisory Board takes an active interest in maintaining a good understanding of our stakeholders and their positions on various topics related to QIAGEN's areas of business. This includes the perceptions of our shareholders, which is received through direct interaction and calls with major institutional shareholders. The Supervisory Board is also informed of the position of the range of QIAGEN stakeholders by the Managing Board and other senior managers. In addition, the Supervisory Board members collect information through their own individual networks, and this is shared with other Board members and the Managing Board.

Corporate Governance

The Supervisory Board follows the principle of increasing stakeholder value as the members represent the interests of all stakeholders, including shareholders, and has always pursued the highest standards in Corporate Governance.

QIAGEN is committed to a corporate governance structure that best suits its business and stakeholders, and that complies with relevant rules and regulations. QIAGEN follows applicable Dutch law and the principles described in the Dutch Corporate Governance Code, although some minor deviations, which are explained in detail in our Corporate Governance Report, may result from the impact of factors such as legal requirements imposed on QIAGEN or industry standards.

Our common shares are registered and traded in the U.S. on the New York Stock Exchange (NYSE) and in Germany on the Frankfurt Stock Exchange in the Prime Standard segment, where QIAGEN is a member of the blue-chip DAX-40 Index of the top publicly-listed companies and the TecDAX of the country's leading technology companies. Shareholders in Europe and the U.S. hold the majority of common shares. As a result of these listings for its Global Shares, QIAGEN is subject to the rules regarding Corporate Governance set by the NYSE. QIAGEN believes all of its operations are carried out in accordance with legal frameworks, including Dutch Corporate Law, U.S. laws and regulations, EU regulations and applicable German capital market laws.

Role of the Supervisory Board

The Supervisory Board has the task of supervising the activities of the Managing Board and the general affairs of QIAGEN including:

- the achievement of corporate objectives;
- the strategy and the risks inherent in the business activities;
- the structure and operation of the internal risk management and control systems;
- the financial reporting process; and
- the observance of good corporate governance.

Throughout 2022, the Supervisory Board agenda was centered around the strategy and its execution, financial and operational performance, business developments, risk management, and people and organization. Based on the strategic priorities for QIAGEN as agreed in the annual strategy review, several topics were extensively discussed by means of deep dives, allowing a focused and in-depth review.

With the strong demand for QIAGEN's products in combination with the company's focus on the execution of its strategic priorities, the Supervisory Board has confidence in QIAGEN's long-term growth opportunities and the continued delivery of value to its stakeholders. As part of the annual strategy review, we held dedicated discussions focused on QIAGEN's strategy, in particular the Five Pillars of Growth. An in-depth review was performed of the short-, medium- and long-term market developments in the markets served by QIAGEN and the related plans to meet customer demands. Additional sessions were focused on longer-term growth opportunities. In line with our

overall strategy, the Supervisory Board also regularly discusses M&A strategy and relevant developments within our sectors. The Supervisory Board was regularly informed and kept up to date on the process of reviewing potential M&A targets during the year, including the process to complete the acquisitions of BLIRT S.A. and Verogen Inc. These sessions enable an engaged and focused discussion between the Supervisory Board and Managing Board on key strategic matters, and we highly value this way of contributing to the strategic decision-making process.

Financial statements and audits

In this Annual Report, the financial statements for 2022 are presented as prepared by the Managing Board and audited by KPMG Accountants N.V. (Independent Auditor). The Audit Committee examined the financial statements, the proposal for the use of the distributable profit, the consolidated financial statements and the Management report. The Supervisory Board also established that the external auditor was independent of QIAGEN.

The results have been approved by the Supervisory Board and an unqualified opinion was given from the external auditors.

The Supervisory Board will submit the 2022 financial statements to the next Annual General Meeting of Shareholders, which is planned for June 2023. The proposal will outline that shareholders adopt them and release the Managing Board from all liability in respect of its managerial activities and to release the Supervisory Board from all liability in respect of its supervision of the Managing Board.

Venlo, the Netherlands

April 2023

The Supervisory Board

Executive Committee

The following is a brief summary of the background of each of the Executive Committee members as of April 1, 2023.

Thierry Bernard

Chief Executive Officer

Gender: Male

Thierry Bernard joined QIAGEN in February 2015 to lead the company's growing presence in molecular diagnostics, the application of Sample to Insight solutions for molecular testing in human healthcare. He was named Chief Executive Officer in March 2020 after serving in this role on an interim basis and became a member of the Managing Board in 2021. Previously, Mr. Bernard held roles of increasing responsibility during 15 years with bioMérieux SA, most recently as Corporate Vice President, Global Commercial Operations, Investor Relations and the Greater China Region, and held senior management roles in several other leading international companies. He has been a member of the Board of Directors of T2 Biosystems, Inc., a publicly listed company based in the U.S., since 2020. He was named in March 2023 as Chair of the AdvaMedDx Board of Directors, a U.S. industry trade association. Mr. Bernard has earned degrees and certifications from Sciences Po, LSE, the College of Europe, Harvard Business School, Centro de Comercio Exterior de Barcelona, and has been appointed Conseiller du Commerce Extérieur by the French government.

Roland Sackers

Chief Financial Officer

Gender: Male

Roland Sackers joined QIAGEN in 1999 as Vice President, Finance; became Chief Financial Officer in 2004, and joined the Managing Board in 2006. From 1995 to 1999, he was an auditor with Arthur Andersen Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft. Since 2019, Mr. Sackers has served on the Supervisory Board of Evotec SE, a publicly listed company based in Germany, becoming Chair of the Audit Committee in 2019 and Vice Chair of the Supervisory Board in 2021. He is also a member of the Board of the industry association BIO Deutschland. Mr. Sackers earned his Diplom-Kaufmann from the University of Münster.

Stephany Foster

Senior Vice President, Head of Global Human Resources

Gender: Female

Stephany Foster joined QIAGEN as Head of Global Internal Audit in 2005, served as Vice President, Head of Compensation and Benefits, and became Senior Vice President, Head of Global Human Resources and a member of the Executive Committee in 2019. Prior to joining QIAGEN, Ms. Foster worked in internal audit at Morgan Franklin, Independence Air and PricewaterhouseCoopers. Since 2022, she has been on the Board of Directors of OncoSec Immunotherapies, where she serves as chair of the Audit Committee and a member of the Compensation Committee. Ms. Foster holds a bachelor's degree and master's in Accounting from the University of Notre Dame.

Antonio M. Santos

Senior Vice President, Head of Global Operations

Gender: Male

Antonio M. Santos joined QIAGEN in 2022 as Senior Vice President, Global Operations, and a member of the Executive Committee, bringing more than 25 years of experience in manufacturing diagnostics and medical devices. Prior to joining QIAGEN, he was Senior Vice President, Americas Operations & Global Third Party Products, at bioMérieux in St. Louis. Mr. Santos also has served as Vice President Operations at Reliable Biopharmaceutical in the U.S., and at Hovione Pharmasciencia in Portugal, China and the U.S. He studied chemical engineering at the Nova University of Lisbon, School of Science and Technology, and earned a master's in business administration from Rutgers University.

Thomas Schweins

Senior Vice President, Life Sciences Business Area

Gender: Male

Thomas Schweins, Ph.D., joined QIAGEN in 2004 as Vice President Corporate Strategy, was appointed Vice President Marketing & Strategy in 2005, and has been deeply involved in managing the global business for Life Science customers. Dr. Schweins was responsible for Human Resources from 2011 until 2017, when he took on leadership of the Life Science Business Area. Dr. Schweins came to QIAGEN from The Boston Consulting Group and previously worked as Technology Manager and Assistant to the Management Board at Hoechst / Aventis. He earned a master's of science in Biochemistry from the University of Hanover, a Ph.D. from the Max Planck Society, and a second master's of science in Business Administration and Chemistry from the University of Southern California.

Jonathan Sheldon

Senior Vice President, QIAGEN Digital Insights Business Area

Gender: Male

Jonathan Sheldon, Ph.D., joined QIAGEN in 2018 as Senior Vice President, QIAGEN Digital Insights Business Area, leading QIAGEN's growing presence in bioinformatics. Dr. Sheldon came to QIAGEN from Oracle, where he was Global Vice President in the Health Sciences Global Business Unit and served on the executive committee. Previously, he established the bioinformatics group and served as Head of Bioinformatics at Roche (UK) Pharmaceuticals, and provided leadership in software firms serving the life science and healthcare sectors. Dr. Sheldon is also a member of the Supervisory Board of Centogene N.V. He received his bachelor's degree in Biochemistry and Molecular Biology from the University of Manchester, and his Ph.D. in Biochemistry and Molecular Biology from the University of Cambridge.

Jean-Pascal Viola

Senior Vice President, Head of Molecular Diagnostics Business Area and Corporate Business Development

Gender: Male

Jean-Pascal Viola joined QIAGEN in 2005 and was named Senior Vice President, Corporate Business Development in 2015 and was appointed to the Executive Committee in 2019. Previously, Mr. Viola was President and CEO of Nextal Biotechnologies Inc., a provider of technologies for protein crystallization acquired by QIAGEN in 2005, at which time Mr. Viola became Director of Protein Crystallization before moving to Business Development in 2007, leading efforts in Asia-Pacific, the Americas, Global M&A and Corporate Ventures. He earned a bachelor's of science in Biochemistry from the University of Montreal.

Common Shares

Market Environment

Global stock markets suffered the worst year in 2022 since the 2008 financial crisis. A somewhat bullish initial outlook for the year was quickly reversed due to a number of factors in the early months of the year - in particular the geopolitical crisis created by Russia invading Ukraine. The shock effects led to inflation reaching 40-year highs, and prompting central banks around the world to quickly tighten monetary policy by raising interest rates from a long period of historically low levels. All three major U.S. indices ended 2022 with losses, marking the first year of an annual decline in several years. The Dow Jones Industrial Average fared best, closing down 8.8%. The S&P 500 dropped 19.4% and the Nasdaq 100 Index fell 33.0%. Among the indices in which QIAGEN is a member in Germany, the blue-chip DAX-40 Index declined 12.3%, while the TecDAX Index of the country's top technology companies closed down 25.5% on the year.

Global shares listed in the U.S. and Europe

QIAGEN's global shares have been registered and traded in the United States since 1996 and are currently traded on the New York Stock Exchange (NYSE). The global shares have also traded in Germany on the Frankfurt Stock Exchange since 1997, and the Prime Standard segment since its launch in 2003. The dual listing of global shares on NYSE and the Frankfurt exchange offers advantages for QIAGEN, our shareholders and employees, enhancing liquidity, and increasing the potential market opportunity to attract investors, particularly those in the U.S. that can only invest in U.S. dollar-denominated investments. Unlike American Depositary Receipts (ADRs), QIAGEN's global shares provide equal rights for all shareholders and can be traded on either exchange, in U.S. dollars or euros.

Share Price and Liquidity

QIAGEN's share price fared much better than the declines seen in market indices in the U.S. and Germany, decreasing 10.3% in U.S. dollars to $49.87 on the NYSE and declining 4.0% in euros to EUR 47.01 on the Frankfurt Stock Exchange (XETRA) in 2022. Our shares continued to offer high liquidity, with average daily trading volume of approximately 1.4 million in 2022 (about 0.9 million on the NYSE and other U.S. trading venues, and about 0.5 million on the Frankfurt Stock Exchange (XETRA) and other German exchanges). QIAGEN continued its commitment to disciplined capital allocation and shareholder returns. As of December 31, 2022, the free float, which affects weighting of QIAGEN shares in various indices, was approximately 99%.

Shareholder Structure

QIAGEN has a global investor base comprised of more than 500 identified institutional investors, with about 47% in North America, about 48% in Europe and the remaining shares held in the rest of the world. Members of the Managing Board and the Supervisory Board, in total, owned less than 1% of QIAGEN's outstanding common shares at the end of 2022.

Annual Shareholder Meeting

At the Annual General Meeting on June 23, 2022, in Venlo, the Netherlands, shareholders voted on a number of annually recurring items as well as the Remuneration Policy of the Managing Board. Many of the annually recurring items were approved with majorities above 95% of the shares represented at the meeting. Shareholders present or represented at the meeting held approximately 170.4 million shares, or 73.8% of QIAGEN's approximately 230.8 million issued shares as of the record date for the meeting. Details of attendance and voting results are available at corporate.QIAGEN.com.

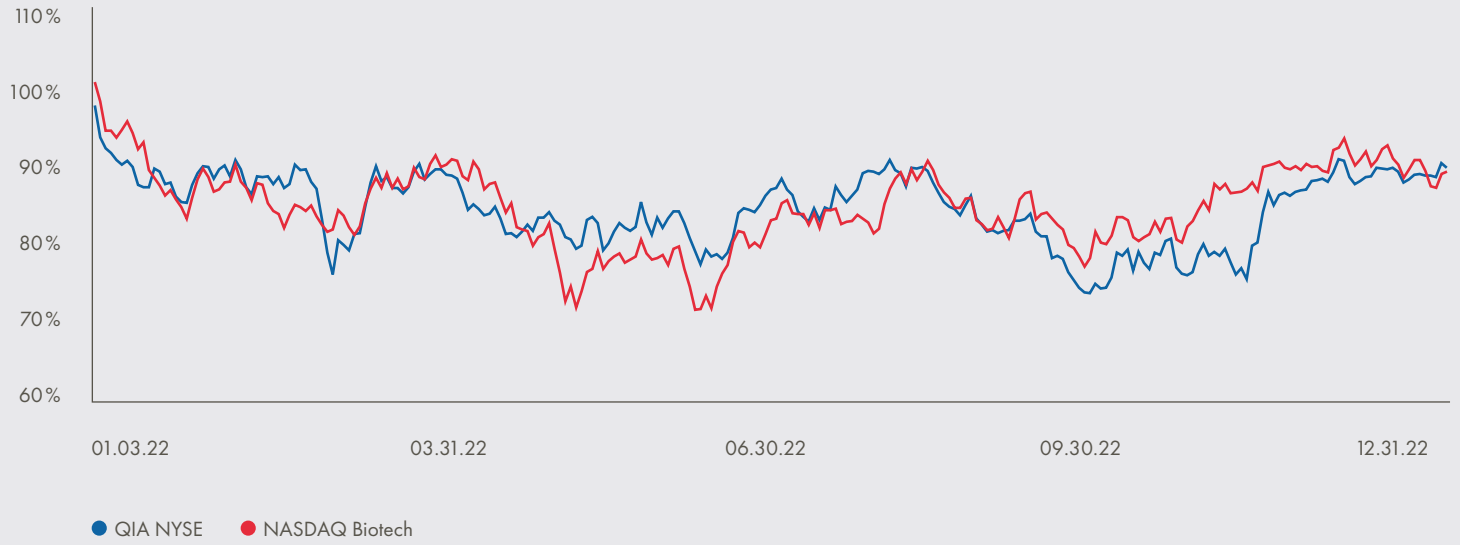
Investor Relations and Engagement with Shareholders

QIAGEN is committed to offering shareholders, analysts and communities around the world transparent, comprehensive and readily accessible information on our performance, strategy and future prospects, as well as our vision and mission. Due to the COVID-19 pandemic, most discussions with investors and other members of the financial community were held virtually during the first half of 2022, but an increasing share of meetings were held in person during the second half of the year. These interactions included individual calls, roadshows and attendance at broker-sponsored investor conferences.

QIAGEN Share Price Development and Average Trading Volume - NYSE 2022

	2022
Year-end price	$49.87
High	$55.12
Low	$40.38
Average daily trading volume (in million shares)	0.91

US Share Prices



QIAGEN Share Indices and Historic Prices - U.S. NYSE

As of January 10, 2018, our Common Shares began trading on the New York Stock Exchange (NYSE) under the symbol QGEN. Prior to that, from July 3, 2006, until January 9, 2018, our Common Shares were traded on the NASDAQ Global Select Market under the symbol QGEN. Previously, since February 15, 2005, our Common Shares had been quoted on the NASDAQ National Market under the symbol QGEN. Prior to that, since June 27, 1996, our Common Shares had been quoted on the NASDAQ National Market under the symbol QGENF.

The following tables set forth the annual high and low sale prices for the last five years, the quarterly high and low sale prices for the last two years, and the monthly high and low sale prices for the last six months of our Common Shares on the NYSE and NASDAQ Global Select, as applicable.

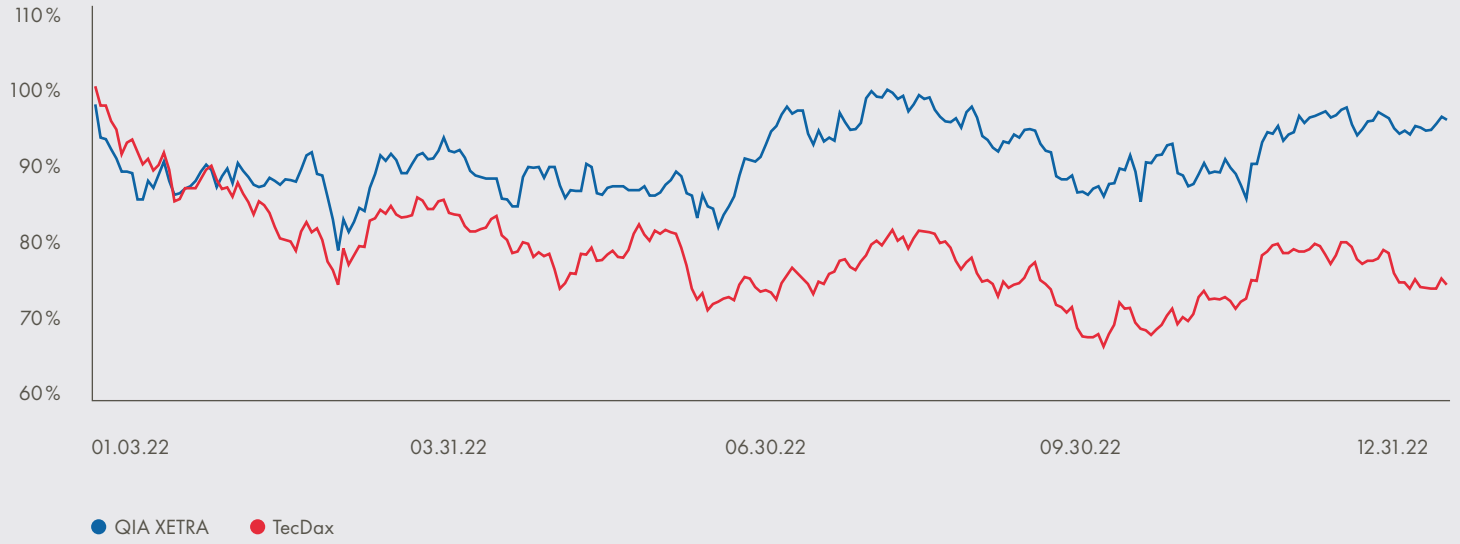
	High ($)	Low ($)
Annual:		
2018	39.45	30.78
2019	43.16	25.04
2020	55.27	32.97
2021	59.00	45.58
2022	55.12	40.38

	High ($)	Low ($)
Quarterly 2021:		
First Quarter	59.00	45.72
Second Quarter	52.83	45.58
Third Quarter	56.91	45.95
Fourth Quarter	58.00	50.08
Quarterly 2022:		
First Quarter	55.12	41.32
Second Quarter	50.38	42.44
Third Quarter	50.51	40.49
Fourth Quarter	51.05	40.38
Quarterly 2023:		
First Quarter (through March 9)	51.18	45.08

QIAGEN Share Price Development and Average Trading Volume - Germany Frankfurt Stock Exchange (XETRA) 2022

	2022
Year-end price	€47.01
High	€49.37
Low	€37.95
Average daily trading volume (in million shares)	0.54

German Share Prices



QIAGEN Share Indices and Historic Prices - Germany

From September 25, 1997, to December 31, 2002, our Common Shares were traded on the Frankfurt Stock Exchange Neuer Markt under the symbol QIA and with the security code number 901626. As of January 1, 2003, the trading of our Common Shares was transferred to the Prime Standard Segment of the Frankfurt Stock Exchange. QIAGEN is a member of DAX effective September 20, 2021, due to a reorganization of German stock market indices. Prior to that, QIAGEN was a member of the MDAX since September 24, 2018. This reorganization in September 2021 included expansion of the DAX index from 30 to the 40 largest companies in Germany based on market capitalization.

The following table sets forth the annual high and low sale prices for the last five years, the quarterly high and low sale prices for the last two years, and the monthly high and low sale prices for the last six months of our Common Shares on the Prime Standard.

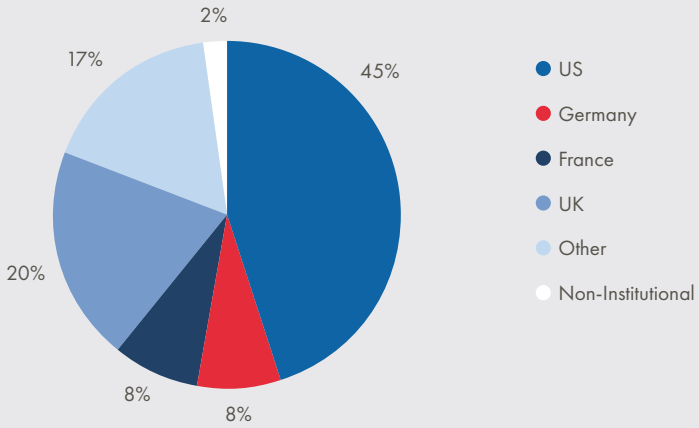
	High (EUR)	Low (EUR)
Annual:		
2018	34.05	25.22
2019	39.19	22.54
2020	46.95	29.55
2021	51.56	37.38
2022	49.37	37.95

	High (EUR)	Low (EUR)
Quarterly 2021:		
First Quarter	46.45	38.84
Second Quarter	44.02	37.38
Third Quarter	48.05	38.73
Fourth Quarter	51.56	43.06
Quarterly 2022:		
First Quarter	49.34	37.95
Second Quarter	46.03	39.94
Third Quarter	49.37	41.32
Fourth Quarter	48.26	41.62
Quarterly 2023:		
First Quarter (through March 9)	48.36	42.46

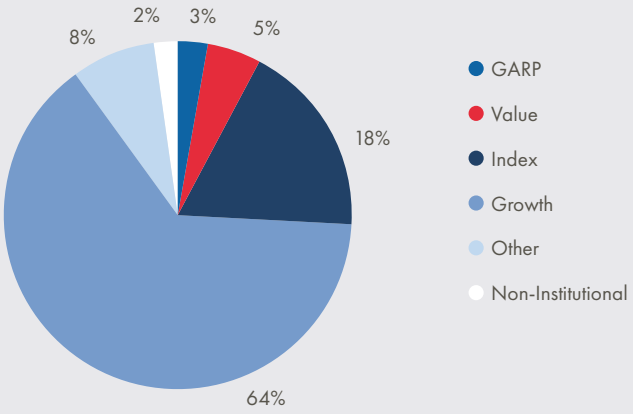
Key Share Data

	2022
Year-end market capitalization (in $ million)	11,356
Year-end market capitalization (in € million)	10,705

2022 Shareholder Structure by Geography



2022 Shareholder Structure by Investor Type



As of December 12, 2022.

Source: QIAGEN Shareholder ID

Management Report

Management Report

Business and Operating Environment

QIAGEN is a leading global provider of Sample to Insight solutions that enable customers to gain valuable molecular insights from samples containing the building blocks of life. Our sample technologies isolate and process deoxyribonucleic acid (DNA), ribonucleic acid (RNA) and proteins from blood, tissue and other materials. Assay technologies make these biomolecules visible and ready for analysis using a range of technologies. Bioinformatics software and knowledge bases are used to interpret complex data to provide relevant, actionable insights. Instruments and automation solutions are used to tie together these products into seamless and cost-effective workflows. We provide solutions to more than 500,000 customers around the world in Molecular Diagnostics (human healthcare) and Life Sciences (academic research, pharma and biotech companies, and applied applications such as human identification / forensics and food safety). As of December 31, 2022, we employed approximately 6,200 people in more than 35 locations worldwide.

QIAGEN began operations in 1986 as a pioneer in the emerging biotechnology sector with a revolutionary method that standardized and accelerated the extraction and purification of nucleic acids from biological samples, which means any material containing DNA, RNA or proteins. As molecular biology and genomic knowledge has grown to influence many areas of daily life, we have expanded to serve the full spectrum of market needs, developing new instruments, consumables and digital solutions; partnering with researchers and pharmaceutical companies, and acquiring companies and technologies that best complement our portfolio. We believe the addressable global market for our portfolio totals more than $11 billion. We continue to accelerate our portfolio growth and increase our efficiency and effectiveness while also enhancing our customer experience, our corporate citizenship, and our position as an employer of choice. Our growth strategy is anchored in our Five Pillars of Growth: sample technologies, the digital PCR (Polymerase Chain Reaction) platform QIAcuity, the clinical PCR automation solutions QIAstat-Dx and NeuMoDx and the QuantiFERON technology platform used to detect diseases such as latent tuberculosis. Our growth has been funded through internally generated funds, as well as debt offerings and the public sales of equity securities. Our global shares are listed on the New York Stock Exchange under the ticker symbol QGEN and on the Frankfurt Stock Exchange as QIA.

The company is registered under its commercial and legal name QIAGEN N.V. with the trade register (kamer van koophandel) of the Dutch region Limburg Noord under file number 12036979. QIAGEN N.V. is a public limited liability company (naamloze vennootschap) under Dutch law as a holding company. Our principal executive office is located at Hulsterweg 82, 5912 PL Venlo, The Netherlands, and our telephone number is +31-77-355-6600.

As a holding company, QIAGEN conducts business through subsidiaries around the world. Further information on QIAGEN can be found at www.qiagen.com. The SEC maintains an internet site (www.sec.gov/edgar) that contains reports and other information. Information contained in, or that can be accessed through, our website is not a part of, and shall not be incorporated by reference into, this Annual Report. We have included our website address in this document solely as an inactive textual reference.

Operating Environment

Economic Environment

The global economy grew at approximately 3% in 2022, about half the rate seen in 2021 and among the weakest annual growth rates of the last 20 years. This economic growth was slower than anticipated as the world sought to emerge from the adverse impacts of the COVID-19 pandemic at the same time as a period of high inflation. Various central banks tightened their monetary policy conditions, primarily through higher interest rates, and prompted "cost of living" challenges for people around the world. After steadily climbing throughout 2021, the U.S. Dollar Index saw a solid start to 2022, experienced a significant drop mid-year and ended the year up approximately 7% compared to 2021.

Industry Environment

The global molecular diagnostics industry faced a period in 2022 of diverging trends—ongoing growth in areas of the industry that had been adversely affected by COVID-19 pandemic lockdowns in recent years, while also facing a significant drop-off in demand for COVID-19 testing and surveillance products compared to the peak level in 2021. The pandemic has led to significant growth in the installed base of instruments, with industry competitors now seeking to expand the utilization of this installed base to other applications for customers in the Life Sciences and Molecular Diagnostics. Although numerous smaller companies have emerged in recent years, larger companies such as QIAGEN have crucial global distribution and production capacity advantages, as well as brand recognition and credibility, with customers around the world.

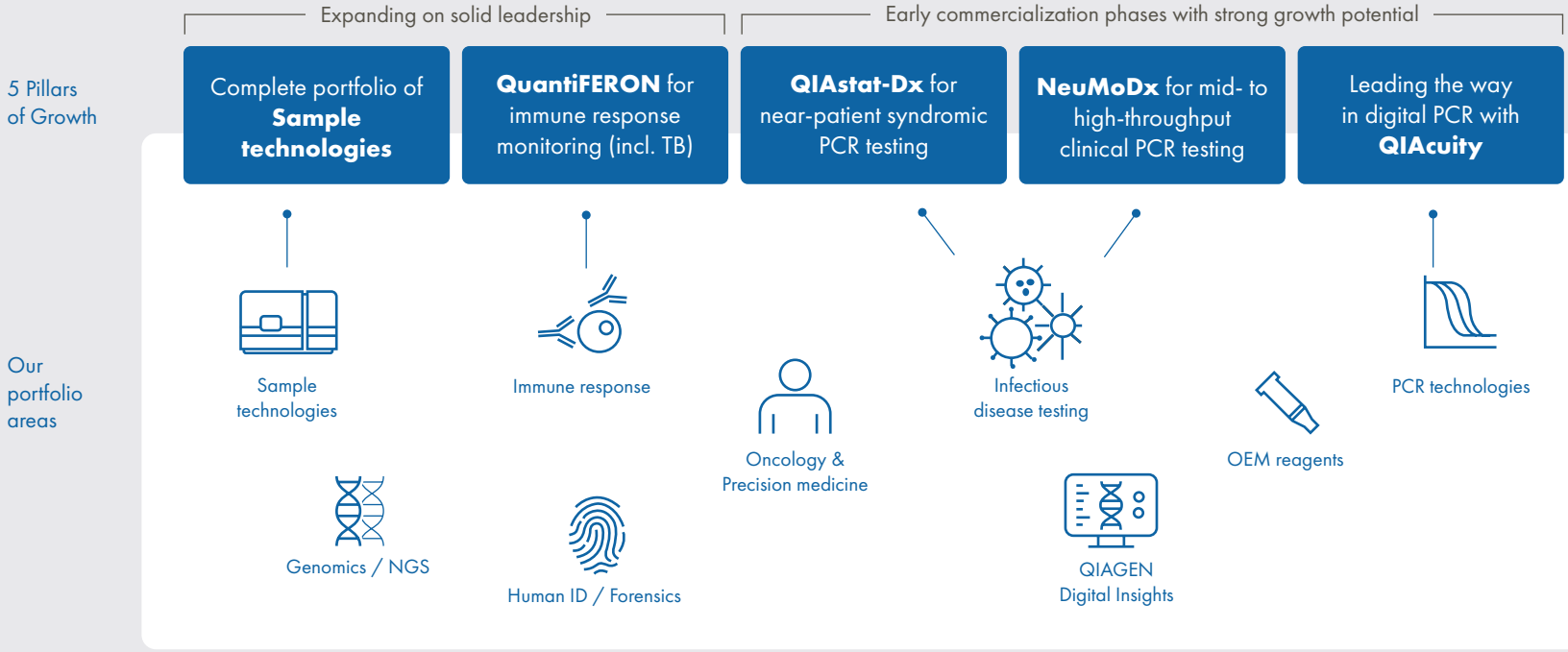
The Life Sciences and Molecular Diagnostics industry segments are together estimated at more than $100 billion of annual sales, and are expected to maintain a healthy single-digit sales growth pace in the coming years. Key growth drivers include an ongoing high level of funding to advance our understanding of biology as well as medical demand for molecular clinical testing given the impact on improving outcomes for patients.

QIAGEN Products

Our leadership in molecular research and testing solutions leverages our product portfolio across a wide range of applications. These are grouped into two main categories:

- Consumables and related revenues involve our consumables kits, bioinformatics solutions, royalties, co-development milestone payments and services (88% of total net sales in 2022)
- Instruments and related services and contracts (12% of total net sales in 2022).

We focus on areas to build and maintain leading positions



QIAGEN Product Groups

Sample Technologies

Sample Technologies is the first of our Five Pillars of Growth and includes products involved in the first step of any molecular lab process.

Our broad portfolio of Sample Technologies includes consumables and instruments used in sample collection, stabilization, storage, purification and quality control. Some of our consumables are designed to run on our instruments, while others are universal kits designed for use with any molecular-testing platform. These products are used in research and applied testing (forensics, human identification and food safety) laboratories as well as clinical testing.

Sample technologies: The foundation of QIAGEN

A portfolio that has grown to address the complete spectrum of processing biological samples

Selected biological samples

- ✓ Tissue
- ✓ Cells
- ✓ Blood
- ✓ Serum
- ✓ Plasma
- ✓ Urine
- ✓ Stool
- ✓ Saliva
- ✓ Other body fluids
- ✓ Bone
- ✓ Plants
- ✓ Soil

Input demands
Low / high-volume
Low-quantity
High-quantity
Tubes / plates

Processing
Manual

Automated
Low-to
High-throughput

Target analytes
Genomic DNA
Plasmid DNA
cfDNA
mRNA, rRNA
miRNA
Proteins
Circ. Tumor cells

Applications

- ✓ Cloning
- ✓ DNA amplification
- ✓ Arrays
- ✓ Gene editing
- ✓ Epigenetic
- ✓ Cellular analytics
- ✓ qPCR / dPCR
- ✓ Sequencing / NGS
- ✓ Liquid biopsy
- ✓ Micobiome
- ✓ Gene silencing
- ✓ Proteomics

>200,000 publications referencing QIAGEN sample prep

Sample technologies	Selected QIAGEN brands		
Primary sample technology consumables			
• Nucleic stabilization and purification kits designed for primary sample materials (DNA, RNA), manual and automated processing for genotyping, gene expression, viral and bacterial analysis • Mainly based on silica membrane and magnetic bead technologies	• QIAamp • PAXgene • AllPrep	• DNeasy • AdnaTest • QIAprep&amp	• RNeasy • MagAttract
Secondary sample technology consumables			
• Kits and components for purification of nucleic acids from secondary sample materials (e.g., gel, plasmid DNA)	• QIAprep • QIAGEN Plasmid • HiSpeed	• QIAquick • QIAfilter • EndoFree	• DyeEx • R.E.A.L.
Sample technology instruments			
• Instruments for nucleic acid purification, quality control and accessories	• QIAsymphony • EZ1 • TissueLyser	• QIAcube Connect • QIAxpert	• QIAcube HT • QIAxcel

Diagnostic Solutions

Diagnostic solutions include our molecular testing platforms and consumables covering three of our Five Pillars of Growth, which are QuantiFERON, QIAstat-Dx and NeuMoDx, as well as Precision Diagnostics which involves companion diagnostic co-development revenues from projects with pharmaceutical companies, regulated assays and solutions for laboratory developed tests. Additional areas include Oncology and Sexual & Reproductive Health for detection of various diseases and for use in prenatal testing for detection of infectious diseases and for other laboratory processes.

Diagnostic solutions: QuantiFERON gold standard for modern latent TB-testing

Fully automated workflow for large-scale testing needs

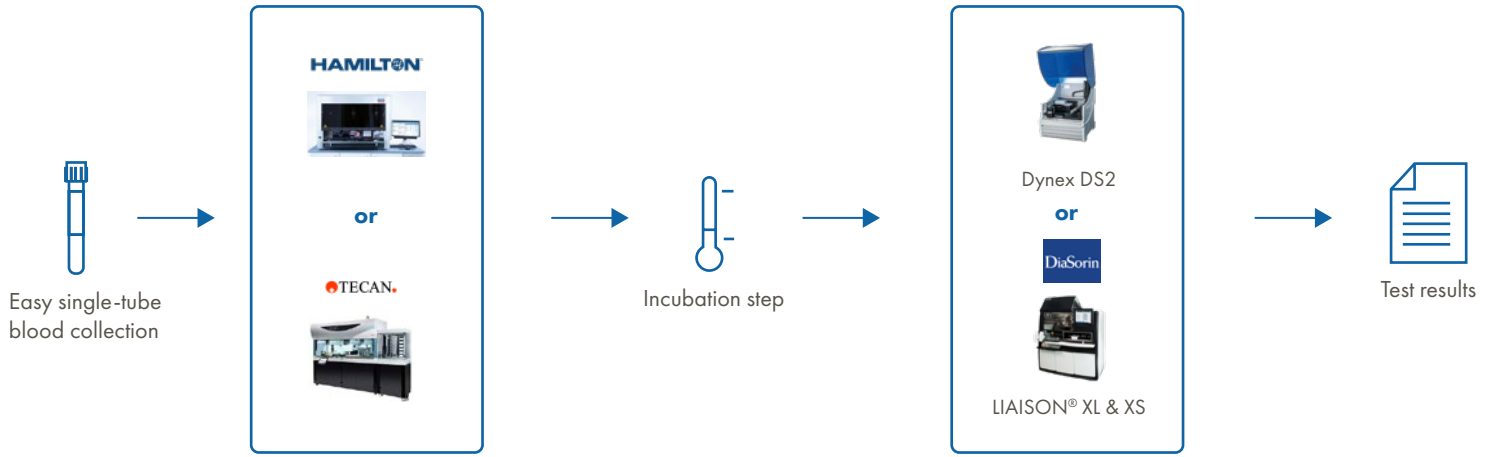
DiaSorin
LIASON XS & XL

> 8,000 systems
Worldwide

QuantiFERON differentiation

- Full automation capability
- Highly specific
- No inter-reader variability
- Electronic results
- Quality-assured laboratory test[1]

[1]Not available in all markets



Diagnostic solutions: NeuMoDx for mid- to high-throughput clinical testing

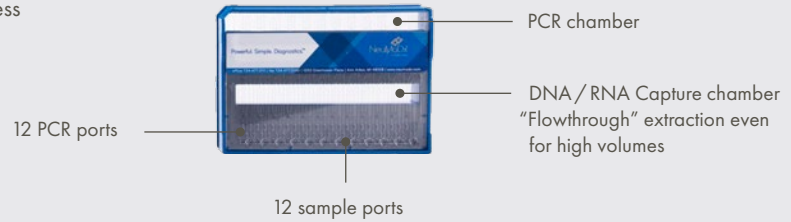
Bringing simplicity of clinical chemistry to integrated PCR testing

- High-throughput
- Ultra-fast results
- Regulated and LDTs in parallel
- True random access
- Cost efficiency

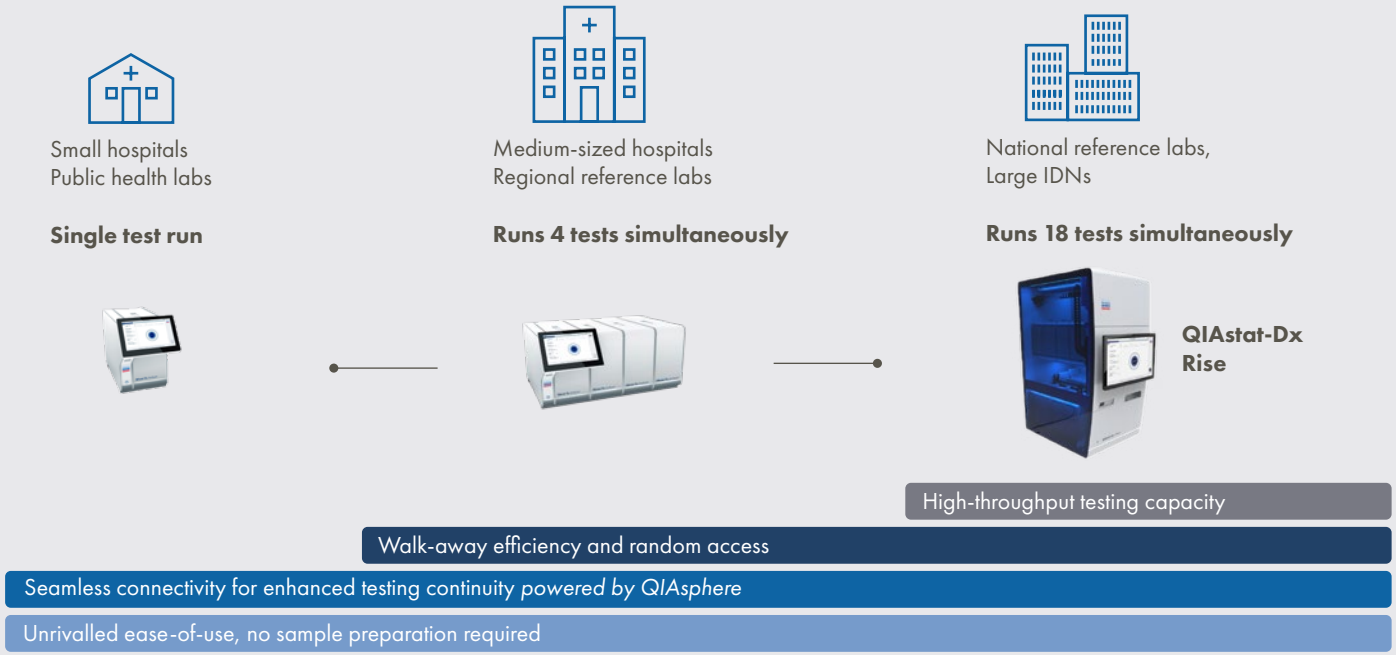
Fully integrated microfluidic design

- No moving parts
- Containment of all waste
- Fewer plastic disposables

Self-contained cartridge



Diagnostic solutions: QIAstat-Dx for near-patient syndromic testing

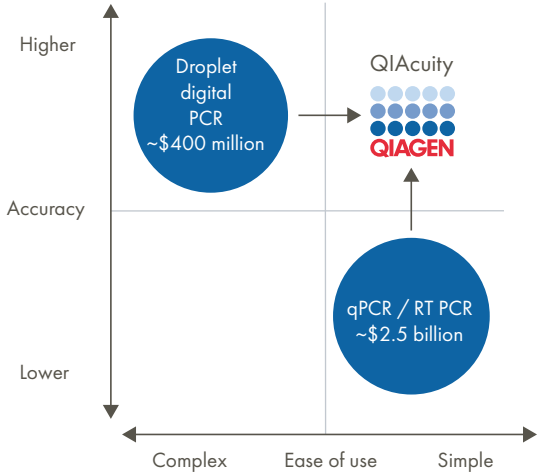


Diagnostic solutions	Selected QIAGEN brands		
Immune response consumables			
• Interferon-Gamma Release Assay (IGRA) for TB testing • Assays for post-transplant testing and viral load monitoring	• QuantiFERON	• QIAreach	
Oncology and Sexual & Reproductive health consumables			
• Assays for analysis of genomic variants such as mutations, insertions, deletions and fusions • Assays for prenatal testing and detection of sexually transmitted diseases and HPV	• Therascreen • AmniSure / PartoSure	• Ipsogen	• digene HC2
Sample to Insight instruments			
• One-step molecular analysis of hard-to-diagnose syndromes • Fully integrated PCR testing	• QIAstat-Dx	• NeuMoDx	

PCR / Nucleic Acid Amplification

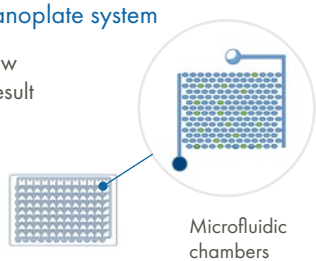
PCR / Nucleic Acid Amplification involves our research and applied PCR solutions and components. The product group includes another of our Five Pillars of Growth: QIAcuity. We offer optimized solutions for end-point PCR, quantitative PCR and digital PCR. Our kits, assays, instruments and accessories amplify and detect targets and streamline workflow for virtually any application.

PCR / Nucleic acid amplification: QIAcuity digital PCR accessing the comprehensive PCR market



Differentiated nanoplate system

Simplified workflow offers sample to result in **under 2 hours**



Easy-to-use system vs. competition

Scalable	More versatile	Easier	Faster
Greater flexibility	Higher multiplexing	Fully automated workflow	Over twice as fast time-to-result

Complete portfolio for research use

New partnerships expanding breadth of applications

GT MOLECULAR — Wastewater testing

ACTOME — Proteomics testing

Millions of assays available on QIAGEN GeneGlobe portal

PCR/Nucleic acid amplification	**Selected QIAGEN brands**		
Research PCR consumables			
• Different generations of PCR, quantitative PCR, reverse transcription and combinations (RT-PCR) kits for analysis of gene expression, genotyping and gene regulation, running on QIAGEN or third-party instruments and technologies	• QuantiTect • OneStep RT-PCR • Type-it • OmniScript	• QuantiFast • QIAGEN Multiplex • miRCURY • miScript	• QuantiNova • HotStarTaq • TopTaq
Human ID / Forensics assay consumables			
• STR assays for Human ID, additional assays for food contamination	• Investigator (human ID / forensics)	• *mericon* (food safety)	
PCR instruments			
• Digital PCR solutions	• QIAcuity • Rotor-Gene Q	• QIAquant • QIAgility	• QIAamplifier 96
OEM consumables			
• Custom-developed and configured enzymes and PCR solutions that are sold to OEM customers	• Provided on an individualized contract basis		

Genomics / NGS

This product group includes our universal NGS (next-generation sequencing) solutions for use with any NGS sequencer as well as the full bioinformatics portfolio offered by QIAGEN Digital Insights.

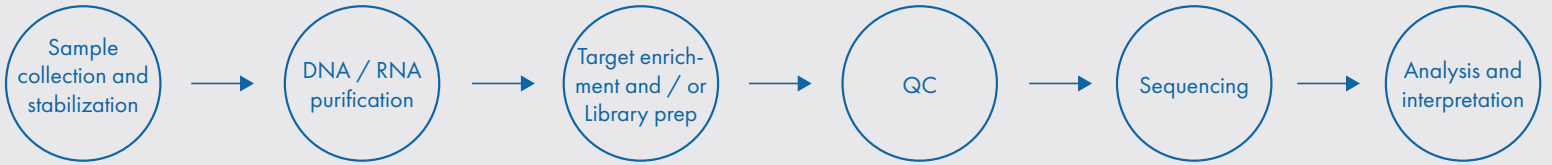
NGS / Genomics: Universal consumables providing high-performance chemistry

Target enrichment and streamlined library preparation leveraging leading sample preparation and bioinformatics

QIAGEN NGS differentiation
Superior technology performance for target enrichment
Gold standard RNAseq products for miRNA and RNA removal
Integrated with leading sample preparation and bioinformatics

NGS research market
>$800m market
>15% CAGR

Over **4 million** samples processed using QIAseq NGS panels



QIAGEN sample preparation

QIAseq Universal NGS solutions Compatible with any sequencer

QIAGEN Digital Insights Compatible with any sequencing data

NGS / Genomics: Bioinformatics serving the research community

Example: Analyzing gene expression data from Sample to Insight with QIAGEN Digital Insights

Biological sample

Freedom of choice

Sample to data

NGS library prep Sequencing

- Platform and Assay agnostic
- Whole transcriptome, Single Cell experiments

Data to information

Normalization and QC
Read mapping
Gene expression

QIAGEN CLC Genomics Workbench, Server and Cloud Engine

Per sample Analysis Portal, BaseSpace Integration

Information to knowledge

Data Integration
Metadata exploration
Differential expression

- **QIAGEN OmicSoft Server and Land Explorer**

Curated Experiments (OncoLand, DiseaseLand, GeneticsLand, Single Cell Land)

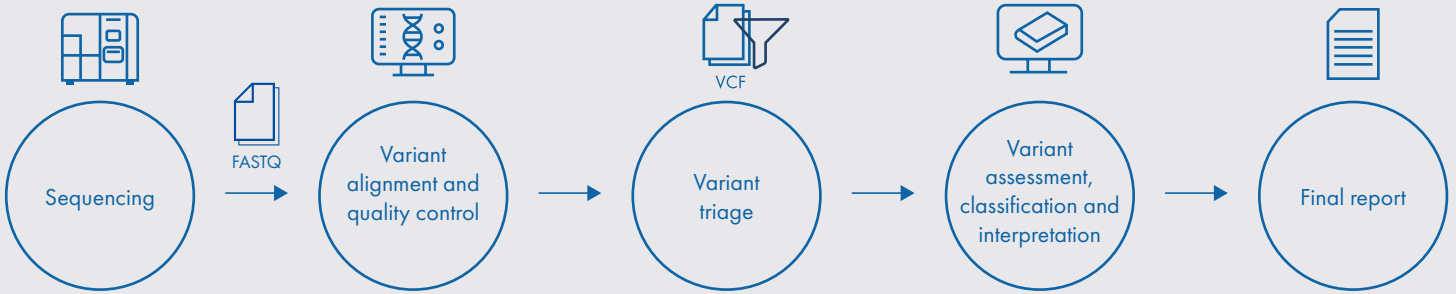
Knowledge to insight

Interpretation Pathway analysis

QIAGEN Ingenuity Pathway Analysis

NGS / Genomics: Bioinformatics serving clinical diagnostics

Software platform for scalable, standardized and reproducible variant interpretation



ONCOLOGY		**QCI PRODUCTS**
Clinical Testing Labs	Freedom of choice	← Precision Insights – QCI Interpret – QCI Interpret One →
Clinical Research Workflows	Freedom of choice	← QCI Translational →
Clinical Research Databases	Freedom of choice	COSMIC-HSMD

HEREDITARY		**QCI PRODUCTS**
Clinical Testing Labs	Freedom of choice	← QCI Interpret →
Clinical Research Workflows	Freedom of choice	← QCI Translational →
Clinical Research Databases	Freedom of choice	HGMD

Genomics / NGS	**Selected QIAGEN brands**		
Universal NGS consumables			
• Predefined and custom NGS gene panels (DNA, RNA), library prep kits and components, whole genome amplification, etc.	• QIAseq	• REPLI-g Epitect	
QIAGEN Digital Insights solutions			
• Bioinformatics solutions analyze and interpret data to deliver actionable insights from NGS. This includes freestanding software or cloud-based solutions and is also integrated into many QIAGEN consumables and instruments	• QIAGEN Clinical Insight • N-of-One • Ingenuity Variant Analysis	• CLC Genomics Workbench • OmicSoft • Ingenuity Pathway Analysis	• QIAGEN Knowledge Base • HGMD
Custom laboratory and genomic services			
• Custom services such as DNA sequencing, whole genome amplification, and non-cGMP DNA production	• Provided on an individualized contract basis		

Other

Revenues from various sources including protein biology products, royalties, intellectual property and freight charges.

Principal Markets

We sell our products to more than 500,000 customers in two broad customer groups: Molecular Diagnostics (clinical testing) and Life Sciences (academia, pharmaceutical R&D and applied testing). We estimate the total addressable market at over $11 billion annually.

Molecular Diagnostics: Improving outcomes for patients

~$6 billion
addressable market

QIAGEN value

- 2022 sales of ~$1.1 billion
- Focused on high-growth, high-demand opportunities
- Strong automation portfolio with multi-year assay menu expansion underway

Selected QIAGEN products

Sample technologies

- Tissue
- Blood
- Liquid biopsy
- Swabs, other

Assay technologies

Indication areas
- Oncology
- Immune modulation
- Infectious diseases technologies: QFT, PCR, NGS

Instruments

- QIAstat-Dx
- NeuMoDx
- QIAsymphony RGQ

Bioinformatics

QIAGEN Clinical Insight (QCI)
- Hereditary diseases
- Somatic and germline cancers
- All diseases

Life Sciences: Enabling the advancement of science

~$5 billion
addressable market

QIAGEN value

- 2022 sales of ~$1 billion
- Recognized innovator supporting breakthrough science
- Ability to translate innovations into commercial products

Selected QIAGEN products

Sample technologies

- ~300 different kit types
- Liquid biopsy, tissue, blood, cells, plants, microbiome, other

Assay technologies

- Real-time PCR
- Digital PCR
- Next-generation sequencing

Instruments

- QIAsymphony
- QIAcube Connect
- QIAcuity digital PCR
- RotorGene Q

Bioinformatics

- Ingenuity Pathway Analysis (IPA)
- Genomics Workbench / Server
- Microbial Pro Suite / RNA-seq
- Microbial Epigenetics

Molecular Diagnostics

The molecular diagnostics market includes healthcare providers engaged in many aspects of patient care that require accurate diagnoses and insights to guide treatment decisions in oncology, infectious diseases and immune monitoring.

We offer one of the broadest portfolios of molecular technologies for healthcare. The success of molecular testing in healthcare depends on the ability to accurately analyze purified nucleic acid samples from sources such as blood, tissue, body fluids and stool. Automated systems process tests reliably and efficiently, often handling hundreds of samples simultaneously. Our range of assays for diseases and biomarkers speed up and simplify laboratory workflow and standardize many lab procedures.

Molecular testing is the most dynamic segment of the global in vitro diagnostics market. The pandemic has demonstrated the value of molecular testing in healthcare and we expect the market to provide significant growth opportunities.

We have built a position as a preferred partner to co-develop companion diagnostics paired with targeted drugs and have created a rich pipeline of molecular tests that are transforming the treatment of cancer and other diseases. We have more than 25 master collaboration agreements with pharmaceutical industry customers, some with multiple co-development projects. In 2022, we continued to expand on these partnerships with new agreements, for example a new partnership with Neuron23 for the

development of a companion diagnostic for Parkinson's disease. Also, our portfolio of assays was expanded following the FDA approval of a companion diagnostic for Mirati's therapy for Non-Small Cell Lung Cancer. Companion diagnostics move through clinical trials and regulatory approvals, along with the paired drugs, to commercialization and marketing to healthcare providers.

Molecular Diagnostics customers accounted for $1.1 billion, $1.1 billion, and $904 million of our sales in 2022, 2021 and 2020, respectively.

What does Sample to Insight look like in Molecular Diagnostics?

A patient blood sample is collected using QIAGEN's proprietary blood collection tubes

QIAGEN's QuantiFERON-TB Gold Plus assay is used to analyze for latent infections with *M. tuberculosis* bacteria

Test results are delivered with one visit and in less than 24 hours

More than

100 million

QuantiFERON TB tests have been run in the global fight against TB

Life Sciences

The Life Sciences market includes governments and biotechnology companies – and researchers who use molecular testing and technologies and are generally served by public funding in areas such as medicine and clinical development, forensics and exploring the building blocks of life.

We partner with customers across diverse disciplines in academia and industry, providing sample technologies, assay technologies, bioinformatics and services to universities and institutes, pharmaceutical and biotech companies, government and law enforcement agencies.

We provide Sample to Insight solutions to academic and research institutions around the world. We focus on enabling researchers to use reliable, fast, highly reproducible and high-quality technologies, sometimes replacing time-consuming traditional or in-house methods. We often partner with leading institutions on research projects and develop customized solutions such as NGS panels for the digital sequencing of multiple gene targets.

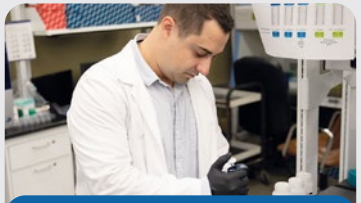
In the course of the COVID-19 pandemic, we served increased demand from viral and vaccine researchers for RNA extraction, general PCR reagents and enzymes, and universal NGS solutions.

We are a global leader in solutions for governments and industry, particularly in forensic testing and human identification. The value of genetic "fingerprinting" has been proven in criminal investigations and examinations of paternity or ancestry, as well as in food safety and veterinary diagnostics. We provide sample collection and analytical solutions for law enforcement and human identification labs, as well as advanced technologies for studies of microbiomes and their effect on health and the environment.

We have deep relationships with pharmaceutical and biotechnology companies. Drug discovery and translational research efforts increasingly employ genomic information, both to guide research in diseases and to differentiate patient populations that are most likely to respond to particular therapies. We estimate that about half of our sales to these companies supports research, while the other half supports clinical development, including stratification of patient populations based on genetic information. Also, QIAGEN Digital Insights solutions are widely used to guide pharmaceutical research.

Life Sciences customers accounted for $1.0 billion, $1.1 billion, and $966 million of our sales in 2022, 2021 and 2020, respectively.

What does Sample to Insight look like in the Life Sciences?



Wastewater samples are collected and brought to a lab, where RNA and DNA are extracted with QIAGEN kits and instrument

QIAGEN's QIAcuity digital PCR system is used to analyze target sequences

QIAGEN bioinformatics are used to analyze the data to monitor for new infectious disease outbreaks

70%

of all U.S. states are using QIAcuity for ultra-sensitive wastewater detection of SARS-CoV-2 infections

Competition

In sample technology products, we also experience competition in various markets from other companies providing sample preparation products in kit form and assay solutions. These competitors include, but are not limited to, companies with a focus on nucleic acid separation and purification, assay solutions, transfection reagents and protein fractionation products. We compete with other suppliers through innovative technologies and products, offering a comprehensive solution for nucleic acid collection, pre-treatment, separation and purification needs and providing significant advantages in speed, reliability, convenience, reproducibility and ease of use.

Some of our other products within our molecular diagnostics customer class, such as tests for chlamydia, gonorrhea, hepatitis B virus, herpes simplex virus and CMV, compete against existing screening, monitoring and diagnostic technologies, including tissue culture and antigen-based diagnostic methodologies. We believe the primary competitive factors in the market for gene-based probe diagnostics and other screening devices are clinical validation, performance and reliability, ease of use, standardization, cost, proprietary position, competitors' market shares, access to distribution channels, regulatory approvals and reimbursement.

We believe our competitors typically do not have the same comprehensive approach to sample to insight solutions as we do, nor do they have the ability to provide the broad range of technologies and depth of products and services that we offer. With our complete range of manual and fully automated solutions, we believe we offer the value of standardization of procedures and, therefore, more reliable results. We also believe our integrated strategic approach gives us a competitive advantage. The quality of sample technologies - an area in which we have a unique market and leadership position - is a key prerequisite for reliable molecular assay solutions, which increasingly are being applied in emerging markets such as Molecular Diagnostics and Applied Testing.

Current and potential competitors may be in the process of seeking FDA or foreign regulatory approvals for their respective products. Our continued future success will depend in large part on our ability to maintain our technological advantage over competing products, expand our market presence and preserve customer loyalty. There can be no assurance that we will be able to compete effectively in the future or that development by others will not render our technologies or products non-competitive.

Global presence with a focus on the most attractive developed and emerging markets

Our global and regional headquarters

Venlo
Netherlands — Global HQ

Germantown
Maryland — Americas HQ

Hilden
Germany — EMEA HQ

Shanghai
China — Asia-Pacific HQ

shipping product to
>170
countries

direct sales in
>30
countries

Global Presence by Category of Activity and Geographic Market

Product Category Information

Net sales for the product categories are attributed based on those revenues related to sample and assay products and related revenues including bioinformatics solutions, and revenues derived from instrumentation sales.

Net Sales (in millions)	2022	2021	2020
Consumables and related revenues	$1,888.9	$1,986.3	$1,615.4
Instrumentation	252.6	265.3	254.9
Total	**$2,141.5**	**$2,251.7**	**$1,870.3**

Geographical Information

We currently market products in more than 130 countries. The following table shows total revenue by geographic market for the past three years (net sales are attributed to countries based on the location of the customer, as certain subsidiaries have international distribution):

Net Sales (in millions)	2022	2021	2020
United States	$909.6	$909.7	$728.6
Other Americas	88.1	97.7	96.9
Total Americas	997.8	1,007.4	825.5
Europe, Middle East and Africa	733.5	814.4	682.3
Asia Pacific, Japan and Rest of World	410.3	429.9	362.6
Total	**$2,141.5**	**$2,251.7**	**$1,870.3**

We have built an increasing presence in key markets as a growth strategy. In 2022, the top six growth markets—Brazil, India, China, South Korea, Mexico and Turkey—contributed approximately 13% of net sales. Russia was excluded as a market in early 2022 following the invasion of Ukraine, and subsequent decision to stop business activities in Russia and Belarus.

Seasonality

Our business does not experience significant predictable seasonality. Historically, a significant portion of our sales has been to researchers, universities, government laboratories and private foundations whose funding is dependent upon grants from government agencies, such as the National Institutes of Health and similar bodies. To the extent that our customers experience increases, decreases or delays in funding arrangements and budget approvals, and to the extent that customers' activities are slowed, such as during times of higher unemployment, vacation periods or delays in approval of government budgets, we may experience fluctuations in sales volumes during the year or delays from one period to the next in the recognition of sales. Additionally, we have customers who are active in the diagnostics testing market, and sales to these customers fluctuate to the extent that their activities are impacted by public health concerns such as the timing and severity of viral infections such as the influenza or SARS-CoV-2 viruses.

Suppliers

We strive to ensure that our quality standards, compliance with laws and regulations as well as environmental and social standards are maintained along the entire value chain of suppliers and partners. We demand the same from our business partners. Suppliers are subjected to a risk analysis with regard to environmental and social criteria

based on their geographic location. Our supplier policy, which is available on our website, contains requirements with regard to legal compliance, bribery and corruption, labor rights, non-discrimination and fair treatment, health and safety as well as environmental protection and conservation. In 2022, all new suppliers have signed our supplier policy. In addition, first-tier suppliers must confirm REACH, RoHS and conflict minerals compliance as appropriate. As part of our supplier assessment procedures, we evaluate on a monthly basis the supply performance of our raw material and component suppliers, and we assess on a continuous basis potential alternative sources of such materials and components, and on a yearly basis the risks and benefits of reliance on our existing suppliers.

We buy materials for our products from many suppliers, and are not dependent on any one supplier or group of suppliers for our business as a whole. Raw materials generally include chemicals, raw separation media, biologics, plastics, electronics and packaging. Certain raw materials are produced under our specifications. We have inventory agreements with the majority of our suppliers and we closely monitor stock levels to maintain adequate supplies. In 2022, the volatility in product availability and pricing drastically increased compared to previous years. We have used long-term supply contracts to secure raw materials and mitigate a majority of availability challenges that we have currently identified. The overall increase in energy costs and materials has had a significant adverse impact on our costs for raw materials, specifically plastics and packaging as well as for logistics. Long-term supply contracts have helped to limit the risks for shortages in electronic components, but have still resulted in price increases. We expect some level of market constraints to continue in 2023. We strive to maintain inventories at a sufficient level to ensure reasonable customer service levels and to guard against normal volatility in availability. These initiatives help us avoid shortages and keep pricing competitive.

Research and Development

We are committed to expanding our global leadership in Sample to Insight solutions in Molecular Diagnostics and the Life Sciences. We target our research and development resources at the most promising technologies to address the unmet needs of our customers in healthcare and research labs in key geographic markets.

Innovation at QIAGEN follows parallel paths:

- Creating new systems for automation of workflows - platforms for laboratories, hospitals and other users of novel molecular technologies.
- Expanding our broad portfolio of novel content - including assays to detect and measure biomarkers for disease or genetic identification.
- Integrating QIAGEN Digital Insights with the testing process - software and cloud-based resources to interpret and transform raw molecular data into useful insights.

Innovation in automation systems positions us in fast-growing fields of molecular testing, and generates ongoing demand for our consumable products. We are developing and commercializing a deep pipeline of assays for preventive screening and diagnostic profiling of diseases, detection of biomarkers to guide Precision Diagnostics in cancer and other diseases, and other molecular targets. Our assay development program aims to commercialize tests that will add value to our QIAsymphony, QIAstat-Dx and NeuMoDx automation systems in the coming years, as well as next-generation sequencing (NGS) kits to support our universal NGS franchise and our in vitro diagnostics partnership with Illumina. We continue to develop applications for the QIAcuity digital PCR system which is designed to make digital PCR technology available to Life Sciences laboratories worldwide.

Sales and Marketing

We market our products in more than 130 countries, mainly through subsidiaries in markets in the Americas, Europe, Australia and Asia with the greatest sales potential. Experienced marketing and sales staff, many of them scientists with academic degrees in molecular biology or related areas, sell our products and support our customers. Business managers oversee key accounts to ensure that we serve customers' commercial needs, such as procurement processes, financing, data on costs and the value of our systems, and collaborative relationships. In many markets, we have specialized independent distributors and importers.

Our marketing strategy focuses on providing differentiated, high-quality products across the value chain from Sample to Insight, integrating components into end-to-end solutions when possible, and enhancing relationships with commitment to technical excellence and customer service. Our omni-channel approach seeks to engage customers through their preferred channels - online, by phone, in person, etc. - and to optimize investment in different customer types.

We continue to drive the growth of our digital marketing channels - including our website (www.qiagen.com), product-specific sites and social media. Since the onset of the pandemic there has been an increase in virtual events and use of digital sales channels. We have likewise increased the activities in digital marketing to adapt to these market changes, such as installing an in-house studio to facilitate creation of video content and live virtual events.

Our eCommerce team works with clients to provide automated processes supporting a variety of electronic transactions and all major eProcurement systems. Information contained on our website, or accessed through it, is not part of this Annual Report.

My QIAGEN is an easy-to-use self-service portal that is personalized to our customers' needs and enables customers to manage different activities in one central place. Customers can now easily reorder, place bulk orders, apply quotes to their cart, and then track their order status. Functionality in the dashboard allows customers to monitor their instrument use and view the status of licenses and service agreements. Additionally, customers can access our exclusive content and services, such as webinars, handbooks and other documents.

Our GeneGlobe Design & Analysis Hub (www.geneglobe.com) is a valuable outreach to scientists in pharma and academia, enabling researchers to search and order from approximately 25 million pre-designed and custom PCR assay kits, NGS assay panels and other products. The new hub brings next-level experiment planning, execution and follow-up to life science researchers, linking our QIAGEN Digital Insights solutions with ordering of assays to accelerate research.

We use a range of tools to provide customers with direct access to technical support, inform them of new product offerings, and enhance our reputation for technical excellence, high-quality products and commitment to service. For example, our technical service hotline allows existing or potential customers to discuss a wide range of questions about our products and molecular biology procedures, online or via phone, with Ph.D. and M.Sc. scientists at QIAGEN. Frequent communication with customers enables us to identify market needs, learn of new developments and opportunities, and respond with new products.

We also distribute publications, including our catalog, to existing and potential customers worldwide, providing new product information, updates, and articles about existing and new applications. In addition, we hold numerous scientific seminars at clinical, academic and industrial research institutes worldwide and at major scientific and clinical meetings. We conduct direct marketing campaigns to announce new products and special promotions, and we offer personalized electronic newsletters and webinars highlighting molecular biology applications.

For laboratories that frequently rely on our consumables, the QIAstock program maintains inventory on-site to keep up with their requirements. QIAGEN representatives make regular visits to replenish the stock and help with other needs, and we are automating this process with digital technologies. Easy-to-use online ordering, inventory monitoring and customer-driven changes make QIAstock an efficient system for providing ready access to our products for the hundreds of customers worldwide who use this program.

Intellectual Property, Proprietary Rights and Licenses

We have made and expect to continue to make investments in intellectual property. In 2022, additions to our intangible assets outside of business combinations totaled $19.6 million. While we do not depend solely on any individual patent or technology, we are significantly dependent in the aggregate on technology that we own or license. Therefore, we consider protection of proprietary technologies and products one of the major keys to our business success. We rely on a combination of patents, licenses and trademarks to establish and protect proprietary rights. As of December 31, 2022, we owned 314 issued patents in the United States, 260 issued patents in Germany and 1,776 issued patents in other major industrialized countries. We had 370 pending patent applications. Our policy is to file patent applications in Western Europe, the United States and Japan. Patents in most countries have a term of 20 years from the date of filing the patent application. We intend to aggressively prosecute and enforce patents and to otherwise protect our proprietary technologies. We also rely on trade secrets, know-how, continuing technological innovation and licensing opportunities to develop and maintain our competitive position.

Our practice is to require employees, consultants, outside scientific collaborators, sponsored researchers and other advisers to execute confidentiality agreements upon commencement of their relationships with us. These agreements provide that all confidential information developed by or made known to the individual during the course of the relationship is to be kept confidential and not disclosed to third parties, subject to a right to publish certain information in scientific literature in certain circumstances and to other specific exceptions. In the case of our employees, the agreements provide that all inventions conceived by individuals in the course of their employment will be our exclusive property.

See “Risk Factors” included below for details regarding risks related to our reliance on patents and proprietary rights.

Government Regulations

We are subject to a variety of laws and regulations in the European Union, the United States and other countries. The level and scope of the regulation varies depending on the country or defined economic region, but may include, among other things, the research, development, testing, clinical trials, manufacture, storage, recordkeeping, approval, labeling, promotion and commercial sales and distribution, of many of our products.

European Union Regulations

In the European Union, in vitro diagnostic medical devices (IVDs) had been regulated under EU-Directive 98/79/EC (IVD Directive) and corresponding national provisions. The IVD Directive required that medical devices meet the essential requirements, including those relating to device safety and efficacy, set out in an annex of the Directive. According to the IVD Directive, EU Member States have presumed compliance with these essential requirements for devices that are in conformity with the relevant national standards transposing the harmonized standards, such as ISO 13485:2016, the quality system standard for medical device manufacturers.

IVD medical devices, other than devices for performance evaluation, must bear the CE marking of conformity when they are placed on the European market. The CE mark is a declaration by the manufacturer that the product meets all the appropriate provisions of the applicable legislation implementing the relevant European Directive. As a general rule, the manufacturer must follow the EU declaration of conformity procedure to obtain or apply a CE mark.

In May 2022, the Directive was replaced by the In Vitro Diagnostic Device Regulation (IVDR) (EU) 2017/746 that was published in May 2017 and given a 5-year transition period until its full implementation on May 26, 2022. Unlike the IVD Directive, the IVDR has binding legal force throughout every Member State. The major goal of the IVDR was to standardize diagnostic procedures within the EU, increase reliability of diagnostic analysis and enhance patient safety. Under the IVDR as enacted by the European Commission (EC), IVDs are subject to additional legal regulatory requirements. Among other things, the IVDR introduces a new risk-based classification system and requirements for conformity assessments. Under the IVDR and subsequent amendments, IVDs already certified by a Notified Body may remain on the market until May 26, 2025, and IVDs certified without the involvement of a Notified Body may be placed on, or remain in, the market for up to two additional years (until May 26, 2027),

or three years (until May 26, 2028) respectively, depending on the classification of the IVD. The manufacturers of such devices remaining on the market must comply with specific requirements in the IVDR, but ultimately, such products, as with all new IVDs, will have to undergo the IVDR's conformity assessment procedures. Under the IVD Directive the majority of QIAGEN products were classified as self-declared, while under IVDR most of QIAGEN products will require pre-approval, and those that are in the highest risk class will have to be tested by a Designated Reference Laboratory. In addition, the IVDR imposes additional requirements relating to post-market surveillance and submission of post-market performance follow-up reports.

The EC has designated seven (7) Notified Bodies to perform conformity assessments under the IVDR, including QIAGEN's Notified Bodies, TÜV Rheinland and BSI. MedTech Europe has issued guidance relating to the IVDR in several areas, e.g., clinical benefit, technical documentation, state of art, accessories, and EUDAMED. Open points still being addressed/defined are the designation of EU Reference Laboratories and Common Specification for high risk IVDs. With respect to the current COVID-19 pandemic, the EC has classified SARS-CoV-2 assays as high risk.

The General Data Protection Regulation (GDPR) of the European Union, imposes restrictions on the transfer, access, use, and disclosure of health and other personal information. We have implemented the requirements set forth by the GDPR, which took effect on May 25, 2018. GDPR and other EU data privacy and security laws impact our business either directly or indirectly. Our failure to comply with applicable privacy or security laws or significant changes in these laws could significantly impact our business and future business plans. For example, we may be subject to regulatory action, fines, or lawsuits in the event we fail to comply with applicable privacy laws. We may face significant liability in the event any of the personal information we maintain is lost or otherwise subject to misuse or other wrongful use, access or disclosure.

United Kingdom

The UK's withdrawal from the EU has major ramifications for IVD manufacturers. Among other things, companies now have to follow new procedures that apply in the UK, including appointment of a UK Responsible Person rather than relying on European Authorized Representatives, to manage their compliance efforts in the UK.

The UK Medicine and Healthcare Products Regulatory Agency (MHRA) issued guidance on how the country will regulate IVDs after January 1, 2021. According to MHRA, IVDs will require certification in the UK, which is defined as England, Scotland and Wales, while companies will still be able to sell tests in Northern Ireland under existing EU IVD regulations. Under subsequent amendments to MHRA guidance, MHRA will continue to recognize CE marks until December 31, 224 although companies wishing to place IVDs on the UK market were required to register as such with MHRA by June 30, 2023. After December 31, 2024, companies selling in the UK will have to obtain a new marking called a UK Conformity Assessed mark (UKCA).

United States

In the United States, in vitro diagnostic products are subject to regulation by the FDA as medical devices to the extent that they are intended for use in the diagnosis, treatment, mitigation or prevention of disease or other conditions.

Certain types of tests, like some that we manufacture and sell for research use only in the United States, are not subject to the FDA's premarket review and controls because we do not promote these tests for clinical diagnostic use, and they are labeled "For Research Use Only," or RUO, as required by the FDA. Other tests, known as laboratory developed tests (LDTs), which are IVDs that are designed, manufactured and used within a single, CLIA-certified, clinical laboratory that meets applicable requirements to perform high-complexity testing, have generally been subject to enforcement discretion and not actively regulated by the FDA. As LDTs have increased in complexity, the FDA has taken steps towards developing a risk-based approach to the regulation of LDTs; however, most LDTs currently remain under FDA enforcement discretion. Congress has also signaled interest in clarifying the regulatory landscape for LDTs. For several years, members of Congress have been working with stakeholders on a possible bill to regulate in vitro clinical tests including LDTs. Most recently, legislation called the Verifying Accurate, Leading-edge IVCT Development (VALID Act), has been garnering bipartisan and bicameral support. If enacted, clinical laboratories that develop and offer LDTs and traditional IVD medical device manufacturers would be subject to similar

regulatory oversight. The VALID Act defines both LDTs and IVDs as in vitro clinical tests (IVCT) and would establish a new regulatory framework under the Food, Drug and Cosmetic Act (FDCA) for the review and oversight of IVCTs. The proposed regulatory framework adopts various concepts from the FDCA, utilizing a risk-based approach that aims to ensure that all marketed IVCTs have a reasonable assurance of both analytical and clinical validity.

Medical devices, including IVDs, are classified into one of three classes depending on the controls deemed by the FDA to be necessary to reasonably assure their safety and effectiveness. Class I devices are generally exempt from premarket review and are subject to general controls, including adherence to the FDA's Quality System Regulation (QSR), which describes device-specific current good manufacturing practices, as well as regulations requiring facility registration and product listing, reporting of adverse medical events, and appropriate, truthful and non-misleading labeling, advertising and promotional materials. Class II devices are generally subject to premarket notification (or 510(k) clearance), general controls and special controls, including performance standards, post-market surveillance, patient registries or FDA guidance documents describing device-specific special controls. Class III devices are subject to most of the previously identified requirements as well as to premarket approval (PMA). The payment of a user fee, which is typically adjusted annually, to the FDA is usually required upon filing a premarket submission (e.g., premarket notification, premarket approval, or De Novo classification request) for FDA review.

510(k) Premarket Notification. A 510(k) premarket notification requires the sponsor to demonstrate that a medical device is substantially equivalent to another marketed device, termed a "predicate device," that is legally marketed in the United States and is not subject to premarket approval. A device is substantially equivalent to a predicate device if its intended use(s), performance, safety and technological characteristics are similar to those of the predicate; or has a similar intended use but different technological characteristics, where the information submitted to the FDA does not raise new questions of safety and effectiveness and demonstrates that the device is at least as safe and effective as the legally marketed device.

If the FDA determines that the device (1) is not substantially equivalent to a predicate device, (2) has a new intended use compared to the identified predicate, (3) has different technological characteristics that raise different questions of safety and effectiveness, or (4) has new indications for use or technological characteristics and required performance data were not provided, it will issue a "Not Substantially Equivalent" (NSE) determination. If the FDA determines that the applicant's device is substantially equivalent to the identified predicate device(s), the agency will issue a 510(k) clearance letter that authorizes commercial marketing of the device for one or more specific indications for use.

De Novo Classification. If a previously unclassified new medical device does not qualify for the 510(k) premarket notification process because no predicate device to which it is substantially equivalent can be identified, the device is automatically classified into Class III. However, if such a device would be considered low or moderate risk (in other words, it does not rise to the level of requiring the approval of a PMA), it may be eligible for the De Novo classification process. The De Novo classification process allows a device developer to request that the novel medical device be reclassified as either a Class I or Class II device, rather than having it regulated as a high risk Class III device subject to the PMA requirements. If the manufacturer seeks reclassification into Class II, the classification request must include a draft proposal for special controls that are necessary to provide a reasonable assurance of the safety and effectiveness of the medical device.

Premarket Approval. The PMA process is more complex, costly and time consuming than the 510(k) process. A PMA must be supported by more detailed and comprehensive scientific evidence, including clinical data, to demonstrate the safety and efficacy of the medical device for its intended purpose. A clinical trial involving a "significant risk" device may not begin until the sponsor submits an investigational device exemption (IDE) application to the FDA and obtains approval to begin the trial.

After the PMA is submitted, the FDA has 45 days to make a threshold determination that the PMA is sufficiently complete to permit a substantive review. If the PMA is complete, the FDA will file the PMA and begin the substantive review process. The FDA is subject to a performance goal review time for a PMA that is 180 days from the date of filing, although in practice this review time is longer. Questions from the FDA, requests for additional data and referrals to advisory committees may delay the process

considerably. The total process may take several years and there is no guarantee that the PMA will ever be approved. Even if approved, the FDA may limit the indications for which the device may be marketed. The FDA may also request additional clinical data as a condition of approval or after the PMA is approved. Any changes to the medical device may require a supplemental PMA to be submitted and approved before the modified device may be marketed.

Any products manufactured and sold by us pursuant to FDA clearances or approvals will be subject to pervasive and continuing regulation by the FDA, including quality system requirements, record-keeping requirements, reporting of adverse experiences with the use of the device and restrictions on the advertising and promotion of our products. Device manufacturers are required to register their establishments and list their devices with the FDA and are subject to periodic inspections by the FDA and certain state agencies. Noncompliance with applicable FDA requirements can result in, among other things, warning letters, fines, injunctions, civil penalties, recalls or seizures of products, total or partial suspension of production, refusal of the FDA to grant 510(k) clearance or PMA approval for new devices, withdrawal of 510(k) clearances and/or PMA approvals and criminal prosecution.

As a result of the COVID-19 pandemic, the Secretary of the U.S. Department of Health and Human Services declared a public health emergency and authorized the FDA to issue emergency use authorizations (EUAs) to provide more timely access to critical medical countermeasures (including medicines and diagnostic tests) when there are no adequate, approved, and available alternative options. EUAs remain in effect until the emergency declaration ends unless the FDA decides to revise or revoke an EUA at an earlier point as the agency considers public health needs during the emergency and new data on an authorized product's safety and effectiveness, or as products meet the criteria for FDA approval or clearance. Manufacturers of several types of SARS-CoV-2 assays have been granted EUAs, including QIAGEN. The FDA has indicated the withdrawal of EUAs for COVID-19 countermeasures will be done in a gradual, phased process and issued draft guidance on a transitional plan.

Regulation of Companion Diagnostic Devices

If a sponsor or the FDA believes that a diagnostic test is essential for the safe and effective use of a corresponding therapeutic product, the sponsor of the therapeutic product will typically work with a collaborator to develop an in vitro companion diagnostic device. The FDA defines an IVD companion diagnostic device as a device that provides information that is essential for the safe and effective use of a corresponding therapeutic product.

The FDA has also introduced the concept of complementary diagnostics that are distinct from companion diagnostics because they provide additional information about how a drug is used or identify patients who are likely to derive the greatest benefit from therapy without being required for the safe and effective use of that drug. The FDA has not yet provided much guidance on the regulation and use of complementary diagnostics, but several have been approved.

The FDA indicated that it will apply a risk-based approach to determine the regulatory pathway for IVD companion diagnostic devices, as it does with all medical devices. This means that the regulatory pathway will depend on the level of risk to patients, based on the intended use of the IVD companion diagnostic device and the controls necessary to provide a reasonable assurance of safety and effectiveness. We expect that any IVD companion diagnostic device that we develop will utilize the PMA pathway and that a clinical trial performed under an IDE will have to be completed before the PMA may be submitted.

The FDA expects that the therapeutic sponsor will address the need for an IVD companion diagnostic device in its therapeutic product development plan and that, in most cases, the therapeutic product and its corresponding IVD companion diagnostic device will be developed contemporaneously. If the companion diagnostic test will be used to make critical treatment decisions such as patient selection, treatment assignment, or treatment arm, it will likely be considered a significant risk device for which a clinical trial will be required.

The sponsor of the IVD companion diagnostic device will be required to comply with the FDA's IDE requirements that apply to clinical trials of significant risk devices. If the diagnostic test and the therapeutic drug are studied together to support their respective approvals, the clinical trial must meet both the IDE and IND requirements.

Regulation of Research Use Only Products

Some of our products are sold for research purposes in the United States, and labeled "For Research Use Only" (RUO) or "for molecular biology applications." RUO refers to devices that are in the laboratory phase of development, while investigational use only, or IUO, refers to devices that are in the product testing phase of development. These types of devices are exempt from most regulatory controls pursuant to long-standing FDA guidance on RUO/IUO diagnostics. Because we do not promote our RUOs for clinical diagnostic use, or provide technical assistance to clinical laboratories with respect to these tests, we believe that these tests are exempt from FDA's premarket review and other requirements. If the FDA were to disagree with our designation of any of these products, we could be forced to stop selling the product until we obtain appropriate regulatory clearance or approval. Further, it is possible that some of our RUOs may be used by some customers without our knowledge in their LDTs, which they may then develop, validate and promote for clinical use. However, QIAGEN does not promote these products for use in LDTs or assist in the development of such LDTs for clinical diagnostic use.

HIPAA and Other Privacy and Security Laws

The Health Insurance Portability and Accountability Act of 1996 (HIPAA), established comprehensive federal standards for the privacy and security of health information. The HIPAA standards apply to health plans, healthcare clearing houses, and healthcare providers that conduct certain healthcare transactions electronically (Covered Entities,), as well as individuals or entities that perform services for them involving the use, or disclosure of, individually identifiable health information or "protected health information" under HIPAA. Such service providers are called "Business Associates." Title II of HIPAA, the Administrative Simplification Act, contains provisions that address the privacy of health data, the security of health data, the standardization of identifying numbers used in the healthcare system and the standardization of certain healthcare transactions. The privacy regulations protect medical records and other protected health information by limiting their use and release, giving patients the right to access their medical records and limiting most disclosures of health information to the minimum amount necessary to accomplish an intended purpose. The HIPAA security standards require the adoption of administrative, physical, and technical safeguards and the adoption of written security policies and procedures to maintain the security of protected health information.

On February 17, 2009, Congress enacted Subtitle D of the Health Information Technology for Economic and Clinical Health Act (HITECH) provisions of the American Recovery and Reinvestment Act of 2009. HITECH expanded and strengthened HIPAA, created new targets for enforcement, imposed new penalties for noncompliance and established new breach notification requirements for Covered Entities and Business Associates.

Under 'HITECH's breach notification requirements, Covered Entities must report breaches of protected health information that has not been encrypted or otherwise secured. Required breach notices must be made as soon as is reasonably practicable, but no later than 60 days following discovery of the breach. Reports must be made to affected individuals and to the Secretary and, in some cases depending on the size of the breach, they must be reported through local and national media. Breach reports can lead to investigation, enforcement and civil litigation, including class action lawsuits.

Our Redwood City entity serves in some cases as a Business Associate to customers who are subject to the HIPAA regulations. In this capacity, we maintain an active compliance program that is designed to identify security incidents and other issues in a timely fashion and enable us to remediate, mitigate harm or report if required by law. We are subject to prosecution and/or administrative enforcement and increased civil and criminal penalties for non-compliance, including a new, four-tiered system of monetary penalties adopted under HITECH. We are also subject to enforcement by state attorneys general who were given authority to enforce HIPAA under HITECH. To avoid penalties under the HITECH breach notification provisions, we must ensure that breaches of protected health information are promptly detected and reported within the company, so that we can make all required notifications on a timely basis. However, even if we make required reports on a timely basis, we may still be subject to penalties for the underlying breach.

California has also adopted the California Consumer Privacy Act of 2018, or CCPA, which took effect on January 1, 2020 and became enforceable by the state attorney general on July 1, 2020. The CCPA establishes a new privacy framework for covered businesses by creating an expanded definition of personal information, establishing new data privacy rights for consumers in the State of California, imposing special rules on the collection of consumer data from minors, and creating a new and potentially severe statutory damages framework for violations of the CCPA and for businesses that fail to implement reasonable security procedures and practices to prevent data breaches.

The regulations issued under the CCPA have been modified several times. Additionally, a new privacy law, the California Privacy Rights Act, or CPRA, was approved by California voters in the election on November 3, 2020. The CPRA imposes additional data protection obligations on companies doing business in California, including additional consumer rights processes, limitations on data uses, new audit requirements for higher risk data, and opt outs for certain uses of sensitive data. It will also create a new California data protection agency authorized to issue substantive regulations and could result in increased privacy and information security enforcement. The majority of the provisions become effective on January 1, 2023, and additional compliance investment and potential business process changes may be required. Similar laws have been adopted in other states (for example, Nevada, Virginia, Connecticut, Utah and Colorado) or proposed in other states and at the federal level, and if passed, such laws may have potentially conflicting requirements that would make compliance challenging.

Many states have also implemented genetic testing and privacy laws imposing specific patient consent requirements and protecting test results by strictly limiting the disclosure of those results. State requirements are particularly stringent regarding predictive genetic tests, due to the risk of genetic discrimination against healthy patients identified through testing as being at a high risk for disease. We believe that we have taken the steps required of us to comply with health information privacy and security statutes and regulations, including genetic testing and genetic information privacy laws in all jurisdictions, both state and federal. However, these laws constantly change, and we may not be able to maintain compliance in all jurisdictions where we do business. Failure to maintain compliance, or changes in state or federal laws regarding privacy or security could result in civil and/or criminal penalties, significant reputational damage and could have a material adverse effect on our business.

U.S. Fraud and Abuse Laws and Other Healthcare Regulations

A variety of state and federal laws prohibit fraud and abuse involving state and federal healthcare programs, as well as commercial insurers. These laws are interpreted broadly and enforced aggressively by various federal and state agencies, including the Centers for Medicare & Medicaid Services (CMS), the Department of Justice (DOJ), and the Office of Inspector General for the U.S. Department of Health and Human Services (OIG). The Company seeks to conduct its business in compliance with all applicable federal and state laws.

State and federal fraud and abuse laws may be interpreted and applied differently, and arrangements and business practices could be subject to scrutiny under them by federal or state enforcement agencies. Sanctions for violations of these laws could result in a wide range of penalties, including but not limited to significant criminal sanctions, civil fines and penalties.

The Anti-Kickback Statute

The federal Anti-Kickback Statute (AKS) is a criminal statute that prohibits, in pertinent part, persons from knowingly and willfully soliciting, receiving, offering or paying remuneration, directly or indirectly, in cash or in kind, in exchange for or to induce a person:

- To refer an individual to a person for the furnishing or arranging for the furnishing of any item or service for which payment may be made by federal healthcare programs; or

- To purchase, lease, order, or arrange for or recommend purchasing, leasing, or ordering, any good, facility, service, or item for which payment may be made by a federal healthcare program.

A person or entity does not need to have actual knowledge of the AKS or specific intent to violate it to have committed a violation. Recognizing that the AKS is broad and potentially applies to innocuous or beneficial arrangements, the OIG issued regulations, commonly known as "safe harbors," which set forth certain requirements that, if fully met, insulate a given arrangement or conduct from prosecution under the AKS. The AKS also has statutory exceptions that provide protection similar to that of safe harbors. If, however, an arrangement does not meet every requirement of an exception or safe harbor, the arrangement does not necessarily violate the AKS. A facts-and-circumstances analysis is necessary to determine AKS compliance or lack thereof. Potential statutory penalties for violating the AKS include imprisonment and criminal fines. In addition, through application of other laws, conduct that violates the AKS can give rise to civil monetary penalties and possible exclusion from participation in Medicare, Medicaid, and other federal healthcare programs. Claims including items or services resulting from a violation of the AKS also constitute a false or fraudulent claim for purposes of the False Claims Act.

In addition to the federal AKS, many states have their own anti-kickback laws. Often, these laws closely follow the language of the federal law, although they do not always have the same scope, exceptions, safe harbors or sanctions. In some states, these anti-kickback laws apply to both state healthcare programs and commercial insurers. The penalties for violating state anti-kickback provisions can be severe, including criminal and civil penalties (including penalties under the state false claims law), imprisonment, and exclusion from state healthcare programs.

The False Claims Act

The federal False Claims Act (FCA) imposes civil liability on any person or entity that, among other things, knowingly presents, or causes to be presented, to the federal government, claims for payment that are false or fraudulent; knowingly makes, uses or causes to be made or used, a false statement or record material to a false or fraudulent claim or obligation to pay or transmit money or property to the federal government; or knowingly conceals or knowingly and improperly avoids or decreases an obligation to pay money to the federal government. The FCA also prohibits the knowing retention of overpayments (sometimes referred to as "reverse false claims").

In addition, the FCA permits a private individual acting as a "whistleblower" (also referred to as a "relator") to bring FCA actions on behalf of the federal government under the statute's qui tam provisions, and to share in any monetary recovery. The federal government may elect or decline to intervene in such matters, but if the government declines intervention, the whistleblower may still proceed with the litigation on the government's behalf.

Penalties for violating the FCA include payment of up to three times the actual damages sustained by the government, plus substantial per-claim statutory penalties, as well as possible exclusion from participation in federal healthcare programs.

Various states have enacted similar laws modeled after the FCA that apply to items and services reimbursed under Medicaid and other state healthcare programs, and, in several states, such laws apply to claims submitted to any payor, including commercial insurers.

There is also a federal criminal false claims statute that prohibits, in pertinent part, the making or presentation of a false claim, knowing such claim to be false, to any person or officer in the civil, military, or naval service or any department or agency thereof. Potential penalties for violating this statute include fines or imprisonment.

Health Care Fraud and False Statements

The federal healthcare fraud statute criminalizes, in pertinent part, knowingly and willfully defrauding a healthcare benefit program, which is defined to include commercial insurers. A violation of this statute may result in fines, imprisonment, or exclusion from participation in federal healthcare programs. The federal criminal statute prohibiting false statements relating to health care matters prohibits, in pertinent part, knowingly and willfully (i) falsifying, concealing, or covering up a material fact, or (ii) making a materially false, fictitious, or fraudulent statement or representation, or making or using any materially false writing or document knowing that writing or document to contain any materially false, fictitious, or fraudulent statements, in connection with the delivery of or payment for healthcare benefits, items, or services. A violation of this statute may result in fines or imprisonment.

Civil Monetary Penalties Law

The federal Civil Monetary Penalties Law (CMP Law) prohibits, among other things, (1) the offering or transfer of remuneration to a beneficiary of Medicare or a state healthcare program if the person knows or should know it is likely to influence the beneficiary's selection of a particular provider, practitioner, or supplier of services reimbursable by Medicare or a state healthcare program, unless an exception applies; (2) employing or contracting with an individual or entity that the provider knows or should know is excluded from participation in a federal healthcare program; (3) billing for services requested by an unlicensed physician or an excluded provider; and (4) billing for medically unnecessary services. The potential penalties for violating the CMP Law include exclusion from participation in federal healthcare programs, substantial fines, and payment of up to three times the amount billed, depending on the nature of the offense.

Physician Payments Sunshine Act

The federal Physician Payments Sunshine Act (Sunshine Act) imposes reporting requirements on manufacturers of certain devices, drugs, biologics, and medical supplies for which payment is available under Medicare, Medicaid, or the Children's Health Insurance Program (CHIP), with certain exceptions. Manufacturers to which the Sunshine Act applies must collect and report annually certain data on certain payments and transfers of value by them (and in some cases their distributors) to physicians, teaching hospitals, and certain advanced non-physician healthcare practitioners, as well as ownership and investment interests held by physicians and their immediate family members. For reporting beginning January 1, 2022, U.S.-licensed physician assistants, clinical nurse specialists, certified nurse-midwives, certified nurse anesthetists, and nurse practitioners must be included in the provider types subject to Sunshine Act reporting. The reporting program (known as the Open Payments program) is administered by CMS.

There are also an increasing number of state "sunshine" laws that require manufacturers to provide reports to state governments on pricing and marketing information. Several states have enacted legislation requiring manufacturers, including medical device companies to, among other things, establish marketing compliance programs, file periodic reports with the state, make periodic public disclosures on sales and marketing activities, and to prohibit or limit certain other sales and marketing practices.

Failure to comply with the Sunshine Act or state equivalents could result in civil monetary penalties, among other sanctions, depending upon the nature of the violation.

Foreign Corrupt Practices Act

Despite extensive procedures to ensure compliance, we may also be exposed to liabilities under the U.S. Foreign Corrupt Practices Act (FCPA), which generally prohibits companies and their intermediaries from making corrupt payments to foreign officials for the purpose of obtaining or maintaining business or otherwise obtaining favorable treatment, and requires companies to maintain adequate record-keeping and internal accounting practices to accurately reflect the transactions of the company. We are also subject to a number of other laws and regulations relating to money laundering, international money transfers and electronic fund transfers. These laws apply to companies, individual directors, officers, employees and agents.

Environment, Health and Safety

We are subject to laws and regulations related to the protection of the environment, the health and safety of employees and the handling, transportation and disposal of medical specimens, infectious and hazardous waste and radioactive materials. For example, the U.S. Occupational Safety and Health Administration (OSHA) has established extensive requirements relating specifically to workplace safety for healthcare employers in the U.S. This includes requirements to develop and implement multi-faceted programs to protect workers from exposure to blood-borne pathogens, such as HIV and hepatitis B and C, including preventing or minimizing any exposure through needle stick injuries. For purposes of transportation, some biological materials and laboratory supplies are classified as hazardous materials and are subject to regulation by one or more of the following agencies: the U.S. Department of Transportation, the U.S. Public Health Service, the United States Postal Service and the International Air Transport Association. The U.S. Environmental Protection Agency (EPA) has also promulgated regulations setting forth importation, labelling, and registration requirements, among others, which may apply to certain products and/or establishments of the company.

Rest of the World Regulation

In addition to regulations in the United States and the EU, we are subject to a variety of regulations governing clinical studies and commercial sales and distribution of molecular testing instruments, consumables and digital solutions in other jurisdictions around the world. These laws and regulations typically require the licensing of manufacturing facilities, as well as controlled research, testing and governmental authorization of product candidates. Additionally, they may require adherence to good manufacturing, clinical and laboratory practices.

We must obtain approval from regulatory authorities in all countries where we distribute our products. The requirements governing the conduct of product authorization, pricing and reimbursement vary greatly from country to country. If we fail to comply with applicable regulatory requirements, we may be subject to, among other things, fines, suspension or withdrawal of regulatory approvals, product recalls, seizure of products, operating restrictions, or criminal prosecution.

Reimbursement

United States

In the United States, payments for diagnostic tests come from several sources, including commercial insurers, (which might include health maintenance organizations and preferred provider organizations); government healthcare programs (such as Medicare or Medicaid); and, in many cases, the patients themselves. For many years, federal and state governments in the United States have pursued methods to reduce the cost of healthcare delivery. For example, in 2010, the United States enacted major healthcare reform legislation known as the Patient Protection and Affordable Care Act (ACA). Such changes have had, and are expected to continue to have, an impact on our business.

In addition, in August 2011, the Budget Control Act of 2011, among other things, created measures for spending reductions by Congress. A Joint Select Committee on Deficit Reduction, tasked with recommending a targeted deficit reduction of at least $1.2 trillion for the years 2013 through 2021, was unable to reach required goals, thereby triggering the legislation's automatic reduction to several government programs. This includes aggregate reductions of Medicare payments to providers up to 2% per fiscal year, and, due to subsequent legislative amendments, will remain in effect through 2032 unless additional Congressional action is taken.

We frequently identify value propositions on our products and communicate them to payors, providers, and patient stakeholders and attempt to positively impact coverage, coding and payment pathways. However, we have no direct control over payor decisions with respect to coverage and payment levels for our products. The manner and level of reimbursement may depend on the site of care, the procedure(s) performed, the final patient diagnosis, the device(s) and/or drug(s) utilized, the available budget, or a combination of these factors, and coverage and payment levels are determined at each payor's discretion. Changes in reimbursement levels or methods may positively or negatively affect sales of our products in any given country for any given product. At QIAGEN, we work with several specialized reimbursement consulting companies and maintain regular contact with payors.

As government programs seek to expand healthcare coverage for their citizens, they have at the same time sought to control costs by limiting the amount of reimbursement they will pay for particular procedures, products or services. Many third-party payors have developed payment and delivery mechanisms to support cost control efforts and to focus on paying for quality. Such mechanisms include payment reductions, pay-for-performance metrics, quality-based performance payments, restrictive coverage policies, studies to compare effectiveness and patient outcomes, and technology assessments. These changes have increased emphasis on the delivery of more cost-effective and quality-driven healthcare.

Code Assignment. In the United States, a third-party payor's decisions regarding coverage and payment are impacted, in large part, by the specific Current Procedural Terminology (CPT) code used to identify a test. The American Medical Association (AMA) publishes the CPT, which identifies codes, along with descriptions, for reporting medical services and procedures. The purpose of the CPT is to provide a uniform language that accurately describes medical, surgical, and diagnostic services and

therefore to ensure reliable nationwide communication among healthcare providers, patients, and third-party payors. CMS uses its own Healthcare Common Procedure Coding System (HCPCS) codes for medical billing and reimbursement purposes. Level I HCPCS codes are comprised of current CPT codes, while Level II HCPCS codes primarily represent non-physician services and Level III HCPCS codes are local codes developed by Medicaid agencies, Medicare contractors and commercial insurers. Proprietary Laboratory Analyses (PLA) Codes are an addition to the CPT® code set approved by the AMA CPT® Editorial Panel. They are alpha-numeric CPT codes with a corresponding descriptor for labs or manufacturers that want to more specifically identify their test.

A manufacturer of in vitro diagnostic kits or a provider of laboratory services may request establishment of a Category I CPT code for a new product or a PLA Code or both. In addition, Z-Code identifiers are unique five-character alphanumeric tracking codes associated with a specific molecular diagnostic test. When a claim is submitted, it includes the associated CPT code and the Z-Code identifier is entered as a device code. Assignment of a specific CPT code ensures routine processing and payment for a diagnostic test by both commercial insurers and government payors.

The AMA has specific procedures for establishing a new CPT code and, if appropriate, for modifying existing nomenclature to incorporate a new test into an existing code. If the AMA concludes that a new code or modification of nomenclature is unnecessary, the AMA will inform the requestor how to use one or more existing codes to report the test.

While the AMA's decision is pending, billing and collection may be sought under an existing, non-specific CPT code. A manufacturer or provider may decide not to request assignment of a CPT code and instead use an existing, non-specific code for reimbursement purposes. However, use of such codes may result in more frequent denials and/or requests for supporting clinical documentation from the third-party payor and in lower reimbursement rates, which may vary based on geographical location.

CMS reimbursement rates for clinical diagnostic tests are defined by CPT and HCPCS codes in the Clinical Laboratory Fee Schedule (CLFS). In 2012, the AMA added 127 new CPT codes for molecular pathology services that became effective on January 1, 2013. These new CPT codes are biomarker specific and were designed to replace the previous methodology of billing for molecular pathology testing, which involved "stacking" a series of non-biomarker specific CPT codes together to describe the testing performed. CMS issued final national reimbursement prices for the new CPT codes in November 2013. These federal reimbursement amounts are widely acknowledged to be lower than the reimbursement obtained by the now outdated "stacking" method, but commercial insurers and Medicare contractors are still in the process of solidifying their coverage and reimbursement policies for the testing described by these new CPT codes.

As of January 1, 2018, in accordance with the Protecting Access to Medicare Act of 2014 (PAMA), applicable laboratories are required to report to CMS commercial insurer payment rates and volumes for their tests. CMS uses the data reported and the HCPCS code associated with the test to calculate a weighted median payment rate for each test, which is used to establish revised Medicare CLFS reimbursement rates for certain clinical diagnostic laboratory tests (CDLTs), subject to certain phase-in limits. For a CDLT that is assigned a new or substantially revised CPT code, the initial payment rate is assigned using the gap-fill methodology.

If the test at issue falls into the category of new advanced diagnostic laboratory test (ADLT) instead of CDLT, the test will be paid based on an actual list charge for an initial period of three quarters, before being shifted to the weighted median commercial insurer rate reported by the laboratory performing the ADLT. Laboratories offering ADLTs are subject to recoupment if the actual list charge exceeds the weighted median private payor rate by a certain amount.

On December 20, 2019, the President signed the Further Consolidated Appropriations Act, which included the Laboratory Access for Beneficiaries Act (LAB Act). The LAB Act delayed until the first quarter of 2021 the reporting of payment data under PAMA for CDLTs that are not ADLTs. The Coronavirus Aid, Relief, and Economic Security Act (CARES Act), which Congress passed in March 2020, again delayed reporting by an additional year, until the first quarter of 2022. The CARES Act also delayed the next PAMA reporting period for CDLTs to January 1, 2022 through March 31, 2022. Then, on December 10, 2021, Congress passed the Protecting Medicare and American

Farmers from Sequester Cuts Act, which included a provision that further delays the next PAMA reporting period for CDLTs that are not ADLTs to January 1, 2023 through March 31, 2023. Finally, on December 29, 2022, Section 4114 of the Consolidated Appropriations Act for 2023, revised the next data reporting period for CDLTs that are to ADLTs and the phase-in of payment reductions. The next data reporting period of January 1, 2024 through March 31, 2024, will be based on the original data collection period of January 1, 2019 through June 30, 2019. The statutory phase-in of payment reductions resulting from private payor rate implementation is now extended through calendar year 2026, which means that there is no reduction for calendar years 2021, 2022, and 2023 and payment may not be reduced by more than 15 percent for calendar years 2024, 2025, and 2026.

CMS's methodology under PAMA (as well as the willingness of commercial insurers to recognize the value of diagnostic testing and pay for that testing accordingly) renders commercial insurer payment levels even more significant. This calculation methodology has resulted in significant reductions in reimbursement, even though CMS imposed caps on those reductions. Given the many uncertainties built into PAMA's price-setting process, it is difficult to predict how payments made by CMS under the CLFS may change from year to year.

Coverage Decisions: When deciding whether to cover a particular diagnostic test, third-party payors generally consider whether the test is a medically necessary and, if so, whether the test will directly impact clinical decision making. For coverage, the testing method should be considered scientifically valid to identify the specific gene biomarker or gene mutation, and must have been demonstrated to improve clinical outcomes for the patient's condition. Coverage of a drug therapy and its companion diagnostic for cancer treatment indications may be validated by a NCCN category 1, 2A or 2B recommendation. However, most third-party payors do not cover experimental services. Coverage determinations are often influenced by current standards of practice and clinical data, particularly at the local level. CMS has the authority to make coverage determinations on a national basis, but most Medicare coverage decisions are made at the local level by contractors that administer the Medicare program in specified geographic areas. Commercial insurers and government payors have separate processes for making coverage determinations, and commercial insurer may or may not follow Medicare's coverage decisions. If a third-party payor has a coverage determination in place for a particular diagnostic test, billing for that test must comply with the established policy. Otherwise, the third-party payor makes reimbursement decisions on a case-by-case basis.

Payment: Payment for covered diagnostic tests is determined based on various methodologies, including prospective payment systems and fee schedules. In addition, commercial insurers may negotiate contractual rates with participating providers, establish fee schedule rates, or set rates as a percentage of the billed charge. Diagnostic tests furnished to Medicare inpatients generally are included in the bundled payment made to the hospital under Medicare's Inpatient Prospective Payment System, utilizing Diagnosis Related Groups (DRGs) depending on the patient's condition. Payment rates for diagnostic tests furnished to Medicare beneficiaries in outpatient settings are the lesser of the amount billed, the local fee for a geographic area, or a national limit. Each year, the fee schedule is updated for inflation and could be modified by Congress in accordance with the CLFS rules and provisions. Medicaid programs generally pay for diagnostic tests based on a fee schedule, but reimbursement varies by geographic region.

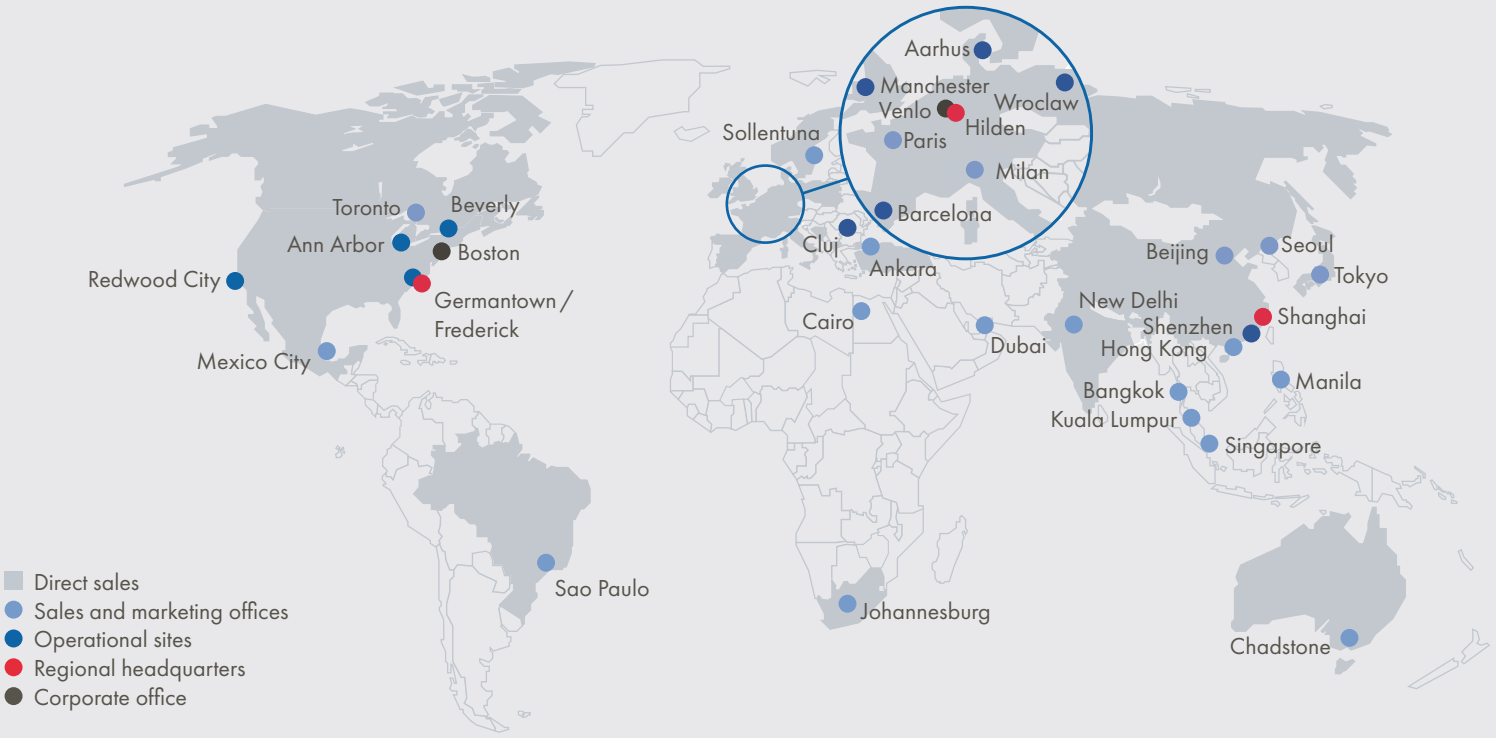
European Union

In the European Union, the reimbursement mechanisms used by private and public health insurers vary by country. For the public systems, reimbursement is determined by guidelines established by the legislator or responsible national authority. As elsewhere, inclusion in reimbursement catalogues focuses on the medical usefulness, need, quality and economic benefits to patients and the healthcare system. Acceptance for reimbursement comes with cost, use, and often volume restrictions, which again can vary by country.

Organizational Structure

QIAGEN N.V. is the holding company for more than 50 consolidated subsidiaries, many of which have the primary function of distributing our products and services on a regional basis. Certain subsidiaries also have research and development or production activities. A listing of our significant subsidiaries and their jurisdictions of incorporation is included in the Financial Results to this Annual Report.

Our global presence: Focus on the most attractive developed and emerging markets



Description of Property

Our primary production and manufacturing facilities for consumable products are located in Germany, the United States, Spain and China. Our facilities for software development are located in the United States, Germany, Poland, Denmark and Romania. In recent years, we have made investments in automated and interchangeable production equipment to increase our production capacity and improve efficiency. Our production and manufacturing operations are highly integrated and benefit from sophisticated inventory control. Production management personnel are highly qualified, and many have advanced degrees in engineering, business and science. We also have installed and continue to expand production-planning systems that are included in our integrated information and control system based on the SAP R/3 business

software package from SAP SE. Worldwide, we use SAP software to integrate most of our operating subsidiaries. Capital expenditures for property, plant and equipment totaled $129.2 million, $189.9 million and $132.8 million for 2022, 2021 and 2020, respectively.

We have an established quality system, including standard manufacturing and documentation procedures, intended to ensure that products are produced and tested in accordance with the FDA's Quality System Regulations, which impose current Good Manufacturing Practice (cGMP) requirements. For facilities that accommodate cGMP production, special areas were built and these facilities operate in accordance with cGMP requirements.

The consumable products manufactured at QIAGEN GmbH in Germany, and QIAGEN Sciences LLC in Maryland, are produced under ISO 9001: 2015, ISO 13485:2016, MDSAP. Our certifications form part of our ongoing commitment to provide our customers with high-quality, state-of-the-art sample and assay technologies under our Total Quality Management system.

Our corporate headquarters are located in leased office space in Venlo, The Netherlands. The below table summarizes our material facilities. Other subsidiaries throughout the world lease smaller amounts of space.

Location	Country	Purpose	Owned or Leased	Square feet
Hilden	Germany	Manufacturing, warehousing, distribution, research and development, and administration	Owned	983,000
Germantown, Maryland	U.S.	Manufacturing, warehousing, distribution, and administration	Owned	285,000
Shenzhen	China	Development, manufacturing, warehousing, distribution, and administration	Leased	102,150
Manchester	UK	Development and Service Solutions	Leased	96,300
Ann Arbor, Michigan	U.S.	Manufacturing, warehousing, distribution, and administration	Leased	81,000
Wroclaw	Poland	Business service center	Leased	65,100
Beverly, Massachusetts	U.S.	Enzyme manufacturing	Leased	44,000
Frederick, Maryland	U.S.	Manufacturing, warehousing, distribution, and development	Leased	42,000
Barcelona	Spain	Development, manufacturing, warehousing, distribution, and administration	Leased	31,900
Manila	Philippines	Business service center	Leased	29,300
Shanghai	China	Service Solutions and administration	Leased	28,400
Ann Arbor, Michigan	U.S.	Service Solutions, warehousing, and administration	Leased	28,000
Gdańsk	Poland	Enzyme manufacturing, development, warehousing, and administration	Leased	19,000
Germantown, Maryland	U.S.	Service Solutions and training center	Leased	13,500
Redwood City, California	U.S.	Bioinformatics	Leased	12,700

In 2022, we expanded manufacturing and logistic space at our site in Hilden, Germany, and invested in renewable heating systems and are planning further facility investments in 2023 in order to reduce our dependency on carbon energy sources and to reduce our carbon emission. At each of our owned facilities in Hilden, Germany, and Germantown, Maryland, there is room for future expansion of up to 300,000 square feet of facility space.

We believe our existing production and distribution facilities can support anticipated production needs for the next 36 months. Our production and manufacturing operations are subject to various federal, state, and local laws and regulations including environmental regulations. We do not believe we have any material issues relating to these laws and regulations.

Risks Management

Risk Factors

Risk Management

Our risk management approach embodies the key elements of a sound risk management system including (1) active Supervisory Board and senior management involvement; (2) adequate policies and procedures; (3) adequate risk management, monitoring and information systems; and (4) comprehensive internal controls.

QIAGEN is managed by a Managing Board and an independent Supervisory Board appointed by the General Meeting of Shareholders. One of the Managing Board's responsibilities is the oversight of the risk management system. The Managing Board has developed and implemented strategies, controls and mitigation measures to identify current and developing risks as part of this system. These policies and procedures are embodied in our corporate governance, code of ethics and financial reporting controls and procedures. A variety of functional experts evaluate these business risks, attempting to mitigate and manage them on an ongoing basis.

Identified risks are subdivided into three types:

- a base business risk that is specific to us or our industry and threatens our existing business;
- a business growth risk that is specific to us or our industry and threatens our future business growth; and
- an underlying business risk that is not specific to us or our industry, but applies to a larger number of public companies.

All identified risks are evaluated based on their likelihood of occurring and their potential impact (estimated in monetary terms) in disrupting our progress in achieving our business objectives. The overall risk management goal is to identify risks that could significantly threaten our success and to provide management the opportunity to successfully implement mitigation actions on a timely basis. The results of the risk assessment, and any updates, are reported to the Audit Committee of the Supervisory Board on a regular basis. A detailed risk reporting update is provided each quarter to the Audit Committee for specific risks that have been newly identified or have changed since the previous assessment. At least once on an annual basis, the Supervisory Board discusses the corporate strategy and business risks, as well as the results of an assessment by the Managing Board and the Audit Committee of the structure and operations of the internal risk management and control systems, including any significant changes.

Our corporate governance structure outlines the responsibilities of our Managing Board and Supervisory Board (discussed in more detail in Item 10 of this Annual Report) and the function of the Audit Committee of the Supervisory Board (discussed in more detail in Item 6 of this Annual Report). We maintain internal controls to ensure the integrity of financial reporting, which is described further in Item 15 of this Annual Report. Additionally, we have a Compliance Committee that consists of senior executives from various functional areas who are responsible for ensuring compliance with legal and regulatory requirements, as well as overseeing the communication of corporate policies, including our Code of Ethics as described further in Item 16B of this Annual Report.

Risk Types
Base Business Risk
• Identification and monitoring of competitive business threats • Monitoring complexity of product portfolio • Monitoring dependence on key customers for single product groups • Reviewing dependence on individual production sites or suppliers • Evaluating purchasing initiatives, price controls and changes to reimbursements • Monitoring production risks, including contamination prevention and high-quality product assurance • Ensuring our ability to defend against intellectual property infringements and maintain competitive advantage after expiration
Business Growth Risk
• Managing the development and successful completion of key R&D projects • Managing successful integration of acquisitions to achieve anticipated benefits
Underlying Business Risk
• Evaluating financial risks, including global economic risks and currency rate fluctuations against the U.S. dollar (our reporting currency) • Evaluating and monitoring international hostilities • Monitoring financial reporting risks, including multi-jurisdiction tax compliance • Reviewing possible asset impairment events • Assessing cyber security, compliance and legal risks, including safety in operations and environmental hazard risks, compliance with various regulatory bodies and pending product approvals • Monitoring risks of FCPA (Foreign Corrupt Practices Act) or antitrust concerns arising from a network of subsidiaries and distributors in foreign countries

The risks described below are listed in the order of our current view of their expected significance. Describing the risk factors in order of significance does not imply that a lower-listed risk factor may not have a material adverse impact on our results of operations, liquidity or capital resources.

Our continued growth is dependent on the development and success of new products.

Rapid technological change and frequent new product introductions are typical in the markets we serve. Our success will depend in part on continuous, timely development and introduction of new products that address sometimes rapidly evolving market requirements, such as the pandemic caused by the SARS-CoV-2 virus. We believe successful new product introductions provide a significant competitive advantage because many customers make an investment of time into selecting and learning how to use a new product and are reluctant to switch after these efforts. To the extent that we fail to introduce new and innovative products, or such products suffer significant delays in development or are not accepted by customers, we may lose market share to our competitors that would be difficult or impossible to regain. An inability to successfully develop and introduce new products, for technological or other reasons, could reduce our growth prospects or otherwise have an adverse effect on our business. In the past, we have experienced delays in the development and introduction of new products, including due to delays in regulatory approvals, or decisions to stop development of projects, and we may experience delays or make decisions to stop certain product development in the future.

As a result, we cannot assure you that we will keep pace with the rapid rate of developments in our markets or that our new products will adequately meet the requirements of the marketplace, achieve market acceptance or regulatory approval, or compete successfully with companies offering similar or new technologies. Some of the factors affecting market acceptance of a new product include:

- availability, quality and price relative to existing competitor products;
- the timing of introduction of the new product relative to competitive products;
- perceptions of the new product's utility;
- citation of the new product in published research;

- regulatory trends and approvals; and
- general trends in life sciences research, applied markets and molecular diagnostics.

In the development of new products, we may make significant investments in intellectual property, software solutions and manufacturing capacity. These investments increase our fixed costs, resulting in higher operational costs in the short term that will negatively impact our gross profit and operating income until products potentially reach a minimum level of market acceptance and sales. The expenses or losses associated with unsuccessful product development activities or lack of market acceptance of our new products could materially adversely affect our business, financial condition and results of operations.

Our continued growth depends significantly on the success of new products in the molecular research and testing markets that we serve and our ability to scale manufacturing capacities to meet customer demands. Important product programs in early commercialization stage include the QIAstat-Dx system for one-step, fully integrated molecular analysis of hard-to-diagnose syndromes, the NeuMoDx 96 and 288 systems offering fully integrated PCR clinical testing and the QIAcuity digital PCR system.

The speed and level of adoption of our new automation platforms will affect sales not only of instrumentation but also of consumables kits – identified as sample and assay kits – that are designed to run on the systems in a "razor-razorblade" model. The rollout of new automation platforms are intended to drive the dissemination and increasing sales of consumables for these systems. We are developing or co-developing new kits for these platforms and seeking regulatory approvals for a number of new products. In turn, the availability and regulatory approval of more tests for processing on the QIAstat-Dx, NeuMoDx and QIAcuity systems will influence the value of the instruments to prospective customers. Slower adoption of these systems could significantly affect sales of instruments as well as consumables products designed to run on these platforms.

An inability to manage our growth, manage the expansion of our operations, or successfully integrate acquired businesses could adversely affect our business.

Our business has grown in recent years, with total net sales increasing to $2.14 billion in 2022 from $1.42 billion in 2017. In addition to incremental sales from our global response to the COVID-19 pandemic, we have made a series of acquisitions in recent years, including the acquisitions of Verogen, Inc in January 2023, BLIRT S.A. in 2022 and NeuMoDx Molecular, Inc. in 2020. We intend to identify and acquire other businesses in the future that support our strategy to build on our global leadership position in providing Sample to Insight solutions focused on molecular research and clinical testing. The successful integration of acquired businesses requires a significant effort and expense across all operational areas.

We continue to make investments to expand our existing business operations. These projects increase our fixed costs, resulting in higher operational costs in the short term that will negatively impact our gross profit and operating income until we more fully utilize the additional capacity of these facilities. The expansion of our business and the addition of new personnel may place a strain on our management and operational systems. As we continue to upgrade our operating and financial systems, as well as expand the geographic presence of our operations, we intend to continue to assess the need to reallocate existing resources or hire new employees, as well as increase responsibilities for both existing and new management personnel.

Our future operating results will depend on our ability to continue to implement and improve our research, product development, manufacturing, sales and marketing and customer support programs, enhance our operational and financial control systems, expand, train and manage our employee base, integrate acquired businesses, and effectively address new issues related to our growth as they arise. There can be no assurance that we will be able to manage our recent or any future expansion or acquisitions successfully, and any inability to do so could have a material adverse effect on our results of operations.

Our acquisitions expose us to new risks, and we may not achieve the anticipated benefits of acquisitions of technologies and businesses.

During the past several years, we have acquired and integrated a number of companies, as mentioned earlier, through which we have gained access to new technologies, products and businesses that complement our internally developed product lines. In the future, we expect to acquire additional technologies, products or businesses to expand our operations. Acquisitions potentially expose us to new operating and financial risks, including risks associated with the:

- assimilation of new products, technologies, operations, sites and personnel;
- integration and retention of fundamental personnel and technical expertise;
- application for and achievement of regulatory approvals or other clearances;
- diversion of resources from our existing products, business and technologies;
- generation of sales;
- implementation and maintenance of uniform standards and effective controls and procedures;
- exposure to cyber security risks or compromise of acquired entities;
- maintenance of relationships with employees, customers and suppliers, and integration of new management personnel;
- issuance of initially dilutive equity securities;
- incurrence or assumption of debt and contingent liabilities;
- increased exposure to geopolitical risks;
- amortization or impairment of acquired intangible assets or potential businesses; and
- exposure to liabilities of and claims against acquired entities or personnel, including patent litigation.

Our failure to address the above risks successfully in the future may prevent us from achieving the anticipated benefits from any acquisition in a reasonable time frame, or at all.

Global economic conditions could adversely affect our business, results of operations and financial condition.

Our results of operations could be materially affected by adverse general conditions in the global economy and financial markets. We may experience an adverse impact on our results of operations due to the current geopolitical tensions caused by the Russian invasion of Ukraine, and the resulting impact it has had on global economic growth rates through higher inflation and ongoing supply chain tensions. The governments of the European Union, the United States, Japan and other jurisdictions have imposed sanctions on certain industry sectors and parties in Russia and the regions of Donetsk and Luhansk in Ukraine, as well as enhanced export controls on certain products and industries. QIAGEN decided in 2022 to suspend business operations in Russia and Belarus, with sales in these countries (along with Ukraine) representing less than 1% of total annual sales.

Further, the global economy recovery from the COVID-19 pandemic will depend on many factors, including the recovery of supply chains to be able to better support customer demands, including those served by QIAGEN. In the near term, we anticipate continued exposures to supply chain restrictions. As we did during the COVID-19 pandemic, we have established inventory agreements with the majority of our suppliers to help compensate for this situation. We closely monitor stock levels to maintain

adequate supplies. We also have long-term supply contracts in place to secure raw materials and mitigate a majority of the challenges that we have currently identified. The overall increase in energy costs and base materials has also had a significant adverse impact on our costs for raw materials, specifically plastics and packaging as well as for logistics. Long-term supply contracts have helped to limit the risks for shortages in electronic components, but have still resulted in price increases. We expect some level of market constraints to continue in 2023. We strive to maintain inventories at a sufficient level to ensure reasonable customer service levels and to guard against normal volatility in availability. These initiatives help us to avoid shortages and keep pricing competitive for our products. However, there also is a risk of loss of revenue, penalties due to delayed deliveries and currency losses, or other unforeseen costs that could negatively impact our operating profits.

During these challenging economic times, access to financing in the global financial markets has been adversely affected for many businesses in light of the high-inflation environment. The central banks in the U.S., the United Kingdom and the Euro Zone tightened their monetary policies materially in 2022 by raising interest rates, and are expected to continue doing so in 2023. Combined with the high degree of uncertainty in the global financial markets and the economic conditions generally and as a result of the war in Ukraine, this may impact our future performance. Our customers may face internal financing pressures that adversely impact spending decisions or the ability to purchase our products, or that lead to a delay in collection of receivables and thus negatively impact our cash flow. A severe or prolonged economic downturn could result in a variety of risks to our business that would adversely impact our results of operations, including the reduction or delay in planned improvements to healthcare systems in various countries, the reduction of funding for life sciences research, and intensified efforts by governments and healthcare payors regarding cost-containment efforts.

Our results of operations could also be negatively impacted if the U.S. federal government were to enact automatic spending cuts (sequestration), which have occurred in the past. Such a decision could add uncertainty to the timing and the availability of budget funds for investment decisions by our customers—particularly researchers, universities, government laboratories and private foundations whose funding is dependent upon grants from government agencies, such as the U.S. National Institutes of Health (NIH) and similar bodies.

As is the case for many businesses, we face the following risks in regard to financial markets:

- severely limited access to financing over an extended period of time, which may affect our ability to fund our growth strategy and could result in delays to capital expenditures, acquisitions or research and development projects;
- failures of currently solvent financial institutions, which may cause losses from our short-term cash investments or our hedging transactions due to a counterparty's inability to fulfill its payment obligations;
- inability to refinance existing debt at competitive rates, reasonable terms or sufficient amounts; and
- increased volatility or adverse movements in foreign currency exchange rates.

Our global operations may be affected by actions of governments, global or regional economic or public health developments, weather or transportation delays, epidemics or pandemics, natural disasters or other force majeure events (collectively, unforeseen events) which may negatively impact our suppliers, our customers or us.

Our business involves operations around the world. Our primary manufacturing facilities are located in Germany, the U.S., Spain and China. We have established sales subsidiaries in numerous countries, and our products are sold through independent distributors serving more than 60 countries. Our global footprint exposes us to unforeseen events, such as the COVID-19 pandemic, or other natural events. We have analyzed climate change risk and its potential impact on our largest production and logistics sites, as well as important sites of our key suppliers. No material risks were identified that could potentially impact our business, operations, sales or expenditures. However, our facilities may be harmed by unforeseen events. In the event that we or our customers are affected by a disaster, we may experience delays or reductions in sales or production. We may also face significantly increased costs or be required to identify alternate suppliers and/or rely on third-party manufacturers.

To the extent that our suppliers are impacted by a natural disaster or other disruption, we may experience periods of reduced production. Any unexpected interruptions in our production capabilities may lead to delayed or lost sales and adversely affect our results of operations for a specific period.

In addition, to the extent we temporarily shut down any facility following such an unforeseen event, we may experience disruptions in our ability to manufacture or ship products to customers or otherwise operate our business. Many of our products are manufactured in a single location, and we may experience significantly adverse effects to the extent that these manufacturing operations are disrupted and cannot be replaced elsewhere.

While our global operations give us the ability to ship some products from alternative sites, we may not be able to do so because the facilities of our customers are shut or the local logistics infrastructure is not functioning. As a result, our sales, profitability and cash flows would suffer.

Damage to our property due to unforeseen events, and the resulting disruption of our business, may be covered by insurance. However, this insurance may not be sufficient to cover all of our potential losses, and the insurance coverage may not continue to be available to us on acceptable terms, or at all. In addition, we may incur incremental costs following an unforeseen event, which will reduce profits and adversely affect our results of operations.

Terrorist attacks and international hostilities and instability in any region could adversely affect our business.

Terrorist attacks, the outbreak of war, or the existence of international hostilities could damage the world economy, adversely affect the global supply chain and materially impact the availability of and prices for energy and other raw materials. In February 2022, the government of Russia invaded Ukraine. The ongoing war is so far confined to Ukraine, but any expansion into other countries could materially disrupt our operations in Europe and/or increase our operating costs. In addition, Russia's prior annexation of Crimea, the annexation of various regions of Ukraine and subsequent military interventions have led to sanctions being levied by the European Union, the U.S. and other countries against Russia. Any such disruptions caused by the Russian military actions in Ukraine, or expansion into other countries, could magnify the impact of other risks described in this Annual Report.

We depend on suppliers for materials used to manufacture our products, and if shipments from these suppliers are delayed or interrupted, we may be unable to manufacture our products.

We buy materials to create our products from a number of suppliers and are not dependent on any one supplier or group of suppliers for our business as a whole. However, key components of certain products, including certain instrumentation and chemicals, are available only from a single source. If supplies from these vendors are delayed or interrupted for any reason, we may not be able to obtain these materials in a timely manner or in sufficient quantity or quality to produce certain products, and this could have an adverse impact on our results of operations.

In 2022, the volatility in product availability and pricing drastically increased compared to previous years. We have long-term supply contracts to secure raw materials and mitigate a majority of availability challenges. The overall increase during 2022 in energy costs and base materials had a significant adverse impact on our raw materials, specifically plastics and packaging as well as logistics costs. We expect some level of market constraints to continue in 2023. Supply chain constraints have required, and may continue to require, in certain instances, alternative delivery arrangements and increased costs and could have a material adverse effect on our business and operations.

We rely heavily on air cargo carriers and other overnight logistics services, and shipping delays or interruptions could harm our business.

Our customers typically keep only a modest inventory of our consumables kits on hand, and consequently often require rapid delivery of purchases. Additionally, some of our products require complex supply chains, such as constant cold storage or shipment using dry ice. As a result, we rely heavily on air cargo carriers and logistic suppliers. If these services are suspended or delayed, and other delivery and logistic suppliers cannot provide satisfactory services, customers may be forced to suspend a significant amount of their work. The lack of adequate delivery alternatives would have a serious adverse impact on our customer relations and results of operations.

Changes in tax laws or their application or the termination or reduction of certain government tax incentives, could adversely impact our overall effective tax rate, results of operations or financial flexibility.

Our effective tax rate reflects the benefit of some income being partially exempt from income taxes due to various intercompany operating and financing activities. The benefit also derives from our global operations, where income or loss in some jurisdictions is taxed at rates higher or lower than the statutory rate of 25.8% in the Netherlands. Changes in tax laws or their application with respect to matters such as changes in tax rates, transfer pricing and income allocation, utilization of tax loss carryforwards, intercompany dividends, controlled corporations, and limitations on the deductibility of interest and foreign related-party expenses, and changes to tax credit mechanisms, could increase our effective tax rate and adversely affect our results of operations and limit our ability to repurchase our common shares, par value EUR 0.01 per share (Common Shares) without experiencing adverse tax consequences. The increased tax burden as a result of changes in law may adversely affect our results of operations. Additionally, if our tax positions are challenged by taxing authorities or other governmental bodies, such as the European Commission, we could incur additional tax liabilities, which could have an adverse effect on our results of operations, financial flexibility or cash flow.

We rely on secure communication and information systems and are subject to privacy and data security laws which, in the event of a disruption, breach, violation or failure, could adversely affect our business.

We rely heavily on communications and information systems to conduct our business. In the ordinary course of business, we collect and store sensitive data, including our own intellectual property and other proprietary business information and that of our customers, suppliers and business partners, as well as personally identifiable information (PII) of our customers and employees, in our data centers and on our networks or in the cloud. Our operations rely on the secure processing, storage and transmission of confidential and other information on both our own and cloud-based computer systems and networks. We have made significant investments to ensure our employees are aware of cyber security risks facing our company and how to prevent data breaches. We have modernized our cyber security tools, and are continually updating our cyber security processes, in an attempt to keep pace with evolving cyber security risks. In spite of our efforts, we are unable to completely eliminate these risks and occasionally experience minor cyber security incidents. External phishing emails (occurring outside of our computer services) are a growing threat our customers are facing. These emails could lead to the disclosing of intellectual property or personally identifiable information, which could lead to financial harm or reputational damage. While our cyber security team works diligently with our employees around the world, as well as with our customers, to mitigate these threats by helping to identify and analyze phishing emails, we cannot guarantee that sensitive data will not be lost or stolen.

A breach in cyber security due to unauthorized access to our computer systems or misuse could include the misappropriation of assets or sensitive information, the corruption of data or other operational disruption. Failures in our computer systems and networks could be caused by internal or external events, such as incursions by intruders or hackers, computer viruses, failures in hardware or software, or cyber terrorists. Furthermore, there is an increased risk of cyber security attacks by state actors due to the Russian invasion of Ukraine. Russian ransomware gangs have threatened to increase hacking activity against critical infrastructure of any nation or organization that retaliates against Russia. Any such increase in such attacks on our third-party providers or other systems could adversely affect our network systems or other operations. If we experience a breach or failure of our systems, we could experience potentially significant operational delays due to the disruption of systems, loss due to theft or

misappropriation of assets or data, or negative impacts from the loss of confidential data or intellectual property. We may face significant liability in the event personal information that we maintain is lost or otherwise subject to misuse or other wrongful use, access or disclosure. Further, we could experience significant negative publicity that could result in reputation or brand damage with customers or partners.

Additionally, we are subject to privacy and data security laws across multiple jurisdictions. These include laws relating to the storage of health information that are complex, overlapping, sometimes contradictory and rapidly evolving. In the U.S., individual states regulate requirements and have authority over privacy and personal data protection. For example, the California Consumer Privacy Act of 2018 (CCPA), which took effect on January 1, 2020, imposes expansive new requirements and protections upon the processing of personal data, aimed at giving California consumers more visibility into and control over their personal information. The U.S. states of Virginia and Colorado also enacted comprehensive data privacy laws similar to the CCPA, both of which became effective in 2023. In addition, laws in all 50 U.S. states require businesses to provide notice to consumers whose personal information has been disclosed as a result of a data breach. State laws are changing rapidly and there is discussion in the U.S. Congress of a new comprehensive federal data privacy law to which we would become subject if it is enacted. There are also European privacy laws, such as the General Data Protection Regulation (GDPR) of the European Union, that impose restrictions on the transfer, access, use and disclosure of health and other personal information. As our activities continue to evolve and expand, we may be subject to additional laws that impose further restrictions on the transfer, access, use and disclosure of health and other personal information, which may impact our business either directly or indirectly. A failure to comply with applicable privacy or security laws or significant changes in these laws could subject us to costly regulatory action or lawsuits and could adversely impact our reputation, business and future business plans.

We may encounter delays in receipt, or limits in the amount, of reimbursement approvals and public health funding, which may negatively impact our ability to grow revenues in the healthcare market or our profitability.

Changes in the market availability or reimbursement of our diagnostic testing products by insurance providers and health maintenance organizations could have a significant adverse impact on our results of operations. Third-party payors are often reluctant to reimburse healthcare providers for the use of medical tests that involve new technologies or provide novel diagnostic information. In addition, third-party payors are increasingly limiting reimbursement coverage for medical diagnostic products and, in many instances, are even exerting pressure on suppliers to reduce their prices. Since each third-party payor often makes reimbursement decisions on an individual patient basis, obtaining such approvals is a time-consuming and costly process that requires us to provide scientific and clinical data supporting the clinical benefits of each of our products. As a result, there can be no assurance that reimbursement approvals will be obtained, and the process can delay the broad market introduction of new products. If third-party reimbursement is not consistent or financially adequate to cover the cost of our products, this could limit our ability to sell our products or cause us to reduce prices, which would adversely affect our results of operations.

Further, the ability of many of our customers to successfully market their products depends in part on the extent to which reimbursement for the costs of these products is available from governmental health administrations, private health insurers and other organizations. Governmental and other third-party payors are increasingly seeking to contain healthcare costs and to reduce the price of medical products and services. With evolving political realities in the United States, certain sections of the Patient Protection and Affordable Care Act of 2010 (ACA) have not been fully implemented and the direction of healthcare policy is unpredictable. Uncertainty around the future of the ACA, and in particular the impact to reimbursement levels, may lead to uncertainty or delay in the purchasing decisions of our customers, which may in turn negatively impact our product sales. In accordance with the Protecting Access to Medicare Act of 2014 (PAMA), the Centers for Medicare & Medicaid Services calculate Medicare reimbursement rates for certain clinical diagnostic tests using weighted median private payor rates, which are based on rate information reported by applicable laboratories. This new rate methodology means the lower reimbursement rates previously experienced in the field of molecular pathology testing now extend to additional diagnostic testing codes on the Clinical Laboratory Fee Schedule (CLFS). If there are not adequate reimbursement levels, our business and results of operations could be adversely affected.

Reduction in research and development budgets and government funding may result in reduced sales.

Our customers include researchers at pharmaceutical and biotechnology companies, academic institutions, and government and private laboratories. Fluctuations in the research and development budgets of these organizations could have a significant adverse effect on demand for our products. Research and development budgets are affected by changes in available resources, the mergers of pharmaceutical and biotechnology companies, changes in spending priorities and institutional budgetary policies. Our results of operations could be adversely affected by any significant decrease in expenditures for life sciences research and development by pharmaceutical and biotechnology companies, academic institutions, and government and private laboratories. In addition, short-term changes in administrative, regulatory or purchasing-related procedures can create uncertainties or other impediments that can have an adverse impact on our results of operations.

In recent years, the pharmaceutical and biotechnology industries have undergone substantial restructuring and consolidation. Additional mergers or consolidation within the pharmaceutical and biotechnology industries could cause us to lose existing customers and potential future customers, which could have a material adverse impact on our results of operations.

We sell our products to universities, government laboratories and private foundations, whose funding is dependent on grants from government agencies, such as the NIH (National Institutes of Health) in the U.S. which accounts for the majority of Life Science funding in the country. Although the level of research funding has been increasing in recent years, we cannot ensure that this trend will continue given federal and state budget constraints. Government funding of research and development is subject to the political process, which is inherently unpredictable. Future sales may be adversely affected if our customers delay purchases as a result of uncertainties regarding the approval of government budget proposals. Also, government proposals to reduce or eliminate budgetary deficits have sometimes included reduced allocations to the NIH and government agencies in other countries that fund life sciences research and development activities. A reduction in government funding for the NIH or government research agencies in other countries could have a serious adverse impact on our results of operations.

Competition could reduce our sales.

The markets for most of our products are very competitive. Competitors may have significant advantages in financial, operational, sales and marketing resources as well as experience in research and development. These competitors may have developed, or could develop in the future, new technologies that compete with our products or even render our products obsolete. Some competitors may obtain regulatory approval from the U.S. Food and Drug Administration (FDA) or similar non-U.S. authorities. Our competitors' development of alternative products offering superior technology, greater cost-effectiveness and/or receiving regulatory approval could have a material adverse effect on our sales and results of operations.

The growth of our business depends in part on the continued conversion of users from competitive products to our sample and assay technologies and other solutions. Lack of conversion could have a material adverse effect on our sales and results of operations.

It can be difficult for users of our products to switch from their current supplier of a particular product, primarily due to the time and expense required to properly integrate new products into their operations. As a result, if we are unable to be the first to develop and supply new products, our competitive position may suffer, resulting in a material adverse effect on our sales and results of operations.

For our commercial clinical assays, we often compete with solutions developed by our laboratory customers, and driving conversion from such laboratory-developed tests (LDTs) to commercial diagnostics assays can be challenging.

The time and expense needed to obtain regulatory approval and respond to changes in regulatory requirements could adversely affect our ability to commercially distribute our products and generate sales.

We and our customers operate in a highly regulated environment characterized by frequent changes in the governing regulatory framework. Genetic research activities and products commonly referred to as "genetically engineered" (such as certain food and therapeutic products) are subject to extensive governmental regulation in most developed countries, especially in the major markets for pharmaceutical and diagnostic products such as the European Union, the U.S., China and Japan. In recent years, several highly publicized scientific events (notably in genomic research, gene editing and cloning) have prompted intense public debate on the ethical, philosophical and religious implications of an unlimited expansion in genetic research and the use of products emerging from this research. As a result of this debate, some key countries may increase or establish regulatory barriers, which could adversely affect demand for our products and prevent us from fulfilling our growth expectations. Furthermore, there can be no assurance that any future changes in applicable regulations will not require further expenditures or an alteration, suspension or liquidation of our operations in certain areas, or even in their entirety.

Changes in the existing regulations or adoption of new requirements or policies could adversely affect our ability to sell our approved or cleared products, or to seek approvals for new products in other countries around the world. Sales of certain products now in development may be dependent upon us successfully conducting preclinical studies, clinical trials and other tasks required to gain regulatory approvals and meet other requirements from the In Vitro Diagnostic Device Regulation in the European Union, the FDA in the U.S. and regulatory agencies in other countries. If we are not able to meet the applicable requirements, we will not be able to commercialize our products and tests, which will have a material adverse effect on our business.

Several of our key products and programs are medical devices that are subject to extensive regulation by the FDA under the U.S. Food, Drug and Cosmetic Act. We plan to apply for FDA clearance or approval of additional products in the future. Regulatory agencies in other countries also have medical device and in vitro diagnostic medical devices (IVD) approval requirements that are becoming more extensive. These regulations govern most commercial activities associated with medical devices, including indications for the use of these products as well as other aspects that include product development, testing, manufacturing, labeling, storage, record-keeping, advertising and promotion. Compliance with these regulations is expensive and time-consuming.

Our cleared or approved devices, including diagnostic tests and related equipment, are subject to numerous post-approval requirements. We are subject to inspection and marketing surveillance by the FDA to determine our compliance with regulatory requirements. If the FDA determines that we have failed to comply, it can institute a wide variety of enforcement actions, ranging from warning letters to more severe sanctions such as fines, injunctions and civil penalties, recalls or seizures of our products, operating restrictions, partial suspension or total shutdown of production, denial of our requests for 510(k) clearance or pre-market approval of product candidates, withdrawal of 510(k) clearance or pre-market approval already granted and civil or criminal prosecution. Any enforcement action by the FDA may affect our ability to commercially distribute these products in the U.S.

Some of our products are sold for research purposes in the U.S. We do not promote these products for clinical diagnostic use, and they are labeled "For Research Use Only" (RUO) or "For Molecular Biology Applications." If the FDA were to disagree with our designation of a product as having RUO status, we could be forced to stop selling it until appropriate regulatory clearance or approval has been obtained.

We are subject to risks associated with patent litigation.

The biotechnology industry has been characterized by extensive litigation regarding patents and other intellectual property rights, particularly since industry competitors gravitate around common technology platforms. We are aware that patents have been applied for and/or issued to third parties claiming technologies for sample and

assay technologies that are closely related to those we use. From time to time, we receive inquiries requesting confirmation that we do not infringe patents of third parties. We endeavor to follow developments in this field, and we do not believe that our technologies or products infringe any proprietary rights of third parties. However, there can be no assurance that third parties will not challenge our activities or, if so challenged, that we will prevail. In addition, the patent and proprietary rights of others could require that we alter our products or processes, pay licensing fees or cease certain activities, and there can be no assurance that we will be able to license any technologies that we may require on acceptable terms. In addition, litigation, including proceedings that may be declared by the U.S. Patent and Trademark Office or the International Trade Commission, may be necessary to respond to any assertions of infringement, enforce our patent rights and/or determine the scope and validity of our proprietary rights or those of third parties. Litigation, or threatened litigation, could involve substantial cost, and there can be no assurance that we would prevail in any proceedings.

We rely on collaborative commercial relationships to develop and/or market some of our products.

Our long-term business strategy involves entering into strategic alliances as well as marketing and distribution arrangements with academic, corporate and other partners relating to the development, commercialization, marketing and distribution of certain of our existing and potential products. We may be unable to continue to negotiate these collaborative arrangements on acceptable terms, and these relationships also may not be scientifically or commercially successful. In addition, we may be unable to maintain these relationships, and our collaborative partners may pursue or develop competing products or technologies, either on their own or in collaboration with others.

Our Precision Diagnostics business includes projects with pharmaceutical and biotechnology companies to co-develop companion diagnostics paired with drugs that those companies either market currently or are developing for future use. The success of these co-development programs, including regulatory approvals for the companion diagnostics, depends upon the continued commitment of our partners to the development of their drugs, the outcome of clinical trials for the drugs and diagnostics, and regulatory approvals of the tests and drugs. In addition, the future level of sales for companion diagnostics depends to a high degree on the commercial success of the related medicines for which the tests have been designed. More companion diagnostics would be sold in combination with a widely prescribed drug than one with limited use.

The successful marketing of QIAGEN products, in some cases, depends on commercial relationships such as joint ventures or distributorships, particularly in emerging markets where we partner with local companies to augment our less-established commercial relationships and infrastructure. The continued commitment of our partners to these ventures, as well as the management of the commercial efforts, could influence QIAGEN's sales and profitability in these markets.

We have made investments in and are expanding our business into growth markets, which exposes us to risks.

Our top six emerging growth markets are Brazil, China, India, South Korea, Mexico, and Turkey, which together accounted in 2022 for approximately 13% of total sales. Russia was removed as a top growth market in 2022 following the invasion of Ukraine and the subsequent decision to suspend business operations in Russia and Belarus, which made up less than 1% of total sales. We expect to continue to focus on expanding our business in these or other fast-growing markets, including those in the Middle East and Asia. In addition to the currency and operating risks described above, our international operations are subject to a variety of risks arising from the economy, political outlook, language and cultural barriers in countries where we have operations or do business. In many of these emerging markets, we may face several risks that are more significant than in other countries in which we have a history of doing business. These risks include economies that may be dependent on only a few products and are therefore subject to significant fluctuations, weak legal systems that may affect our ability to enforce contractual rights, exchange controls, unstable governments, and privatization or other government actions affecting the flow of goods and currency. In conducting our business, we move products from one country to another and may provide services in one country from a subsidiary located in another country. Accordingly, we are vulnerable to abrupt changes in customs and tax regimes that could have significant negative impacts on our results of operations.

Some of our customers are requiring us to change our sales arrangements to lower their costs, and this may limit our pricing flexibility and harm our business.

Some of our customers have developed purchasing initiatives to reduce the number of vendors from which they purchase products in order to lower their supply costs. In some cases, these customers have established agreements with large distributors, which include discounts and direct involvement in the distributor's purchasing process. These activities may force us to supply large distributors with our products at discounts in order to continue providing products to some customers. For similar reasons, many larger customers, including the U.S. federal government, have requested, and may request in the future, special pricing arrangements, which can include blanket purchase agreements. These agreements may limit our pricing flexibility, which could harm our business and affect our results of operations. For a limited number of customers, and at the request of customers, we have conducted sales transactions through distribution and other value-added partners. If sales grow through these intermediaries, this could adversely impact our results of operations, in particular our gross profit.

Exchange rate fluctuations may adversely affect our business and operating results.

Given that we currently market our products throughout the world, a significant portion of our business is conducted in currencies other than the U.S. dollar, our reporting currency. As a result, fluctuations in value relative to the U.S. dollar of the currencies in which we conduct our business have caused and will continue to cause foreign currency transaction gains and losses. Foreign currency transaction gains and losses arising from normal business operations are charged against earnings in the period when incurred. Due to the number of currencies involved, the variability of currency exposures and the potential volatility of currency exchange rates, we cannot predict the effects of future exchange rate fluctuations. As of April 1, 2022, the results of operations from our subsidiary in Turkey have been reported under highly inflationary accounting as the prior three-years cumulative inflation rate exceeded 100%. While we may engage in foreign exchange hedging transactions to manage our foreign currency exposure, there can be no assurance that our hedging strategy will adequately protect our operating results from the effects of future exchange rate fluctuations.

Our success depends on the continued employment of qualified personnel, any of whom we may lose at any time.

Although we have not experienced any difficulties attracting or retaining management and scientific staff, our ability to recruit and retain qualified, skilled employees will continue to be critical to our success. Given the intense competition for experienced scientists and managers among pharmaceutical and biotechnology companies, as well as academic and other research institutions, there can be no assurance that we will be able to attract and retain employees critical to our success on acceptable terms. Initiatives to expand QIAGEN will also require additional employees, including management with expertise in areas such as research and development, manufacturing, digitization, sales and marketing, and the development of existing managers to lead a growing organization. The failure to recruit and retain qualified employees, or develop existing employees, could have a material adverse impact on our results of operations.

Our ability to accurately forecast our results during each quarter may be negatively impacted by the fact that at times a high percentage of our sales may be recorded in the final weeks or days of the quarter.

In the markets we serve, a high percentage of purchase orders can be received in the final few weeks or days of each quarter. Although this varies from quarter to quarter, many customers make a large portion of their purchase decisions late in each quarter, in particular because they receive new information during this period on their budgets and requirements. Additionally, volatility in the timing of revenue from companion diagnostic partnerships can be difficult to predict. As a result, even late in each quarter, we cannot predict with certainty whether our sales forecasts for the quarter will be achieved.

Historically, we have been able to rely on the overall pattern of customer purchase orders during prior periods to project with reasonable accuracy our anticipated sales for the current or coming quarters. However, if customer purchasing trends during a quarter vary from historical patterns, as may occur with changes in market and economic

conditions, our quarterly financial results could deviate significantly from our projections. As a result, our sales forecasts for any given quarter may prove not to be accurate. We also may not have sufficient, timely information to confirm or revise our sales projections for a specific quarter. If we fail to achieve our forecasted sales for a particular quarter, the value of our Common Shares could be significantly affected.

We have a significant amount of debt that may adversely affect our financial condition and flexibility.

We have a significant amount of debt, debt service obligations and restrictive covenants imposed by our lenders. A high level of indebtedness increases the risk that we may default on our debt obligations, and restrictive covenants may prevent us from borrowing additional funds. There is no assurance that we will be able to generate sufficient cash flow to pay the interest on our debt and comply with our debt covenants, or that future working capital, borrowings or equity financing will be available to repay or refinance our debt. If we are unable to generate sufficient cash flow to pay the interest on our debt and comply with our debt covenants, we may have to delay or curtail our research and development programs. The level of our indebtedness could, among other things:

- make it difficult for us to make required payments on our debt;
- make it difficult in the future for us to obtain financing necessary for working capital, capital expenditures, debt service requirements or other purposes;
- limit our flexibility in planning for, or reacting to, changes in our business and the industry in which we compete; and
- make us more vulnerable in the event of a downturn in our business.

Our business may require substantial additional capital, which we may not be able to obtain on terms acceptable to us, if at all.

Our future capital requirements and level of expenses will depend on numerous factors, including the costs associated with:

- marketing, sales and customer support efforts;
- research and development activities;
- expansion of our facilities;
- consummation of possible future acquisitions of technologies, products or businesses;
- demand for our products and services;
- repayment or refinancing of debt; and
- payments in connection with our hedging activities and/or taxes.

We currently anticipate that our short-term capital requirements will be satisfied by cash flow from our operations and/or cash on hand. As of December 31, 2022, we had outstanding long-term debt of $1.9 billion, of which $389.6 million was current. We may choose to refinance these liabilities.

If at some point in time our existing resources should be insufficient to fund our activities, we may need to raise funds through public or private debt or equity financings. The funds for the refinancing of existing liabilities or for the ongoing funding of our business may not be available or, if available, not on terms acceptable to us. If adequate funds are not available, we may be required to reduce or delay expenditures for research and development, production, marketing, capital expenditures and/or acquisitions, which could have a material adverse effect on our business and results of operations. To the extent that additional capital is raised through the sale of equity or convertible securities, the issuance of any securities could result in dilution to our shareholders.

The accounting for the cash convertible notes we have issued will result in recognition of interest expense significantly greater than the stated interest rate of the notes and may result in volatility to our Consolidated Statements of Income.

We will settle any conversions of the Cash Convertible Notes described under the heading "Other Factors Affecting Liquidity and Capital Resources" elsewhere in this Annual Report, entirely in cash. Accordingly, the conversion option that is part of the Cash Convertible Notes is accounted for as a derivative pursuant to accounting standards relating to derivative instruments and hedging activities. Refer to Note 14 "Derivatives and Hedging" and Note 16 "Debt", of the Notes to Consolidated Financial Statements. In general, this resulted in an initial valuation of the conversion option separate from the debt component of the Cash Convertible Notes, resulting in an original issue discount. The original issue discount will be accreted to interest expense over the term of the Cash Convertible Notes, which will result in an effective interest rate reported in our financial statements significantly in excess of the stated coupon rates of the Cash Convertible Notes. This accounting treatment will reduce our earnings. For each financial statement period after the issuance of the Cash Convertible Notes, a gain (or loss) will be reported in our financial statements to the extent the valuation of the conversion option changes from the previous period. The Call Options issued in connection with the Cash Convertible Notes will also be accounted for as derivative instruments, substantially offsetting the gain (or loss) associated with changes to the valuation of the conversion option. This may result in increased volatility to our results of operations.

The cash convertible note hedge and warrant transactions we entered into in connection with the issuance of our Cash Convertible Notes may not provide the benefits we anticipate, and may have a dilutive effect on our common stock.

Concurrently with the issuance of the Cash Convertible Notes, we entered into Call Options and issued Warrants. We entered into the Call Options with the expectation that they would offset potential cash payments by us in excess of the principal amount of the Cash Convertible Notes upon conversion of the Cash Convertible Notes. In the event that the hedge counterparties fail to deliver potential cash payments to us, as required under the Call Options, we would not receive the benefit of such transaction. Separately, we also issued Warrants. The Warrants could separately have a dilutive effect to the extent that the market price per share of our common stock, as measured under the terms of the Warrants, exceeds the strike price of the Warrants.

An impairment of goodwill and intangible assets could reduce our earnings.

At December 31, 2022, our consolidated balance sheet reflected $2.4 billion of goodwill and $544.8 million of intangible assets. Goodwill is recorded when the purchase price of a business exceeds the fair value of the tangible and separately measurable intangible net assets. U.S. generally accepted accounting principles (U.S. GAAP) require us to test goodwill for impairment on an annual basis or when events or circumstances occur indicating that goodwill might be impaired. Long-lived assets, such as intangible assets with finite useful lives, are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. The impairment review often cannot be done at the level of the individual asset and it must instead be applied to a group of assets. For the purpose of our annual goodwill impairment testing based on the current circumstances of how we manage our business, this group of assets is the Company as a whole. If we determine that any of our goodwill or intangible assets were impaired, we will be required to take an immediate charge to earnings and our results of operations could be adversely affected.

Our strategic equity investments may result in losses.

We have made, and may continue to make, strategic investments in businesses as opportunities arise. We periodically review the carrying value of these investments for impairment, considering factors that include the most recent stock transactions, book values from the most recent financial statements, and forecasts and expectations of the investee. The results of these valuations may fluctuate due to market conditions and other conditions over which we have no control.

Estimating the fair value of non-marketable equity investments in life science companies is inherently subjective. If actual events differ from our assumptions and unfavorable fluctuations in the valuations of the investments are indicated, we could be required to write down the investment. This could result in future charges on our earnings that could materially adversely affect our results of operations. It is uncertain whether or not we will realize any long-term benefits from these strategic investments.

Doing business internationally creates certain risks.

Our business involves operations in several countries around the world. Our consumables manufacturing facilities are located in Germany, China, Spain and the U.S. We source raw materials and subcomponents to manufacture our products from different countries. We have established sales subsidiaries in numerous countries. In addition, our products are sold through independent distributors serving more than 60 countries. Conducting and launching operations on an international scale requires close coordination of activities across multiple jurisdictions and time zones and consumes significant management resources. We have invested heavily in computerized information systems in order to manage more efficiently the widely dispersed components of our operations. If we fail to coordinate and manage these activities effectively, our business and results of operations will be adversely affected.

Our operations are subject to other risks inherent in international business activities, such as the general economic and public health conditions in the countries in which we operate, trade restrictions and changes in tariffs, longer accounts receivable payment cycles in certain countries, overlap of different tax structures, unexpected changes in regulatory requirements, and compliance with a variety of foreign laws and regulations. Other risks associated with international operations include import and export licensing requirements, climate change legislation, exchange controls and changes in freight rates, as may occur as a result of rising energy costs. Further, any misuse or other wrongful use of our products could expose us to negative publicity resulting in reputation or brand damage with customers or partners. As a result of these conditions, an inability to successfully manage our international operations could have a material adverse impact on our business and results of operations.

In any of the markets in which we do business, increasing attention to environmental, social and governance (ESG) matters may result in new or expanded legal or regulatory requirements or expectations specific to ESG matters. A failure to meet investor or other stakeholder expectations, may result in adverse reputation impacts, loss of business or a negative impact to attract and retain talent. Further, working to adhere to any new or expanded legal or regulatory requirements may require additional investments which could negatively impact our profitability.

Unethical behavior and non-compliance with laws by our sales representatives, other employees, consultants, commercial partners or distributors or employees could seriously harm our business.

Our operations include doing business in countries with a history of corruption and involve transactions with foreign governments. These factors may increase the risks associated with our international activities. We are subject to the U.S. Foreign Corrupt Practices Act (FCPA), the U.K. Bribery Act and other laws that prohibit improper payments or offers of payments to foreign governments and their officials and political parties by business entities for the purpose of obtaining or retaining business. We have operations, agreements with third parties and sales in countries known to experience corruption. Further international expansion may involve increased exposure to these types of practices. Our activities in these countries and others create risks of unauthorized payments or offers of payments, non-compliance with laws, or other unethical behavior by any of our employees, consultants, sales agents or distributors, that could be in violation of various laws, including the FCPA, even though these parties are not always subject to our control.

Our policy is to implement safeguards to discourage these or other unethical practices by our employees and distributors including online and in-person employee trainings, periodic internal audits and standard reviews of our distributors. However, our existing safeguards and any future improvements may not prove to be effective, and our employees, consultants, sales agents or distributors may engage in conduct for which we might be held responsible. Violations of the FCPA and other laws may result in

criminal or civil sanctions, which could be severe, and we may be subject to other liabilities, which could negatively affect our business, results of operations and financial condition.

Real or perceived defects in or misuse of our products could adversely affect our results of operations, growth prospects and reputation.

We currently market our products in over 130 countries either directly or indirectly through commercial partners and distributors. Due to the size and breadth of our operations, we may not always be able to track the use of our products by the end users. If our products are misused or are perceived to be misused, this could adversely affect our reputation and our customers' willingness to buy from us, and adversely affect market acceptance or perception of our products.

Many of our customers—especially those in law enforcement and government who use our products for forensic testing, human identification, food testing or other purposes—could use our products in applications that are of public interest or critical to their businesses or missions. As a result, they may a lower risk tolerance to defects in our products than to defects in other less critical products. A defect in or misuse of any of our products by our law enforcement customers could lead to interference with the administration of justice, such as damage to forensic evidence. Any defects or misuse, real or perceived, could cause us to lose sales opportunities, increase our service costs, incur replacement costs, cause reputational damage, lose customers or subject us to liability for damages and divert our resources from other tasks. Any one of these factors could materially and adversely affect our business and results of operations. In addition, our products could be perceived as ineffective for reasons outside of our control.

Additionally, if any of our customers, government or otherwise, use or are perceived to use our products in a manner that is unethical, unlawful or inconsistent with our values, this may damage our reputation and results of operations. We strive to ensure that our products are used only in ethical and lawful ways, but we cannot provide any assurance that we will not be subject to claims from third parties alleging that our products were misused. Any allegations of misuse by our customers or third parties may damage our reputation, even if we took no part in the misuse or take immediate action to sever ties with such customers.

We believe that our brand and reputation are critical to driving our business. Building our brand will depend largely on our ability to continue to provide top-tier service, including high quality products at appropriate price points, which we may not do successfully. Negative reviews or publicity about our products or business, especially on media outlets, could harm our reputation and diminish our ability to make additional sales, which would adversely affect our business, financial condition, and results of operations.

We depend on patents and proprietary rights that may fail to protect our business.

Our success depends to a large extent on our ability to develop proprietary products and technologies and to establish and protect our patent and trademark rights in these products and technologies. As of December 31, 2022, we owned 314 issued patents in the United States, 260 issued patents in Germany and 1,776 issued patents in other major industrialized countries. In addition, as of December 31, 2022, we had 370 pending patent applications, and we intend to file applications for additional patents as our products and technologies are developed. The patent positions of technology-based companies involve complex legal and factual questions and may be uncertain, and the laws governing the scope of patent coverage and the periods of enforceability of patent protection are subject to change. In addition, patent applications in the United States are maintained in secrecy until patents issue, and publication of discoveries in the scientific or patent literature tends to lag behind actual discoveries by several months. Therefore, no assurance can be given that patents will issue from any patent applications that we own or license, or if patents do issue, that the claims allowed will be sufficiently broad to protect our technology. In addition, no assurance can be given that any issued patents that we own or license will not be challenged, invalidated or circumvented, or that the rights granted thereunder will provide us competitive advantages. Further, as issued patents expire, we may lose some competitive advantage as others develop competing products and as a result, we may lose revenue.

Some of our products incorporate patents and technologies that are licensed from third parties and for certain products, these in-licensed patents together with other patents provide us with a competitive advantage. These licenses impose various commercialization, sublicensing and other obligations on us. Our failure to comply with these requirements could result in the conversion of the applicable license from being exclusive to non-exclusive or, in some cases, termination of the license, and as a result, we may lose some competitive advantage and experience a loss of revenue.

We also rely on trade secrets and proprietary know-how, which we seek to protect through confidentiality agreements with our employees and consultants. There can be no assurance that any confidentiality agreements that we have with our employees, consultants, outside scientific collaborators and sponsored researchers and other advisors will provide meaningful protection for our trade secrets or adequate remedies in the event of unauthorized use or disclosure of such information. There also can be no assurance that our trade secrets will not otherwise become known or be independently developed by competitors.

We currently engage in, and may continue to engage in, collaborations with academic researchers and institutions. There can be no assurance that under the terms of such collaborations, third parties will not acquire rights in certain inventions developed during the course of these collaborations.

Our business exposes us to potential product liability.

The marketing and sale of our products and services for certain applications entail a potential risk of product liability. Although we are not currently subject to any material product liability claims, product liability claims may be brought against us in the future. Further, there can be no assurance that our products will not be included in unethical, illegal or inappropriate research or applications, which may in turn put us at risk of litigation. We carry product liability insurance coverage, which is limited in scope and amount. There can be no assurance that we will be able to maintain this insurance at a reasonable cost and on reasonable terms, or that this insurance will be adequate to protect us against any or all potential claims or losses.

We are subject to various laws and regulations generally applicable to businesses in the different jurisdictions in which we operate, including laws and regulations applicable to the handling and disposal of hazardous substances. The risk of accidental contamination or injury from these materials cannot be completely eliminated. In the event of such an accident, we could be held liable for any damages that result, and any such liability could have a material adverse impact on us.

Our operating results may vary significantly from period to period and this may affect the market price of our Common Shares.

Our operating results may vary significantly from quarter to quarter, and also year to year, since they are dependent upon a broad range of factors that include demand for our products, the level and timing of customer research budgets and commercialization efforts, the timing of government funding budgets of our customers, the timing of our research and development activities and related regulatory approvals, the impact of sales and marketing expenses, restructuring activities, introduction of new products by us or our competitors, competitive market conditions, exchange rate fluctuations and general economic conditions. Our expense levels are based in part on our expectations as to future sales trends. As a result, sales and earnings may vary significantly from quarter to quarter or from year to year, and actual sales and earnings results in any one period will not necessarily be indicative of results to be anticipated in subsequent periods. Our results may also fail to meet or exceed the expectations of securities analysts or investors, which could cause a decline in the market price of our Common Shares.

Our holding company structure makes us dependent on the operations of our subsidiaries.

QIAGEN N.V. is incorporated under Dutch law as a public limited liability company (naamloze vennootschap), and is organized as a holding company. Currently, the material assets are the outstanding shares of the QIAGEN subsidiaries, intercompany receivables and other financial assets such as cash, short-term investments and

derivative instruments. As a result, QIAGEN N.V. is dependent upon payments, dividends and distributions from the subsidiaries for funds to pay operating and other expenses as well as to pay future cash dividends or distributions, if any, to holders of our Common Shares. Dividends or distributions by subsidiaries in a currency other than the U.S. dollar may result in a loss upon a subsequent conversion into U.S. dollars.

Our Common Shares may have a volatile public trading price.

The market price of our Common Shares since our initial public offering in September 1996 has increased significantly and been highly volatile. Since January 10, 2018, our shares have been listed on the New York Stock Exchange (NYSE). Before that, our shares were listed on the NASDAQ through January 9, 2018. In the last two years, the price of our Common Shares has ranged from a high of $59.00 to a low of $40.38. On the Frankfurt Stock Exchange our Common Shares have ranged from a high of €51.56 to a low of €37.38 during the last two years.

In addition to overall stock market fluctuations, factors that may have a significant impact on the price of our Common Shares include:

- announcements of technological innovations or the introduction of new products by us or our competitors;
- developments in our relationships with collaborative partners;
- quarterly variations in our operating results or those of our peer companies;
- changes in government regulations, tax laws or patent laws;
- developments in patent or other intellectual property rights;
- developments in government spending budgets for life sciences-related research;
- general market conditions relating to the diagnostics, applied testing, pharmaceutical and biotechnology industries; and
- impact from foreign exchange rates.

The stock market has from time to time experienced extreme price and trading volume fluctuations that have particularly affected the market for technology-based companies. These fluctuations have not necessarily been related to the operating performance of these companies. These broad market fluctuations may adversely affect the market price of our Common Shares.

Holders of our Common Shares should not expect to receive dividend income.

QIAGEN has not paid an annual dividend since its inception, and does not intend to implement one at this time. At the same time, in January 2017 we completed a synthetic share repurchase that combined a direct capital repayment with a reverse stock split. Although we do not anticipate paying any cash dividends on a regular basis, the distribution of any cash dividends through another synthetic share repurchase in a currency other than the U.S. dollar will be subject to the risk of foreign currency transaction losses. Investors should not invest in our Common Shares if they are seeking dividend income; the only return that may be realized through investing in our Common Shares would be through an appreciation in the share price.

Holders of our Common Shares may not benefit from future stock repurchase programs.

QIAGEN has conducted share repurchase programs in the past through open-market transactions. The purpose of our share repurchases has been to hold the shares in treasury in order to satisfy obligations from exchangeable debt instruments, warrants and/or employee share-based remuneration plans, and thus to reduce dilution to

existing holders of our Common Shares. In 2019, we began net share withholding on the vesting of stock-based awards and as a result, fewer shares are issued than the number of awards outstanding. We may decide not to continue such programs in the future, our covenants with lenders may limit our ability to use available cash to do so, or the market price of our Common Shares may make such repurchases less desirable. In any of these cases, holders of our Common Shares may suffer dilution from conversion of our indebtedness or issuance of shares pursuant to employee remuneration plans that would otherwise be at least partially offset by repurchased shares.

Future sales and issuances of our Common Shares could adversely affect our stock price.

Any future sale or issuance of a substantial number of our Common Shares in the public market, or any perception that a sale may occur, could adversely affect the market price of our Common Shares. Under Dutch law, a company can issue shares up to its authorized share capital provided for in its Articles of Association. Pursuant to our Articles of Association, our authorized share capital amounts to EUR 9.0 million, which is divided into 410.0 million common shares, 40.0 million financing preference shares and 450.0 million preference shares, with all shares having a EUR 0.01 par value. As of December 31, 2022, a total of approximately 227.7 million Common Shares were outstanding along with approximately 3.8 million additional shares reserved for issuance upon exercise or release of outstanding stock options and awards, of which 9.0 thousand were vested. A total of approximately 11.8 million Common Shares are reserved and available for issuances under our stock plans as of December 31, 2022, including the shares subject to outstanding stock options and awards. The majority of our outstanding Common Shares may be sold without restriction, except shares held by our affiliates, which are subject to certain limitations on resale. Additionally, convertible debt issued in 2020 and Warrants issued in connection with the Cash Convertible Notes cover an aggregate of 26.8 million underlying shares of common stock or up to a maximum of 42.5 million shares, subject to customary adjustments under certain circumstances.

Shareholders who are United States residents could be subject to unfavorable tax treatment.

We may be classified as a "passive foreign investment company," or a PFIC, for U.S. federal income tax purposes if certain tests are met. Our treatment as a PFIC could result in a reduction in the after-tax return to holders of Common Shares and would likely cause a reduction in the value of these shares. If we were determined to be a PFIC for U.S. federal income tax purposes, highly complex rules would apply to our U.S. shareholders. We would be considered a PFIC with respect to a U.S. shareholder if for any taxable year in which the U.S. shareholder held the Common Shares, either (i) 75% or more of our gross income for the taxable year is passive income; or (ii) the average value of our assets (during the taxable year) which produce or are held for the production of passive income is at least 50% of the average value of all assets for such year. Based on our income, assets and activities, we do not believe that we were a PFIC for U.S. federal income tax purposes for our taxable year ended December 31, 2022, and do not expect to be a PFIC for the current taxable year or any future taxable year. No assurances can be made, however, that the Internal Revenue Service will not challenge this position or that we will not subsequently become a PFIC.

Provisions of our Articles of Association and Dutch law and an option we have granted may make it difficult to replace or remove management and may inhibit or delay a takeover.

Our Articles of Association (Articles) provide that our shareholders may only suspend or dismiss our Managing Directors and Supervisory Directors against their wishes with a vote of two-thirds of the votes cast if such votes represent more than 50% of our issued share capital. If the proposal was made by the joint meeting of the Supervisory Board and the Managing Board, a simple majority is sufficient. The Articles also provide that if the members of our Supervisory Board and our Managing Board have been nominated by the joint meeting of the Supervisory Board and Managing Board, shareholders may only overrule this nomination with a vote of two-thirds of the votes cast if such votes represent more than 50% of our issued share capital.

Certain other provisions of our Articles allow us, under certain circumstances, to prevent a third party from obtaining a majority of the voting control of our Common Shares through the issuance of Preference Shares. Pursuant to our Articles and the resolution adopted by our General Meeting of Shareholders, our Supervisory Board is entitled to issue Preference Shares in case of an intended takeover of our company by (i) any person who alone or with one or more other persons, directly or indirectly, have acquired or given notice of an intent to acquire (beneficial) ownership of an equity stake which in aggregate equals 20% or more of our share capital then outstanding or (ii) an "adverse person" as determined by the Supervisory Board. If the Supervisory Board opposes an intended takeover and authorizes the issuance of Preference Shares, the bidder may withdraw its bid or enter into negotiations with the Managing Board and/or Supervisory Board and agree on a higher bid price for our Shares.

In 2004, we granted an option to the Stichting Preferente Aandelen QIAGEN, or the Foundation (*Stichting*), subject to the conditions described in the paragraph above, which allows the Foundation to acquire Preference Shares from us. The option enables the Foundation to acquire such number of Preference Shares as equals the number of our outstanding Common Shares at the time of the relevant exercise of the option, less one Preference Share. When exercising the option and exercising its voting rights on these Preference Shares, the Foundation must act in our interest and the interests of our stakeholders. The purpose of the Foundation option is to prevent or delay a change of control that would not be in the best interests of our stakeholders. An important restriction on the Foundation's ability to prevent or delay a change of control is that a public offer must be announced by a third party before it can issue (preference or other) protective shares that would enable the Foundation to exercise rights to 30% or more of the voting rights without an obligation to make a mandatory offer for all shares held by the remaining shareholders. In addition, the holding period for these shares by the Foundation is restricted to two years, and this protective stake must fall below the 30% voting rights threshold before the two-year period ends.

Critical Accounting Policies, Judgments and Estimates

The preparation of our financial statements in accordance with accounting principles generally accepted in the United States requires management to make assumptions that affect the reported amounts of assets, liabilities and disclosure of contingencies as of the date of the financial statements, as well as the reported amounts of revenues and expenses during the reporting period. Critical accounting policies are those that require the most complex or subjective judgments often as a result of the need to make estimates about the effects of matters that are inherently uncertain. Thus, to the extent that actual events differ from management's estimates and assumptions, there could be a material impact to the financial statements. In applying our critical accounting policies, at times we used accounting estimates that either required us to make assumptions about matters that were highly uncertain at the time the estimate was made or it is reasonably likely that changes in the accounting estimate may occur from period to period that would have a material impact on the presentation of our results of operations, financial position or cash flows. Our critical accounting policies are those related to revenue recognition, income taxes, share-based compensation, investments, goodwill and other intangible assets, acquisitions and fair value measurements. We reviewed the development, selection, and disclosure of our critical accounting policies and estimates with the Audit Committee of our Supervisory Board.

Revenue Recognition

We recognize revenue when control of promised goods or services is transferred to customers in an amount that reflects the consideration that is expected to be received for those goods or services. Identifying performance obligations in a contract, estimating the amount of variable consideration to include in the transaction price and allocating the transaction price to each separate performance obligation requires management's judgments and estimates. Sales arrangements which require a measure of progress toward completion by measuring actual hours incurred to date as a proportion of the total budgeted hours of the project also involves management's judgments and estimates. While the majority of our sales agreements contain standard terms and conditions, we do enter into agreements that contain multiple products or services or non-standard terms and conditions. Sometimes it is difficult to determine whether there is more than one performance obligation under a sales agreement and if so, how and when revenue should be recognized is subject to certain estimates or assumptions. Should our judgments and estimates not be correct, revenue recognized for any reporting period could be adversely affected.

Income Taxes

Calculation of our tax provision is complex due to our international operations and the multiple taxing jurisdictions in which we operate. Some of our deferred tax assets relate to net operating losses (NOL). The utilization of NOLs is not assured and is dependent on generating sufficient taxable income in the future. Although management believes it is more likely than not that we will generate sufficient taxable income to utilize substantially all NOL carryforwards, evaluating the NOLs related to our newer subsidiaries requires us to make estimates that we believe are reasonable, but may also be highly uncertain given that we do not have direct experience with these subsidiaries or their products. Thus, the estimates may be subject to significant changes from period to period as we gain that experience. To the extent that our estimates of future taxable income are insufficient to utilize all available NOLs, a valuation allowance will be recorded in the provision for income taxes in the period the determination is made, and the deferred tax assets will be reduced by this amount, which could be material. In the event that actual circumstances differ from management's estimates, or to the extent that these estimates are adjusted in the future, any changes to the valuation allowance could materially impact our financial position and results of operations.

The calculation of our tax liabilities involves dealing with uncertainties in the application of complex tax laws and regulations in many jurisdictions across our global operations. ASC 740 states that a tax benefit from an uncertain tax position may be recognized when it is more likely than not that the position will be sustained upon examination, including resolutions of any related appeals or litigation processes on the basis of technical merits. We record unrecognized tax positions in accordance with ASC 740 and adjust these liabilities when our judgment changes as a result of the evaluation of new information not previously available. Because of the complexity of some of these uncertainties, the ultimate resolution may result in a payment that is materially different from our current estimate of the unrecognized tax liabilities. These differences will be reflected as increases or decreases to income tax expense in the period in which the new information is available.

Share-Based Compensation

Our stock plan, the QIAGEN N.V. 2014 Stock Plan (the Plan), allows for the granting of stock rights, incentive stock options, as well as for non-qualified options, stock grants and stock-based awards. We grant performance-based stock units subject to performance periods of three years. Thus, the estimates of performance achieved during the performance period may be subject to significant changes from period to period as the performance is completed. Any increase or decrease in share-based compensation expense resulting from an adjustment in the estimated shares to be released is treated as a cumulative catch-up in the period of adjustment. If any of the assumptions or estimates used change significantly, share-based compensation expense may differ materially from what we have recorded in the current period.

Investments

Generally accepted accounting principles require different methods of accounting for an investment depending on the level of influence that we exert. Assessing the level of influence involves subjective judgments. If management's assumptions with respect to its level of influence differ in future periods and we therefore have to account for these investments under a method other than the cost method, it could have a material impact to our financial statements.

We have equity investments accounted for under the measurement alternative as these equity securities do not have readily determinable fair values and are not accounted for under the equity method. This measurement alternative requires these investments to be measured at cost, less any impairment, plus or minus changes resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer. At each reporting date, we review each investment for impairment, considering factors such as book values from the most recent financial statements, and forecasts and expectations of the investee, and also for any observable price changes from stock transactions of the issuer. If an impairment is determined to have occurred, estimation of the fair value of these non-marketable equity investments is inherently subjective. Therefore, in the case of an impairment or an observable price change occurs, it could require a write-down or write-up of the investment that could materially impact our financial position and results of operations.

Additionally, we have made strategic investments in certain companies as more fully described in Note 10 "Investments" to the consolidated financial statements, some of which are variable interest entities. FASB ASC Topic 810 requires a company to consolidate a variable interest entity in which it holds a variable interest if it is designated as the primary beneficiary of that entity even if the company does not have a majority of voting interests. A variable interest entity is generally defined as an entity with insufficient equity to finance its activities or where the owners of the entity lack the risk and rewards of ownership. Assessing the requirements of ASC Topic 810 involves subjective judgments. If management's assumptions with respect to the criteria differ in future periods, and we therefore have to account for these investments under a different method, it could have a material impact on our financial statements.

Amortized Intangible Assets

We assess amortized intangible assets at least annually, as of October 1st of each year, for indications of impairment. Intangibles are assessed for recoverability considering the contract life, where applicable, and the period of time over which the intangible will contribute to future cash flow. The unamortized cost of intangible assets, where cash flows are independent and identifiable from other assets, is evaluated periodically and adjusted, if necessary, if events and circumstances indicate that a decline in value below the carrying amount has occurred. Due to the numerous variables associated with our judgments and assumptions and the effects of changes in circumstances affecting the valuation, both the precision and reliability of the resulting estimates are subject to uncertainty. As additional information becomes known, we may change our estimates.

Acquisitions

We frequently enter into business combinations and must determine whether an acquired entity is considered to be a business or an asset or group of assets under ASU 2017-01, *Business Combinations: Clarifying the Definition of a Business*. A portion of the purchase price can only be allocated to goodwill in a business combination. Transaction costs are expensed in a business combination yet capitalized in an asset acquisition. Contingent payments and in-process research and development costs

are also handled differently. A set of assets is not a business if substantially all of the fair value of the acquired gross assets is concentrated in a single asset or group of similar identifiable assets. In determining whether an acquired entity is considered to be a business or a set of assets, application of the "substantially all" threshold requires judgment.

The purchase price allocation for acquisitions of a business requires extensive use of accounting estimates and judgments to allocate the purchase price to the identifiable tangible and intangible assets acquired, including in-process research and development, and liabilities assumed based on their respective fair values. An acquisition may include contingent consideration as part of the purchase price. Contingent consideration is accounted for at fair value at the acquisition date with subsequent changes to the fair value being recognized in earnings.

We have made several acquisitions of businesses in recent years. The purchase prices for the acquisitions were allocated to tangible and intangible assets acquired and liabilities assumed based on their estimated fair values at the acquisition dates. In most acquisitions, we engage an independent third-party valuation firm to assist us in determining the estimated fair values of acquired in-process research and development and identifiable intangible assets. Such a valuation requires significant estimates and assumptions, including but not limited to determining the timing and estimated costs to complete the in-process projects, projecting regulatory approvals, estimating projected revenue and related growth rates, estimating future cash flows, estimating customer attrition rates and developing appropriate discount rates. We believe the estimated fair values of contingent consideration and assets acquired and liabilities assumed are based on reasonable assumptions. However, the fair value estimates for the purchase price allocations may change during the allowable allocation period, which is up to one year from the acquisition dates, if additional information becomes available.

Fair Value Measurements

We have categorized our assets and liabilities that are measured at fair value, based on the priority of the inputs to the valuation techniques, in a three-level fair value hierarchy: Level 1 - using quoted prices in active markets for identical assets or liabilities; Level 2 - using observable inputs other than quoted prices; and Level 3 – using unobservable inputs. We primarily apply the market approach for recurring fair value measurements, maximize our use of observable inputs and minimize our use of unobservable inputs. We utilize the mid-point price between bid and ask prices for valuing the majority of our assets and liabilities measured and reported at fair value. In addition to using market data, we make assumptions in valuing assets and liabilities, including assumptions about risk and the risks inherent in the inputs to the valuation technique.

Certain of our derivative instruments, which are classified in Level 2 of the fair value hierarchy, are valued using industry-standard models that consider various inputs, including time value, volatility factors, and current market and contractual prices for the underlying instruments, as well as other relevant economic measures. Substantially all of these inputs are observable in the marketplace throughout the full term of the instrument, can be derived from observable data or are supported by observable prices at which transactions are executed in the marketplace.

Certain of our acquisitions involve contingent consideration, the payment of which is contingent on the occurrence of future events. Contingent consideration is classified in Level 3 of the fair value hierarchy and is initially recognized at fair value as a cost of the acquisition. After the acquisition, the contingent consideration liability is remeasured each reporting period. The fair value of contingent consideration is measured predominantly on unobservable inputs such as assumptions about the likelihood of achieving specified milestone criteria, projections of future financial performance, assumed discount rates and assumed weightings applied to potential scenarios in deriving a probability weighted fair value. Significant judgment is used in developing these estimates and assumptions both at the acquisition date and in subsequent periods. If actual events differ from management's estimates, or to the extent these estimates are adjusted in the future, our financial position or results of operations could be affected in the period of any change.

Additionally, our Level 3 instruments include non-marketable equity security investments. Under the measurement alternative, the carrying value is measured at cost, less any impairment, plus or minus changes resulting from observable price changes in orderly transactions for identical or similar investments of the same issuer. Adjustments are determined primarily based on a market approach as of the transaction date.

For other fair value measurements, we generally use an income approach to measure fair value when there is not a market observable price for an identical or similar asset or liability. This approach utilizes management's best assumptions regarding expectations of projected cash flows, and discounts the expected cash flows using a commensurate risk-adjusted discount rate.

The above listing is not intended to be a comprehensive list of all our accounting policies. In many cases, the accounting treatment of a particular transaction is specifically dictated by generally accepted accounting principles in the United States, with limited or no need for management's judgment. There are also areas in which management's judgment in selecting available alternatives may or may not produce a materially different result. See our audited consolidated financial statements and notes thereto in the Financial Results section of this Annual Report.

Recent Authoritative Pronouncements

For information on recent accounting pronouncements impacting our business see Note 2 "Effects of New Accounting Pronouncements" of the Notes to the consolidated financial statements included in the Financial Results section of this Annual Report.

Performance Review

Our future operating results may be affected by various risk factors, many of which are beyond our control. Certain statements included in this Annual Report may be forward-looking statements within the meaning of Section 27A of the U.S. Securities Act of 1933, as amended, and Section 21E of the U.S. Securities Exchange Act of 1934, as amended, including statements regarding potential future net sales, gross profit, net income and liquidity.These statements are based on current management expectations, and actual results may differ materially. These statements can be identified by the use of forward-looking terminology such as “believe,” “hope,” “plan,” “intend,” “seek,” “may,” “will,” “could,” “should,” “would,” “expect,” “anticipate,” “estimate,” “continue” or other similar words. Reference is made in particular to the description of our plans and objectives for future operations, assumptions underlying such plans and objectives, and other forward-looking statements. Such statements are based on management’s current expectations and are subject to a number of factors and uncertainties that could cause actual results to differ materially from those described in the forward-looking statements. We caution investors that there can be no assurance that actual results or business conditions will not differ materially from those projected or suggested in such forward-looking statements as a result of various factors. Factors which could cause such results to differ materially from those described in the forward-looking statements include those set forth in the risk factors below. As a result, our future success involves a high degree of risk. When considering forward-looking statements, you should keep in mind that the risk factors could cause our actual results to differ significantly from those contained in any forward-looking statement.

Operating Environment

Economic Environment

The global economy grew at approximately 3% in 2022, about half the rate seen in 2021 and among the weakest annual growth rates of the last 20 years. This economic growth was slower than anticipated as the world sought to emerge from the adverse impacts of the COVID-19 pandemic at the same time as a period of high inflation. Various central banks tightened their monetary policy conditions, primarily through higher interest rates, and prompted "cost of living" challenges for people around the world. After steadily climbing throughout 2021, the U.S. Dollar Index saw a solid start to 2022, experienced a significant drop mid-year and ended the year up approximately 7% compared to 2021.

Industry Environment

The global molecular diagnostics industry faced a period in 2022 of diverging trends—ongoing growth in areas of the industry that had been adversely affected by COVID-19 pandemic lockdowns in recent years, while also facing a significant drop-off in demand for COVID-19 testing and surveillance products compared to the peak level in 2021. The pandemic has led to significant growth in the installed base of instruments, with industry competitors now seeking to expand the utilization of this installed base to other applications for customers in the Life Sciences and Molecular Diagnostics. Although numerous smaller companies have emerged in recent years, larger companies such as QIAGEN have crucial global distribution and production capacity advantages, as well as brand recognition and credibility, with customers around the world.

The Life Sciences and Molecular Diagnostics industry segments are together estimated at more than $100 billion of annual sales, and are expected to maintain a healthy single-digit sales growth pace in the coming years. Key growth drivers include an ongoing high level of funding to advance our understanding of biology as well as medical demand for molecular clinical testing given the impact on improving outcomes for patients.

Operating Results

Overview

In 2022, QIAGEN achieved more than $2 billion of sales, delivering a strong underlying performance with solid sales growth in the non-COVID products while absorbing significantly lower sales in COVID-19 testing products over the prior year. Important contributions in the non-COVID products came from continued execution on goals for the Five Pillars of Growth, which involve various product groups in which QIAGEN has a top leadership position and / or significant growth potential. We maintained a high level of investments into research and development for menu expansion of our key platforms, while also resuming more commercialization activities with the end of lockdown measures in various countries. Cash flow trends were higher in 2022 over 2021, reflecting the strength of our business activities as the world moves increasingly into a post-pandemic environment.

Financial highlights of 2022 include:

- Net sales declined 5% to $2.14 billion in 2022 from $2.25 billion in 2021, reflecting an increase in non-COVID product groups sales that was more than offset by a drop in COVID-19 product sales. Results in 2022 were adversely impacted by about five percentage points from unfavorable currency movements against the U.S. dollar.

- The operating income margin in 2022 was 24.8% of sales compared to 28.0% in 2021, reflecting higher expenses as a percentage of sales that included the costs from recent consumables kit production capacity expansion projects, an ongoing high level of investments into Research and Development and a higher level of commercialization activities compared to 2021.

- Net cash provided by operating activities rose 12% to $715 million in 2022 from $639 million in 2021.

Year Ended December 31, 2022, Compared to 2021

Net Sales

(in millions)	2022		2021		
Product type	Net sales	% of net sales	Net sales	% of net sales	% change
Consumables and related revenues	$1,888.9	88%	$1,986.3	88%	-5%
Instruments	252.6	12%	265.3	12%	-5%
Net Sales	**$2,141.5**		**$2,251.7**		**-5%**
Customer class					
Molecular Diagnostics	$1,126.2	53%	$1,143.7	51%	-2%
Life Sciences	1,015.3	47%	1,108.0	49%	-8%
Net Sales	**$2,141.5**		**$2,251.7**		**-5%**

(in millions)	2022		2021		
Product group	Net sales	% of net sales	Net sales	% of net sales	% change
Sample technologies	$796.9	37%	$850.6	38%	-6%
Diagnostic solutions	660.9	31%	638.8	28%	+3%
PCR / Nucleic acid amplification	390.8	18%	434.0	19%	-10%
Genomics / NGS	224.8	10%	245.1	11%	-8%
Other	68.1	3%	83.2	4%	-18%
Net Sales	**$2,141.5**		**$2,251.7**		**-5%**

Sample technologies involve the sale of consumables kits and instruments for use in gaining DNA, RNA and proteins from biological samples. Sales in this product group declined 6% in 2022 to $796.9 million, as underlying growth in non-COVID applications (particularly for DNA samples) was more than offset by the decline in COVID-19 product sales (involving RNA samples). Non-COVID product sales were supported by ongoing healthy demand amid increasing levels of lab work during 2022, and supported by instrument sales. Sales results for 2022 were adversely impacted by approximately five percentage points of currency movements over the prior year.

Diagnostic solutions involve the sale of regulated consumables kits and instruments for use in clinical healthcare, as well as revenues from our Precision Diagnostics portfolio and companion diagnostic co-development projects with pharmaceutical companies. Sales in this product group grew 3% to $660.9 million in 2022. The QuantiFERON-TB test for tuberculosis detection maintained a solid pace with 17% growth in 2022, reflecting the continued conversion of the latent TB market from the traditional skin test. QIAstat-DX sales rose and benefited from ongoing instrument placements along with higher consumables sales, in particular for the new Gastrointestinal panel in Europe. NeuMoDx sales exceeded the annual sales goal, supported by higher non-COVID testing utilization, but still declined over 2021 results. Sales in the rest of this product group declined, mainly due to lower sales of COVID-19 products.

PCR / Nucleic acid amplification involves consumables kits and instruments used in non-regulated applications. Sales in this product group fell 10% to $390.8 million due to a very significant decline in COVID-19 testing demand. The QIAcuity digital PCR system delivered solid growth in 2022 over 2021 results, supported by the launch of new assays for biopharma applications.

Genomics / NGS involves our portfolio of universal solutions for use on any next-generation sequencer (NGS) as well as the QIAGEN Digital Insights bioinformatics business and other products used in genomics analysis workflows. Sales in this product group declined 8% to $224.8 million, also on overall weaker demand for COVID-19 product groups.

Geographic region (in millions)	2022	2021	% change
Americas	$997.8	$1,007.4	-1%
Europe, Middle East and Africa	733.5	814.4	-10%
Asia Pacific, Japan and Rest of World	410.3	429.9	-5%
Net Sales	**$2,141.5**	**$2,251.7**	**-5%**

The **Americas** region led the performance among our three regions, with overall results significantly affected by the decline in COVID-19 sales. Sales in the U.S. were largely unchanged compared to 2021, while sales rose in Canada against lower results in Brazil and Mexico over the prior year. Sales in this region were not affected by currency movements.

The **Europe, Middle East and Africa (EMEA)** region's results were also affected by the decline in COVID-19 sales, as well as 11 percentage points of unfavorable currency movements against the U.S. dollar. Among the top-performing countries in 2022 were Germany, France, Spain and the United Kingdom.

The **Asia Pacific, Japan and Rest of World** region saw an overall sales decline in 2022 over the prior year. Higher sales were seen in Australia, while sales at actual rates declined in Japan and China compared to 2021. Sales in this region were adversely impacted by seven percentage points from unfavorable currency movements against the U.S. dollar.

Gross Profit

(in millions)	**2022**	2021	% change
Gross Profit	$1,384.6	$1,450.8	-5%
Gross Margin	64.7%	64.4%	

The gross margin in 2022 was 64.7% of sales, and slightly higher than 64.4% in 2021 despite an adverse change in product mix due to higher sales of instruments compared to consumables kits. Generally, our consumables and related products have a higher gross margin than instruments and service arrangements, and changes in the sales levels of these products and services can result in fluctuations in gross margin between periods. Results for 2022 also absorbed higher costs related to labor (including a one-time inflation payment) as well as increased product and royalty payments compared to 2021.

The amortization expense on acquisition-related intangibles within cost of sales declined to $60.5 million in 2022 compared to $67.1 million in 2021. The lower amortization expense reflected the full amortization of certain assets.

Operating Expenses

	2022		2021		
(in millions)	Expenses	% of net sales	Expenses	% of net sales	% change
Research and development	$189.9	8.9%	$190.0	8.4%	0%
Sales and marketing	474.2	22.1%	456.4	20.3%	+4%
General and administrative	129.7	6.1%	128.1	5.7%	+1%
Acquisition-related intangible amortization	14.5	0.7%	18.5	0.8%	-22%
Restructuring, acquisition, integration and other, net	44.8	2.1%	27.8	1.2%	+15%
Total operating expenses	$853.1	39.8%	$820.8	36.5%	
Income from operations	$531.5	24.8%	$630.1	28.0%	

Research and Development

Research and development expenses were largely unchanged at $189.9 million in 2022 compared to 2021, but rose to 8.9% of sales from 8.4% in 2021. The majority of investments were made in our Five Pillars of Growth, including investments in menu expansion for the NeuMoDx, QIAstat-Dx and QIAcuity products, to support post-pandemic sales expansion. Results for 2022 included $16.4 million of favorable currency exchange movements. As we continue to discover, develop and acquire new products and technologies, we expect to incur additional expenses related to facilities, licenses and employees engaged in research and development. Overall, research and development costs are expected to increase as a result of seeking regulatory approvals, including U.S. FDA Pre-Market Approval (PMA), U.S. FDA 510(k) clearance and EU CE approval of certain assays or instruments. Further, business combinations, along with the acquisition of new technologies, may increase research and development costs in the future. We have a strong commitment to innovation and expect to continue to maintain a high level of investments into our research and development efforts.

Sales and Marketing

Sales and marketing expenses rose 4% to $474.2 million over 2021, and rose to 22.1% of sales from 20.3% in 2021. Among the factors for the higher expenses in 2022 were increased commercialization costs amid a resumption of activities following pandemic lockdowns in certain regions during 2021, as well as higher freight and other distribution expenses. Results for 2022 included $32.1 million of favorable currency exchange movements. Sales and marketing expenses are primarily associated with personnel, commissions, advertising, trade shows, publications, freight and logistics expenses, and other promotional expenses, including higher travel costs in 2022 compared to 2021. We continue to increase the use of digital customer engagement capabilities that were built up during the COVID-19 pandemic to enhance customer engagement with a focus on greater efficiency and effectiveness.

General and Administrative

General and administrative expenses increased 1% to $129.7 million in 2022, and also rose to 6.1% of sales compared to 5.7% in 2021. These results reflect efficiency gains across many administrative functions as well as investments into our information technology systems (including an upgrade of the SAP enterprise resource planning system) and into cybersecurity measures. Results for 2022 included $9.6 million of favorable currency exchange movements. We expect to maintain this level of spending in the coming years due to higher licensing and information technology costs as well as increased cybersecurity costs.

Acquisition-Related Intangible Amortization

Amortization expense on acquisition-related intangibles within operating expense declined 22% to $14.5 million from $18.5 million in 2021. The decrease reflects the full amortization of certain previously acquired assets. Amortization expense related to developed technology and patent and license rights acquired in business combinations are included in cost of sales. Amortization of trademarks and customer base acquired in business combinations are recorded in operating expense under the caption “acquisition-related intangible amortization.” Amortization expenses of intangible assets not acquired in business combinations are recorded within cost of sales, research and development, or sales and marketing line items based on the use of the asset. Our acquisition-related intangible amortization recorded in operating expenses will increase in the event of future acquisitions.

Restructuring, Acquisition, Integration and Other, net

Restructuring, acquisition, integration and other, net expenses increased to $44.8 million in 2022, or 2.1% of sales, from $27.8 million, or 1.2% of sales, in 2021. Expenses in 2022 included costs related to our acquisitions of BLIRT S.A. and NeuMoDx, and our decision to suspend business in Russia and Belarus in 2022. Additionally, impairments to intangible assets during the year ended December 31, 2022 totaled $12.8 million, and included impairments related to Ellume, as further discussed in Note 11 "Goodwill and Intangible Assets". We also incurred $5.0 million of charges related to the 2022 restructuring program as discussed further in Note 6 "Restructuring".

For 2021, the expenses for the year included costs for the ongoing integration of NeuMoDx as well as $4.7 million as part of the outcome of a jury trial with ArcherDX in the U.S.

Other (Expense) Income, net

(in millions)	2022	2021	% change
Interest income	$32.8	$9.6	+243%
Interest expense	(58.4)	(54.5)	+7%
Other income, net	6.7	40.7	-83%
Total other (expense) income, net	**($18.9)**	**($4.3)**	**+344%**

Interest income includes interest earned on cash, cash equivalents and short-term investments, income related to certain interest rate derivatives as discussed in Note 14 "Derivatives and Hedging" and other components including the interest portion of operating lease transactions. The increase in 2022 compared to the prior year was due to increasing interest rates and the duration and level of short-term investments held during the period.

Interest expense primarily relates to debt, as discussed in Note 16 "Debt" in the accompanying notes to consolidated financial statements. The increase in 2022 compared to 2021 reflects the issuance of German private placement bonds in July and August 2022 totaling €370.0 million.

Other income, net, for the year ended December 31, 2022, included $3.8 million of income from equity method investments and a gain of $2.7 million on foreign currency transactions.

Other income, net, for the year ended December 31, 2021, included a gain of $35.8 million recognized from the receipt and sale of shares in Invitae Corp. and related hedge, $12.0 million of income from equity method investments, $0.7 million of income, net, from the changes in fair value and the sale of investments held in other publicly traded companies, and a gain of $0.3 million from the sale of an equity method investment. These gains were partially offset by a loss of $9.0 million on foreign currency transactions.

Income Tax Expense

(in millions)	2022	2021	% change
Income before income taxes	$512.6	$625.8	-18%
Income tax expense	89.4	113.2	-21%
Net income	**$423.2**	**$512.6**	
Effective tax rate	17.4%	18.1%	

In 2022 our effective tax rate was 17.4% compared to 18.1% in 2021. The effective tax rates in both years reflected higher pre-tax book income due to an increased level of operating income in light of the strong sales growth. Our effective tax rates differ from the Netherlands statutory tax rate of 25.8% due in part to our operating subsidiaries being exposed to various effective tax around the world that range from zero to 35%. Fluctuations in the distribution of pre-tax income or loss among our operating subsidiaries can lead to fluctuations of the effective tax rate in the consolidated financial statements. We record partial tax exemptions on foreign income primarily derived from operations in Germany, the Netherlands and Singapore. These foreign tax benefits are due to a combination of favorable tax laws, rules and exemptions in these jurisdictions. These include intercompany foreign royalty income in Germany, which is statutorily exempt from trade tax. Further, we have intercompany financing

arrangements in which the intercompany income is nontaxable in Dubai. See Note 17 "Income Taxes" to the consolidated financial statements for a full reconciliation of the Netherlands' statutory income tax rate to the effective tax rate.

In future periods, our effective tax rate may fluctuate due to similar or other factors as discussed in "Changes in tax laws or their application or the termination or reduction of certain government tax incentives, could adversely impact our overall effective tax rate, results of operations or financial flexibility" in Risk Factors.

Foreign Currencies

The reporting currency of QIAGEN N.V. is the U.S. dollar. The functional currency of most of our subsidiaries are the local currencies of the countries in which they are headquartered. All amounts in the financial statements of entities whose functional currency is not the U.S. dollar are translated into U.S. dollar equivalents at exchange rates as follows: (1) assets and liabilities at period-end rates, (2) income statement accounts at average exchange rates for the period, and (3) components of equity at historical rates. Translation gains or losses are recorded in equity, and transaction gains and losses are reflected in net income.

Foreign currency transactions for the year ended December 31, 2022 resulted in a net gain of $2.7 million and net losses of $9.0 million and $4.1 million for the years ended December 31, 2021 and 2020, respectively. These amounts are included in other income, net.

As of April 1, 2022, the results of our subsidiary in Turkey are reported under highly inflationary accounting, as the prior three-years cumulative inflation rate exceeded 100%.

Derivatives and Hedging

In the ordinary course of business, we use derivative instruments, including swaps, forwards and / or options, to manage potential losses from foreign currency exposures and variable rate debt. The principal objective of such derivative instruments is to minimize the risks and / or costs associated with global financial and operating activities. We do not utilize derivative or other financial instruments for trading or speculative purposes. We recognize all derivatives as either assets or liabilities on the balance sheet, measure those instruments at fair value and recognize the change in fair value in earnings in the period of change, unless the derivative qualifies as an effective hedge that offsets certain exposures. In determining fair value, we consider both the counterparty credit risk and our own creditworthiness, to the extent that the derivatives are not covered by collateral agreements with the respective counterparties. To determine our own credit risk, we estimated our own credit rating by benchmarking the price of our outstanding debt to publicly-available comparable data from rated companies. Using the estimated rating, we quantify our credit risk by reference to publicly traded debt with a corresponding rating.

Foreign Currency Derivatives

As a globally active enterprise, we are subject to risks associated with fluctuations in foreign currencies in our ordinary operations. This includes foreign currency-denominated receivables, payables, debt and other balance sheet positions including intercompany items. We manage our balance sheet exposure on a group-wide basis using foreign exchange forwards, options and cross-currency swaps.

Interest Rate Derivatives

We use interest rate derivative contracts on certain borrowing transactions to hedge interest rate exposures. We have entered into interest rate swaps in which we agree to exchange, at specified intervals, the difference between fixed and floating interest amounts calculated by reference to an agreed-upon notional principal amount.

We also make use of economic hedges. Further details of our derivative and hedging activities can be found in Note 14 "Derivatives and Hedging" in the accompanying consolidated financial statements.

Liquidity and Capital Resources

To date, we have funded our business primarily through internally generated funds, debt, as well as private and public sales of equity. Our primary use of cash has been to strengthen our business operations, while our investing activities have focused on capital expenditure requirements and acquisitions.

(in millions)	**2022**	2021
Cash and cash equivalents	$730.7	$880.5
Short-term investments	687.6	184.8
Total cash and cash equivalents and short-term investments	**$1,418.3**	**$1,065.3**
Working capital	$1,419.4	$592.1

Cash and cash equivalents are primarily held in U.S. dollars and euros, other than those cash balances maintained in the local currency of subsidiaries to meet local working capital needs. At December 31, 2022, cash and cash equivalents had decreased by $149.8 million from December 31, 2021, primarily as a result of cash used in investing activities of $726.8 million and cash used in financing activities of $125.8 million, partially offset by cash provided by operating activities of $715.3 million as discussed in the Cash Flow Summary below. Short-term investments increased at December 31, 2022 to take advantage of higher commercial paper rates. The overall higher cash and cash equivalent balance supported the increase in working capital at December 31, 2022 together with a lower current portion of long-term debt following repayments made during the year.

Cash Flow Summary

(in millions)	**2022**	2021
Net cash provided by operating activities	$715.3	$639.0
Net cash used in investing activities	(726.8)	(202.4)
Net cash used in financing activities	(125.8)	(150.4)
Effect of exchange rate changes on cash and cash equivalents	(12.5)	(3.7)
Net (decrease) increase in cash and cash equivalents	**($149.8)**	**$282.5**

Operating Activities

For the year ended December 31, 2022, we generated net cash from operating activities of $715.3 million compared to $639.0 million in 2021, due to a reduced level of non-cash adjustments in 2022 over the prior year that more than offset a lower amount of net income than in 2021. Among the non-cash factors, depreciation and amortization declined to $208.4 from $214.9 million in 2021, while the amortization of debt discount and issuance costs was largely unchanged at $33.7 million. Cash

flow impacts from net changes in operating assets and liabilities primarily reflect increased inventories to support customer demand trends in light of global supply chain tensions. Given that we rely heavily on cash generated from our operating activities to fund our business, a decrease in demand for our products, longer collection cycles or significant technology advances by competitors could have a negative impact on our liquidity.

Investing Activities

Approximately $726.8 million of cash was used in investing activities in 2022 compared to $202.4 million in 2021. Investing activities during 2022 consisted principally of $1.4 billion for purchases of short-term investments, $129.2 million in cash paid for purchases of property and equipment, $63.7 million of net cash paid for the acquisition of BLIRT S.A. and $20.1 million paid for intangible assets. This was partially offset by cash inflows of $883.1 million from the redemption of short-term investments and $9.9 million returned to us from our derivative counterparties in connection with cash provided to them to collateralize our derivative liabilities with them as discussed in Note 14 "Derivatives and Hedging".

Cash used in investing activities during 2021 consisted principally of $397.7 million for purchases of short-term investments, $189.9 million for purchases of property, plant and equipment and $16.6 million paid for intangible assets. This was partially offset by cash inflows of $359.6 million from the redemption of short-term investments and $44.9 million returned to us from our derivative counterparties with cash provided to them to collateralize our derivative liabilities with them.

Financing Activities

For the year ended December 31, 2022, cash used in financing activities was $125.8 million compared to $150.4 million in 2021. Financing activities during 2022 included $480.0 million for the repayment of long-term debt, $25.4 million paid in connection with net share settlement for tax withholdings related to the vesting of stock awards and $4.6 million in cash paid for contingent consideration. This was partially offset by proceeds of $371.5 million from the issuance of long-term debt and $12.6 million received from our derivative counterparties to collateralize derivative assets that we hold with them.

In 2021, cash used in financing activities totaled $150.4 million and consisted primarily of net payments of $100.0 million for the repurchase of QIAGEN shares, repayment of $41.3 million of long-term debt, and $23.6 million paid in connection with net share settlement for tax withholdings related to the vesting of stock awards. This was partially offset by $8.6 million received from our derivative counterparties to collateralize derivative assets that we hold with them.

Other Factors Affecting Liquidity and Capital Resources

As of December 31, 2022, we carry $1.9 billion of long-term debt, of which $389.6 million is current and $1.5 billion is long-term.

In July and August 2022, we completed a German private placement bond (2022 Schuldschein), which was issued in various tranches totaling €370.0 million ($371.5 million) that have maturities through 2032 as described more fully in Note 16 "Debt". The interest rate is linked to our ESG performance. As of December 31, 2022, a total of $393.5 million is outstanding.

In December 2020, we issued $500.0 million aggregate principal amount of zero coupon Convertible Notes due in 2027 (2027 Notes). The 2027 Notes will mature on December 17, 2027, unless converted in accordance with their terms prior to such date as described more fully in Note 16 "Debt".

In November 2018, we issued $500.0 million aggregate principal amount of Cash Convertible Senior Notes due in 2024 (2024 Notes). Interest on the 2024 Notes is payable semiannually in arrears at a rate of 1.000% per annum. The 2024 Notes will mature on November 13, 2024, unless repurchased or converted in accordance with their terms prior to such date.

In September 2017, we issued $400.0 million aggregate principal amount of Cash Convertible Senior Notes due in 2023 (2023 Notes). Interest on the 2023 Notes is payable semiannually in arrears at a rate of 0.500% per annum. The 2023 Notes will mature on September 13, 2023, unless repurchased or converted in accordance with their terms prior to such date.

In 2017, we completed a German private placement (2017 Schuldschein) consisting of various tranches denominated in U.S. dollars or Euros at either floating or fixed rates, and have various maturities through June 2027. As of December 31, 2022, a total of $116.7 million was outstanding. During 2022, we repaid $153.0 million for the four tranches that matured. In 2021, we paid $41.1 million for two tranches that matured, as described in Note 16 "Debt".

In March 2014, we issued Cash Convertible Senior Notes, of which the remaining $0.2 million was paid during 2021.

In October 2012, we completed a U.S. private placement with three series at a weighted average interest rate of 3.66%. The remaining outstanding amount of $327.0 million was repaid in October 2022.

In December 2020, we obtained a €400 million syndicated revolving credit facility with a contractual life of three years, and with the ability to be extended twice by a one-year period. No amounts were utilized during 2022. The facility can be utilized in Euros and bears interest of 0.550% to 1.500% above EURIBOR, and is offered with interest periods of one, three or six months. The interest rate is linked to our ESG performance. We have additional credit lines totaling €27.0 million with no expiration date. None of these credit lines were utilized in 2022.

On July 12, 2021, we announced our seventh share repurchase program of up to $100 million of our common shares. During 2021, we repurchased 1.9 million QIAGEN shares for $100.0 million (including transaction costs). This program ended on October 29, 2021. In May 2019, we announced our sixth share repurchase program of up to $100 million of our common shares, and we repurchased 1.3 million QIAGEN shares during 2020 in this program for $64.0 million (including transaction costs) before it ended at the end of the year. Repurchased shares are held in treasury to satisfy various obligations, which include employee share-based remuneration plans.

We have lease obligations, including interest, in the aggregate amount of $100.9 million, of which $23.7 million was current as of December 31, 2022. We also have purchase obligations of $127.2 million and license commitments of $18.5 million. In connection with certain acquisitions that we have completed, QIAGEN could be required to make additional contingent cash payments of up to $20.7 million based on the achievement of certain revenue and operating results milestones. These obligations are further discussed in Note 12 "Leases" and Note 20 "Commitments and Contingencies" in the consolidated financial statements.

Liabilities associated with uncertain tax positions, including interest and penalties, were estimated at $83.0 million as of December 31, 2022. Ultimate settlement of these liabilities is dependent on factors outside of our control, such as examinations by each agency and expiration of statutes of limitation for assessment of additional taxes. Therefore, we cannot reasonably estimate when, if ever, this amount will be paid to a government agency.

We did not use special purpose entities and did not have any off-balance sheet financing arrangements during the years ended December 31, 2022, 2021 and 2020.

We expect that cash from financing activities will continue to be impacted by issuances of our common shares in connection with our equity compensation plans, and that the market performance of our shares will impact the timing and volume of the issuances. Additionally, we may make future acquisitions or investments requiring cash payments, the issuance of additional debt or equity financing.

We believe that funds from operations, existing cash and cash equivalents, together with the proceeds from any public and private sales of equity, and availability of financing facilities, would be sufficient to fund our planned operations and expansion in the coming year. However, any global economic downturn may have a greater impact on our business than currently expected, and we may experience a decrease in the sales of our products, which could impact our ability to generate cash. If our future cash flows from operations and other capital resources are not adequate to fund our liquidity needs, we may be required to obtain additional debt or equity financing or to reduce or delay our capital expenditures, acquisitions or research and development projects. If we could not obtain financing on a timely basis or at satisfactory terms, or implement timely reductions in our expenditures, our business could be adversely affected.

Dividend

QIAGEN has not paid a cash dividend since its inception and does not intend to pay any dividends in the foreseeable future. We intend to retain any earnings for the development of the business.

Credit Rating

QIAGEN currently does not have a rating issued by any credit rating agency.

Human Capital

The skills, knowledge, dedication and passion of our employees are critical for the success of QIAGEN. We want to recruit, support and retain the best employees, offering performance-based remuneration, development opportunities and measures to balance work and family life. We are committed to diversity in our teams, fueling innovation and engagement with our customers and business partners, and an environment and culture that allow all employees the equal opportunity for success. In a fast-changing, competitive business environment, QIAGEN has a significant commitment to being an employer of choice and further enhancing our position as a great place to work.

Recognizing that our employees are the key to our success, we seek to be a great place to work. In 2022, many of our subsidiaries have been recognized as an employer of choice including our subsidiaries in Germany and Poland, where we are recognized again as a "Top Employer" by the Top Employer Institute, a global authority on recognizing excellence in people practices. In 2022, we received the Top Employer Certificate for China, and our subsidiaries in the U.S., Brazil, Mexico, India, Hong Kong, and Taiwan were again recognized as a "Great Place to Work". Our subsidiary in the Philippines won multiple employer certifications in 2022, including Asia's "Great Place to Work" and Asia's "Best Employer Brand in 2022."

In 2022, we launched QIAflex, our hybrid work schedule for employees where remote work is possible due to their role. QIAflex provides employees the opportunity to work remote on up to two days per week, while also ensuring that employees have the opportunity to work together with their colleagues in person on at least two days per week. The new system is an outcome of the new working environment possibilities that emerged during the COVID-19 pandemic.

Diversity and Inclusion

We are committed to creating an environment that is rich in diversity and empowers all employees. Diverse teams strengthen our organization through the variety of ideas, perspectives and approaches they bring to our business. Our teams outperform and succeed when they are composed of individuals with the widest possible range of personalities, backgrounds and traits. That's why we value each person's uniqueness and maintain an environment where all individuals can succeed based on their strengths and characteristics. In 2022, our workforce was composed of at least 90 nationalities with an average age of 39.5 years old. With 50% women, we are well-balanced in terms of gender on an aggregate level. Our strategic initiative on gender diversity, which began in 2018, has yielded remarkable results in the past years, particularly with regard to leadership positions. The participation of women in management roles rose from just under 28% in 2018 to 35% in 2022 as a result of a series of initiatives to drive awareness, engagement, and development among our leadership team.

For 2023, we have a target goal to achieve a level of at least 36% women in management roles. For the second consecutive year, we have been named to the 2023 Bloomberg Gender Equality Index, which provides an opportunity for companies to assess progress towards parity, benchmark against peers and highlight a commitment to gender equality. Our commitment to diversity goes beyond cultural and gender diversity. Our U.S. subsidiary received a score of 100 on the Human Rights Campaign Foundation's 2022 Corporate Equality Index. QIAGEN is also a member of the Business Coalition for the Equality Act.

Employee Development

Employee development is viewed as integral to the success of creating lasting value for our customers, patients, colleagues, partners, and shareholders. We believe we offer opportunities to work on exciting tasks and projects in an engaging work environment. Employees join QIAGEN and stay with QIAGEN because they can see how their work makes a difference to people's lives everywhere in the world. We offer various training platforms that provide the possibility to either use our global e-learning portfolio or to participate in personal trainings usually offered in a blended format. The focus is on job-specific skills, compliance, competencies and leadership development.

Employee Compensation

We have been committed since our beginning to attract and retain the best talent worldwide via our focus on rewarding all employees for performance, both for QIAGEN

as a whole as well as for their personal impact. Our compensation system fosters a focus on achieving corporate strategic initiatives as well as personal accountability. We regularly benchmark our compensation strategy to evaluate the level and mix of compensation awarded by companies and industries for a broad range of positions around the world. Benchmark companies include many competitors, as well as other companies in the regions where we operate. QIAGEN has a "pay for performance" culture, with the compensation of employees linked to the achievement of both corporate and personal performance goals. The corporate goals are established by senior management as the result of bottom-up as well as top-down analysis and review against strategic objectives. These goals are set at "realistically ambitious" levels on an annual basis to motivate and drive performance, with a focus on both short-term and long-term quantifiable objectives. Furthermore, to align our compensation programs with the interests of shareholders, management levels receive a portion of their total compensation in the form of long-term compensation, which is granted as equity as a reward for performance.

For more information about our human capital, please refer to the Sustainability page on our website at www.qiagen.com/sustainability.

Employees

The following tables provide information on the number of employees by geographical region and main category of activity as of December 31, 2022, 2021 and 2020:

	2022	2021	2020
Americas	1,370	1,384	1,328
Europe, Middle East & Africa	3,558	3,389	3,059
Asia Pacific, Japan and Rest of World	1,250	1,255	1,223
Total	**6,178**	**6,028**	**5,610**

	2022	2021	2020
Production	29%	30%	28%
Research & Development	17%	16%	16%
Sales	37%	37%	39%
Marketing	6%	6%	6%
Administration	11%	11%	11%
Total	**100%**	**100%**	**100%**

Outlook

Global Economic Perspectives for 2023

A number of international organizations point to mounting challenges facing the global economy in 2023, with projections for global growth to slow even more than in 2022. The International Monetary Fund (IMF), for example, projects growth to fall from 3.4% in 2022 to 2.9% in 2023, while The World Bank projects growth to fall from 2.9% in 2022 to just 1.7% in 2023, almost half the rate it had expected earlier in 2022. The dampened economic outlook reflects monetary policy actions to raise interest rates aimed at containing high inflation rates, while the world economies address worsening financial conditions and continued disruptions from Russia's invasion of Ukraine. The U.S., the Euro zone and China are all undergoing a period of pronounced economic weakness, and the resulting spillovers are exacerbating other headwinds faced by emerging market and developing economies (EMDEs). The recovery from the recessionary conditions created by the COVID-19 pandemic is far from complete, and investment to support growth in EMDEs is expected to remain below the average levels seen in the past two decades. Global prospects are also becoming increasingly imbalanced, with the major Asian emerging-market economies accounting for close to 75% of global GDP growth in 2023, reflecting their projected steady expansion against the anticipated slowdowns in the U.S. and Europe. Headline consumer price inflation rates in the major advanced economies are projected to moderate from about 6% in 2022 to approximately 4-5% in 2023, according to international organizations. However, the pace of this decline will vary across countries and is difficult to predict based on current conditions.

Industry Perspectives for 2023

After a period of significant growth due to the impact of the COVID-19 pandemic in recent years, the Life Science and Molecular Diagnostics industries are expected to face in 2023 a year of overall declining sales as the decline in demand for testing more than offsets underlying growth driven by sustained demand for molecular research and testing. Research markets largely resumed in 2022 the activities that were curtailed during the pandemic, while the use of molecular diagnostics in clinical healthcare has also returned to pre-pandemic levels. Against this backdrop, industry forecasts call for both of these markets to see sales growth at a mid-single-digit annual pace in the coming years. As innovation once again drives market expansion, QIAGEN intends to grow above this pace thanks to a strong product portfolio and global presence to capture opportunities in growing areas.

QIAGEN Perspectives for 2023

QIAGEN announced an outlook for 2023 (as of February 2023) with expectations for sales solid sales growth in the non-COVID product groups to continue from 2022, but for an ongoing significant decline in COVID-19 product group sales amid a sharp slowdown in demand for testing. The outlook for sales, which implies an overall decline from 2022, takes a prudent view on current macro trends and ongoing volatility in certain regions (e.g., China) while still expecting positive trends in a number of our end-markets. Currency movements against the U.S. Dollar are expected to have an overall neutral impact on a full-year basis, despite an adverse impact in the first half of the year. QIAGEN continues to implement its strategy based on "focus" and "balance." Focus involves our Five Pillars of Growth strategy to make significant investments in the commercialization and development of (1) Sample technologies, (2) QuantiFERON, (3) QIAcuity, (4) NeuMoDx and (5) QIAcuity. Balance involves developing our portfolio to address more than 500,000 customers across the Life Sciences and Molecular Diagnostics, as well as to build out our global presence in markets around the world offering growth potential. In terms of profitability, QIAGEN anticipates earnings per share (EPS) to be below the 2022 level as a result of the reduced sales outlook, as well as investments into the business to support mid-term growth prospects. The outlook provided by QIAGEN in February 2023 does not include any potential acquisitions that could be completed during the year.

Corporate Governance Report

Corporate Governance

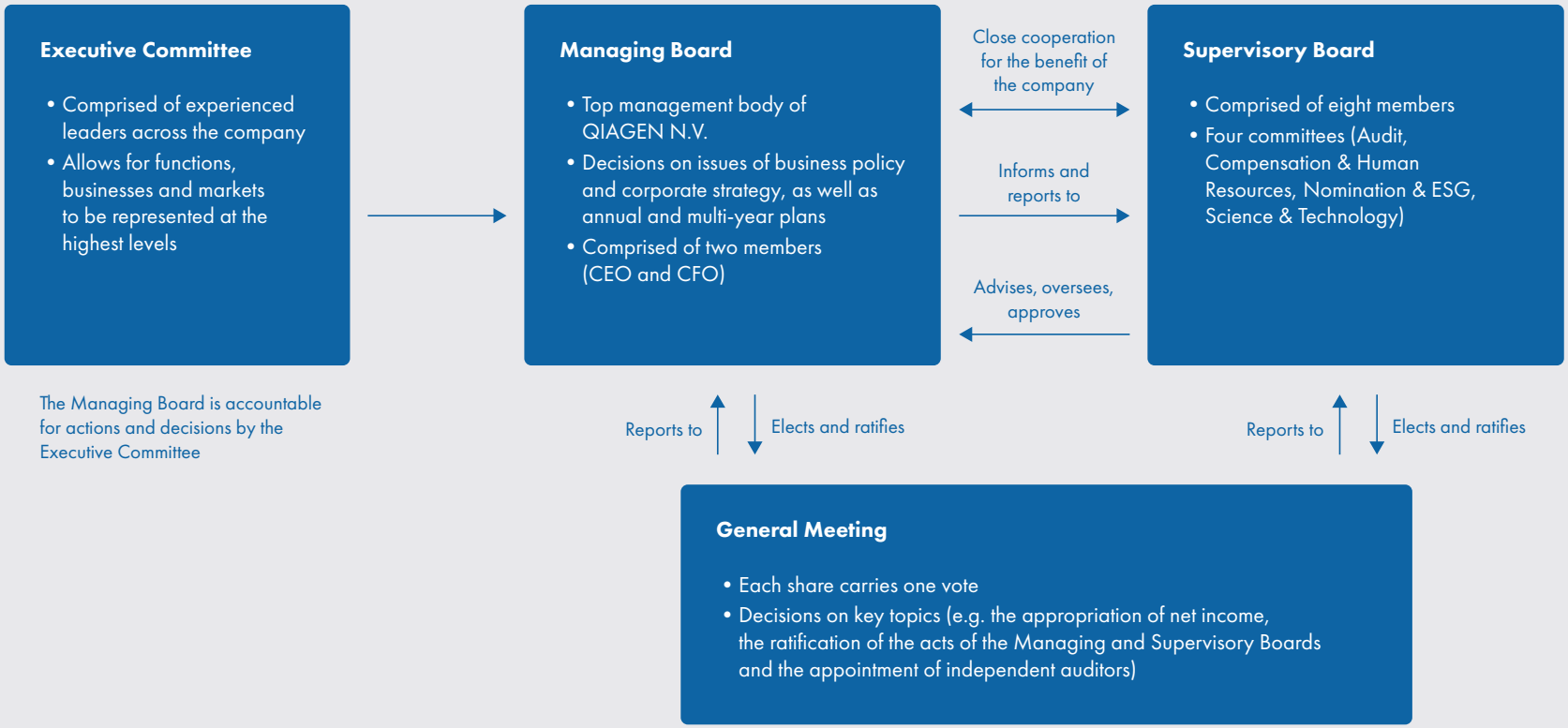
We recognize the importance of clear and straightforward rules on corporate governance and, where appropriate, have adapted our internal organization and processes to these rules. This section provides an overview of QIAGEN's corporate governance structure and includes details of the information required under the Dutch Corporate Governance Code 2016 (the Dutch Code). The Dutch Code was applicable to QIAGEN N.V. (in the following also referred to as the Company) during 2022, as it is a publicly listed company incorporated under the laws of the Netherlands with a registered seat in Venlo, The Netherlands. The Dutch Code contains principles and best-practice provisions which the persons involved in a listed company (including Managing Board members and Supervisory Board members) and stakeholders should observe in relation to one another.

Our corporate governance practices generally derive from the provisions of the Dutch Civil Code and the Dutch Code. Further, due to our listing on the New York Stock Exchange in the U.S., the Managing Board and the Supervisory Board of QIAGEN N.V. declared their intention to disclose in QIAGEN's Annual Reports the Company's compliance with the corporate governance practices followed by U.S. companies under the New York Stock Exchange listing standards or state the deviations recorded in the period. A brief summary is presented below under the section *Dutch Corporate Governance Code - Comply or explain*.

Corporate Structure

QIAGEN is a 'Naamloze Vennootschap,' or N.V., a Dutch limited liability company similar to a corporation in the United States. QIAGEN has a two-tier board structure. QIAGEN is managed by a Managing Board consisting of executive management acting under the supervision of a Supervisory Board (non-executives), similar to a Board of Directors in a U.S. corporation. It is in the interest of QIAGEN and all its stakeholders that each Board performs its functions appropriately and that there is a clear division of responsibilities between the Managing Board, the Supervisory Board, the general meeting of shareholders (General Meeting) and the external auditor in a well-functioning system of checks and balances.

QIAGEN operates under a two-tier corporate structure



Managing Board

General

The Managing Board manages QIAGEN and is responsible for defining and achieving QIAGEN's aims, strategy, policies and results. The Managing Board is also responsible for complying with all relevant legislation and regulations as well as for managing the risks associated with the business activities and the financing of QIAGEN. It reports related developments to and discusses the internal risk management and control systems with the Supervisory Board and the Audit Committee. The Managing Board is accountable for the performance of its duties to the Supervisory Board and the General Meeting. The Managing Board timely provides the Supervisory Board with information necessary for the exercise of the duties of the Supervisory Board. In discharging its duties, the Managing Board takes into account the interests of QIAGEN, its enterprises and all parties involved in QIAGEN, including shareholders and other stakeholders.

Composition and Appointment

The Managing Board consists of one or more members as determined by the Supervisory Board. The members of the Managing Board are appointed by the General Meeting upon the joint meeting of the Supervisory Board and the Managing Board (the Joint Meeting) having made a binding nomination for each vacancy. However, the General Meeting may at all times overrule the binding nature of such a nomination by a resolution adopted by at least a two-thirds majority of the votes cast, if such majority represents more than half of the issued share capital. Managing Directors are appointed annually for the period beginning on the date following the Annual General Meeting up to and including the date of the Annual General Meeting held in the following year.

Members of the Managing Board may be suspended and dismissed by the General Meeting by a resolution adopted by a two-thirds majority of the votes cast, if such majority represents more than half of the issued share capital, unless the proposal was made by the Joint Meeting, in which case a simple majority of votes cast is sufficient. Furthermore, the Supervisory Board may at any time suspend (but not dismiss) a member of the Managing Board.

Managing Directors:

Our Managing Directors for the year ended December 31, 2022 and their ages as of January 31, 2023, are as follows:

Thierry Bernard

Chief Executive Officer

Gender: Male

Thierry Bernard, 58, joined QIAGEN in February 2015 to lead the company's growing presence in molecular diagnostics, the application of Sample to Insight solutions for molecular testing in human healthcare. He was named Chief Executive Officer in March 2020 after serving in this role on an interim basis and became a member of the Managing Board in 2021. Previously, Mr. Bernard held roles of increasing responsibility during 15 years with bioMérieux SA, most recently as Corporate Vice President, Global Commercial Operations, Investor Relations and the Greater China Region, and held senior management roles in several other leading international companies. He has been a member of the Board of Directors of T2 Biosystems, Inc., a publicly listed company based in the U.S., since 2020. He was named in March 2023 as Chair of the AdvaMedDx Board of Directors, a U.S. industry trade association. Mr. Bernard has earned degrees and certifications from Sciences Po, LSE, the College of Europe, Harvard Business School, Centro de Comercio Exterior de Barcelona, and has been appointed Conseiller du Commerce Extérieur by the French government.

Roland Sackers

Chief Financial Officer

Gender: Male

Roland Sackers, 54, joined QIAGEN in 1999 as Vice President, Finance; became Chief Financial Officer in 2004, and joined the Managing Board in 2006. From 1995 to 1999, he was an auditor with Arthur Andersen Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft. Since 2019, Mr. Sackers has served on the Supervisory Board of Evotec SE, a publicly listed company based in Germany, becoming Chair of the Audit Committee in 2019 and Vice Chair of the Supervisory Board in 2021. He is also a member of the Board of the industry association BIO Deutschland. Mr. Sackers earned his Diplom-Kaufmann from the University of Münster.

Conflicts of Interest, Loans or Similar Benefits

Resolutions to enter into transactions under which members of the Managing Board could have a conflict of interest with QIAGEN, and which are of material significance to QIAGEN and/or the relevant member of the Managing Board, require the approval of the Supervisory Board. QIAGEN has not entered into any such transactions in 2022. No credit, loans or similar benefits were granted to members of the Managing Board. Additionally, the Managing Board members did not receive any benefits from third parties that were either promised or granted in view of their position as members of the Managing Board.

Supervisory Board

General

The Supervisory Board supervises the policies of the Managing Board, the general course of QIAGEN's affairs and strategy and the business enterprises which we operate. The Supervisory Board assists the Managing Board by providing advice relating to the business activities of QIAGEN. In 2022, the Supervisory Board had seven meetings, all with the attendance of the Managing Board, and five of which were held in person. The Supervisory Board meets in the absence of the Managing Board for select topics at every regular meeting. In discharging its duties, the Supervisory Board takes into account the interests of QIAGEN, its enterprise and all parties involved in QIAGEN, including shareholders and other stakeholders. The Supervisory Board is responsible for the quality of its own performance. In this respect, the Supervisory Board conducts a self-evaluation on an annual basis. Our Supervisory Board has specified matters requiring its approval, including decisions and actions which would fundamentally change the company's assets, financial position or results of operations. The Supervisory Board has established an Audit Committee, a Compensation & Human Resources Committee, a Nomination & ESG Committee and a Science & Technology Committee from among its members and can establish other committees as deemed beneficial. The Supervisory Board has approved charters pursuant to which each of the committees operates.

Composition and Appointment

The Supervisory Board consists of at least three members, or a larger number as determined by the Joint Meeting. Members of the Supervisory Board are appointed by the General Meeting upon the Joint Meeting having made a binding nomination for each vacancy. However, the General Meeting may at all times overrule the binding nature of such a nomination by a resolution adopted by at least a two-thirds majority of the votes cast, if such majority represents more than half of the issued share capital.

The Supervisory Board shall be composed in a way that enables it to carry out its duties properly and enables its members to act critically and independently of one another and of the Managing Board and any particular interests. To that effect, the Supervisory Board has adopted a profile of its size and composition that takes into account the nature of our business, our activities and the desired diversity, expertise and background of the members of the Supervisory Board. The current profile of the Supervisory Board can be found on our website (www.qiagen.com). The Supervisory Board has appointed a chair from its members who has the duties assigned by the Articles of Association and the Dutch Code.

Members of the Supervisory Board are appointed annually for the period beginning on the date following the General Meeting up to and including the date of the General Meeting held in the following year. Members of the Supervisory Board may be suspended and dismissed by the General Meeting by a resolution adopted by a two-thirds majority of the votes cast, if such majority represents more than half of the issued share capital, unless the proposal was made by the Joint Meeting in which case a simple majority of votes cast is sufficient.

The composition of our Supervisory Board is diverse in gender, nationality, background, knowledge and experience. We believe that all of our Supervisory Board members meet the independence requirements set forth in the Dutch Code. We further believe that all Supervisory Board members qualify as independent under the independence standards set forth in the New York Stock Exchange (NYSE) Listed Company Manual. Pursuant to the NYSE rules, a majority of the Supervisory Directors must qualify as independent, as defined in the Rules.

The following table outlines the skills and experience of the current Supervisory Board members:

Key competencies	Lawrence A. Rosen (Chair)	Dr. Metin Colpan	Thomas Ebeling	Dr. Toralf Haag	Prof. Dr. Ross L. Levine	Prof. Dr. Elaine Mardis	Dr. Eva Pisa	Elizabeth E. Tallett
Required								
Integrity	•	•	•	•	•	•	•	•
Ethics	•	•	•	•	•	•	•	•
Health	•	•	•	•	•	•	•	•
English language skills	•	•	•	•	•	•	•	•
Experience	•	•	•	•	•	•	•	•
Recommended								
U.S. background	•				•	•		•
Entrepreneur		•	•		•		•	•
Corporate management multinational	•	•	•	•			•	•
Currently full-time employed / active				•	•	•		
Public reputation	•	•	•	•	•	•	•	•
Academic research		•			•	•		
Industrial research		•						
Diagnostics markets		•		•		•	•	
Capital markets	•	•	•	•				•
Financial management	•			•				•
M&A, business development	•	•	•	•			•	•
Commercial operations		•	•	•			•	•
Public management (e.g., universities)		•			•	•		
Regulatory / operations		•	•	•			•	•

Supervisory Directors:

The following is a brief summary of the background of each of the Supervisory Directors. References to QIAGEN and the Company in relation to periods prior to April 29, 1996 mean QIAGEN GmbH and its consolidated subsidiaries.

Lawrence A. Rosen

Committees: Audit, Nomination & ESG (Chair), Compensation & Human Resources

Gender: Male

Lawrence A. Rosen, 65, joined the Supervisory Board in 2013 and was appointed Chair in 2020. He is Chair of the Nomination & ESG Committee and a member of the Audit Committee and the Compensation & Human Resources Committee. Mr. Rosen also serves on the Supervisory Boards of Lanxess AG and Deutsche Post AG, where he previously was a member of the Board of Management and Chief Financial Officer from 2009 to 2016. He served as Chief Financial Officer of Fresenius Medical Care AG & Co. KGaA from 2003 to 2009, and earlier as Senior Vice President and Treasurer of Aventis SA in Strasbourg. A U.S. citizen, Mr. Rosen holds a bachelor's degree from the State University of New York and a master's in business from the University of Michigan.

Dr. Metin Colpan

Committees: Science & Technology (Chair), Nomination & ESG

Gender: Male

Metin Colpan Ph.D., 68, co-founded QIAGEN and served as its first Chief Executive Officer and a Managing Director from 1985 to 2003. A member of the Supervisory Board since 2004, Dr. Colpan is currently Chair of the Science & Technology Committee and a member of the Nomination & ESG Committee. Prior to co-founding QIAGEN, Dr. Colpan was an Assistant Investigator at the Institute for Biophysics at the University of Düsseldorf. He has extensive experience in sample technologies, in particular the separation and purification of nucleic acids, and has many patents in the field. Dr. Colpan obtained his doctorate and master's degree from the Darmstadt Institute of Technology.

Thomas Ebeling

Committee: Nomination & ESG

Gender: Male

Thomas Ebeling, 63, joined the Supervisory Board in 2021 and serves on the Nomination & ESG Committee. An advisor to various businesses, he previously served as Chief Executive Officer of ProSiebenSat.1 Media SE from 2009 to 2018. He worked for Novartis AG from 1997 to 2008, including as Chief Executive Officer of Novartis Pharmaceuticals and Chief Executive Officer of Novartis Consumer Health. He also has served on the Supervisory Boards of Bayer AG and Lonza Group AG. Mr. Ebeling has a degree in psychology from the University of Hamburg.

Dr. Toralf Haag

Committee: Audit (Chair and Financial Expert)

Gender: Male

Toralf Haag Ph.D., 56, joined the Supervisory Board in 2021 and currently serves as Chair of the Audit Committee. Dr. Haag is Chief Executive Officer and Chairman of the Corporate Board of Management of Voith GmbH & Co. KGaA, a privately held German technology company. Before joining Voith as Chief Financial Officer in 2016, Dr. Haag served for more than 11 years as Chief Financial Officer and Member of the Executive Committee of Lonza Group AG. Dr. Haag earned a degree in business administration from the University of Augsburg and a doctorate from the University of Kiel.

Prof. Dr. Ross L. Levine

Committee: Science & Technology

Gender: Male

Ross L. Levine M.D., 51, joined the Supervisory Board in 2016 and serves on the Science & Technology Committee. In 2021, he became Chair of QIAGEN's Scientific Advisory Board. A physician-scientist focused on researching and treating blood and bone-marrow cancers, Dr. Levine is the Laurence Joseph Dineen Chair in Leukemia Research, the Chief of Molecular Cancer Medicine and an Attending Physician at Memorial Sloan Kettering Cancer Center, and Professor of Medicine at Weill Cornell Medicine. Board-certified in internal medicine and hematology-oncology, Dr. Levine received a bachelor's degree from Harvard College and his M.D. from The Johns Hopkins University School of Medicine.

Prof. Dr. Elaine Mardis

Committees: Compensation & Human Resources, Science & Technology

Gender: Female

Elaine Mardis Ph.D., 60, joined the Supervisory Board in 2014 and serves on the Science & Technology Committee and the Compensation & Human Resources Committee. Dr. Mardis is Co-Executive Director of the Steve and Cindy Rasmussen Institute for Genomic Medicine at Nationwide Children's Hospital in Columbus, Ohio, and Professor of Pediatrics at The Ohio State University College of Medicine. Previously, she was the Robert E. and Louise F. Dunn Distinguished Professor of Medical Sciences at Washington University School of Medicine and President of the American Association for Cancer Research. Dr. Mardis is a scientific advisor to Scorpion Therapeutics LLC, an elected member of the U.S. National Academy of Medicine, and a member of the Board of Directors of Singular Genomics Systems, Inc., a publicly listed company based in the U.S. Dr. Mardis received her bachelor's degree and doctorate from the University of Oklahoma.

Dr. Eva Pisa

Committees: Compensation & Human Resources

Gender: Female

Eva Pisa Ph.D., 68, joined the Supervisory Board in 2022 and serves on the Compensation & Human Resources Committee. An advisor to several life science and diagnostic companies through her company piMed Consulting, she previously held senior leadership positions in Roche Diagnostics International from 2007 to 2020, most recently as Senior Vice President at Roche Centralized and POC Solutions. Prior to joining Roche, she was Chief Executive Officer of Sangtec Molecular Diagnostics AB, a Swedish start-up, from 2001 to 2007. Dr. Pisa holds a doctorate from the Karolinska Institutet and a master's in business from Heriot-Watt University.

Elizabeth E. Tallett

Committees: Audit, Compensation & Human Resources (Chair), Nomination & ESG

Gender: Female

Elizabeth E. Tallett, 73, joined the Supervisory Board in 2011. She is Chair of the Compensation & Human Resources Committee and a member of the Audit Committee and the Nomination & ESG Committee. Ms. Tallett is Chair of the Board of Directors of Elevance Health, Inc., and a member of the Board of Directors of Moderna, Inc., both publicly listed companies based in the U.S. From 2002 to 2015, she was a Principal of Hunter Partners, LLC, a management company for pharmaceutical, biotechnology and medical device companies, and continues to consult with early-stage healthcare companies. She previously served as President and Chief Executive Officer of Transcell Technologies Inc.; President of Centocor Pharmaceuticals; a member of the Parke-Davis Executive Committee, and Director of Worldwide Strategic Planning for Warner-Lambert Company. A founding Board member of the Biotechnology Council of New Jersey, Ms. Tallett received bachelor's degrees in mathematics and economics from the University of Nottingham.

Conflicts of Interest, Loans or Similar Benefits

Resolutions to enter into transactions under which members of the Supervisory Board could have a conflict of interest with QIAGEN, and which are of material significance to QIAGEN and/or the relevant member of the Supervisory Board, must be reported and require the approval of the Supervisory Board plenum. A Supervisory Director that has a personal conflict of interest will not participate in the decision making process regarding such item. In 2022, neither QIAGEN nor its Supervisory Board members have entered into any such transactions. No credit, loans or similar benefits were granted to members of the Supervisory Board. Additionally, the Supervisory Board Members did not receive any benefits from third parties that were either promised or granted in view of their position as members of the Supervisory Board.

Diversity within the Managing Board and Supervisory Board

On January 1, 2022, a new Dutch gender diversity bill became effective. Although the gender quota introduced by this bill do not apply to Dutch companies listed outside of the Netherlands, the gender diversity bill still imposes new requirements on so-called "large" companies, such as our Company. Under the Dutch gender diversity bill, "large" Dutch companies are required to formulate appropriate and ambitious gender balance targets for the Supervisory Board, Managing Board and senior management.

Accordingly, we have established gender balance targets that we consider appropriate and ambitious as follows:

- It is our objective that at least 40% of the seats of the Supervisory Board are occupied by women and at least 40% by men in the mid term. To achieve this goal, gender diversity will be one of the key selection criteria for new Supervisory Board members.
- We have chosen the governance structure of a Managing Board that consists of only two members, the CEO and the CFO, who are ultimately accountable for the actions and decisions of the Company. If either a change of a current Managing Board member, an extension in the number of Managing Board members, or a change in governance structure is implemented, we will work to achieve that at least 30% of members of the Managing Board are women and at least 30% of the Managing Board members are men either by considering internal female candidates from QIAGEN's senior management who fulfill the desired profile for the open position or by defining selection criteria for new hires that include, amongst other factors, gender diversity.
- It is our goal to achieve at least 40% women in senior management and at least 40% are men in the mid term. To achieve this goal, gender diversity is a corporate goal, which is part of our bonus incentive structure, and is a focus of our recruiting practices and development programs.

Although QIAGEN is not subject to the quota requirement regarding gender diversity within the Managing Board and Supervisory Board, in nominating candidates for these boards, QIAGEN supports the trend toward higher participation of women. QIAGEN feels that gender is only one part of diversity and strives for a diverse composition in the Managing Board and Supervisory Board also in terms of other factors such as age, nationality, public reputation, industry or academic background. QIAGEN is committed to expanding diversity while pursuing individuals for these boards with a unique blend of scientific and commercial expertise and experience that will contribute to the future success of its business. Management development programs support the career advancement of leaders regardless of gender and other factors. As a result a number of women are in key leadership roles, particularly in leading commercial and operational positions around the world. In line with this commitment, QIAGEN's Nomination & ESG Committee will continue selecting future members of the Managing Board and Supervisory Board with due observance of its aim to have a diverse leadership team on the basis of gender, but also on the basis of age, wide ranging experience, backgrounds, skills, knowledge and insight. This all without compromising QIAGEN's commitment to hiring the best individuals for those positions. More information about diversity within the Board other than gender, can be found in below under the section *Dutch Corporate Governance Code - Comply or explain*.

Compensation of Managing Board Members and Supervisory Directors

Managing Board Remuneration Policy

Remuneration of Managing Board members consists of a combination of base salary, short-term variable cash incentive (STI) tied to the achievement of annual Corporate Goals and Team Goals, and a long-term incentive (LTI) granted in share units that only vest after multiple years upon the achievement of predefined targets. In addition, Managing Board members can receive deferred compensation contributions and other benefits in line with market practices.

The Remuneration Policy complies with the best practices in Corporate Governance in the United States and Germany, where QIAGEN shares are listed on the New York Stock Exchange (NYSE) and the Frankfurt Stock Exchange, respectively. The inclusion of perspectives from the U.S. is particularly important given that this country is the domicile of many of our competitors, and for many members of our leadership and senior executive team, and also a country that represents about 40% of our annual sales.

The remuneration package for Managing Board members is designed to have a significant portion of total compensation in variable awards. The value of these awards can differ substantially from year to year depending on actual performance. Within the variable component, the incentives for short-term performance targets have a lower weight than those for long-term incentives, which are aimed at delivering sustainable value creation for our stakeholders, including shareholders.

A copy of the Remuneration Policy for the Managing Board can be found on QIAGEN's website (www.qiagen.com).

Managing Board Compensation for 2022

For the year ended December 31, 2022, the Managing Board members received the following compensation:

	Annual Compensation				Long-Term Compensation	
Managing Board Member	Fixed Salary	Variable Cash Bonus	Other [1]	Total	Benefit Plans	Performance Stock Units Granted
Thierry Bernard	$950,000	1,544,800	37,000	$2,531,800	$142,500	110,000
Roland Sackers	$556,500	617,000	40,000	$1,213,500	$114,000	71,000

(1) Amounts include, among others, car lease and reimbursed personal expenses such as tax consulting. We also occasionally reimburse our Managing Directors' personal expenses related to attending out-of-town meetings but not directly related to their attendance. Amounts do not include the reimbursement of certain expenses relating to travel incurred at the request of QIAGEN, other reimbursements or payments that in total did not exceed $10,000, or tax amounts paid by the Company to taxing authorities in order to avoid double-taxation under multi-tax jurisdiction employment agreements.

Supervisory Board Remuneration Policy

At the Annual General Meeting of Shareholders in 2021, an update to the Remuneration Policy for the Supervisory Board was adopted to harmonize the annual compensation granted to members of certain Board committees. This policy complies with the Dutch law provisions implementing the Shareholders Rights Directive II (EU Directive 2017/828). Under Dutch law, the Supervisory Board will be required to submit a proposal to adopt a Remuneration Policy for the Supervisory Board no later than at the Annual General Meeting to be held in 2024.

The objective of the Remuneration Policy for the Supervisory Board is to attract, retain, and motivate highly qualified Board members, taking into account QIAGEN's mission and vision, as well as strategic initiatives and opportunities to create value for stakeholders, including shareholders. It focuses on achieving a total remuneration level, both short-term and long term, that is comparable with levels provided by other European and U.S.-based companies.

This Policy supports the long-term development and strategy of QIAGEN in a highly dynamic environment, while aiming to address the requests of various stakeholders and maintaining an acceptable risk profile. It builds on remuneration principles and practices that have proven to be both fitting and effective for QIAGEN, especially as a Dutch incorporated company with global operations as well as stock market listings in the U.S. and Germany. The Supervisory Board ensures that the Policy and its implementation are linked to our objectives.

Supervisory Board Compensation for 2022

The Supervisory Board compensation for 2022 consists of fixed compensation and additional amounts for Chair and Vice Chair. Annual remuneration of the Supervisory Board members is as follows:

Fee payable to the Chair of the Supervisory Board	$150,000
Fee payable to each member of the Supervisory Board	$57,500
Additional compensation payable to members holding the following positions:	
Chair of the Audit Committee	$25,000
Member of the Audit Committee	$15,000
Chair of the (i) Compensation & Human Resources Committee, (ii) the Nomination & ESG Committee, or (iii) the Science & Technology Committee	$18,000
Member of the (i) Compensation & Human Resources Committee, (ii) the Nomination & ESG Committee, or (iii) the Science & Technology Committee	$11,000
Chair of other committees	$12,000
Member of other committees	$6,000

Further, Supervisory Board members will be reimbursed for tax consulting costs incurred in connection with the preparation of their tax returns up to an amount of €5,000 per person per year.

Supervisory Board members also receive a variable component, in the form of share-based compensation. We did not pay any agency or advisory service fees to members of the Supervisory Board in 2022.

The Supervisory Board held seven meetings in 2022. Of these meetings, five were held in person and two were held virtually. All Managing Board members were present for the Supervisory Board meetings in 2022. Members of senior management are regularly invited to these meetings to provide updates on topics within their area of expertise. This gives the Supervisory Board the opportunity to get acquainted with a variety of managers across QIAGEN, which the Supervisory Board considers very useful in connection with its talent management and succession planning activities.

The following table outlines the committee membership and meetings attended in 2022:

	Meeting Attendance				
	Supervisory Board	**Audit Committee**	**Compensation & Human Resources Committee**	**Nomination & ESG Committee**	**Science & Technology Committee**
Lawrence A. Rosen	7/7	6/7	4/4	5/5 (Chair)	
Dr. Metin Colpan	7/7			4/5	4/4 (Chair)
Thomas Ebeling	7/7			5/5	
Dr. Toralf Haag	7/7	7/7 (Chair)			
Dr. Ross L. Levine	7/7				4/4
Dr. Elaine Mardis	7/7		4/4		4/4
Dr. Eva Pisa[1]	4/4		2/2		
Elizabeth E. Tallett	7/7	7/7	4/4 (Chair)	5/5	

(1) Dr. Eva Pisa joined the Supervisory Board in June 2022.

The Supervisory Board meetings and the Supervisory Board committee meetings are held over a number of days, ensuring there is time for review and discussion. At each meeting, the Supervisory Board members discuss among themselves the goals and outcome of the meeting, as well as topics such as the functioning and composition of the Supervisory Board and the Managing Board.

In 2022, the Supervisory Board worked with an international consulting company to undertake an extensive benchmarking of the Supervisory Board, its composition and the way it operates. This assessment showed QIAGEN has ranking among the top five companies in the DAX-40 index in terms diversity and independence, range of experience, age and tenure, and the effectiveness of committee work and Board meetings. The benchmarking also included extensive interviews with each member of the Supervisory Board and Managing Board, as well as a joint session to review the outcomes.

For the year ended December 31, 2022, members of the Supervisory Board received the following compensation:

Supervisory Board Member	Fixed Remuneration	Committee Chair	Committee Membership	Total [1]	Restricted Stock Units
Lawrence A. Rosen	$150,000	18,000	26,000	$194,000	6,980
Dr. Metin Colpan	$57,500	18,000	11,000	$86,500	6,980
Thomas Ebeling	$57,500	—	11,000	$68,500	6,980
Dr. Toralf Haag	$57,500	25,000	—	$82,500	6,980
Dr. Ross L. Levine	$57,500	—	11,000	$68,500	6,980
Dr. Elaine Mardis	$57,500	—	22,000	$79,500	6,980
Dr. Eva Pisa[2]	$28,750	—	5,500	$34,250	—
Elizabeth E. Tallett	$57,500	18,000	26,000	$101,500	6,980

(1) Supervisory Board members are reimbursed for travel costs and for any value added tax to be paid on their remuneration. These reimbursements are excluded from the amounts presented herein.

(2) Dr. Eva Pisa joined the Supervisory Board in June 2022, and was not eligible for the equity grant for 2022.

Share ownership

QIAGEN requires the Managing Board members and other senior executives to build up a significant share ownership to underscore their alignment to the interests of the Company and its shareholders. Under the remuneration policy, Managing Board members must build up a shareholding equal in value to five times their net base salary (after taxes) within four years of their first appointment. At the end of 2021, Mr. Bernard and Mr. Sackers both complied with the requirement. The following table sets forth certain information as of January 31, 2023, concerning the ownership of Common Shares by our Managing Board and Supervisory Board members. In preparing the following table, we have relied on information furnished by such persons.

	Shares Beneficially Owned [1]	
Name	Number [2]	
Thierry Bernard	136,501	(3)
Roland Sackers	220,000	(4)
Dr. Metin Colpan	418,728	(5)
Thomas Ebeling	—	
Dr. Toralf Haag	700	
Dr. Ross L. Levine	8,720	(6)
Dr. Elaine Mardis	—	(7)
Dr. Eva Pisa	—	
Lawrence A. Rosen	5,504	(8)
Elizabeth Tallett	40,097	(9)

(1) The number of Common Shares outstanding as of January 31, 2023, was 227,717,404. The persons named in the table have sole voting and investment power with respect to all shares shown as beneficially owned by them and have the same voting rights as shareholders with respect to Common Shares.

(2) Does not include Common Shares subject to options or awards held by such persons as of January 31, 2023. See footnotes below for information regarding stock awards that could become releasable within 60 days of the date of this table.

(3) Does not include 93,950 shares issuable upon the release of unvested stock awards that could become releasable within 60 days from the date of this table.

(4) Does not include 122,307 shares issuable upon the release of unvested stock awards that could become releasable within 60 days from the date of this table.

(5) Includes 357,893 shares held by CC Verwaltungs GmbH, of which Dr. Colpan is the sole stockholder. Does not include 9,690 shares issuable upon the release of unvested stock awards that could become releasable within 60 days from the date of this table.

(6) Does not include 9,690 shares issuable upon the release of unvested stock awards that could become releasable within 60 days from the date of this table.

(7) Does not include 9,690 shares issuable upon the release of unvested stock awards that could become released within 60 days from the date of this table.

(8) Does not include 9,690 shares issuable upon the release of unvested stock awards that could become releasable within 60 days from the date of this table.

(9) Does not include 9,690 shares issuable upon the release of unvested stock awards that could become releasable within 60 days from the date of this table.

Additional Information

Shareholders

Our shareholders exercise their voting rights through Annual and Extraordinary General Meetings. Resolutions of the General Meeting are adopted by an absolute majority of votes cast, unless a different majority of votes or quorum is required by Dutch law or the Articles of Association. Each common share confers the right to cast one vote.

Furthermore, the Managing Board, or where appropriate, the Supervisory Board, shall provide all shareholders and other parties in the financial markets with equal and simultaneous information about matters that may influence QIAGEN's share price.

QIAGEN is required to convene an Annual General Meeting in the Netherlands no later than six months following the end of each year. The agenda for the Annual General Meeting must contain certain matters as specified in QIAGEN's Articles of Association and under Dutch law, including, among other things, the adoption of QIAGEN's annual financial statements.

Additional Extraordinary General Meetings may be convened at any time by the Managing Board, the Supervisory Board or upon a request to the Managing Board or Supervisory Board by one or more shareholders and other persons entitled to attend meetings jointly representing (i) at least 40% of QIAGEN's issued share capital, with those persons jointly being authorized to convene such meeting themselves in case the Boards do not timely comply with the request, in accordance with the Articles of Association, or (ii) at least 10% of QIAGEN's issued share capital, with those persons jointly being authorized to convene such meeting themselves in case the Boards do not timely comply with the request, but only if and to the extent authorized thereto by the district court judge. Shareholders are entitled to propose items for the agenda of the General Meeting provided that they hold at least 3% of the issued share capital. Proposals for agenda items for the General Meeting must be submitted at least 60 days prior to the meeting date. The notice convening a General Meeting, accompanied by the agenda, shall be sent no later than 42 days prior to the meeting. QIAGEN informs the General Meeting by means of explanatory notes to the agenda, providing all facts and circumstances relevant to the proposed resolutions.

Pursuant to the Dutch Code, all transactions between the company and legal or natural persons who hold at least 10% of the shares in the company shall be agreed on terms that are customary in the sector concerned. Decisions to enter into transactions in which there are conflicts of interest with such persons that are of material significance to the company and/or to such persons require the approval of the Supervisory Board. QIAGEN has not entered into any such transactions in 2022.

Furthermore, pursuant to the Dutch implementation of the Shareholders Rights Directive II (SRD II), certain material transactions with related parties (in the meaning of the standards adopted by the International Accounting Standards Board and approved by the European Commission) require the approval of the Supervisory Board, or, if all Supervisory Directors are involved in such transaction, the General Meeting.

Stock Plans

We adopted the QIAGEN N.V. Amended and Restated 2005 Stock Plan (the 2005 Plan) which was approved by our shareholders on June 14, 2005. The 2005 Plan expired by its terms in April 2015 and no further awards will be granted under the 2005 Plan. On June 25, 2014, our shareholders approved the QIAGEN N.V. 2014 Stock Plan (the 2014 Plan), which replaced the 2005 Plan in April 2015. An aggregate of 16.7 million Common Shares were reserved for issuance pursuant to the 2014 Plan, subject to certain antidilution adjustments. We issue Treasury Shares to satisfy option exercises and award releases and had approximately 11.8 million Common Shares reserved and available for issuance under the 2005 and 2014 Plans at December 31, 2022.

Pursuant to the 2014 Plan, stock rights, which include options to purchase our Common Shares, stock grants and stock-based awards, may be granted to employees and consultants of QIAGEN and its subsidiaries and to Supervisory Directors. Options granted pursuant to the 2014 Plan may either be incentive stock options within the

meaning of Section 422 of the United States Internal Revenue Code of 1986, as amended (the Code), or non-qualified stock options. Options granted to members of the Supervisory Board and the Managing Board must have an exercise price that is higher than the market price at the time of grant. Generally, the stock rights and incentive stock options, as well as non-qualified options, stock grants and stock-based awards have terms of up to five or ten years, subject to earlier termination in the event of death, disability or other termination of employment. The vesting and exercisability of certain stock rights will be accelerated in the event of a Change of Control, as defined in the agreements under the 2014 Plan.

The Plan is administered by the Compensation & Human Resources Committee of the Supervisory Board, which selects participants from among eligible employees, consultants and directors and determines the number of shares subject to the stock-based award, the length of time the award will remain outstanding, the manner and time of the award's vesting, the price per share subject to the award and other terms and conditions of the award consistent with the Plan. The Compensation & Human Resources Committee's decisions are subject to the approval of the Supervisory Board.

The Compensation & Human Resources Committee has the power, subject to Supervisory Board approval, to interpret the plans and to adopt such rules and regulations (including the adoption of "sub plans" applicable to participants in specified jurisdictions) as it may deem necessary or appropriate. The Compensation & Human Resources Committee or the Supervisory Board may at any time amend the plans in any respect, subject to Supervisory Board approval, and except that (i) no amendment that would adversely affect the rights of any participant under any option previously granted may be made without such participant's consent and (ii) no amendment shall be effective prior to shareholder approval to the extent such approval is required to ensure favorable tax treatment for incentive stock options or to ensure compliance with Rule 16b-3 under the United States Securities Exchange Act of 1934, as amended (the Exchange Act) at such times as any participants are subject to Section 16 of the Exchange Act.

As of January 31, 2023 there were 4.3 million stock unit awards outstanding as of January 31, 2023. These awards will be released between February 21, 2023 and May 31, 2028. As of January 31, 2023, 0.8 million stock unit awards were held by the officers and directors of QIAGEN, as a group.

Further detailed information regarding stock options and awards granted under the plan can be found in Note 22 "Share-Based Payments" included in the Consolidated Financial Statements.

Independence

Unlike the New York Stock Exchange listing standards which require a majority of the Supervisory Board Members to be independent, the Dutch Corporate Governance Code distinguishes between certain independence criteria which may be fulfilled by not more than one Supervisory Board Members (as e.g., prior employment with the Company, receiving personal financial compensation from the Company, or an important business relationship with the Company) and other criteria which may not be fulfilled by more than the majority of the Supervisory Board members. In some cases, the Dutch independence requirement is more stringent, such as by requiring a longer "look back" period (five years) for former executive directors. In other cases, the New York Stock Exchange rules are more stringent, such as a broader definition of disqualifying affiliations. Currently, all members of our Supervisory Board are "independent" under both the New York Stock Exchange and Dutch definitions.

Risk Management

Reference is made to the discussion in the section "Risk Management" above.

Disclosure Controls and Procedures

Our Managing Directors, with the assistance of other members of management, performed an evaluation of the effectiveness of the design and operation of our disclosure controls and procedures. Based on that evaluation, they concluded that as of December 31, 2022, our disclosure controls and procedures were effective to ensure that information required to be disclosed by us in the reports that we file is recorded, processed, summarized and reported in a timely manner and is accumulated and communicated to our management, including our Managing Directors, as appropriate to allow timely decisions regarding required disclosure.

There are inherent limitations to the effectiveness of any system of disclosure controls and procedures, no matter how well designed, such as the possibility of human error and the circumvention or overriding of the controls and procedures. Therefore, even those systems determined to be effective may not prevent or detect misstatements and can provide only reasonable assurance of achieving their control objectives. In addition, any determination of effectiveness of controls is not a projection of any effectiveness of those controls to future periods, as those controls may become inadequate because of changes in conditions or the degree of compliance with the policies or procedures may deteriorate.

Changes in Internal Control over Financial Reporting

There has been no change in our internal control over financial reporting during 2022 that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Independent Auditors

In accordance with the requirements of Dutch law, our independent auditor for our statutory consolidated financial statements prepared in accordance with International Financial Reporting Standards as adopted by the European Union and filed with the Netherlands Authority for the Financial Markets (AFM), is appointed, and may be removed by, the General Meeting. The Supervisory Board nominates a candidate for the appointment as external auditor, for which purpose the Audit Committee advises the Supervisory Board. At the Annual General Meeting in 2022, KPMG Accountants N.V. was appointed as external auditor for the Company for the 2022 year. The external auditor is invited to attend the meeting of the Supervisory Board at which the statutory financial statements prepared in accordance with International Financial Reporting Standards and filed with the AFM shall be approved and is furthermore invited to attend the General Meeting at which the statutory financial statements are adopted and may be questioned by the General Meeting on its statement on the fairness of our annual accounts prepared in accordance with International Financial Reporting Standards.

Following the appointment of KPMG Accountants N.V. for the audit of our statutory consolidated financial statements, the external auditor for our consolidated financial statements prepared under U.S. generally accepted accounting principles is KPMG AG Wirtschaftsprüfungsgesellschaft who audited the consolidated financial statements as of and for the year ended December 31, 2022.

The remuneration of the external auditor, and instructions to the external auditor to provide non-audit services, shall be approved by the Supervisory Board on the recommendation of the Audit Committee and after consultation with the Managing Board. At least once every four years, the Supervisory Board and the Audit Committee shall conduct a thorough assessment of the functioning of the external auditor. The main conclusions of this assessment shall be communicated to the General Meeting for the purposes of assessing the nomination for the appointment of the external auditor. The next assessment will be completed in 2023.

Whistleblower Policy and Code of Conduct

We have a formal Whistleblower Policy concerning the reporting of alleged irregularities within QIAGEN of a general, operational or financial nature. Furthermore, we have a published Code of Conduct that outlines business principles for our employees and rules of conduct. The Code of Conduct can be found on our website at www.qiagen.com.

Anti-Takeover Measures

In 2004, the Supervisory Board granted an option to the Dutch Foundation Stichting Preferente Aandelen QIAGEN that allows the Foundation to acquire preference shares from QIAGEN if (i) a person has (directly or indirectly) acquired or has expressed a desire to acquire more than 20% of our issued share capital, or (ii) a person holding at least a 10% interest in the share capital has been designated as a hostile person by our Supervisory Board. The option enables the Foundation to acquire preference shares equal to the number of our outstanding common shares at the time of the relevant exercise of the right, less one share. When exercising the option and exercising its voting rights on these shares, the Foundation must act in the interest of QIAGEN and the interests of our stakeholders. No preference shares are currently outstanding.

Dutch Corporate Governance Code - Comply or Explain

The corporate governance structure and compliance with the Dutch Code is the joint responsibility of the Managing Board and the Supervisory Board. They are accountable for this responsibility to the General Meeting. We continue to seek ways to improve our corporate governance by measuring itself against international best practice. The Dutch Code, Dutch Corporate Governance Code 2016, applicable in relation to the financial year 2022 can be found at www.mccg.nl/.

Non-application of a specific best practice provision is not in itself considered objectionable by the Dutch Code and may well be justified because of particular circumstances relevant to a company. In accordance with Dutch law, we disclose in our Annual Report the application of the Dutch Code's principles and best practice provisions.

To the extent that we do not apply certain principles and best practice provisions, or do not intend to apply these in the current or the subsequent year, we state the reasons.

We take a positive view of the Dutch Code and apply nearly all of the best practice provisions. However, we prefer not to apply some provisions due to the international character of our business as well as the fact - acknowledged by the Commission that drafted the Dutch Code - that existing contractual agreements between QIAGEN and individual members of the Managing Board cannot be set aside at will.

The following provides an overview of exceptions that we have identified:

(1) *Best practice provision 2.2.2 recommends that a Supervisory Board member is appointed for a period of four years and may then be reappointed once for another four-year period. The Supervisory Board member may then subsequently be reappointed again for a period of two years, which appointment may be extended by at most two years.*

Members of the Supervisory Board are appointed annually for a one-year period beginning on the day following the General Meeting up to and including the day of the General Meeting held in the following year. Dr. Metin Colpan joined the Supervisory Board in 2004, Ms. Elizabeth Tallett has been a member since 2011, Mr. Lawrence A. Rosen since 2013 and Prof. Dr. Elaine Mardis since 2014. Dr. Colpan brings extensive contributions to the Supervisory Board based on his in-depth scientific and commercial experience, and above all his role as a co-founder of QIAGEN. He has also served as a board member for various other healthcare industry companies, which provides unique perspectives and valuable contributions to the discussions of our Board. Ms. Tallett has executive- and board-level experience at a number of international companies, in particular in the U.S. healthcare, pharmaceutical and biotechnology industries. Areas of expertise include international operations, mergers and acquisitions, strategic planning, marketing, product development, talent management and executive compensation. Prof Dr. Mardis is an internationally recognized scientist, and an important contributor to our Science and Technology Committee and the Compensation and Human Resources Committee. Dr. Mardis is the Co-Executive Director of the Institute for Genomic Medicine at Nationwide Children's Hospital in Columbus, Ohio. She also is Professor of Pediatrics at the Ohio State University College of Medicine. Dr. Mardis has research interests in the application of genomic technologies to improving the understanding of human disease and toward improving the precision of medical diagnosis, prognosis and treatment. She is also the immediate past President of the American Association for

Cancer Research, and also serves the U.S. government as a scientific advisor to the Veteran's Administration for the Million Veterans Program. Mr. Rosen is a highly experienced executive who has served at the highest levels of various publicly-listed multinational companies, including Deutsche Post AG, Fresenius Medical Care AG & Co. KGaA and Aventis SA. He contributes to the profile of the Supervisory Board with his knowledge and cross-border expertise developed during a career working primarily in Europe and outside his home country of the United States. Key areas in which Mr. Rosen contributes his expertise include finance, strategy, mergers and acquisitions, investor relations, corporate governance and engagement with the capital markets.

QIAGEN highly values and appreciates the full engagement of Dr. Colpan, Ms. Tallett, Mr. Rosen and Prof. Dr. Mardis to the success of our Company, and strongly supports their re-appointment.

(2) *Best practice provision 2.1.5 recommends that the Supervisory Board should draw up a diversity policy for the composition of the Management Board, the Supervisory Board and, if applicable, the Executive Committee. The policy should address concrete targets relating to diversity and the diversity aspects to the Company, such as nationality, age, gender and education and work background.*

While QIAGEN strives for a diverse composition of the Supervisory Board, Managing Board and in all other management levels of the Company, we do not consider the definition of concrete targets relating to diversity useful. In accordance with the Dutch Gender Diversity Bill, we have set gender balance targets that we consider appropriate and ambitious as disclosed in our Diversity Policy. We are committed to creating an environment where all individuals have the opportunity to grow and contribute to our progress, regardless of their age, educational background, gender, nationality, physical abilities, race and ethnic background, religion, or sexual orientation. We consider it to be a key success factor on the path to achieving our mission and goals. Individuals and teams alike understand the diverse needs of our customers, identify and realize cross-functional opportunities for our business areas, and can quickly adapt to a fast changing environment. In 2022, our multicultural workforce was composed of at least 90 nationalities with an average age of 39.5. With 50% women, we are well balanced in terms of gender on an aggregate level. Information on the composition of our Managing Board and Supervisory Board can be found about under the section "*Diversity within the Managing Board and Supervisory Board*."

(3) *Best practice provision 3.1.2 vi recommends that when formulating the remuneration policy, it should be considered that shares awarded to members of the Management Board should be held for a period of at least five years*

Pursuant to the Company's Remuneration Policy, long-term equity-based grants to members of the Managing Board under the 2014 Plan primarily consist of an award of performance stock units, i.e., long-term incentive awards which are dependent upon the achievement of pre-defined performance goals. Grants of restricted stock units, which are based on time vesting only, are no longer to be granted. Performance stock units and restricted stock units granted until February 2018 are basically structured so that 40% of a grant vests after three years, 50% after five years and the remaining 10% after ten years. Grants of performance stock units and restricted stock units granted after February 2018 vest 40% after three years, 60% after five years. Beginning in February 2021, grants of performance stock units vest after three years.

(4) *Best practice provision 3.2.3 recommends that the maximum remuneration in the event of dismissal of a Management Board member may not exceed one year's salary (the "fixed" remuneration component).*

Our Managing Board members have entered into agreements with QIAGEN N.V. and some QIAGEN affiliates for which they hold managing positions. In case of termination of an agreement without serious cause as defined by the applicable law, the respective affiliate would remain obliged to compensate the Managing Board member for the remaining term of the employment agreement.

(5) *Best practice provision 2.2.4 recommends that the Supervisory Board should draw up a retirement schedule in order to avoid, as far as possible, a situation in which many Supervisory Board members retire simultaneously. The retirement schedule should be made generally available and should be posted on the company's website.*

The Supervisory Board follows the practice to discuss retirement plans of individual members early to proactively manage continuity within the Supervisory Board. QIAGEN believes that this practice provides a more flexible and better succession planning than a fixed retirement schedule.

(6) *Best practice provision 3.3.2 recommends that a Supervisory Board member may not be granted any shares and/or rights to shares by way of remuneration.*

QIAGEN has granted stock options to the members of the Supervisory Board as a remuneration component since its establishment until 2013 when we stopped granting stock options. Since 2007, Supervisory Board members have been granted restricted stock units. We believe that the reasonable level of equity-based compensation which we practice allows a positive alignment of shareholder interests with the other duties of the Supervisory Board and that this practice is necessary to attract and retain Supervisory Board members as the granting of share-based compensation to Supervisory Board members is a common practice in our industry.

NYSE Exemptions

Exemptions from the NYSE corporate governance standards are available to foreign private issuers, such as QIAGEN when those standards are contrary to a law, rule or regulation of any public authority exercising jurisdiction over such issuer or contrary to generally accepted business practices in the issuer's country of domicile. In connection with QIAGEN's listing on the NYSE, the NYSE accepted QIAGEN's exemptions from certain corporate governance standards that are contrary to the laws, rules, regulations or generally accepted business practices of the Netherlands. These exemptions and the practices followed by QIAGEN are described below:

- QIAGEN is exempt from NYSE's quorum requirements applicable to meetings of ordinary shareholders. In keeping with the law of the Netherlands and generally accepted business practices in the Netherlands, QIAGEN's Articles of Association provide that there are no quorum requirements generally applicable to meetings of the General Meeting.

- QIAGEN is exempt from NYSE's requirements that shareholder approval be obtained prior to the establishment of, or material amendments to, stock option or purchase plans and other equity compensation arrangements pursuant to which options or stock may be acquired by directors, officers, employees or consultants. QIAGEN is also exempt from NYSE's requirements that shareholder approval be obtained prior to certain issuances of stock resulting in a change of control, occurring in connection with acquisitions of stock or assets of another company or issued at a price less than the greater of book or market value other than in a public offering. QIAGEN's Articles of Association do not require approval of the General Meeting prior to the establishment of a stock plan. The Articles of Association also permit the General Meeting to grant the Supervisory Board general authority to issue shares without further approval of the General Meeting. QIAGEN's General Meeting has granted the Supervisory Board general authority to issue up to a maximum of our authorized capital without further approval of the General Meeting. QIAGEN plans to seek approval of the General Meetings for stock plans and stock issuances only where required under the law of the Netherlands or under QIAGEN's Articles of Association.

Environmental, Social and Governance

Environmental, Social and Governance

Our Approach to Sustainability

QIAGEN plays a vital role in helping to advance our understanding about the biology of life – DNA, RNA, and proteins. Our products are used to advance science and improve outcomes for patients around the world. This is underscored by our vision of "making improvements in life possible," which extends to our commitment of being a sustainable business ensuring that we do not negatively impact our environment, community or society as a whole. We take into consideration the views of our stakeholders – customers, employees, authorities, regulators, suppliers, and shareholders – in making decisions on the way to operate our business.

Our approach to sustainability is to consider our potential impact throughout each area of our business. We have a commitment to deliver the best possible portfolio of products and services while leaving the smallest footprint on our planet. From who we source from to how we produce, we approach each step with the intention to do so in a sustainable way. We know our people are our most critical asset and we care about them from their working environment to career development and opportunity. We aim to attract and retain talent that contributes to our vibrant workforce and our culture anchored in empowerment and ownership. a strong governance structure that provides a clear framework to supports these goals.

In 2022, we made significant improvements across our sustainability measures as we continued working towards creating a more sustainable business that supports our vision of making improvements in live possible.

We are committed to contributing to a more sustainable future

Solid achievements towards our goals

Environment

Practice sustainability and protect global ecosystems

Carbon neutral by 2050

2030 interim goal: 42% reduction in Scope 1 and Scope 2 GHG emissions, 25% reduction in Scope 3 (base year 2020)

70.7% reduction in Scope 2 emissions in 2022 (compared to 2021)

16.5% reduction transportation packaging in 2022

Social

Foster diversity, inclusion and access to healthcare

Top Employer LGBTQ+ with 100% on 2022 Corporate Equality Index

35% women in leadership in 2022

Participation in the **Global-Diversity Equality Index**

Governance

Ensure responsible corporate practices

100% strategic suppliers with sustainable engagement goals in 2023

No material cyber security incidents in 2022

78% of new employees completed compliance training in 2022

Corporate Responsibility Prime
RATED BY ISS ESG

MSCI ESG RATINGS A
CCC B BB BBB A AA AAA

SUSTAINALYTICS
ESG Risk Rating COMPREHENSIVE
16.5 Low Risk
Negligible Low Medium High Severe
0-10 10-20 20-30 30-40 40+
Ranking
Industry Group (1st = lowest risk)
Pharmaceuticals 9 out of 1028
Universe
Global Universe 1866 out of 15121

HUMAN RIGHTS CAMPAIGN FOUNDATION
BEST PLACES TO WORK
2022 for LGBTQ+ Equality
100% CORPORATE EQUALITY INDEX

Bloomberg Gender-Equality Index 2023 Member

Commitments and goals

As a global company, QIAGEN actively supports the Sustainable Development Goals (SDGs) of the United Nations (UN). The SDGs identify starting points for policymakers, businesses, and private individuals worldwide to tackle the major challenges of our time from resource consumption and global inequality to climate change. The 17 SDGs and the 169 targets were adopted by all UN member states in 2015 in what is termed the "Agenda 2030." Companies can make a major contribution to the implementation of the SDGs due to their influence on the environment and society in many ways – from production to distribution of products, the actions and behaviors of employees, and cooperations with partners, suppliers, and customers along the supply chain. At QIAGEN, we are aware of this responsibility and want to make an impactful contribution to the SDGs that can be influenced by our business activities.

Looking at the impact of our business activities on sustainable development, we have identified five SDGs where we can make a contribution:

- SDG 3 Good Health and Well Being
- SDG 5 Gender Equality
- SDG 8 Decent Work and Economic Growth
- SDG 12 Responsible Consumption and Production
- SDG 13 Climate Action

We have further refined our sustainability strategy and goals based on a new materiality analysis completed in 2022 that included a review of the SDG targets detailed below. Our progress toward these goals, together with the external results of ratings and rankings, provide reassurance that we are on the right track with our efforts.

Additionally, our carbon emissions targets have now been validated by the Science Based Targets initiative (SBTi), endorsing our ambition to honor the Paris Agreement's climate goals.

The SBTi is a global body that enables companies to set ambitious emissions reductions targets in line with the latest climate science. Its Net-Zero Standard is the world's first science-based certification of net-zero targets set by companies around the world in line with the Paris Agreement's goal of keeping planetary warming to 1.5°C.

We are seeking to achieve net-zero status by 2050 by cutting direct and indirect emissions throughout our operations. We plan to achieve this goal through a series of measures including transitioning facilities to renewable energy, implementing energy-saving measures, minimizing waste in operations, reducing the total plastic footprint and working with suppliers and logistical operators to reduce their carbon footprints. Reference is made to the environment section for detailed description.

The importance of sustainability at QIAGEN is anchored in our compensation system with the inclusion of Environmental, Social and Governance (ESG) related objectives in the annual QIAGEN Team Goals, which are used as a basis for variable short-term incentive compensation for a significant share of our global workforce and the Management Board. Refer to the Remuneration Report for additional information. With regard to the importance of this topic, we have increased their weighting and impact in view of QIAGEN's sustainability ambitions. This is also aligned with the commitments we made on ESG topics.

Sustainability governance

The Nomination & ESG Committee, a dedicated Supervisory Board Committee, oversees the strategy development and performance measurements of our sustainability initiatives. This Committee reviews the operational activities of the Corporate ESG Committee, a cross-functional team with representatives from across the Company. The Corporate ESG Committee is led by our Head of ESG Strategy under the direction of the Executive Committee. The ESG Committee is responsible for developing and gaining approval for our sustainability strategy and driving the implementation. The Executive Committee is provided updates on a quarterly basis while the Supervisory Board is informed at least twice a year.

To anchor sustainability further in the organization, a mandatory ESG Foundational Course was launched in 2022 for all employees. The course provides an overview of ESG initiatives and helps employees understand their role in making the company—and ultimately the world—a better place. Refer to information in the chapter on employee training for additional insight. This training is followed by an "ESG deep dive" class that helps QIAGEN management understand the following objectives:

- To create more sustainable economic value, organizations should strive to make a reasonable profit taking all stakeholders into consideration;
- To create more environmental value, organizations need to think about their greenhouse gas (GHG) footprint and other environmental impacts and work to address these issues profitably; and
- To create more social value, companies should consider the communities and cultures in which they operate as important stakeholders whose health and well-being should be protected.

Stakeholder engagement

We regard dialogue with our stakeholders as a central element in the development of our company and the achievement of our long-term vision. We are aware that the shift toward a more sustainable economy and society requires intensive dialogue and cooperation between various stakeholder groups.

We proactively engage with our stakeholders around the world, in particular with our investors and shareholders, financial authorities and regulators. Our engagement also involves other important stakeholders including our employees, customers, suppliers and regulators. We welcome this engagement and see these discussions as a way to identify important trends and developments in society and in our business fields. We take the outcomes of these discussions into account when shaping our business strategy as well as our sustainability agenda and objectives.

Stakeholder group	Formats of engagement	Topics we engage on
Employees	ESG and employee trainings, regular one-on-one review sessions, 180° feedback process, surveys (e.g., sustainability, diversity & inclusion)	Health & safety, culture, inclusion & diversity, innovation, employee development, company strategy and organizational topics
Customers	Surveys (e.g., on sustainability, customer satisfaction), web chat, service portal with 24/7 follow-up, conferences, trade fairs, bilateral engagement, production tours, VIP days in our facilities, questionnaires (e.g., EcoVadis)	ESG strategy and targets, decarbonization, minimizing plastics, quality, and product safety
Shareholders and the financial community	Quarterly reports and quarterly earnings calls, Annual Report, live broadcast of all parts of the Annual General Meeting with access to appointed proxies in advance of the meeting, regular roadshows and calls, investor relations website	ESG strategy and targets, access to healthcare, and corporate governance topics
Suppliers	Strategic reviews, supplier days, workshops, bilateral engagement, initiatives, video conferences including employees	Sustainability performance, quality and product safety, responsible sourcing standards
General society and local communities	Industry-specific forums and conferences, proactive communication with local and national press, local engagement, engagement in more than 50 joint healthcare projects in more than 30 countries.	Access to healthcare, business support
Banks and financial institutions	Mandatory reporting and information (e.g., Annual Report, non-financial reporting), bilateral meetings	Sustainability performance, ESG-linked financing

Reporting Scope

The basis for the non-financial reporting in the Report by the Managing Board is Book 2 of the Dutch Civil Code. Non-financial reporting requirements are further defined in the EU Non-financial Reporting Directive (2014) and the EU Corporate Sustainability Reporting Directive (in effect as of 2024), including the EU Taxonomy (partially in effect as of 2022) and the proposed EU Sustainability Reporting Standards (in effect as of 2024).

Materiality analysis

In 2022, we conducted a materiality analysis to identify sustainability topics of relevance to our business, society and the environment. Our first step was to create a long-list of potential material topics by reviewing internal data such as last year's materiality analysis. We analyzed the sector-specific regulations and standards of the draft of the European Sustainability Reporting Standards (ESRS), the reporting standards provided by Global Reporting Initiative (GRI), the relevant guidance issued by Sustainability Accounting Standards Board (SASB) as well as ratings and rankings. We further considered feedback from our investors, partners, suppliers, and customers as well as results from a comprehensive ESG-benchmark assessment we conducted in the reporting year. The long-list was then refined to a final short-list of twenty-one topics.

Next, we evaluated each topic in terms of two perspectives: i) the impact of our business activity on a particular topic (inside-out perspective) and ii) the impact of the topic on assets, financial and the profitability of QIAGEN (outside-in perspective). This involved conducting interviews with each manager familiar with sustainability issues at QIAGEN. Thereafter, we considered the results of ratings and analyses. The results were then discussed, validated, and partially adapted by the Executive Committee and the Supervisory Board.

Through this process, we derived a total of eleven topics that can be classified as material regarding both our impact on the environment and society and in terms of their relevance to our business. Each topic is attributed to one of the four missions "Environmental Responsibility," "Invest in People," "Serving Societies," or "Business with Integrity." Listed below are our material topics with a selection of opportunities and risks for QIAGEN.

Mission	Topic	Connection to European Sustainability Reporting Standards (ESRS)	Possible opportunities (selection)	Possible risks (selection)
Environmental Responsibility	Reduce, recycle and replace plastic	E5: Resource Use and Circular Economy	Improved reputation and increasing revenue opportunities due to higher demand for products without plastic.	Loss of revenue due to reputational loss and de-listing as supplier if other suppliers can deliver with less plastic.
	Minimize Carbon Footprint	E1: Climate Change	Secure and stable energy supply due to regenerative energy sources and sustainable contract conditions as well as protection of the climate and of ecosystems.	Increasing costs due to regulations and dependencies on third parties as well as decreasing revenue due to reputational loss.
Invest in People	Occupational Health & Safety	S1: Own Workforce	Good employee health leads to increased efficiency, a higher external recognition and less insurance and litigation costs.	Staff absenteeism due to illness leads to production stops or delays, and reputation loss.
	Diversity & Inclusion	S1: Own Workforce	Increased level of creativity as well as high employee motivation and satisfaction which has a positive impact on innovation potential, reputation and market development.	Increased costs and decreased revenue due to high employee attrition, drop in job performance and lower productivity.
	Employee Attraction & Development	S1: Own Workforce	Being an attractive Employer Brand leads to attraction of highly skilled workers and increased revenue due to higher efficiency and skill level.	Higher costs and less revenue due to less qualified staff, repetitive recruitment and trainings and less productivity and innovation.
Serving Societies	Access to Healthcare	S2: Workers in the value chain S3: Affected communities S4: Consumers and End-Users G1: Business Conduct	Improved health and well-being of populations in line with UN SDG goals and higher revenue due to ESG Ratings and good reputation.	Lower revenue due to loss in market position, low reputation and employee retention.
	Customer Satisfaction	S4: Consumers and End-Users	Increasing customer loyalty leads to financial success and allows for innovation and business extension.	Decreasing revenue due to decreasing customer loyalty and trust, lower standing and less access to talented workforce.
	Quality and Product Safety	S4: Consumers and End-Users	Contribution to global health and increased revenue due to brand image and positive recognition by our customers.	Increased costs and loss of revenue due to regulatory requirements and decreased trustworthiness.
Business with Integrity	Anti-Corruption and Anti-Trust	G1: Business Conduct	Good governance simplifies access to capital from banks and investors and stabilizes revenue due to a good reputation as a business partner.	Negative impact on workers, decreasing revenue and increased costs due to fines and penalties, loss of reputation and drop out of suppliers.
	Governance, Risk and Controls	G1: Business Conduct	Effective decision making due to diverse management composition.	Increased costs and loss of capital due to reputational damage and compliance issues.
	Data and Cyber Security	S1: Own Workforce S4: Consumers and End-Users	Higher revenue due to resilient products and establishing high confidence as a quality leader, protection of (sensitive) data.	Loss of revenue due to disruptive cyber events and loss of crucial data, market share and legal fines.

The results of the materiality analysis led us to adapt the structure of our Corporate ESG Committee to enable better coordination of the individual topics. In subsequent workshops, specialist departments carried out a detailed analysis of the maturity levels of each material topic to develop concrete roadmaps and action plans for achieving our goals.

Environmental Responsibility

At QIAGEN, we are committed to minimizing the environmental impact of our business activities – from the energy we consume and the resources we use in our manufacturing processes to the materials we use in our own laboratories and offices. We address these issues through the global programs described in this section. We also encourage our employees to conserve energy and reduce waste in their own activities as well as in the services and products we provide. Some of these initiatives are driven by local sustainability committees.

Our Global Environmental Health and Safety (EHS) team is comprised of global managers as well as local EHS representatives that oversee EHS management at many of our sites. The Senior Director of Global EHS is a member of the Corporate Sustainability Committee and the Climate Working Group, helping to ensure our environmental goals and objectives are met. The QIAGEN EHS policy directs all employees to be responsible "for improving environmental performance in order to protect the environment", to integrate sustainability principles into their decision making and operational activities, and to address and minimize our carbon footprint. This is reinforced by regular training and cross-functional projects to support key objectives identified in the climate scenario analysis.

During 2022, the global process to align our EHS management system with the relevant ISO norms was finalized. This process is being applied to our largest manufacturing site in Hilden. The site has completed the planning phase including the assessment and identification of significant environmental aspects for the site, leading to a clear plan with objectives and goals related to reducing CO_{2e} and waste. During 2023, the processes will be further implemented with the aim of certification to ISO 14001 by the end of the first quarter of 2024. In November 2022, Shenzhen Co. Ltd also began implementing the global EHS process to develop an EHS Management System with the aim of being certified to ISO 14001 in 2023.

Overall we apply the Corporate Accounting and Reporting Standards as outlined in the Greenhouse Gas Protocol (GHG Protocol) for the GHG emissions reporting. Hence the consolidated GHG emissions include all emissions from subsidiaries where QIAGEN has financial control. We have developed environmental indicators as below and show consolidated environmental data in relation to our consolidated net sales in order to establish a system for near- and long-term monitoring.

For reasons of transparency, accuracy and consistency we conduct ongoing data review, in case of material changes that reflect an update of previously reported data we provide respective explanation at the affected table. Where we have updated the current year calculation, the corresponding prior year numbers have been calculated as well.

Environmental Indicators	2022	Indicators 2022	2021	Indicators 2021
Energy (in MWh)	94,005	0.0439 MWh/NS	88,087	0.0391 MWh/NS
GHG emissions Scope 1 + 2 (in tCO_2; location-based)	30,399	0.0142 t/NS	30,240	0.0134 t/NS
Freshwater use (in m^3)	118,551	55.32 l/NS	131,870	58.57 l/NS
Non-hazardous waste (in t)	1,932	0.902 kg/NS	2,434	1.081 kg/NS
Hazardous waste (in t)	1,550	0.723 kg/NS	1,534	0.681 kg/NS
Non-hazardous waste recycled (in t)	648	0.302 kg/NS	n/a	
Hazardous waste recycled (in t)	12	0.006 kg/NS	n/a	

Energy and emissions

We recognize climate change as one of the most pressing global challenges bringing with it risks such as extreme weather events, and changes in regulations and changes in customer needs and behavior. Operations could, for example, be negatively impacted by fluctuations in the cost of raw materials, components, freight, and energy. New laws and regulations adopted in response to climate change could cause a further rise in energy prices, as well as the price of certain raw materials, components, packaging, and transportation. From general customer feedback and a customer survey we conducted in 2020, we deduced that the majority of our customers are very conscious of environmental issues including plastic consumption and the recyclability and durability of products. These factors influence their choice of supplier.

As a subset of the Corporate ESG Committee, we have set up a dedicated Climate Working Group that defines our emission reduction strategy in alignment with the Science Based Target Initiative (SBTi).

While we began setting emission reduction goals in 2019, in 2021, we committed to reducing greenhouse gas emissions in line with the most recent criteria set out by the SBTi. These targets have been validated and approved by the SBTi early in 2023 and the SBTi has assessed our near-term and net-zero targets against the SBTi's Net-Zero Standard Criteria and the SBTi Near-Term Target Criteria and Recommendations (Version 5). The SBTi target validation team has classified QIAGEN's scope 1 and 2 target ambition and has determined that it is in line with 1.5°C trajectory. Our approved targets are:

- Overall Net-Zero Target: QIAGEN commits to reach net-zero greenhouse gas emissions (GHG) across the value chain by 2050 from a 2020 base year.
- Near-Term Targets: QIAGEN commits to reduce absolute scope 1 and 2 GHG emissions 42% by 2030 from a 2020 base year. QIAGEN also commits to reduce absolute scope 3 GHG emissions from business travel, use of sold products and end-of-life treatment of sold products 25% within the same timeframe. QIAGEN further commits that 67% of its suppliers by emissions covering purchased goods and services, capital goods and upstream transportation and distribution will have science-based targets by 2027.
- Long-Term Targets: QIAGEN commits to reduce absolute Scope 1, 2 and 3 GHG emissions 90% by 2050 from a 2020 base year.

By the end of 2022, we recorded a net decrease of 20.4% or 4,264 tCO2e in Scope 1 and 2 emissions compared to 2021. Based on our expanded emissions reporting for 2022, we also recorded a significant reduction in Scope 3 emissions, which were 13.1% or 47,030 tCO2e less over a one-year period. In accordance with the requirements of the SBTi, we extended our emissions reporting in 2021 to include additional Scope 3 categories. In line with our continuous review of reported energy consumption data we have updated Scope 3 emissions also for the comparison period, in line with our emission reporting policies and to ensure meaningful comparisons of emissions over time. The total corporate carbon footprint for 2022 amounts to 329,524 tCO2e which is 13.5 % or 51,294 tCO2e below the same year ago period of 380,818 tCO2e.

For scope 3.1.Purchased goods and services we have applied new spend-based emission factors as released by the Department for Business, Energy and Industrial Strategy (BEIS) for the years 2020, 2021, and 2022. This triggers QIAGEN's recalculation rule based on the science-based targets initiative (+/-5% emission changes within Scope 3). The emission data for the years 2020 and 2021 have been recalculated accordingly.

For scope 3.12. End of life, we have applied a newly developed methodological approach to estimate the weight and type of materials used in sold products for the years 2020, 2021, and 2022. The improved activity data influence the emissions calculation and triggers the recalculation rule based on the science-based targets initiative as well, resulting in restated emissions for prior years.

QIAGEN Corporate Carbon Footprint 2022

Emission category (in tCO_2e)	**2022**	2021	Change in tCO_2e 2021 to 2022	Change in % 2021 to 2022
Scope 1: Direct emissions	13,730	11,054	2,676	24.2%
Scope 2: Indirect emissions	2,882	9,822	(6,940)	-70.7%
Total Scope 1 and 2 (market based)	**16,612**	**20,876**	**(4,264)**	**-20.4%**
Scope 3.1: Purchased goods	234,189	288,179	(53,990)	-18.7%
Scope 3.3: Energy related activities	4,104	4,011	93	+2.3%
Scope 3.4: Transportation and distribution	36,420	33,062	3,358	+10.2%
Scope 3.5: Waste in operations	6,493	6,097	396	+6.5%
Scope 3.6: Business travel	10,621	8,472	2,149	+25.4%
Scope 3.7: Employee commuting	8,092	7,165	927	+12.9%
Scope 3.11: Use phase of sold products	1,552	1,475	77	+5.2%
Scope 3.12: End of life	11,441	11,481	(40)	-0.3%
Total Scope 3	**312,912**	**359,942**	**(47,030)**	**-13.1%**
Total Emissions	**329,524**	**380,818**	**(51,294)**	**-13.5%**

Scope 1 covers direct Greenhouse Gas (GHG) emissions from the combustion of fossil fuels on our own premises and by company vehicles.

Scope 2 covers our indirect GHG emissions originating from the external generation of electricity for our operational and business activities. They are reported using both a location-based and market-based approach. A market-based calculation method for Scope 2 emissions reflects emissions calculated with the energy source mix used by each of our sites and is our first priority. A location-based method reflects the average emissions intensity of grids on which energy consumption occurs and is only made when market-based is not available.

Scope 3 covers upstream and downstream emissions that occur along our value chain. The subcategories are reported separately in table QIAGEN Corporate Carbon Footprint 2022. We have considered emissions in the following categories as material to our operations: Scopes 3.1. (purchased goods and services), 3.3. (energy-related activities), 3.4. (upstream and downstream transportation and distribution), 3.5. (waste in operations), 3.6. (business travel), 3.7. (employee commuting), 3.11. (use phase of sold products) and 3.12. (end of life treatment of sold products). The energy data used to calculate Scope 1 and 2 emissions can be viewed by source in the following table:

Energy consumption by source (in kWh)	2022	2021	2020
Natural gas	37,367,870	35,254,698	33,854,835
Petrol	13,682,304	10,632,676	7,908,050
Diesel	4,169,284	3,833,095	3,771,816
Liquefied Petroleum Gas (LPG)	482	435	361
Electricity procurement from conventional tariffs	10,300,270	22,587,904	38,551,191
Electricity procurement from green tariffs	25,707,203	14,507,701	136,970
Consumption from district heating, district cooling and steam	2,777,584	1,270,813	362,748
Total energy consumption (including green energy)	**94,004,997**	**88,087,322**	**84,585,971**

Energy efficiency and diversification

Improving energy efficiency is a key part of our climate strategy. In 2022, we conducted an American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) level 2 energy audit at our key site in Germantown, Maryland. The audit identified 37 potential measures that are now part of our ongoing review to create a climate goal roadmap.

During 2022, we also launched an energy efficiency campaign to create awareness and understanding about our energy efficiency priorities. This campaign involved guidance on how all employees could contribute to our climate goals and identify creative solutions for energy efficiencies across the company, beyond facility improvements.

To protect the site at Hilden, Germany, from the impact of the war in Ukraine and fluctuations in the supply of natural gas, a project was initiated to reduce the reliance on this resource. This included an energy audit, the installation of heat pumps, a wood burner, and an emergency oil reserve.

Use of renewable energy

In 2022, we continued our transition to green energy by purchasing renewable energy certificates for our manufacturing site in Germantown. Together with the site in Hilden, these two sites make up 65% of our global electricity consumption. In addition to renewable energy certificates in Hilden, the solar panels will produce electricity for our own operations and reduce reliance on the electricity grid.

Electric company cars and commuting incentives

To reduce the environmental impact of employee commuting, several of our sites have installed charging stations for electric cars and introduced bike-to-work programs at German QIAGEN sites. Many facilities provide discounted train and bus tickets to encourage employees to use public transportation. At our sites in Shenzhen, China, and Manila, Philippines, we offer bus shuttles to public transport stations and in Hilden (Germany) and Manchester (Great Britain) we support commuting by subsidizing public transportation costs. In Hilden, an electric bike program was initiated to encourage employees to avoid using cars. We also rolled out a pilot to track and reduce the emissions of our employees from their commute to and from work. Developed in cooperation with a global telecommunication company, the QIAGEN EcoShift App can track employee emissions and suggest feasible ways to reduce them. The data collected is fully anonymized and adheres strictly to data protection regulations. The app will gradually offer new features and other QIAGEN locations are to follow.

In line with our emissions reduction strategy, we started to transition our fleet of company cars in the U.S., Germany, Switzerland, and Austria to use hybrid or electric vehicles in 2022. Benelux and U.K. will follow suit in 2023. We are expanding the necessary infrastructure for electric vehicles and plan to install new charging stations in 2023. At our U.S. facilities, employees are offered a car allowance in lieu of a company car. This is increased by $100 per month if the employee chooses a hybrid

or electric car. For these drivers, we provide a one-off $500 payment for installing a level-two home charger. We are also working with a U.S. car charging company to provide employees with a corporate electric charging card and expect this system to be in place from 2023 onwards. Hybrid car drivers can use a corporate gas card and electric car drivers are supported by a fixed payment per month to cover electric charging.

Conservation of resources and waste reduction

Product life cycle assessment

A life cycle assessment (LCA) considers the environmental impact of the full life cycle of a product (so called "cradle to grave"). This includes the extraction and processing of raw materials, transport to the customer, the energy and material input required when using the product, transport to the disposal facility and incineration of remaining materials.

In 2019, and again in 2021, we conducted an LCA for the QIAamp DNA Mini Kit, one of our best-selling products, and one which is similar in composition and manufacturing process to other QIAGEN kits. Areas identified for optimization in the first instance included changes to secondary transportation packaging to reduce plastic usage, further details of which can be found in the section"Plastic Footprint Reduction." The 2021 LCA was carried out with an increased scope in accordance with ISO 14040/14044 and certified by an independent third party (GUTcert). The LCA reconfirmed the environmental impacts within the entire life cycle of a QIAamp DNA Mini Kit. The detailed report on the LCA can be found on our sustainability website.

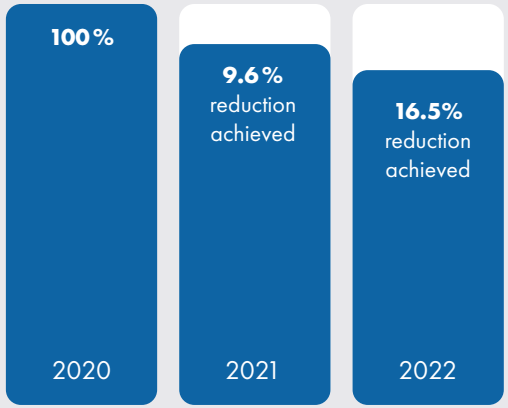
We are currently conducting an analysis of the amount of plastics contained in our top selling products, the results of which are expected mid 2023. With improved data we will be able to measure the impact of reducing plastic and, in future, use the results for our other testing kits. We are also planning to measure the impact of the kits' transportation. Using the broader basis of data on the plastic consumption and transportation, we will conduct new LCA's for representative products in 2023.

Plastic footprint reduction

While technical, regulatory, safety and hygiene standards mean we must use plastics in many of our products, and for transport and packaging, we are working to eliminate plastics wherever possible without compromising product quality. Our global cross-functional plastic footprint reduction team identifies opportunities to reduce plastic, investigates more environmentally friendly alternative materials, and optimizes recyclability, where possible.

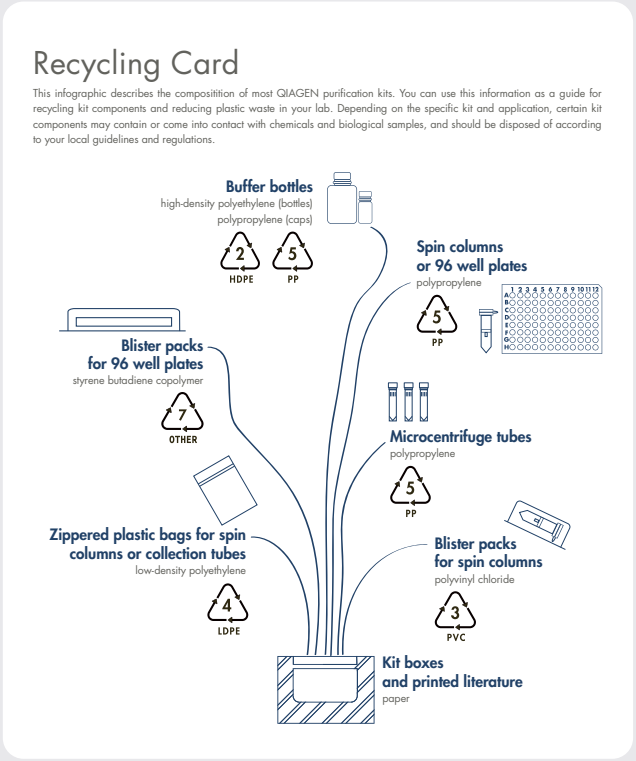
We are setting ambitious corporate goals to reduce plastic transportation packaging materials and overachieved the goal for 2022 of 9% by 7.5% and recognized a plastic reduction in transportation packaging of 16.5% compared to 2021, which equals an absolute reduction of plastic of 28.8 t. Key initiatives in 2022 included further replacing packaging materials with sustainable alternatives. The biggest impact was derived from our global initiative to replace bubble foil and air cushions with paper fill. This has been rolled out in (Asia and Pacific) APAC, (European, Middle-east and Africa) EMEA and the Americas (North and South America). In 2022, the roll-out of

Plastic footprint



16.5%

Plastic footprint reduction
For transportation packaging starting in 2020



ecofriendly transport boxes was launched in EMEA, replacing expanded polystyrene (EPS) transport boxes with cold chain shipments. The Beverly, Massachusetts site in the U.S. has also changed its dry ice transport packaging, replacing EPS coolers with ecofriendly packaging. APAC and the Americas have successfully implemented the roll-out of ecofriendly shipping boxes and converted plastic materials such as tape to a paper-based material for our shipping boxes.

In 2023, we aim to reduce plastic in transportation packaging by a further 7%. This will be achieved by introducing new technology for pallet wrapping, as recently implemented in the Hilden warehouse.

Furthermore, we are expanding our plastic reduction strategy "reduce – replace – recycle" into other workstreams that cover product packaging or operational waste reduction. Our project teams are working on the reduction of the thickness of primary plastic product packaging materials, while other project teams are searching for paper-based product packaging alternatives. To reduce plastic waste, we are continuously reducing the use of single-use plastics at all sites, such as single-use plastic overshoes, which we no longer use in uncritical production areas. We aim to increase the sustainability awareness of our employees and customers and are setting up

an educational program for our employees in collaboration with My Green Lab, a non-profit organization working to create a global culture of sustainability in science.

Active cooperation with our logistics suppliers is helping to reduce shipping waste. Initiatives include switching to re-usable passive temperature control shipping systems for certain cold-chain products and reusable containers for long-term bulk shipments. We are exchanging best practice examples of green logistics solutions with our global distribution centers to identify further opportunities.

With the aim to reduce plastics in our products, we launched an eco-friendlier product range, QIAwave in January 2022. The three new QIAwave kits deliver the same high-quality DNA and RNA but produce less plastic and cardboard waste compared to our RNeasy Mini, DNeasy Blood & Tissue and QIAprep Spin Miniprep Kits. The new QIAwave Kits feature fewer components, waste tubes made from 100% recycled plastic, and buffer concentrates in smaller bottles. More compact kits and new packaging methods reduce the cardboard needed to box them up. Instructions for use are available online. This results in up to 63% less plastic and up to 42% less cardboard compared to our standard kits. QIAwave marks the beginning of our journey to translate sustainability into our products and we continue to work on improving the QIAwave Kits. Our next development steps aim to reduce plastic further by re-designing the spin columns and waste tubes.

The QIAwave Kits are the first sample preparation kit in our industry to receive the prestigious ACT (Accountability, Consistency, and Transparency) Environmental Impact Factor Label from My Green Lab. Compared to our standard kits, our QIAwave Kits have a 35% lower environmental impact factor, taking criteria such as manufacturing, impact reduction, responsible chemical management, product and packaging content as well as disposal of packaging into account. In 2023, we will launch additional QIAwave Kits for the simultaneous purification of DNA and RNA from cells and tissues, as well as RNA isolation with effective gDNA removal.

Environmentally friendly facilities

We aim to make our buildings environmentally friendly by incorporating Green Building certification standards into our corporate architecture guidelines. More than a third of our main locations have already achieved this standard or are currently planning to do so. Hilden's research and development and the production facility were awarded LEED (Leadership in Energy and Environmental Design) Gold certification, and an extension to the QIAGEN Germantown facility received Silver certification. In 2021, our Manchester subsidiary moved to a new BREEAM (Building Research Establishment Environmental Assessment Method) certificated site, which uses energy saving technology.

Our initiatives to improve energy efficiency include energy modeling during the design phase of buildings, installation of solar panels, replacing gas and oil with renewable sources (such as wood pellets and heat pumps fueled by green electricity), energy extraction from co-generators, improved insulation, heat recovery, LED lighting, motion-controlled lighting, off-hour reduction, use of green electrical energy and installation of intelligent building systems. The engagement of our employees in energy savings is proven by several local energy saving initiatives. In its corporate architecture guideline, QIAGEN also defines standards for health and wellbeing measures, which almost all our main locations have partially or fully implemented, such as access to kindergartens or gyms, covered bicycle stands, facilities for sport and leisure, ad-hoc childcare offices, canteens, and coffee corners.

The majority of our main sites separate its waste. To reduce commuting related emissions, QIAGEN offers electric vehicle charging, as well as electric vehicle and bicycle policies at many locations. More information can be found in the chapter Electric company cars and commuting incentives.

Local volunteer committees at our facilities collaborate across regions and departments to identify and implement sustainability projects that mitigate waste, reduce

emissions, educate other employees, and engage with local communities. Our committees have introduced recycling and composting programs, replaced single-use items with reusable products, and donate surplus office furniture and lab equipment to local community organizations. Key actions in 2022:

- in partnership with a global telecommunication company, our volunteer group in Germany helped to develop the Ecoshift commuting app which tracks and calculates emissions generated by our employees on the way to and from work;
- our employee committee in the Philippines organized an annual tree planting at La Mesa Watershed, during which 49 volunteers planted 400 trees;
- in the US, our volunteer group saved large plastic buckets and containers from landfill and incineration by donating them to local businesses.

Beyond such infrastructure-related initiatives, QIAGEN supports ecological and social activities. The Hilden site has, for example, insect-friendly gardens, which are home to two colonies of company bees. Furthermore, we offer social or ecological volunteering days in Germany (Hilden and Stockach) and the Unites States (Germantown and Frederick).

Water consumption

Our production processes and office facilities require only moderate amounts of fresh water. In 2022, our operations consumed with 118,551 cubic meters of water (2021: 131,870 cubic meters) which is a lower consumption of 13,319 cubic meters or 10% less compared to the year-ago period. 13.3 megaliters were extracted from areas classified as having medium-high, high, or extremely high water stress, as defined by World Resource Institute Aqueduct. We aim to use this resource sparingly going forward especially in high-stress locations. Existing measures at key sites include using process water – a by-product of manufacturing – to cool buildings. We have also installed hand-motion activated faucets, introduced low-flow plumbing, dual-flush toilets and the use of rainwater to flush toilets. Our site in Manchester, for example, has reduced its water consumption by 37% as a result of such measures.

Water Consumption by Water Stress Level (in megaliters)	**2022**	2021
Low	101,749	105,855
Low-medium	3,497	14,444
Medium-high	8,867	6,200
High	2,826	3,455
Extremely high	1,612	1,916
Total water consumption	**118,551**	**131,870**

Invest in People

Employees

Our long-term success and growth depend on the knowledge, skill, and passion of our employees. Focusing on human capital therefore drives our economic performance and considerably influences the sustainability of our operations. We are convinced that the professional and personal development of our employees is an integral factor in creating value for customers, colleagues, partners, and shareholders. One of our global goals is being recognized as an employer of choice, which enables us to attract top talents that are critical to our long-term success. To achieve that, we encourage a work environment that empowers and involves employees at all levels.

We have a culture of empowerment

Decentralized decision-making

- Giving teams at all levels greater influence
- Bringing decisions closer to customers

Ambitious but realistic targets

- Appropriately balance opportunity and risk
- Training teams on PREmortem analysis

A culture of "doers"

- Foster a stronger culture of ownership
- Increase diversity in global workforce

As a company headquartered in the EU, freedom of association and collective bargaining are cornerstones of the good relationship between management and representatives of employees. Approximately 75% of our workforce is employed in member states of the OSCE (Organization for Security and Cooperation in Europe), which includes states from Europe, Central Asia and North America. In all regions where we operate, including the OSCE, we respect local labor laws and regulations including freedom of association and collective bargaining as outlined in our Human Rights Policy, which is available on our sustainability website. We strive to foster an open-door workplace culture where employees can approach management and / or Human Resources about any concerns without fear of retaliation. Our policy states that employees may communicate openly with management regarding their working conditions without threat of reprisal, intimidation, or harassment. We have the following

policies which aim to incorporate our culture and values into all our internal and external relationships. These policies are communicated to all employees when they first join QIAGEN, and are reviewed for any necessary updates on an annual basis. Employees may access these policies at any time via the company intranet.

- QIAGEN's Corporate Code of Conduct and Ethics provides our employees with a clear understanding of the principles of business conduct and ethics that are expected of them.
- QIAGEN's Ethical Standards Policy defines our cultural norms and values as defined in our mission, vision, and identity. Our values form the basis of our business success and every employee is expected to treat everyone in an open, honest, and respectful manner.

	2022				2021			
Employees by Region	**Female**	**Male**	**Total**	**Percentage**	Female	Male	Total	Percentage
EMEA	1,863	1,695	3,558	57.6%	1,735	1,654	3,389	56.2%
Americas	610	760	1,370	22.2%	612	772	1,384	23.0%
APAC	632	618	1,250	20.2%	610	645	1,255	20.8%
Total employees	**3,105**	**3,073**	**6,178**	**100.0%**	**2,957**	**3,071**	**6,028**	**100.0%**
	50.3%	49.7%			49.1%	50.9%		

In 2021, we introduced an initiative to foster inclusive networks and inspire a culture of empowerment. We call this initiative EMPOWER and it was launched by more than 100 voluntary ambassadors who facilitated approximately 300 workshops with close to 3,500 employees participating globally. The workshops were structured to anchor the EMPOWER principles into our day-to-day activities and discussions were focused around both our strengths as well as key areas to improve. As a result of the workshops, approximately 400 team action items were targeted with approximately 97% completed in 2022. Key practices in human resources have been updated to embed this culture of empowerment into the development of our employees, including within our 360° feedback process, called QIAlead, our Pulse Check questionnaires and across all leadership programs.

Employee development and training

We seek to inspire our people to grow, so they have the right mindset, behaviors and skills to thrive and achieve organizational goals and objectives. With our focus on performance management, employee, career and leadership development we foster individual and organizational effectiveness to support achieving QIAGEN's commitment. Our formal coaching guidelines to EMPOWER every employee and encourage them taking responsibility for their own learning, growth and career development.

As part of our talent and succession management, we have established transparent career paths with the QIAGEN Profile Navigator. It defines jobs, core competencies and approaches to advancement across the global organization. In addition, our global Performance Enhancement System creates a clear framework of regular one-on-one review sessions for each employee and their manager to discuss career development. These include discussions of goals and achievement levels, assessment of relevant competencies, as well as training needs and career planning steps. They are held on a mandatory basis at least once a year.

We consider high-quality training and career development to be an integral part of our success. We offer various training opportunities via our global e-learning platform QIAlearn as well as in person trainings or trainings offered in a hybrid format. Training focuses on job-specific skills, compliance, competencies, and leadership development. Most trainings continue to be conducted virtually. During 2022, employees completed more than 40,000 virtual instructor-led and e-learning courses.

As part of the professional development, we also offered in 2022 a Mentorship Exchange program to support QIAGENers in their development journey. The Mentorship Exchange program is a powerful, evidence-based internal mentorship program that pairs employees across the organization. In 2022, we had 256 participants.

Our success is based on having leaders with the capability to lead in an ever-changing work environment. We need to ensure that we remain competitive, innovative and prepared for the future so that we not only adapt to a world that is changing rapidly, but proactively anticipate and drive the changes ourselves. As part of our continued leadership development, in 2022 we launched our newly designed, interactive and blended training journey program called "Cultivate" for new Managers in EMEA and the U.S. There is a strong focus on self-directed learning, online and in-person workshops and discussion groups to build leadership and management networks across the organization.

As part of the feedback mechanism for continuous improvement to individual leadership competencies, an annual 180° feedback process provides the opportunity for employees and supervisors to give anonymized feedback to managers. In case of unsatisfying feedback, a formal process is in place to follow up with specific solutions. In 2022, we rolled out a pilot for 360° feedback, which we are currently developing further.

In addition, in 2022 on our online learning platform, QIAlearn, we launched a global online new hire onboarding portal for new employees joining the company as well as anyone new to a managerial role. The path contains several e-learnings which employees can work through at their own pace.

Diversity

Diverse teams strengthen our organization through the variety of ideas, perspectives and approaches they bring to our business. Our teams perform best when they are composed of individuals with the widest possible range of personalities, backgrounds, and traits. At QIAGEN, we are committed to creating an environment that is rich in diversity and empowers all employees. We actively work to ensure we provide an environment where all individuals have the equal opportunity to grow and contribute, regardless of their age, educational background, sex, sexual orientation, gender identity, gender expression, nationality, ethnicity, veteran status, physical abilities, or religion. Our diversity is a strength and makes QIAGEN a great place to work. We leverage this strength through our Executive Council of Equal Opportunity (ECEO), our diversity council that oversees our diversity and inclusion (D&I) initiatives.

The ECEO strives to ensure QIAGEN policies, practices and procedures are conducive to recruiting, retaining, educating, and developing a diverse, high-performing workforce that draws from all segments of society. It values fairness, diversity, and inclusion, and aims to foster an environment that attracts the best talent, values diversity of life experiences and perspectives, and encourages innovation. The ECEO is comprised of volunteers from across the company: executives, management, and individual contributors. The cross-functional approach to membership allows multiple perspectives and experiences to be included in the overall advancement of QIAGEN's diversity goals. The council consists of a minimum of six advisory board members and a minimum of four council members with a co-chair leadership structure that reports to an Executive Committee Sponsor. Globally agreed, cross-functional objectives are tied directly to our corporate goals on D&I and the ECEO drives and communicates initiatives within each organizational area and sponsors our D&I ambassador program and the QIAGEN Communities, our employee resource groups.

Our diversity ambassadors are comprised of employee volunteers who champion D&I across our global sites through various activities such as hosting site and region-specific speakers and presentations, and organizing trainings, workshops, and events to educate the community within QIAGEN and beyond. In 2022, the ambassadors hosted events to educate and celebrate Juneteenth in the U.S., promote awareness on anxiety and depression, and support the LGBTQIA+ community through participation in local Pride parades and engaging in conversations about allyship.

In May 2022, following a series of discussions, surveys, and focus groups, we introduced QIAGEN communities, our employee resource groups. These four groups are all volunteer-led and focus on: (1) disability, mental health, and well-being through Thrive@QIAGEN, (2) parents and caregivers through QIAGEN Parents and Caregivers Community (QPACC), (3) LGBTQIA+ through Pride@QIAGEN and (4) women through QIAwomen.

In 2018, we started our strategic initiative on gender diversity with a focus on improving the number of women in management. The participation of women in management roles increased from approximately 28% in 2018 to 35% in 2022 (2021: 34%) because of strategic initiatives to drive awareness, engagement, and development of better gender representation among our management team. We continue to work towards gender parity and are targeting a 2023 goal of 36% or more women in management roles and it is our goal to achieve at least 40% of women in management in the mid-term in accordance with our Gender Diversity Policy. More information about the policy on diversifying the Management Board and the Supervisory Board can be found in the Corporate Governance Report.

In 2022, QIAwomen hosted events featuring both internal and external speakers to share experiences and promote discussion. These included on-site events in support of the UN's campaign to end violence against women. These gave participants the opportunity to exchange resources and, in the US, support a local charity for survivors of domestic violence. Launched in July 2022, QIAwomen has grown to more than 300 members. For the second consecutive year, QIAGEN has been listed on the Bloomberg Gender Equality Index (GEI), which provides an opportunity for companies to assess progress towards parity, benchmark against peers and highlight a commitment to gender equality. QIAGEN also endorses the Women's Empowerment Principles, as expressed between the UN Global Compact and UN Women. These principles emphasize the business case for corporate action to promote gender equality and women's empowerment.

Our commitment to diversity extends beyond cultural and gender diversity. In 2021 we made a targeted review of all our policies and guidelines and updated them to ensure clarity and confirmation of our commitment to equality for LGBTQ+ workers and their families, including joining the Business Coalition for the Equality Act. As a result of these updates, as well as of other initiatives focused on the LGBTQ+ community during the year, our U.S. subsidiary received a perfect score of 100 on the Human Rights Campaign (HRC) Foundation's 2022 Corporate Equality Index (CEI). We aim to continue our participation in this program and have been actively assessing the new criteria being introduced for the 2023 CEI. The Pride@QIAGEN community was launched in June 2022 over 150 members. The community hosted virtual and in-person events in support of pride month activities in the U.S., Poland, Germany, Mexico, and the U.K., and held several virtual discussions to engage outside of pride month and share ways to support the LGBTQIA+ community throughout the year. QIAGEN also endorses the Standards of Conduct for Business: Tackling Discrimination against Lesbian, Gay, Bi, Trans, & Intersex People which builds on the UN Guiding Principles of Business and Human Rights.

During 2022, we further focused on disability and assessed which targeted areas we could identify for improvement through a project team assembled as part of our leadership training program. The project team identified key areas to review such as hiring and retention strategies for onboarding differently-abled candidates, improving information accessibility and visibility within QIAGEN and extending our outreach in our local communities. Our Thrive@QIAGEN employee resource group has grown to almost 200 members since it launched in July 2022 and hosted an event championing well-being and inclusion in the workplace. In 2022, we participated for the first time in the Global Diversity Equality Index (GDEI) and will use the results as a scorecard and benchmark to identify and implement specific actions to better support our differently-abled employees.

	2022		2021	
Employees by age, gender and management roles	**Female**	**Male**	Female	Male
Under 30 years old	584	395	456	340
30 to 50 years old	2,063	1,984	2,015	2,014
Over 50 years old	458	694	486	717
	3,105	**3,073**	**2,957**	**3,071**
Employees in management roles	**226**	**425**	**211**	**412**

Employee satisfaction and retention

Our employees are the key to our success, and we strive to be a great place to work. Employees join QIAGEN and stay with us because they know their work makes a difference in improving lives around the world. Our internal and external ratings have continued to improve and highlight our good reputation and preferred position within the global working environment.

Our commitment to excellence also extends to our QIAGENers

In 2022, many of our subsidiaries have been recognized as an employer of choice including our subsidiaries in Germany and Poland, where we were once again recognized as a "Top Employer" by the Top Employer Institute, a global authority on recognizing excellence in people practices. Additionally, we received the Top Employer Certificate for China for the first time in 2022. The "Top Employer" title is awarded after a very rigorous process where companies must share detailed information on their HR practices, have an onsite review and provide several employee interviews. Further, our subsidiaries in the U.S., Brazil, Mexico, India, Hong Kong, and Taiwan were once again recognized as a "Great Place to Work" in 2022. To earn the certification, at least 7 out of 10 employees must classify the company as a “Great Place to Work” in an anonymous survey. Our business service center in the Philippines won multiple employer certifications in 2022, including Asia's "Great Place to Work" and Asia's "Best Employer Brand in 2022."

Depending on local law and custom, there are different types of QIAGEN employment ranging from long-term fixed contracts to temporary positions. We offer flexible time and programs for parents returning from parental leave, including part-time work.

	2022		2021	
Employees by contract	**Total**	**Percentage**	Total	Percentage
Full-time employees	5,903	95.5%	5,612	93.1%
Part-time employees	275	4.5%	416	6.9%
Total employees	**6, 178**	**100.0%**	**6,028**	**100.0%**

Work-life balance is an important measure to create and maintain employee satisfaction. We provide services to help employees balance their personal lives with our dynamic work environment, including in-house childcare at certain sites, and flexible working hours. Beginning in 2021, we began the roll out our QIAflex program, our flexible working framework, on a limited basis and in 2022 have expanded the QIAflex program worldwide. QIAflex provides the structure that local site leadership follows in developing the model of flexible working for employees whose role is suitable for remote work. QIAflex allows eligible employees to work remotely up to 40% of the time.

We also have frameworks in place for performance-based and share-based compensation, as well as incentive programs for new ideas and innovation. All members of QIAGEN management participate in our stock plan and are eligible to receive stock unit grants subject to performance and / or service requirements. These programs aim to ensure fair and attractive compensation and to encourage each employee to contribute to our long-term success. Our Remuneration Report provides detailed information on the compensation practices regarding our Supervisory and Managing Boards. Our internal pay ratio is defined as the ratio between the average pay of the Managing Board and the average pay of our employees on a global level. The combined pay ratio in 2022 for the Managing Board was 95:1 (2021: 68:1).

An essential component of our efforts to maintain a high level of satisfaction at work is our corporate health and safety management. We offer a wide range of measures and tools, from annual "health days" with free counseling, screening and medical check-ups, to fitness opportunities in the form of in-house gyms, on-site soccer fields and beach volleyball courts, and online yoga. Beginning in January 2023, Employee Assistance Programs (EAP) are available globally. EAPs are offered at no cost to employees and delivered by external providers to support a broad range of issues such as child care, financial or legal problems or wellness matters. Our employees can make use of a consultant service to get support on personal matters via phone, video-based counseling, or face-to-face.

We also deploy short anonymous global engagement surveys, called Pulse Checks, to provide a snapshot of engagement levels within the organization. The findings from the Pulse Checks are used to help leaders focus on specific engagement topics. In 2022, two Pulse Checks were conducted and had an average participation rate of 63% (2021: 65%) with an average score of 4.0 — on a scale of 1 (lowest) to 5 (highest) — across all areas of engagement.

In 2022, our global voluntary turnover rate was 14.1% and at the management level turnover was 9.6% representing a return to pre-pandemic levels as recovery in the labor market continued to improve.

	2022		2021	
Turnover	Headcount	Voluntary Turnover	Headcount	Voluntary Turnover
Overall turnover	**6, 178**	**14.1%**	6,028	11.1%
Management turnover	**651**	**9.6%**	623	7.7%

Occupational safety and health protection

At QIAGEN, we recognize our responsibilities with respect to occupational health and safety. All employees are required to adhere to local health and safety procedures and practices. Safety, orderliness, and cleanliness are a key success factor at QIAGEN.

Our Global Environmental Health and Safety (EHS) team defines the principles and direction for the implementation of global EHS policies and procedures, which are in alignment with international standards. Local EHS teams at our facilities coordinate, manage, and monitor site-specific occupational health and safety risks and hazards, which includes the management of permits and licenses, risk analysis and assessments, planning for unplanned events, accident reporting, and health and safety inspections.

During 2022, we finalized the global processes for our EHS Management system to meet the ISO norms and the local implementation of these new processes commenced at our largest manufacturing site in Hilden, Germany. The site has completed the planning phase, including the assessment and identification of significant safety risks for the site, with the aim of certification to ISO 45001 by the end of the first quarter of 2024. QIAGEN Shenzhen Co. Ltd, located in China, also began the process of implementing an EHS Management System with the aim of being certified to ISO 45001 by the end of 2023.

In 2022, we also committed to a company-wide goal to reduce the rate of lost workday cases due to injuries by driving initiatives to improve our culture of safety. To support this initiative, we continued to drive safety awareness via our QIAttention campaign, which aims to promote reporting of safety incidents and near misses using our Global EHS Reporting tool.

The result of this initiative is reflected in the table below which shows an increase in the number of near misses reported and a reduction in the lost time case rate in 2022 compared to 2021:

Safety Indicators (employees and contractors)	**2022**	2021
Total recordable incident rate	1.18	0.97
Lost time case rate (excludes restricted and transferred work)	0.75	0.80
Number of near misses	93	81

Our corporate goal for 2022 was to keep the number of recordable work-related lost workday cases (Days Away, Restricted and Transferred, DART) below 1.1 /per 100 employees. The data for this metric during 2022 was collected monthly from 14 sites across all regions. The DART rate for 2022 was 0.83 and achieved the corporate goal. The DART rates for our 14 key facilities in 2022 and 2021 were as follows:

DART rate for key facilities (employees and contractors)	**2022**	2021
Total number of calculated work hours[1]	7,987,934	8,263,028
Total number of recordable work-related cases	47	40
Total number of recordable work-related cases that caused days away, restricted or transferred encountered	33	35
DART (per 100 employees)	0.83	0.85

(1) Total number of calculated work hours including employees, temporary workers and contractors.

The table below shows the number of recordable work-related incidents and number of days lost due to injuries for all workers, which include employees, temporary workers and contractors, during 2022 and 2021 by region at key manufacturing sites.

Reportable Incidents and Lost Workdays for All	Total Recordable Incidents[1]		Days Lost due to Injuries	
	2022	2021	**2022**	2021
Total average headcount per month at key manufacturing sites	3,929	3,815	3,929	3,815
EMEA	39	30	275	471
Americas	6	9	38	146
APAC	2	1	0	0

(1) Recordable incidents include all work-related accidents excluding first aid cases.

The table below compares the safety indicators for employees and temporary workers against contractors for work related injuries and also recordable work-related cases at key manufacturing sites.

Safety indicators for full-time employees and temporary workers vs. contractors	Full-time employees and temporary workers		Contractors	
	2022	2021[1]	**2022**	2021[1]
Number of hours worked	7,286,205	7,332,668	701,729	930,360
Number of work-related fatalities	0	0	0	0
Number of work-related injuries including first aid cases	163	134	22	26
Rate of work-related injuries including first aid cases	4.47	3.65	6.27	5.59
Number of recordable work-related cases[2]	39	26	8	14
Recordable incident rate[2]	1.07	0.71	2.28	3.01
Main types of work-related injuries and illnesses	Slipping, tripping, falling, misbehavior, unsafe working procedures	Slipping, tripping, falling, unsafe equipment, misbehavior, unsafe working procedures	Misbehavior, unsafe acts by people	Slipping, tripping, falling, unsafe equipment

(1) 2021 data has been amended to ensure comparability.

(2) Recordable incidents include all work-related accidents excluding first aid cases.

Measures at QIAGEN to fight COVID-19

To keep the high level of health and safety for all QIAGEN staff, all measures, capabilities, and capacities to fight COVID-19 continued to be offered in 2022 and were updated as needed. This involved following the local authority guidelines, for instance those of the Centers for Disease Control and Prevention (CDC). In operations and manufacturing locations, we required full-masking and the segregation of employees. We kept further facility measures in place, such as limited occupancy of conference rooms and elevators, additional room dividers, and thorough cleaning. At the Hilden, Germany site, we provided all staff with free face masks (surgical or FFP2), disinfectants at all central and crucial locations, and maintained onsite rules and regulations aligned with the most current recommendations from respective authorities.

As the pandemic slowed down, we continued to offer, at our Hilden, Germany site, free coronavirus testing by rapid antigen self-test throughout the year. These were provided for guests and visitors as well as for Hilden-based employees to take home for testing prior to work and in case they showed symptoms, respectively. PCR testing was available for travel purposes or on-site meetings where we used our in-house saliva-based sample collection method “Lolli-Test 2go.” Results were delivered within a maximum of 24 hours, and people testing positive were called individually to ensure measures were followed to protect the health and safety of all involved. In 2022, we ran more than 105,000 PCR tests in our internal laboratory for Hilden-based employees, their families, and external service providers, using our technologies for sample prep and virus detection. This represents a 50% increase of the more than 69,000 tests run in 2021. We plan to keep all the above offerings available for staff to keep the high level of safety on site in the near term.

Serving Societies

QIAGEN's mission is to make improvements in life possible by enabling our customers to achieve outstanding success and breakthroughs in life sciences, applied testing, pharma and molecular diagnostics. We are committed to delivering our customers and their patients innovative solutions that unlock new insights for scientific research, forensics, food safety or better treatment decisions. We understand and live up to our responsibility to customers and patients who depend on us for reliable, efficient and safe workflows.

Customer satisfaction

Customer satisfaction is an integral part of the QIAGEN mission to make improvements in life possible. Our customers have high expectations in terms of reliability, safety, and environmentally-friendly manufacturing of our products. We develop our products and services in close consultation with our customers and incorporate their feedback into our processes.

We are committed to continually improve our customers' experience, taking into account their evolving needs and expectations. Globally, we have established a systematic approach to measure customer experience in the form of an aggregated Customer Experience Indicator (CEI). This is measured monthly through a set of internal KPIs, including, but not limited to, product and delivery performance, quality, and speed of phone support. As part of a post-interaction satisfaction survey, we gather external customer feedback and link satisfaction levels to customer experience in our transactions. This allows us to quickly and reliably identify areas for improvement and derive corrective actions where needed. Departmental and employee contributions to CEI performance are integrated into our annual goal-setting process. For 2022, we achieved a score of 94.5 points out of a maximum of 100 points and remain at the same high level as in 2021 (94.4%).

Further, we have introduced a transactional net promoter score (NPS-T) for customer care and tech service. The NPS is a market research metric that measures customer satisfaction by asking respondents to rate the likelihood that they would recommend a company or a specific product. Weekly reviews by country managers make sure that the NPS-T service is running smoothly and that customer feedback and inquiries are followed up by the service teams. We will implement a relational NPS (NPS-R) in 2023 which will provide information about the overall state of the relationship between the company and our customers.

Quality and product safety

QIAGEN stands for quality. Since our founding in 1984, we have been committed to the highest quality for our products and strive to exceed our customers' expectations. Product safety is also our utmost priority. Our customers rely on us to develop products that are safe for them, their customers and the environment.

Product quality

Our reputation as a quality supplier is best-in-class in our industry and is the foundation of our loyal global customer base. Our products are designed and developed following state-of-the-art usability standards and are verified and validated according to their intended purpose.

To achieve and maintain our quality standards, we established quality management systems (QMS) in all our manufacturing facilities worldwide. These assure consistent high quality as well as safe and effective medical devices. Our QMS are certified according to ISO 9001, ISO 13485, ISO 18385, and comply to 21 CFR 820 and all other applicable medical device standards around the world. Refer to section "Government Regulations" in the Management Report for additional insight. Furthermore, we are committed to regularly adapting our system to new or revised regulatory requirements like the new European In Vitro Diagnostic Devices Regulation EU/2017/746 (IVDR) and others.

Product safety

We strive to ensure our products and their components are safe to use by customers and our employees. In the early stages of product development, the Chemical Compliance Department provides a statement and guidance on the use of specific substances. During this evaluation, we put special emphasis on substances of very high concern (according to REACH in the EU) and ensure that these substances are not added to new products. To reach this goal, we use toolboxes that represent a list of all materials that can be used in development, including an overview of qualified substances, suppliers, and components. When assessing the manufacturability of a new product, the evaluation considers technical aspects, regulatory requirements, financial aspects, and timeline constraints. We have developed a strategy to reduce substances of concern in our production processes. Our Chemical Compliance department maintains a reference list of substances that pose risks to humans and/or the environment and hence should be avoided in products. We reached our goal to completely eliminate the use of OPnEO and NPnEO (substance groups for substances of very high concern) in production processes by the end of 2022. Further, we have launched projects to substitute OPnEO and NPnEO in non-regulated/non-in-vitro diagnostic (IVD) products within the next three years, and in IVD and otherwise regulated products within the next eight years.

To ensure the compliance of our products, including automated system products, QIAGEN uses software configured to support supply chain communication and data evaluation. It also monitors conformity with directives such as REACH, RoHS, the Waste Framework and Conflict Minerals.

Our design and development processes also cover the generation of user instructions and marketing material for our products. As with all companies in the medical device/IVD industry, our product claims and properties are verified and validated during development and approved by regulatory bodies around the world as part of the product submission process. All IVD products are specially tested for safety and usability during development. We market products only in accordance with their approved intended purpose and declare potential residual (or remaining) risks in the instructions for each product. With regard to "green" marketing claims, we follow specific guidelines such as the Federal Trade Commission's Green Guides or the guide to biodegradable, compostable and related claims on plastic products issued by the Department of Justice, State of California. All communications are legally reviewed at QIAGEN via a document control system before publishing.

In order to assure quality of the products, each manufactured production lot is verified according to predefined specification prior to market release. We monitor product performance in the field by established procedures for complaint handling, data analysis, trending and post market surveillance. QIAGEN, like other companies, is exposed to the financial implications of potential recalls and other adverse events due to equipment failure, manufacturing defects, design flaws, or inadequate disclosure of product-related risks. In the event of a recall, we have established global procedures applicable to all QIAGEN sites that aim to avoid the further use of the product and to guarantee cost-neutral procedures for our customers. We guarantee full traceability of each product to the final customer and can therefore notify customers directly in the event of a recall. Required actions for recalls depend on the individual case. They can range from providing additional information to physically recalling a product. We have defined processes, responsibilities, and improvement programs as required by regulating authorities to avoid the recurrence of recalls. Due to our stringent quality management, recalls rarely occur. In past recalls, we were able to reach 90% to 100% of customers to confirm the recall.

Recalls and Affected Products	**2022**	2021	2020	2019	2018	2017	2016	2015
Number of recalls	6	6	6	3	4	0	3	1
Percentage of affected products	0.09%	0.08%	0.14%	0.15%	0.09%	0.00%	0.21%	0.02%

Access to healthcare

Improving access to diagnostics remains one of the world's greatest healthcare challenges. QIAGEN is committed to enhancing access to our products to underserved patient populations in both developed and developing countries while addressing major global health challenges. We reached millions of patients in 2022 through numerous collaborations with key global health stakeholders, focusing our efforts on the control and elimination of tuberculosis (TB), HIV, COVID-19, Human Papilloma Virus (HPV), and Monkeypox (MPOX) among other infectious and neglected diseases.

Under the lead of the newly appointed Vice President Global Public Health, the Global Public Health Task Force (GPHTF), composed of representatives from each region where QIAGEN operates, coordinated multiple projects focused on marginalized and vulnerable populations, low resource areas, developing countries, rural communities, and gender-based equity in 2022. To this end, the GPHTF established over 50 public health projects in more than 30 countries, with a focus on building local capacity, supporting disease-specific awareness and educational campaigns, addressing affordability challenges, and supporting research projects. More information on this can be found online.

Over the course of the year, several awareness campaigns and educational programs were led in various regions worldwide to support integration of QIAGEN products into national diagnostic pathways and accelerate uptake of international policy. Ongoing educational workshops and campaigns are planned into 2023 through the African Society of Laboratory Medicine in collaboration with Africa CDC (Centers for Disease Control and Prevention) seeking to highlight QIAGEN's solutions to address public health challenges.

In terms of our commitment to affordability, QIAGEN is committed to offering UN agencies, public health authorities, non-profit organizations, and non-governmental organizations operating in low-resource, high-burden countries access to the lowest available global price for our products. This pricing transparency is publicly listed on the websites of the international bodies that procure our products. In most cases, countries that are eligible for Global Fund financing qualify for our global health pricing.

In addition to offering the lowest global price for global health customers, we have also scaled up donations to areas most in need. Our social responsibility efforts aim to provide access to cutting-edge molecular technologies to people worldwide, regardless of their economic or social status, including diagnostic solutions designed especially for settings where limited medical resources are available. In this context, we revised and expanded our Global Donation and Sponsorship Policy, which included creating a Global Donation Review Committee in 2022 to help streamline and scale-up these donation activities. In 2022, more than a dozen institutions globally received financial or product-related donations or both.

Collaboration has proven pivotal to achieving our healthcare objectives. In 2022, we established 25 partnerships with governments, UN institutions and nongovernmental organizations to implement research projects, scale-up programmatic usage, or develop pilot initiatives in low- and middle-income countries (LMIC), with the goal of bringing more innovation to patients.

Complementary to our core business activities, "QIAGEN Cares" is the company's Corporate Social Responsibility program, an umbrella for supporting initiatives that improve lives by fighting diseases with the help of our products. These initiatives are finding new ways to ensure developing countries with scarce resources gain access to affordable diagnostics that play a critical role in helping to prevent and treat diseases. Infectious diseases and various malignancies can be treated much more cost-effectively and with improved patient outcomes through early and precise detection. Yet many developing countries lack properly trained lab personnel and technical infrastructure to utilize the latest molecular testing technologies.

In 2022, our Life Sciences teams were also active in providing research grants and support to various public health, research and academic laboratories in Europe, Asia and North America. For example, the Life Sciences team provided non-monetary research support within the Young Scientist Research Grant 2022 to young scientists

all over the world to support their projects in cancer and in microbiome/microbiology research with an additional focus on sustainability. After receiving close to 900 submissions, five young scientists from different regions were selected to receive $10,000 each in consumables and software packages to support their research projects. These projects spanned from miRNA biomarkers in glioma pathogenesis to tackling plastic waste using the mealworm microbiota.

In addition, the Young Investigator Award was offered again in 2022. The award is based on a competition that encourages and supports new generations of forensic scientists that show potential to make a lasting impact on human identity and forensics. Young scientists from all over the world were invited to participate and the winner was entitled to a consumables and instruments package of up to $60,000. The three finalists were honored during the International Society for Forensic Genetics (ISFG) Congress in Washington, D.C. in September of 2022.

Tuberculosis

Tuberculosis (TB) is one of the world's leading fatal infectious disease killers and QIAGEN is undertaking a global effort to advance diagnostics for TB in low-resource, high-disease burdened countries.

In January 2022, the World Health Organization (WHO) renewed its recommendations on the use of QuantiFERON-TB Gold Plus products for the diagnosis of TB infection. Recent developments have confirmed the value of QuantiFERON-TB Gold Plus as a standard for blood-based TB detection. In 2022, QIAGEN donated over 9,000 QuantiFERON-TB tests and related instruments valued at approximately $134,000 to the STOP TB partnership, which includes the WHO, The Global Fund, non-governmental organizations, research institutes and local Ministries of Health, and is helping to improve Latent Tuberculosis Infection (LTBI) management.

In 2022, we reached millions of individuals with over 16 million QuantiFERON-TB tests performed around the world. In the Africa region, QIAGEN made QuantiFERON-TB products available on the ground for the screening of 18,000 prisoners in Uganda, 10,000 individuals in Kenya and Democratic Republic of Congo, and 5,000 children in Malawi. By the end of 2023, we aim to provide an additional 5,000 tests to screen children under 5 years of age in Malawi. Moreover, to create greater awareness in the Africa region around the need for TB infection screening, a working group comprising French Speaking National TB programs was created in collaboration with Pasteur Network (Centre Pasteur du Cameroun). In Indonesia, more than 1,000 individuals were screened for TB infection in 5 pilot sites. In India, under the aegis of National TB Elimination Program, State TB Programs and Partner agencies like Union, Clinton Health Access Initiative (CHAI) and Foundation for Innovative New Diagnostics (FIND), around 150,000 QuantiFERON-TB tests were made available on the ground as a part of the screening of TB contact to provide TB preventive therapy. In Brazil, QuantiFERON-TB test has been incorporated into the national guidelines and more than 50,000 tests were made available to screen people living with HIV and patients who are candidates for hematopoietic stem cell transplantation.

QIAGEN was also recognized by the Treatment Action Group among the top five largest private sector funders of TB diagnostics research in 2021. Importantly, we are proud to renew our commitment to pediatric TB R&D and be listed among the top private sector investors in this area. Children are often a neglected segment of this already neglected disease. The unique needs of children and adolescents require new tools and innovations, and QIAGEN is a leader in developing testing solutions suitable for this vulnerable population.

Women's health

QIAGEN is committed to support and improve women's health in line with WHO's Global Strategy for Women's, Children's and Adolescents' Health Initiative (CHAI), 2016–2030. A key example of this commitment is our work in cervical cancer with our women's health portfolio which includes careHPV, QIAscreen and QIAsure. We work with UN agencies, public health authorities, non-profit organizations, and non-governmental organizations to further strengthen access to HPV testing.

In 2021, QIAGEN was recognized by the CHAI for providing careHPV, the lowest cost HPV test currently available in the market, for public health programs and UN

procurement agencies. QIAGEN remains committed to maintaining the lowest global price and has announced an additional donation scheme of careHPV instrumentation for global health partners who commit to working towards scaling up HPV testing in their public health programs. Across sub-Saharan Africa region, QIAGEN products have been used for screening for HPV. In 2022, we partnered with the National AIDS Council of Zimbabwe and Population Solutions for Health to provide free cervical cancer screenings at the "one woman, one health" cancer awareness event. Under this campaign, more than 800 tests were performed in a single day driving up the awareness of screening for cervical cancer. This is on top of 30,000 women screened in Zimbabwe over the last three years. After a successful validation study of Care HPV, further roll-out is expected in the beginning of 2023. In south Asia, we supplied 114,000 QIAGEN HC2 solution to the Ministry of Health of Bhutan under their Flagship Project to screen cervical cancer. In India, we supplied 75,000 careHPV tests over the last five years and 13,000 tests in 2022 alone to Adyar Cancer Institute- Chennai.

COVID-19 testing

Throughout the COVID-19 pandemic, we have been working closely with governments, public health authorities and customers to ensure worldwide availability of critical COVID-19 testing diagnostics, while also developing new dedicated COVID-19 tests to cover all stages of the infection cycle.

Dedicated COVID-19 tests brought to market since the start of the pandemic include:

- QIAStat-Dx Respiratory SARS-CoV-2 Panel (EUA, CE-IVD)
- NeuMoDX single-plex and 4-plex assays (EUA, CE-IVD)
- artus SARS-CoV-2 Prep&Amp UM (CE-IVD)
- QuantiFERON SARS CoV-2 T cell immune response (CE-IVD)
- QIAseq Direct SARS-CoV-2 and QIAseq SARS CoV-2 primer panel

Support for local initiatives

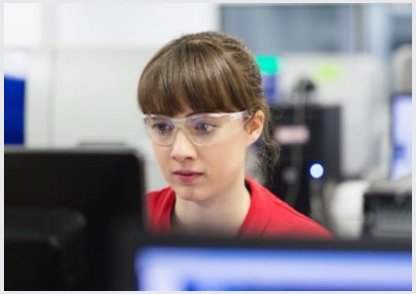
We support a broad range of activities in communities where our businesses are based. Our expanded Global Donation and Sponsorship Policy and new Global Donation Committee was successfully implemented at the beginning of 2022 to streamline and scale-up our activities and to routinely track our level of sponsorships and donations across the organization. Our activities include sponsorship of science education, disease awareness campaigns, the installation of school laboratories and promotion of biology in school curricula. Our local engagement goes beyond financial support, and we collaborate with the local Rotary Club to help integrate refugees from Syria, Ukraine (see below) and other war-torn countries through a program that includes language training and cultural orientation, assessment centers, and internships at QIAGEN.

Our Hilden site also works with Hephata, a local institution for citizens with disabilities, who undertake a broad range of operational tasks for the company, including certain packaging and production responsibilities.

In North America, our employees are granted eight hours of paid community service time per year, and contributed volunteer time to meeting community needs. Our Community Service Committee mobilizes volunteers and provides company funds for projects that improve the lives of people locally and nationally.

~6,200 passionate QIAGENers around the world

People from all functions working together to achieve our vision: Making improvements in life possible



Ukraine

When Ukraine was invaded in February 2022, QIAGEN immediately mobilized to provide healthcare and humanitarian support for the affected population as well as for refugees fleeing to neighboring countries. This included organizing a company-wide donation effort channeling resources to local institutions and global ones including Project Hope and the International Red Cross and Red Crescent Movement.

Additionally, local teams based in Poland organized near weekly supplies delivered first to Ukraine and then to refugees who left all behind. Many of our colleagues drove almost ten hours to the border to bring refugees to a safe place and often hosted them at home.

Finally, members of the QIAGEN GPHTF met with representatives of the Ukraine Ministry of Health, Public Health Centre, and the Global Fund, to discuss product-based donations for human ID and forensic equipment in support of identifying missing persons and war crimes investigation, TB control, and mitigating the spread of other diseases such as cholera and polio as a result to the disruption in healthcare services brought about by the invasion.

Business with Integrity

Business Ethics and Anti-corruption

In conducting responsible business, we are consistently mindful of the ethical foundations of QIAGEN in our day-to-day business operations. This means, in particular, the respect for human rights and legally compliant business behavior.

Ethics in clinical studies

Clinical studies are essential to evaluate the performance and clinical value of our regulated clinical diagnostic tests. This information is required by regulatory authorities to gain marketing approval. More importantly we are committed to bringing high performance products to the market, and this can only be achieved by establishing the performance characteristics of a potential product according to its intended use. Therefore, we and our partners conduct clinical studies for our diagnostics tests that are to be approved for use as in vitro diagnostics in a patient care pathway. In the conduct of these studies, we commit to ensuring the well-being, safety, ethical concerns, and legal rights of the study volunteers.

In light of this, we have built global procedures for the conduct of clinical studies which abide by the following principles:

- the Declaration of Helsinki: this is a statement of ethical principles that was developed by the World Medical Association to guide medical research WMA Declaration of Helsinki – Ethical Principles for Medical Research Involving Human Subjects – WMA – The World Medical Association
- the International Conference on Harmonization and national Good Clinical Practice (GCP) guidelines
- ISO 20916: In vitro diagnostic medical devices — Clinical performance studies using specimens from human subjects —Good study practice

All investigators and staff involved in QIAGEN studies must be suitably qualified for their role and have a current GCP certificate, which aims to prepare research staff in the conduct of clinical trials with human participants and is renewed biannually. Hence, laboratories are only accessible to employees that are qualified and trained to enter using an access card entry system. Eligible studies must be approved by ethics committees or the Institutional Review Board prior to starting, and if required, have the appropriate regulatory approvals from authorities in the country in which the study is being conducted. We use residual (left-over) patient samples whenever possible, minimizing the need to actively collect samples from patients. Where active participation by volunteers in studies is needed, we obtain informed consent by providing volunteers, in accordance with best practice, with a comprehensive overview of the study including its risks and benefits and alternative options for the patient.

Appropriate guidelines, such as ISO20916, Clinical and Laboratory Standards Institute guidelines and direct feedback and guidance documents from regulatory authorities, are followed when designing QIAGEN clinical studies. This is to ensure the integrity of study design, adherence to sound scientific principles and that high quality data is generated, while the risk to volunteers is minimized.

We convene a monthly Medical Safety Committee, chaired by the Chief Medical Officer, to oversee study and patient risk, and to assess any adverse event or device event reports, which are then appropriately reviewed and reported to authorities (e.g., FDA, European Competent Authorities, dependent on study location) when required.

Personally identifiable data that we collect during the conduct of QIAGEN studies is kept confidential in accordance with all applicable laws and regulations. We issue all volunteers with unique subject identification numbers to de-identify patient data, ensuring we meet the requirement for data privacy. For transparency and accessibility of clinical performance data of QIAGEN clinical diagnostic tests, QIAGEN undertakes to:

- register relevant studies on www.clinicaltrials.gov., a resource provided by the U.S. National Library of Medicine;
- publish studies in peer-reviewed publications in an anonymized fashion.

Ethical use of genetic editing

Genome editing tools such as CRISPR-Cas9 are revolutionizing life science research and have the potential to prevent and treat many diseases. QIAGEN's solutions are used in almost every laboratory conducting CRISPR and other gene modification. While such technologies can enable major advances in life science research, we truly appreciate the complex ethical considerations of using such technology as well as the need for clear guidelines and policies.

At QIAGEN, we fully support the careful development of guidelines by scientific and societal leaders, with involvement and transparency for diverse elements of society with a stake in the issue. Tight regulations and ethical rules about the use of genome editing are necessary to prevent misconduct and avoid harm to people and the ecosystem in which we live. We endorse the principles and proposals of scientific organizations and advisory groups – such as the American Society of Human Genetics and the European Society of Human Genetics - that have issued cautionary guidelines.

In 2019, leading scientists and ethicists from seven countries called for an international moratorium on all clinical uses of human germline editing to produce genetically modified children. These leaders are asking for a fixed-period ban on changing heritable human DNA (in sperm, eggs or embryos) to make genetically modified offspring. QIAGEN strongly agrees with the moratorium and requires compliance according to our Human Rights Policy. All employees who become aware or have suspicions of customers using our products in a non-compliant manner in this field are required to notify our Head of Legal and Compliance in accordance with our policy on Ethical Issues in Gene Typing.

Ethical product use

We endorse the application of our products, our services, and our operations in compliance with human rights principles and codes such as the U.N. Guiding Principles on Business and Human Rights. Many of our products, such as DNA or RNA extraction kits, have an intended use for a broad range of research and diagnostic applications, including COVID-19, oncology testing and forensics. None of them are designed for population screening, but we acknowledge that it is technically possible to operate our products for this purpose. As per our Human Rights Policy, we do not tolerate the misuse of our products for purposes such as mass screening and surveillance of ethnic minorities, and we will block customers involved in such practices from further sales should this become known to us. However, as we operate via distributors in many countries, we have no means of monitoring the identity of all our customers or control the use of our products by end-customers.

Following media reports about the use of DNA profiling technologies for the genetic surveillance of minorities in certain countries, we reviewed our commercialization channels in such countries and could not confirm that any such practices were performed with our products.

To further mitigate this risk, we requested our distributors in 2022 to sign modified distribution agreements requiring them to block end-customers from further sales in the event they become aware of any misuse of our products as defined by our Human Rights Policy. Those amendments give us the legal leverage to terminate the respective distribution agreement if necessary.

Human rights

Respect for human rights is an essential component of promoting sustainability in our global business. As a publicly listed company with international operations, we regard ourselves as a responsible corporate citizen in all the countries and regions where we do business. This role includes rights and obligations governed by international and national law, with human rights as one of the foundational elements. Our Human Rights Policy is designed to provide guidance on all human rights issues in our sphere of influence, including our relationship with customers, employees, and in our supply chain. Our Human Rights Policy can be found on the Sustainability page on our website.

In February 2022, the government of Russia invaded Ukraine. The governments of the European Union, the United States, Japan and other jurisdictions have imposed sanctions on certain industry sectors and parties in Russia and the regions of Donetsk and Luhansk in Ukraine, as well as enhanced export controls on certain products and industries. QIAGEN condemns Russia's actions against Ukraine and supports these measures. We decided in 2022 to suspend business operations in Russia and Belarus, while our employees have launched various initiatives to support refugees from Ukraine.

In this sense, we acknowledge and endorse the UN Universal Declaration of Human Rights, the European Convention on Human Rights, the business-related Organization for Economic Cooperation and Development (OECD) Guidelines for Multinational Enterprises, the ILO Declaration on Fundamental Principles and Rights at Work, and the UN Guiding Principles on Business and Human Rights and its application in National Actions Plans of our relevant jurisdictions. Our subsidiaries in the U.K. comply to the U.K. Modern Slavery Act 2015.

Management of human rights issues at QIAGEN lies within different departments such as Legal Affairs and Compliance, Human Resources, Procurement, Sales or ESG – depending on the subject area. Our review of potential compliance matters with respect to human rights violations applies a risk-based approach as further discussed under "Compliance." Our review takes into account that our global operations can be classified as either administrative, research and development, manufacturing or sales based. None of these areas, including our manufacturing sites, allow for employment practices that violate human rights principles (such as child or slave labor). Furthermore, local management is responsible to support that all employees adhere to the observance of the principles set forth in our Code of Conduct and Ethics and our Human Rights Policy at all sites.

Our approach to tax

We are committed to conduct business lawfully, ethically, and with the highest degree of integrity. These fundamental values and principles are key to our long-term success and the basis of our tax strategy. Our tax strategy is firmly anchored within the company, being considered within our risk management, subject to management decisions and reviewed with our Supervisory Board. Our tax strategy is embedded in the following guiding principles reflecting our status as a listed company and the regulated nature of our business.

Tax accountability and governance

Tax is part of our corporate governance and is supervised by the our Managing Board. Our tax function is centrally managed and controlled by our Global Tax Department, which is part of the Global Finance organization. It is led by the Global Head of Tax, who ultimately reports to the Chief Financial Officer. Under the ultimate responsibility of our Audit Committee and Managing Board, the Chief Financial Officer regularly reviews, evaluates, approves and where necessary adjusts our approach to tax.

Tax follows business

One of the basic principles for sustainable tax management is that taxes should be paid where economic value is generated. We allocate assets to the jurisdictions in which the underlying activities are performed, and risks are assumed. This ensures that the return on our business activities is allocated and taxed where they are actually performed. The volume of product and service that flows among entities within the company is significant, and the price of transactions among our entities is an important factor in our overall tax organization. Within Global Tax our Transfer Pricing Team determines the policy for the pricing of such transactions based on a full analysis of the value drivers of our business, ensuring that international and local rules are followed. Our objective is that all entities are remunerated at "arm's length," in accordance with OECD guidelines and country-specific rules and regulations.

The intellectual property related to our products and also to marketing specific intangibles are key profit drivers within QIAGEN, and profits generated with the employment of such assets are appropriately remunerated with the respective owner. The owner is the company controlling and taking the entrepreneurial risk of investing in the intellectual property. Our main entrepreneurs and intellectual property owners are companies in Germany and the U.S.

We only use business structures that are driven by commercial considerations are aligned with business activities and have genuine substance. We do not operate in countries that are on the EU list of non-cooperative jurisdictions for tax purposes.

Seeking and accepting tax benefits

Like many companies, we seek to optimize our global tax position by accepting tax incentives. In doing so, we strive to achieve an appropriate balance between corporate, employee and shareholder interests as well as public interest. We are committed to conducting business lawfully, ethically, and with the highest degree of integrity. We seek to comply with both the letter and the spirit of the relevant local and international tax laws and principles wherever we operate, and we anticipate paying tax on profits where our business activities take place and added value is created. If possible and ethically appropriate, we apply for tax incentives and exemptions. Such tax incentive schemes relate to eligible Research and Development activities performed by QIAGEN.

Compliance and relationships with tax authorities

We are committed to complying with the tax legislation of the countries in which we operate and create added value and to paying the right amount of tax at the right time. We strive for full and timely tax compliance. To minimize any tax compliance risk, a frequent review process is in place to secure timely and correct tax filings and tax payments. In the execution of tax compliance, third-party tax service providers are often involved under the supervision of the Global Tax Department.

Stakeholder engagement

We seek an open dialogue with our stakeholders, including relevant tax authorities, our shareholders, customers, business partners, employees, governments, regulators, NGOs and the communities in which we operate. In some cases, QIAGEN and the respective tax authority may disagree on the correct application of local tax law. In the event of disputes, we collaborate with the respective tax authority in a fair and positive spirit to find balanced solutions in accordance with the applicable laws.

Transparency

Country-by-Country Reporting (CbCR) requires multinationals to report with aggregate data on the global allocation of income, profit, taxes paid and economic activity among tax jurisdictions in which they operate. This requires QIAGEN N.V., the ultimate parent of the QIAGEN Group, to file an annual CbCR report to the Dutch taxing authorities.

We provide in the following selected, aggregated information for the regions Europe, Middle East and Africa (EMEA), North and South America (Americas) and Asia Pacific, Japan and Rest of World (APAC). We also provide more detailed information and reconciliation in accordance with the respective GRI standard in the Sustainability Report on our website within the Financial Reporting section. The following information is based on U.S. GAAP (United States Generally Accepted Accounting Principles) which is underlying to the CbCR filing in the Netherlands.

	2022				2021			
in thousands, except headcount	**EMEA**	**Americas**	**APAC**	**Total**	EMEA	Americas	APAC	Total
Headcount	3,556	1,372	1,250	6,178	3,343	1,433	1,252	6,028
Income tax paid	64,085	28,326	6,154	98,565	22,170	75,108	4,805	102,083
Related party revenues	2,239,637	827,477	28,534	3,095,648	2,133,257	874,037	221,178	3,228,472
Profit before income tax for CbCR	234,848	240,534	21,930	497,312	260,302	372,301	12,432	645,035
Tangible assets	798,317	344,754	86,125	1,229,196	762,676	344,916	97,433	1,205,025

Financial assistance from governments

We recognize government grants when there is reasonable assurance that all conditions will be complied with, and the grant will be received. Our government grants generally represent subsidies for specified research and development activities and are therefore recognized when earned as a reduction of the expenses recorded for the activity for which the grants are intended to compensate. Thus, when the grant relates to research and development expenses, the grant is recognized over the same period that the related costs are incurred. Otherwise, amounts received under government grants are recorded as liabilities in the statement of financial position. When the grant relates to an asset, the value of the grant is deducted from the carrying amount of the asset and recognized over the same period that the related asset is depreciated or amortized.

In 2022, we received income from government grants in the amount of $2.4 million (2021: $1.3 million).

Compliance

As a publicly listed company with international operations, we are subject to regulation in various jurisdictions. Unethical behavior and non-compliance with laws and regulations have the potential to seriously harm our business, our reputation, our shareholders, and expose our employees to personal liability. We have established a comprehensive Compliance Program, which translates legal and regulatory requirements as well as our fundamental values into clear and precise guidelines in our Corporate Code of Conduct and Ethics, supplementing specific policies for our employees. Our Compliance Program is overseen by the Compliance Committee under the leadership of the Head of Global Legal Affairs and Compliance, who reports in this function directly to the Audit Committee of the Supervisory Board. The Compliance Committee consists of managers from Legal, Internal Audit, Human Resources, Commercial Operations, Trade Compliance and Regulatory functions. Our Corporate Code of Conduct and Ethics can be found on our Compliance webpage under Investor Relations.

Our compliance program includes a broad range of policies including, but not limited to, aspects such as conflicts of interest, insider trading, revenue recognition, confidentiality, and social media. Policies regarding interactions with healthcare professionals are fully compliant with the AdvaMed Code of Ethics and are described in detail in our Global Sales and Marketing Policy that includes guidelines on samples, gifts etc. Moreover, we do not make or receive any payments to or from political parties or political action committees. Such actions have been prohibited without exception by our Code of Conduct since its establishment in 1996. QIAGEN is a member of a number of industry trade associations such as AdvaMedDx (U.S.) and MedTech (Europe) which work to advance important healthcare related initiatives with governmental and non-governmental organizations. We also collaborate with global health policy institutions such as the World Health Organization and regional consortia such as the African Society for Laboratory Medicine to improve affordable access to testing solutions for neglected diseases in low-resource settings. Besides our engagement in industry associations, we are not active in any direct lobbying activities.

We pay special attention to antitrust and anti-corruption laws. Our specific antitrust and anti-corruption policies support our commitment to ensure that we abide by the antitrust and anti-corruption laws of the countries in which we operate. Our policies on anti-trust and anti-corruption can be found on our Compliance webpage under Investor Relations. We extend our Compliance Program not only to our management and employees, but also to third-party intermediaries such as distributors or agents. Our third-party due diligence program, which is administered by our Global Compliance Manager, focuses on our local distributors and agents and contains the following six elements:

(1) pre-screening, anti-corruption questionnaire and certification for new distributors, resellers, and agents;

(2) annual risk assessment of selected third parties based on a calculated risk score, which factors in location of business and Corruption Perceptions Index;

(3) annual audits of the anti-corruption program and third-party risk management conducted by internal and external auditors;

(4) training for third-party distributors;

(5) contractual obligation to comply with applicable laws (including anti-corruption laws) and QIAGEN's Code of Conduct and Anti-Corruption Policy as well as compliance certification; and

(6) due diligence in the form of annual background checks of random selection of third parties and ongoing monitoring.

All our compliance policies are available to employees through the intranet. Each policy includes a contact address and the invitation to comment or to ask questions. Our employees' awareness of compliance is increased by regular in-person trainings, which are held by external as well as in-house legal and regulatory experts. We also offer an online training program focusing on topics such as antitrust and competition, bribery and corruption, conflicts of interest, data protection, gifts and entertainment, harassment, insider trading, reporting as well as respectful communication.

Online training is provided to all employees with offerings in multiple languages and supported by multiple communication resources. All new employees are required to take online training on our Corporate Code of Conduct and Ethics and to confirm that they have read and understood the Code. Additional training customized to the specific area of responsibility is mandatory. Employees in sales and marketing as well as upper management are required to complete training on anti-corruption and antitrust laws. These basic trainings are followed by regular refresher courses (depending on the course, from quarterly to every three years). In 2022, our employees completed more than 15,000 compliance course enrollments. In addition, employees are informed through our intranet and regular updates on compliance topics via our internal communication platform Yammer and our quarterly Compliance Newsletter. During 2022, each employee was offered the opportunity to take cyber security, master data governance, and health & safety near miss prevention trainings as required.

We provide a hotline for reporting accounting-related concerns anonymously and in good faith. In accordance with the U.S. Sarbanes-Oxley Act and the listing standards of the NYSE, we follow a strict non-retaliation policy. We will diligently investigate all such complaints and will protect the anonymity of the complainant to ensure protection from retaliation as well as to secure the employment status of the complainant. We also offer a direct email and telephone hotline for employees to address questions or make suggestions for our Compliance Program.

Data and cyber security

In the light of the external threat landscape, that evolved further during the COVID-19 pandemic, the war in the Ukraine, the new realities of a remote workforce and an increasingly hostile cyber space, managing cyber security risk remains a priority. We are committed to and continue to make considerable investments to enhance the cyber resilience of our organization, products and services, and to preserve the trust of our customers, partners and employees.

Our data and cyber security-related processes are based on the ISO 27001 standard as well as on the "Standard of Good Practice for Information Security 2020", which is used to improve resilience against the ever-changing threat landscape. Global cyber security and privacy requirements are actively monitored for and discussed as part of our Cyber Security Council as well as during Data Protection committee meetings, both held quarterly. Cyber security risks are managed as part of our Enterprise Risk Management and regularly reported to the Audit Committee. Refer to further discussion in our Management Report under Risk Management.

Our cyber security program ensures that data and cyber security efforts and initiatives reflect evolving business requirements, regulatory guidance, and emerging threats. We have supporting privacy and cyber security policies and guidelines in place, which are reviewed and approved as part of QIAGEN's Cyber Security Council and Compliance Committee procedures. These documents are available to all employees on QIAGEN's intranet, and we offer further mandatory trainings on a regularly basis, during which we carry out knowledge checks to ensure that the content was understood by the trainees. We also conduct regular 'phishing' simulations, awareness webinars and workshops on important security topics, as well as role specific trainings. In addition, the Cyber Security team regularly conducts incident response exercises to evaluate the organizations established procedures, including an analysis of each applicable incident response stage.

We are working with the Council for Registered Ethical Security Testers (CREST) certified partners to conduct regular, at least annual, security assessments of our infrastructure. To facilitate information and knowledge exchange, QIAGEN has joined well-known industry and governmental cyber security communities like the Information Security Forum (ISF), Allianz fuer CyberSicherheit and Health-ISAC.

Our Cyber Security team pro-actively monitors for exposed weaknesses in the organization's systems and services. QIAGEN's threat and vulnerability management program covers our global networks, digital workplaces, and cloud environments with state-of-the-art security controls. To our knowledge, we did not experience any material cyber security incidents or material breaches of customer data privacy, cases of data theft or data loss related to customer data in 2022. We also did not record any well-founded privacy complaints with Data Protection Authorities.

Sustainable supply chain management

We strive to ensure that our quality standards, compliance with laws and regulations as well as environmental and social standards are maintained along the entire value chain of suppliers and partners. We demand the same high standards from our business partners. Our supplier policy includes specific requirements for corporate governance, environmental and social standards, to which we expect our suppliers to adhere as minimum standards. Among other issues, it includes obligations to reduce the use of substances of concern, to ensure collective bargaining and freedom of association among employees, fair wages, and regulations concerning maximum working time. The supplier policy, which is our external policy for our supply base, is available online on our website under sustainability.

In alignment with our policies, chief among which is our Corporate Code of Conduct and Ethics, every employee is required to conduct themselves honestly, fairly, and objectively in all business relationships with suppliers and all others with whom QIAGEN maintains business relationships. Our compliance training program ensures that employees in the procurement organization understand our guidelines and comply with them. The training is mandatory, and in 2022, 78% of new hires completed the training. Our procurement policy, which is our internal policy, is available on our website under sustainability.

Integrating sustainability throughout the value chain

Examples of sustainability in product design

- Avoiding materials that cause a lot of damage when they are mined, cannot be recycled or do not decompose
- Improving repairability, longevity, and allowing for reuse
- Designing products to use less energy and produce less waste for customers
- Optimizing recycling by making it easy to separate materials

Structure of our supply chain

We operate in more than 35 locations worldwide, and our sites are supported by a global supplier network that includes approximately 6,500 (2021: 8,300) suppliers in 71 (2021: 70) countries, supplying resources such as chemicals and bioreagents, plastics, packaging materials, as well as other materials and services essential to our business. In 2022, 95% (2021: 75%) of our overall purchasing volume came from OECD countries.

Region of origin of suppliers	2022	2021
Europe	58%	47%
Asia	8%	25%
North America	27%	21%
South America	4%	4%
Australia	2%	2%
Africa	1%	1%
Total	**100%**	**100%**

Due diligence process

To minimize compliance, environmental and social risks in our supply chain, we apply a multi-stage vendor selection process. Suppliers are subjected to a risk analysis regarding environmental and social criteria based on their geographic location. These criteria were supported by information from the MVO Netherlands platform financed by the Dutch Foreign Ministry, as well as the Bertelsmann Stiftung's Sustainable Development Goals Index in 2020. This analysis identified no suppliers for whom potential risks exist due to geographic location and sales to QIAGEN.

In 2022, we shared our new supplier policy with all our suppliers, and it is included in our terms and conditions. In 2022, suppliers representing 95% of our purchasing volume have signed our supplier policy as a mandatory part of the contracting process. Beginning in 2023, all suppliers that accept our purchase orders agree to comply with our supplier policy. The policy contains requirements regarding legal compliance, anti-bribery and corruption, labor rights, free speech, right of assembly, non-discrimination and fair treatment, health, and safety as well as environmental protection and conservation. We provide an anonymous whistleblower hotline which can be used by all employees. The contact details can be found on our website within our Anti-corruption Policy. In addition, as part of our quality agreements with the suppliers, first-tier suppliers must confirm REACH, RoHS and conflict mineral compliance as appropriate.

As part of our supplier selection process, we conduct additional assessments. Some suppliers are analyzed with a supplier risk assessment. This includes all strategic suppliers with a high critical impact on QIAGEN's security of supply. The analysis is based on the following criteria, among others: quality management, financial stability, embargoes, risks of natural disaster. This process is currently in evaluation against further criteria in context with evolving compliance, environmental and social standards. The relevant data for the assessment is either submitted via a questionnaire, or the suppliers are assessed on site during a visit. Though it has not yet occurred, if a supplier does not fulfil all criteria, next steps would be decided on an individual basis.

Quality audits are conducted on site at least every three years for all "A"-categorized suppliers. We document all audits and share the results with the audited suppliers. The majority of our audits result in minor, rarely major findings, in the quality processes of our suppliers. In case of non-conformity with respect to quality processes, corrective actions are delivered to the supplier and followed up until effective implementation.

Our subsidiary in Hilden, Germany will be subject to the German Supply Chain Due Diligence Act (Lieferkettensorgfaltspflichtgesetz) effective as of January 1, 2024. The new law will impose due diligence requirements on our supply chain. To effectively address the wide-ranging challenges of a sustainable supply chain and to meet the legal requirements as well as our own ambitions, we plan to realize a number of measures in 2023, such as the publication of our human rights strategy on our corporate website, or the refinement of our risk analysis and prevention measures. In our approach, we not only focus on assessments and audits, but also on a partnership approach that includes, for example, training courses and events with our suppliers. We are also currently preparing to implement a leading cloud-based tool to automate and optimize our due diligence processes and to enable continuous documentation in the supply chain beyond human rights topics. Our requirements of the software were defined during

workshops held with all relevant QIAGEN departments in February 2023. We aim to begin using the tool to review a range of selected suppliers by summer 2023. We anticipate that this tool will also help us to achieve our supply chain-related climate target to which we have committed under the SBTi as further discussed under "Energy and Emissions."

Conflict minerals

U.S. legislation has been enacted to improve transparency and accountability concerning the sourcing of conflict minerals from mines located in the conflict zones of the Democratic Republic of Congo (DRC) and its adjoining countries. The term conflict minerals currently encompasses tantalum, tin, tungsten (or their ores) and gold. Certain of our instrumentation product components that we purchase from third party suppliers contain gold. This U.S. legislation requires manufacturers, such as us, to investigate our supply chain and disclose if there is any use of conflict minerals originating in the DRC or adjoining countries. We conduct due diligence measures annually to determine the presence of conflict minerals in our products and the source of any such conflict minerals. Because we do not purchase conflict minerals directly from smelters or refineries, we rely on our suppliers to specify to us their conflict minerals sources and declare their conflict minerals status. We disclosed our most recent conflict minerals findings to the Securities Exchange Commission for the calendar year ending December 31, 2021 on Form SD on May 31, 2022 and will provide updated disclosure to the Securities Exchange Commission as required.

EU Taxonomy

Under the Green Deal, the European Union is striving for a green transition of its economy. The deal calls for sustainable growth by mitigating climate change, protecting the environment and preserving biodiversity. To help reach its goal of climate neutrality by 2050, the European Union aims to redirect capital flows towards sustainable investments and projects.

The Taxonomy-Regulation is part of the EU Action Plan on Sustainable Finance and contains a classification system for ecologically sustainable business activities. Under the Regulation's disclosure obligations, companies will be required to disclose their share of Taxonomy-eligible and -aligned activities. This will increase transparency and allow investors to make decisions according to sustainability aspects.

The EU Taxonomy-Regulation defines six environmental objectives to which the economic activities listed in the Regulation and its delegated acts can contribute:

- climate change mitigation
- climate change adaptation
- sustainable use and protection of water and marine resources
- transition to a circular economy
- pollution prevention and control
- protection and restoration of biodiversity and ecosystems

For the reporting year 2022, only economic activities contributing to the first two environmental objectives (climate protection and adaptation to climate change) need to be considered. As yet, no delegated act has been adopted to include activities regarding the four remaining objectives.

The EU taxonomy distinguishes between two levels: Taxonomy-eligibility and Taxonomy-alignment. According to Article 8 of the Taxonomy-Regulation, in conjunction with the Delegated Act for the reporting year 2022, key figures on sales, operational and capital expenditures are to be reported for Taxonomy-eligible and Taxonomy-aligned economic activities. For the first time, Taxonomy-alignment must be reported, and the tables provided within the Delegated Act on Article 8 are to be used for the presentation of the key figures.

Taxonomy-eligibility and Taxonomy-alignment

An economic activity is Taxonomy-eligible if it fulfills the description given in the Delegated Act of the corresponding environmental objective. For Taxonomy-alignment, an economic activity must additionally comply with technical and social criteria.

The technical screening criteria are composed of the elements of significant contribution and the do-no-significant-harm approach:

- Substantial Contribution: Companies must meet defined technical requirements, for example regarding the level of CO_2 emissions of an economic activity.
- Do-Not-Significant-Harm (DNSH): Companies must ensure that the contribution to one of the six environmental goals does not have a significant negative impact on any of the other goals. This must be verified through, for example, a climate risk analysis.

The underlying requirements for Substantial Contribution and DNSH are documented for each individual economic activity in the Delegated Act of the corresponding environmental objective. For the minimal social safeguards, a universal approach for every activity is set through which the reporting company must prove its compliance with the following frameworks:

- International Bill of Human Rights
- International Labor Organization Declaration on Fundamental Rights and Principles at Work
- UN Guiding Principles on Business and Human Rights
- OECD Guidelines for Multinational Enterprises

Determination of Taxonomy-eligible business activities

In an initial screening, we examined our whole portfolio to determine relevant business activities. Our core business is not covered by the Climate Delegated Act on the environmental objectives of Climate Change Mitigation and Adaptation that has been submitted to date. None of the listed economic activities match our business model.

Nevertheless, the economic activities listed in the table below are principally relevant to us through the acquisition of products in these categories:

6.4 Transport by motorbikes, passenger cars and light commercial vehicles

7.1 Construction of new buildings

7.2 Renovation of existing buildings

7.3 Installation, maintenance and repair of energy efficiency equipment

Furthermore, the portfolio screening showed that the economic activities relevant for QIAGEN contribute to the environmental objective Climate Change Mitigation.

Disclosure of the financial KPIs

Turnover

To determine the turnover KPI, the Taxonomy-Regulation requires that the net turnover, generated with business activities contributing to the respective environmental objective, is related to the net turnover of the QIAGEN group. As QIAGEN's material, revenue-generating economic activities – the provision of sample to insight solutions for molecular testing - are not yet covered by the EU Taxonomy Regulation, the share of Taxonomy-eligible and Taxonomy-aligned revenues is 0%. Based on the standard table as provided in the EU Taxonomy (Article 8 Delegated Act, Annex 2) and as no economic activities qualify as Taxonomy-eligible, QIAGEN reports the following condensed format of the table for 2022:

Turnover (in thousands)	Absolute Turnover	Proportion of Turnover
A. Taxonomy-eligible activities		
A.1. Environmentally sustainable activities (Taxonomy-aligned)		
- Turnover Taxonomy-eligible activities	$0	0%
A.2 Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)		
- Turnover not Taxonomy-eligible activities	$0	0%
Total (A.1 + A.2)	$0	0%
B. Taxonomy-non-eligible activities		
- Turnover Taxonomy-non-eligible activities	$2,143.0	100%
Total A + B	**$2,143.0**	**100%**

The current version of the Taxonomy Regulation and its Delegated Acts do not cover our core business or any other business activity from which QIAGEN generates turnover.

CapEx

To determine the CapEx KPI, the Taxonomy-Regulation requires that the capital expenditures for business activities contributing to the respective environmental objective are related to the absolute CapEx of the QIAGEN group. The Taxonomy-definition of CapEx considers additions in accordance with the following IFRS standards:

- Additions to tangible assets (IAS 16)
- Additions to intangible assets (IAS 38)
- Additions to right of use assets (IFRS 16)
- Additions to real estate which is kept as financial investment (IAS 40)

As QIAGEN's business activities are not covered by the Taxonomy-Regulation we cannot report taxonomy-eligble or taxonomy-aligned turnover but can only report purchased CapEx . This form of CapEx is classified as "CapEx c)" in the Annex I of the Delegated Act to Article 8.

For purchased CapEx (CapEx c)) the relevant information about compliance with the Taxonomy-alignment criteria (substantial contribution, DNSH, minimal social safeguards) needs to be provided by the suppliers. The results of the respective queries were that the suppliers were not able to ensure their compliance with the alignment criteria.

For individual measures as listed in categories 7.3-7.6, QIAGEN must also prove compliance with the technical screening criteria and the minimum social safeguards despite the purchased character of the products. Compliance with the technical screening criteria and the minimal social safeguards cannot be ensured by QIAGEN at this time. Measures such as the completion of climate-risk-assessments are currently ongoing so that QIAGEN can fulfill the criteria for Taxonomy-alignment in the following years.

Based on the standard table as provided in the EU Taxonomy (Article 8 Delegated Act, Annex 2) and as no economic activities qualify as Taxonomy-eligible, QIAGEN reports the following condensed format of the table for 2022:

CapEx (in thousands)	Absolute CapEx	Proportion of CapEx
A. Taxonomy-eligible activities		
A.1. Environmentally sustainable activities (Taxonomy-aligned)		
- CapEx Taxonomy-eligible activities	$0	0%
A.2 Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)		
- Activity 6.5 Transport by motorbikes, passenger cars and light commercial vehicles	$5,597.4	3.2%
- Activity 7.1 Construction of new buildings	$5,986.3	3.4%
- Activity 7.2 Renovation of existing buildings	$4,891.5	2.8%
- Activity 7.3 Installation, maintenance and repair of energy efficiency equipment	$1,139.4	0.7%
Total (A.1 + A.2)	$17,614.6	10.1%
B. Taxonomy-non-eligible activities		
- CapEx Taxonomy-non-eligible activities	$156,869.4	89.9%
Total A + B	**$174,484.0**	**100.0%**

OpEx

To determine the OpEx KPI, the Taxonomy-Regulation requires that the operational expenditures for business activities contributing to the respective environmental objective are related to the absolute OpEx of the QIAGEN group. The Taxonomy-definition of OpEx differentiates significantly from the common financial definition. It considers non-capitalized expenditures that relate to research and development, building renovation measures, short-term leases, maintenance, and repairs.

As QIAGEN's core business is not covered by the EU Taxonomy Regulation and therefore no operating costs are incurred in connection with revenue-generating economic activities, the materiality of operating costs was assessed.

According to the Delegated Act on Article 8 (Section 1.1.3.2) as well as the FAQ document published in December 2022 by the European Commission (Draft Commission Notice 19 December 2022, question 13), the operating costs as defined according to the Taxonomy Regulation are not material for QIAGEN's business model. The total value in the OpEx denominator is only 1.5% of the total operating costs according to the financial reporting and is therefore classified as immaterial. The taxonomy-eligible or taxonomy-compliant costs for the OpEx numerator can be reported as zero due to the immateriality of the denominator. Thus, QIAGEN's taxonomy-eligible and taxonomy-compliant share of operating costs is 0%.

Based on the standard table as provided in the EU Taxonomy (Article 8 Delegated Act, Annex 2) and as no economic activities qualify as Taxonomy-eligible, QIAGEN reports the following condensed format of the table for 2022:

OpEx (in thousands)	Absolute OpEx	Proportion of OpEx
A. Taxonomy-eligible activities		
A.1. Environmentally sustainable activities (Taxonomy-aligned)		
- OpEx Taxonomy-eligible activities	$0	0%
A.2 Taxonomy-eligible but not environmentally sustainable activities (not Taxonomy-aligned activities)		
- OpEx not Taxonomy-eligible activities	$0	0%
Total (A.1 + A.2)	$0	0%
B. Taxonomy-non-eligible activities		
- OpEx Taxonomy-non-eligible activities	$11,967.8	100%
Total A + B	**$11,967.8**	**100%**

QIAGEN's absolute OpEx (in accordance with the Taxonomy Regulation definition) is immaterial when compared with QIAGEN's absolute OpEx (in accordance with the financial accounting definition). In this case the numerator can be disclosed as 0, so all figures are 0 (%).

ESG performance at a glance

Environmental

Climate
- 329,524 tCO2e total carbon footprint for Scope 1, 2 (market based) and 3
- 94,005 MWh total energy consumption
- 100% renewable electricity for main production sites in Hilden and Germantown
- Climate target validated by SBTi
- Member of We Mean Business Coalition 1.5°C
- Member of UN Race to Zero

Water
- Freshwater use reduced by 10%
- 4,438 m3 in areas with high or very high water stress level

Waste
- 16.5% plastic footprint reduction in 2022 compared to 2021
- 63% less plastic and 42% less cardboard used for each kit in QIAwave product line
- Non-hazardous waste reduced by 21%

Product life cycle assessment
- LCAs for best-selling product in accordance with ISO 14040/14044

Reporting
- GRI Standards
- Sustainability Accounting Standards Board (SASB)
- UN Global Compact

Social

Access to healthcare
- Appointment of the Vice President for Global Public Health
- Production scale-up to meet the demand for COVID-19 tests
- More than 100 million QuantiFERON tests for tuberculosis have been made available in more than 130 countries to date
- More than 100 million women screened for HPV with a QIAGEN test

Attractive employer
- 6,178 employees, 14.1% turnover
- 9.6% turnover at Management level
- Top Employer Certificate in Germany, Poland, and China

Diversity and inclusion
- Diversity & Inclusion program driven by ECEO and D&I ambassadors
- Perfect score of 100% on the 2022 HRC CEI
- UN Standards of Conduct signatory
- 35% of women in leadership roles at year-end 2022
- Listed in 2022 and 2023 Bloomberg Gender Equality Index
- UN Women's Empowerment Principles signatory

Health and safety
- 0.83 DART rate (per 100 employees)
- 1.18 recordable incident rate
- 47 work-related injuries
- 0 work-related fatalities

Governance

Human rights
- Human Rights Policy provides guidance for our relationship with customers, product use, employees, and in our supply chain

Ethics in R&D
- Global procedures for clinical studies in place (Declaration of Helsinki, GCP, ISO 20916)

Compliance
- More than 15,000 online training modules completed

Data security
- Processes are based on the ISO 27001
- No material cyber incidents

Income tax
- $98.6 million income tax paid ($102.1 million in 2021)

Quality and product safety
- 94.5/100 Customer Experience Indicator
- 0.09% of products affected from a total number of 6 recalls

Sustainable supply chain management
- Approximately 6,500 suppliers in over 70 countries
- 95% of purchasing volume sourced from OECD countries
- Conflict mineral inquiries for all direct suppliers

Financial Results

Financial Results

Consolidated Financial Statements

QIAGEN N.V. and Subsidiaries Consolidated Balance Sheets

		As of December 31,	
(in thousands)	Notes	**2022**	2021
Assets			
Current assets:			
Cash and cash equivalents	(3)	$730,669	$880,516
Short-term investments	(7)	687,597	184,785
Accounts receivable, net of allowance for credit losses of $22,880 and $23,124, respectively	(3, 24)	323,750	362,131
Inventories, net	(3)	357,960	327,525
Prepaid expenses and other current assets (of which $11,929 and $16,956 due from related parties, respectively)	(8, 24)	293,976	354,645
Total current assets		2,393,952	2,109,602
Long-term assets:			
Property, plant and equipment, net of accumulated depreciation of $502,967 and $632,416, respectively	(9)	662,170	638,183
Goodwill	(11)	2,352,569	2,350,763
Intangible assets, net of accumulated amortization of $727,691 and $806,787, respectively	(11)	544,796	627,436
Fair value of derivative instruments - long-term	(14)	131,354	190,430
Other long-term assets	(10, 12, 17)	202,894	230,540
Total long-term assets		3,893,783	4,037,352
Total assets		**$6,287,735**	**$6,146,954**

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

QIAGEN N.V. and Subsidiaries Consolidated Balance Sheets

(in thousands, except par value)	Notes	As of December 31, 2022	2021
Liabilities and equity			
Current liabilities:			
Current portion of long-term debt	(16)	$389,552	$847,626
Accounts payable	(24)	98,734	101,224
Accrued and other current liabilities	(13, 24)	486,237	568,620
Total current liabilities		974,523	1,517,470
Long-term liabilities:			
Long-term debt, net of current portion	(16)	1,471,898	1,094,144
Fair value of derivative instruments - long-term	(14)	156,718	191,879
Other long-term liabilities	(10, 12, 15, 17)	217,985	246,911
Total long-term liabilities		1,846,601	1,532,934
Commitments and contingencies	(20)		
Equity:			
Preference shares, 0.01 EUR par value, authorized—450,000 shares, no shares issued and outstanding		—	—
Financing preference shares, 0.01 EUR par value, authorized—40,000 shares, no shares issued and outstanding		—	—
Common Shares, 0.01 EUR par value, authorized—410,000 shares, issued—230,829 shares		2,702	2,702
Additional paid-in capital		1,868,015	1,818,508
Retained earnings		2,160,173	1,791,740
Accumulated other comprehensive loss	(18)	(404,091)	(326,670)
Less treasury shares, at cost—3,113 and 3,755 shares, respectively	(18)	(160,188)	(189,730)
Total equity		3,466,611	3,096,550
Total liabilities and equity		**$6,287,735**	**$6,146,954**

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

QIAGEN N.V. and Subsidiaries Consolidated Statements of Income

		Years ended December 31,		
(in thousands, except per share data)	Notes	**2022**	2021	2020
Net sales	(3, 4, 24)	$2,141,518	$2,251,657	$1,870,346
Cost of sales:				
Cost of sales		696,472	733,719	574,467
Acquisition-related intangible amortization		60,483	67,118	63,164
Total cost of sales		756,955	800,837	637,631
Gross profit		1,384,563	1,450,820	1,232,715
Operating expenses:				
Research and development	(3)	189,859	189,964	149,072
Sales and marketing		474,220	456,392	413,684
General and administrative	(3)	129,725	128,076	111,678
Acquisition-related intangible amortization		14,531	18,542	20,811
Restructuring, acquisition, integration and other, net	(1, 3, 6)	44,768	27,762	151,039
Total operating expenses		853,103	820,736	846,284
Income from operations		531,460	630,084	386,431
Other income (expense):				
Interest income		32,757	9,555	10,032
Interest expense		(58,357)	(54,477)	(71,317)
Other income, net	(6)	6,741	40,671	114,326
Total other (expense) income, net		(18,859)	(4,251)	53,041
Income before income tax expense		512,601	625,833	439,472
Income tax expense	(3, 17)	89,390	113,234	80,284
Net income		**$423,211**	**$512,599**	**$359,188**
Basic earnings per common share	(19)	$1.86	$2.25	$1.57
Diluted earnings per common share	(19)	$1.84	$2.21	$1.53
Weighted-average common shares outstanding:				
Basic	(19)	227,577	227,983	228,427
Diluted	(19)	230,136	232,034	234,214

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

QIAGEN N.V. and Subsidiaries Consolidated Statements of Comprehensive Income

		Years ended December 31,		
(in thousands)	Notes	**2022**	2021	2020
Net income		$423,211	$512,599	$359,188
Other comprehensive income (loss) to be reclassified to profit or loss in subsequent periods:				
Gains (losses) on cash flow hedges (net of tax of $0, $0 and $2,845, respectively)	(14)	(24,098)	16,780	(8,536)
Reclassification adjustments on cash flow hedges (net of tax of $0, $0 and $4,666, respectively)	(14)	21,940	(17,010)	13,999
Cash flow hedges, net of tax		(2,158)	(230)	5,463
Net investment hedge	(14)	(14,724)	24,743	(26,442)
Gain (loss) on pension (net of tax of $528, $5 and $16, respectively)		1,233	11	(38)
Foreign currency translation adjustments (net of tax of $854, $1,674 and $946, respectively)		(61,772)	(107,372)	86,814
Total other comprehensive (loss) income		(77,421)	(82,848)	65,797
Comprehensive income		**$345,790**	**$429,751**	**$424,985**

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

QIAGEN N.V. and Subsidiaries Consolidated Statements of Changes in Equity

(in thousands)	Notes	Common Shares		Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Shares		Total Equity
		Shares	Amount				Shares	Amount	
Balance at December 31, 2019		230,829	$2,702	$1,777,017	$1,178,457	($309,619)	(3,077)	($111,966)	$2,536,591
ASC 326 impact of change in accounting policy		—	—	—	(15,074)	—	—	—	(15,074)
Net income		—	—	—	359,188	—	—	—	359,188
Conversion of warrants	(18)	—	—	(7,547)	(22,725)	—	807	30,272	—
Termination of warrants	(18)	—	—	(30,289)	(144,337)	—	—	—	(174,626)
Equity component of convertible debt, net	(16)	—	—	54,052	—	—	—	—	54,052
Total other comprehensive income		—	—	—	—	65,797	—	—	65,797
Purchase of treasury shares	(18)	—	—	—	—	—	(1,346)	(63,995)	(63,995)
Issuance of common shares in connection with stock plan	(22)	—	—	—	(32,418)	—	1,085	40,079	7,661
Tax withholding related to vesting of stock awards	(22)	—	—	—	—	—	(313)	(12,691)	(12,691)
Share-based compensation	(22)	—	—	40,936	—	—	—	—	40,936
Balance at December 31, 2020		**230,829**	**$2,702**	**$1,834,169**	**$1,323,091**	**($243,822)**	**(2,844)**	**($118,301)**	**$2,797,839**
ASU 2020-06 impact of change in accounting policy	(2)	—	—	(54,052)	263	—	—	—	(53,789)
Net income		—	—	—	512,599	—	—	—	512,599
Total other comprehensive loss		—	—	—	—	(82,848)	—	—	(82,848)
Purchase of treasury shares	(18)	—	—	—	—	—	(1,891)	(99,987)	(99,987)
Issuance of common shares in connection with stock plan	(22)	—	—	—	(44,213)	—	1,441	52,132	7,919
Tax withholding related to vesting of stock awards	(22)	—	—	—	—	—	(461)	(23,574)	(23,574)
Share-based compensation	(22)	—	—	38,391	—	—	—	—	38,391
Balance at December 31, 2021		**230,829**	**$2,702**	**$1,818,508**	**$1,791,740**	**($326,670)**	**(3,755)**	**($189,730)**	**$3,096,550**
Net income		—	—	—	423,211	—	—	—	423,211
Total other comprehensive loss		—	—	—	—	(77,421)	—	—	(77,421)
Issuance of common shares in connection with stock plan	(22)	—	—	—	(54,778)	—	1,171	54,899	121
Tax withholding related to vesting of stock awards	(22)	—	—	—	—	—	(529)	(25,357)	(25,357)
Share-based compensation	(22)	—	—	49,507	—	—	—	—	49,507
Balance at December 31, 2022		**230,829**	**$2,702**	**$1,868,015**	**$2,160,173**	**($404,091)**	**(3,113)**	**($160,188)**	**$3,466,611**

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

QIAGEN N.V. and Subsidiaries Consolidated Statements of Cash Flows

(in thousands)	Notes	Years ended December 31, 2022	2021	2020
Cash flows from operating activities:				
Net income		$423,211	$512,599	$359,188
Adjustments to reconcile net income to net cash provided by operating activities, net of effects of businesses acquired:				
Depreciation and amortization		208,397	214,931	205,014
Non-cash impairments	(6)	12,970	–	1,432
Amortization of debt discount and issuance costs		33,701	32,294	42,318
Share-based compensation expense	(22)	49,507	38,391	40,936
Deferred tax benefit	(17)	(9,603)	(5,288)	(6,706)
Loss (gain) on marketable securities		6,230	6,550	(1,992)
Gain on sale of investment	(10)	–	(36,086)	(121,813)
Other items, net including fair value changes in derivatives		22,732	5,622	11,696
Net changes in operating assets and liabilities:				
Accounts receivable	(3)	15,451	(7,402)	(14,711)
Inventories	(3)	(61,950)	(81,803)	(107,573)
Prepaid expenses and other current assets	(8)	58,999	13,918	1,061
Other long-term assets		(2,025)	1,400	316
Accounts payable		(1,756)	(5,975)	8,442
Accrued and other current liabilities	(13)	(17,837)	(71,681)	(22,141)
Income taxes	(17)	(21,894)	(12,832)	4,682
Other long-term liabilities		(869)	34,363	57,657
Net cash provided by operating activities		715,264	639,001	457,806
Cash flows from investing activities:				
Purchases of property, plant and equipment		(129,224)	(189,904)	(132,787)
Purchases of intangible assets	(11)	(20,112)	(16,630)	(171,450)
(Purchases of) proceeds from investments, net	(10)	(1,156)	(2,645)	25,638
Cash paid for acquisitions, net of cash acquired	(5)	(63,651)	–	(239,572)
Purchases of short-term investments	(7)	(1,385,929)	(397,650)	(49,770)
Proceeds from redemptions of short-term investments	(7)	883,083	359,560	181,223
Proceeds from divestiture	(5)	–	–	1,845
Cash (paid) received for collateral asset	(14)	(9,881)	44,900	(53,417)
Other investing activities		107	(57)	(4,991)
Net cash used in investing activities		(726,763)	(202,426)	(443,281)

QIAGEN N.V. and Subsidiaries Consolidated Statements of Cash Flows

		Years ended December 31,		
(in thousands)	Notes	**2022**	2021	2020
Cash flows from financing activities:				
Proceeds from short-term debt	(16)	—	—	59,345
Repayment of short-term debt	(16)	—	—	(58,705)
Proceeds from long-term debt, net of issuance costs	(16)	371,452	—	497,646
Repayment of long-term debt	(16)	(480,003)	(41,345)	(296,400)
Payment for termination of warrants	(18)	—	—	(174,627)
Payment of intrinsic value of cash convertible notes	(16)	—	—	(237,438)
Proceeds from exercise of call option related to cash convertible notes	(16)	—	—	239,836
Purchase of treasury shares	(18)	—	(99,987)	(63,995)
Proceeds from issuance of common shares		121	7,919	7,662
Tax withholding related to vesting of stock awards		(25,357)	(23,574)	(13,841)
Cash paid for contingent consideration		(4,572)	—	—
Cash received for collateral liability		12,556	8,600	—
Other financing activities		—	(1,979)	(9,610)
Net cash used in financing activities		(125,803)	(150,366)	(50,127)
Effect of exchange rate changes on cash, cash equivalents and restricted cash		(12,545)	(3,677)	4,196
Net (decrease) increase in cash, cash equivalents and restricted cash		(149,847)	282,532	(31,406)
Cash, cash equivalents and restricted cash, beginning of period		880,516	597,984	629,390
Cash, cash equivalents and restricted cash, end of period		$730,669	$880,516	$597,984
Supplemental cash flow disclosures:				
Cash paid for interest		$23,208	$21,588	$25,351
Cash paid for income taxes, net of refunds		$98,565	$102,083	$42,572
Supplemental disclosure of non-cash investing activities:				
Equity securities acquired in non-monetary exchange	(10)	$1,475	$35,705	$122,368
Intangible asset received in exchange for note receivable	(24)	$—	$14,989	$—

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

Notes to the Consolidated Financial Statements

December 31, 2022

1. Corporate Information and Basis of Presentation

Corporate Information

QIAGEN N.V. is a public limited liability company (naamloze vennootschap) under Dutch law with a registered office at Hulsterweg 82, 5912 PL Venlo, The Netherlands. QIAGEN N.V., a Netherlands holding company, and subsidiaries (we, our or the Company) is a leading global provider of Sample to Insight solutions that enable customers to gain valuable molecular insights from samples containing the building blocks of life. Our sample technologies isolate and process DNA, RNA and proteins from blood, tissue and other materials. Assay technologies make these biomolecules visible and ready for analysis. Bioinformatics software and knowledge bases interpret data to report relevant, actionable insights. Automation solutions tie these together in seamless and cost-effective workflows. We provide solutions to more than 500,000 customers around the world in Molecular Diagnostics (human healthcare) and Life Sciences (academia, pharma R&D and industrial applications, primarily forensics). As of December 31, 2022, we employed approximately 6,200 people in over 35 locations worldwide.

Basis of Presentation

The accompanying consolidated financial statements were prepared in accordance with U.S. generally accepted accounting principles (GAAP) and all amounts are presented in U.S. dollars rounded to the nearest thousand, unless otherwise indicated.

Beginning April 1, 2022, the results of our subsidiary in Turkey are reported under highly inflationary accounting as the prior three-years cumulative inflation rate exceeded 100 percent.

QIAGEN has a subsidiary in Moscow, Russia. Due to uncertainties related to the war in Ukraine, and although not material to our consolidated results of operations, during the year ended December 31, 2022, we recorded a combination of credit losses, write-offs and impairments related to our business in Russia totaling $4.0 million. These charges are included in the line item restructuring, acquisition, integration and other, net in the accompanying consolidated statements of income. We have suspended activities in Russia and also with our former commercial partner in Belarus.

We undertake acquisitions to complement our own internal product development activities. In May 2022, we acquired BLIRT S.A., a supplier of standardized and customized solutions for proteins and enzymes as well as molecular biology reagents located in Gdańsk, Poland. Its offering includes proteins and enzymes that are critical to the life sciences industry and diagnostic kit manufacturers. The cash consideration, net of cash acquired was $63.7 million. The acquisition was not significant to the overall consolidated financial statements and as of December 31, 2022, the allocation of the purchase price was preliminary. In September 2020, we completed the acquisition of the remaining shares in NeuMoDx Molecular, Inc. (NeuMoDx), a privately-held U.S. company that designs and develops molecular diagnostics solutions for hospital and clinical reference laboratories. Accordingly, at the acquisition dates, all the assets acquired and liabilities assumed were recorded at their respective fair values and our consolidated results of operations include the operating results from the acquired companies from the acquisition dates.

Certain prior year amounts have been reclassified to conform to the current year presentation.

2. Effects of New Accounting Pronouncements

The following new Financial Accounting Standards Board (FASB) Accounting Standards Updates (ASU) were adopted in 2022, 2021 and 2020:

Adoption of New Accounting Standards in 2022

ASU 2021-08, Accounting for Contract Assets and Contract Liabilities from Contracts with Customers, creates an exception to the recognition and measurement principles in ASC 805, Business Combinations. The amendments require an acquirer to use the guidance in ASC 606, Revenue from Contracts with Customers, rather than using fair value, when recognizing and measuring contract assets and contract liabilities related to customer contracts assumed in a business combination. We early adopted ASU 2021-08 on January 1, 2022. The amended guidance applies on a prospective basis to business combinations that occur after the adoption date.

Adoption of New Accounting Standards in 2021

ASU 2019-12, Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes, removed certain exceptions for recognizing deferred taxes for investments, performing intraperiod tax allocations and calculating income taxes in interim periods. The ASU also adds guidance to reduce complexity in certain areas, including recognizing deferred taxes for tax goodwill and allocating income taxes to members of a consolidated group. We adopted the ASU on the effective date of January 1, 2021 and the adoption of this guidance did not have an impact on our consolidated financial statements on the date of adoption.

ASU 2020-06, Debt-Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging—Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity, reduced the number of accounting models for convertible instruments. The ASU also amended diluted earnings per share (EPS) calculations for convertible instruments, which will result in more dilutive EPS results, and also amended the requirements for a contract (or embedded derivative) that is potentially settled in an entity's own shares to be classified in equity. ASU 2020-06 was effective for annual periods beginning on January 1, 2022, with earlier adoption on January 1, 2021 permitted. We adopted ASU 2020-06 early on January 1, 2021 and this resulted in a decrease of $54.1 million to additional paid-in capital and an increase of $0.3 million to retained earnings for the conversion feature to the liability for our 2027 Convertible Notes further discussed in Note 16 "Debt".

Adoption of New Accounting Standards in 2020

ASU 2016-13, Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments, replaced the incurred loss impairment methodology with a methodology that reflects expected credit losses and requires consideration of a broader range of reasonable and supportable information to form credit loss estimates. We adopted Topic 326 on January 1, 2020 using the modified retrospective approach by recognizing the effect of initially applying Topic 326 as an after-tax $15.1 million ($19.6 million pre-tax) adjustment to the opening balance of retained earnings at January 1, 2020 for credit losses on loans, notes and accounts receivable. The adoption did not have an impact on our consolidated statements of income or cash flows.

ASU 2018-18, Collaborative Arrangements (Topic 808): Clarifying the Interaction between Topic 808 and Topic 606, precludes an entity from presenting consideration from a transaction in a collaborative arrangement as revenue from contracts with customers if the counterparty is not a customer of that transaction. We adopted ASU 2018-18 on January 1, 2020 without any cumulative effect.

ASU 2020-03, Codification Improvements to Financial Instruments, was issued to improve and clarify various financial instrument topics, including Topic 326 issued in 2016. The ASU includes seven issues that describe areas of improvement and the related amendments to GAAP. They are intended to make the standards easier to understand and apply and to eliminate inconsistencies. They are narrow in scope and are not expected to significantly change practice for most entities. We adopted ASU 2020-03 on January 1, 2020 without any effect.

ASU 2020-01, Investments-Equity Securities (Topic 321), Investments-Equity Method and Joint Ventures (Topic 323), and Derivatives and Hedging (Topic 815)-Clarifying the Interactions between Topic 321, Topic 323, and Topic 815, addresses accounting for the transition into and out of the equity method and measuring certain purchased options and forward contracts to acquire investments. We adopted ASU 2020-01 on June 30, 2020 without any impact.

New Accounting Standards Not Yet Adopted

As of December 31, 2022, there are no recently issued but not yet adopted accounting pronouncements that are expected to materially impact our consolidated financial statements.

3. Summary of Significant Accounting Policies

Principles of Consolidation

The consolidated financial statements include the accounts of QIAGEN N.V. and its wholly-owned subsidiaries. All significant intercompany accounts and transactions have been eliminated. Investments in either common stock or in-substance common stock of companies where we exercise significant influence over the operations but do not have control, and where we are not the primary beneficiary, are accounted for using the equity method. All other investments are accounted for as discussed under "Non-marketable Investments" below. When there is a portion of equity in an acquired subsidiary not attributable, directly or indirectly, to the Company, we record the fair value of the noncontrolling interests at the acquisition date and classify the amounts attributable to noncontrolling interests separately in equity in the consolidated financial statements. Any subsequent changes in the Company's ownership interest while the Company retains its controlling financial interest in its subsidiary are accounted for as equity transactions.

Use of Estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities and disclosure of contingencies at the date of the financial statements as well as the reported amounts of revenues and expenses during the reporting period. While changing conditions regarding the war in Ukraine and the COVID-19 pandemic recovery present additional uncertainty, we continue to use the best information available to form our estimates. Actual results could differ from those estimates.

Concentrations of Risk

We buy materials for products from many suppliers, and are not dependent on any one supplier or group of suppliers for the business as a whole. However, key components of certain products, including certain instrumentation components and chemicals, are available only from a single source. If supplies from these vendors were delayed or interrupted for any reason, we may not be able to obtain these materials timely or in sufficient quantities in order to produce certain products and sales levels could be negatively affected. Additionally, our customers include researchers at pharmaceutical and biotechnology companies, academic institutions, and government and private laboratories. Fluctuations in the research and development budgets of these researchers and their organizations for applications in which our products are used could have a significant effect on the demand for our products.

The financial instruments used in managing our foreign currency, equity and interest rate exposures have an element of risk in that the counterparties may be unable to meet the terms of the agreements. We attempt to minimize this risk by limiting the counterparties to a diverse group of highly-rated international financial institutions. The carrying values of our financial instruments incorporate the non-performance risk by using market pricing for credit risk. However, we have no reason to believe that any counterparties will default on their obligations. In order to minimize our exposure with any single counterparty, we have entered into master agreements which allow us to manage the exposure with the respective counterparty on a net basis.

Other financial instruments that potentially subject us to concentrations of credit risk are cash and cash equivalents, short-term investments, and accounts receivable. We attempt to minimize the risks related to cash and cash equivalents and short-term investments by dealing with highly-rated financial institutions and investing in a broad and diverse range of financial instruments. We have established guidelines related to credit quality and maturities of investments intended to maintain safety and liquidity. Concentration of credit risk with respect to accounts receivable is limited due to a large and diverse customer base, which is dispersed over different geographic areas. Allowances are maintained for potential credit losses and such losses have historically been within expected ranges.

Foreign Currency Translation

Our reporting currency is the U.S. dollar and the functional currencies of our subsidiaries are generally the local currency of the respective countries in which they are headquartered. All amounts in the financial statements of entities whose functional currency is not the U.S. dollar are translated into U.S. dollar equivalents at exchange rates as follows: (1) assets and liabilities at period-end rates, (2) income statement accounts at average exchange rates for the period, and (3) components of equity at historical rates. Translation gains or losses are recorded in equity, and transaction gains and losses are reflected in net income as a component of other income, net. Realized gains or losses on the value of derivative contracts entered into to hedge the exchange rate exposure of receivables and payables are also included in net income as a component of other income, net. The net gain or loss on foreign currency transactions was a net gain of $2.7 million in 2022, a net loss of $9.0 million in 2021, and a net loss of $4.1 million in 2020, and is included in other income, net.

The exchange rates of key currencies were as follows:

	Closing rate at December 31,		Annual average rate		
(US$ equivalent for one)	**2022**	2021	**2022**	2021	2020
Euro (EUR)	1.0666	1.1326	1.0542	1.1832	1.1411
Pound Sterling (GBP)	1.2026	1.3479	1.2376	1.3758	1.2836
Swiss Franc (CHF)	1.0832	1.0963	1.0486	1.0940	1.0659
Australian Dollar (AUD)	0.6797	0.7253	0.6952	0.7514	0.6905
Canadian Dollar (CAD)	0.7386	0.7869	0.7692	0.7977	0.7463
Japanese Yen (JPY)	0.0076	0.0087	0.0077	0.0091	0.0094
Chinese Yuan (CNY)	0.1450	0.1574	0.1489	0.1550	0.1450

Segment Information

We determined that we operate as one operating segment in accordance with the Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) Topic 280, Segment Reporting. Our chief operating decision maker (CODM) makes decisions based on the Company as a whole. In addition, we have a common basis of organization and types of products and services which derive revenues and consistent product margins. Accordingly, we operate and make decisions as one reporting unit.

Revenue Recognition

We recognize revenue when control of promised goods or services transfers to our customers in an amount that reflects the consideration that is expected to be received in exchange for those goods or services. The majority of our sales revenue is recognized when products are shipped to the customers at which point control transfers.

Warranty
We provide warranties on our products against defects in materials and workmanship for a period of one year. A provision for estimated future warranty costs is recorded in cost of sales at the time product revenue is recognized. Product warranty obligations are included in accrued and other current liabilities in the accompanying consolidated balance sheets.

Research and Development
Research and product development costs are expensed as incurred. Research and development expenses consist primarily of salaries and related expenses, facility costs, and amounts paid to contract research organizations and laboratories for the provision of services and materials as well as costs for internal use or clinical trials.

Government Grants
We recognize government grants when there is reasonable assurance that all conditions will be complied with and the grant will be received. Our government grants generally represent subsidies for specified activities and are therefore recognized when earned as a reduction of the expenses recorded for the activity that the grants are intended to compensate. Thus, when the grant relates to research and development expense, the grant is recognized over the same period that the related costs are incurred. Otherwise, amounts received under government grants are recorded as liabilities in the balance sheet. When the grant relates to an asset, the nominal amount of the grant is deducted from the carrying amount of the asset and recognized over the same period that the related asset is depreciated.

Borrowing Costs
Borrowing costs directly attributable to the acquisition, construction or production of an asset that takes a substantial period of time to get ready for its intended use or sale are capitalized as part of the cost of the respective assets (qualifying asset) when such borrowing costs are significant. All other borrowing costs are expensed in the period they occur.

Shipping and Handling Income and Costs
Shipping and handling costs charged to customers are recorded as revenue in the period that the related product sale revenue is recorded. Associated costs of shipping and handling are included in sales and marketing expenses. For the years ended December 31, 2022, 2021 and 2020, shipping and handling costs totaled $34.4 million, $31.7 million and $32.1 million, respectively.

Advertising Costs
The costs of advertising are expensed as incurred and are included as a component of sales and marketing expense. Advertising costs for the years ended December 31, 2022, 2021 and 2020 were $15.8 million, $13.5 million and $9.5 million, respectively.

General and Administrative
General and administrative expenses primarily represent the costs required to support administrative infrastructure. These costs include licensing costs in connection with continued investments in information technology improvements, including cyber security, across the organization as well as personnel in administrative functions.

Restructuring, Acquisition, Integration and Other
We incur indirect acquisition and business integration costs in connection with business combinations which are expensed when incurred. These costs represent incremental costs that we believe would not have been incurred absent the business combinations. Major components of these costs include consulting and related fees incurred to integrate or restructure the acquired operations, payroll and related costs for employees remaining with the Company on a transitional basis and public relations, advertising and media costs for re-branding of the combined organization.

Restructuring costs include personnel costs (principally termination benefits) as well as contract and other costs, primarily contract termination costs. Termination benefits are accounted for in accordance with FASB ASC Topic 712, Compensation - Nonretirement Postemployment Benefits, and are recorded when it is probable that employees will be entitled to benefits and the amounts can be reasonably estimated. Estimates of termination benefits are based on the frequency of past termination benefits, the similarity of benefits under the current plan and prior plans, and the existence of statutory required minimum benefits. Contract and other costs are accounted for in accordance with FASB ASC Topic 420, Exit or Disposal Cost Obligations and are recorded when the liability is incurred. The specific restructuring measures and associated estimated costs are based on management's best business judgment under the existing circumstances at the time the estimates are made. If future events require changes to these estimates, such adjustments will be reflected in the period of the revised estimate.

On March 3, 2020, QIAGEN and Thermo Fisher Scientific Inc. (NYSE: TMO) announced that their boards of directors, as well as the Managing Board of QIAGEN N.V., unanimously approved Thermo Fisher's proposal to acquire QIAGEN. On August 13, 2020, QIAGEN announced that Thermo Fisher did not achieve the minimum 66.67% acceptance threshold from QIAGEN shareholders. For the year ended December 31, 2020, we incurred related expenses of $125.5 million, which includes the $95.0 million expense reimbursement which was paid when the minimum acceptance threshold was not met. These costs are recorded within restructuring, acquisition, integration and other, net in the accompanying consolidated statement of income.

Income Taxes

We account for income taxes under the liability method. Under this method, total income tax expense is the amount of income taxes expected to be payable for the current year plus the change from the beginning of the year for deferred tax assets and liabilities established for the expected future tax consequences resulting from differences between the financial statement carrying amount and the tax basis of assets and liabilities. Deferred tax assets and/or liabilities are determined by multiplying the differences between the financial statement carrying amount and the tax bases of assets and liabilities by the enacted tax rates expected to be in effect when such differences are reversed or settled. Deferred tax assets are reduced by a valuation allowance to the amount more likely than not to be realized. The effect on deferred taxes of a change in tax rates is recognized in income in the period that includes the enactment date.

Tax benefits are initially recognized in the financial statements when it is more likely than not that the position will be sustained upon examination by the taxing authorities. Such tax positions are initially and subsequently measured as the largest amount of tax benefit that is greater than 50 percent likely of being realized upon settlement with the taxing authority using the cumulative probability method, assuming the taxing authority has full knowledge of the position and all relevant facts. Our policy is to recognize interest accrued related to unrecognized tax benefits in interest expense and penalties related to income taxes within the income tax expense.

Derivative Instruments

We enter into derivative financial instrument contracts to minimize the variability of cash flows or income statement impact associated with the anticipated transactions being hedged or to hedge fluctuating interest rates. As changes in foreign currencies or interest rates impact the value of anticipated transactions, the fair value of the forward or swap contracts also changes, offsetting foreign currency or interest rate fluctuations. Derivative instruments are recorded on the balance sheet at fair value. Changes in fair value of derivatives are recorded in current earnings or other comprehensive income, depending on whether a derivative is designated as part of a hedge transaction.

Share-Based Payments

Compensation cost for all share-based payments is recorded based on the grant date fair value, less an estimate for pre-vesting forfeitures, recognized in expense over the service period using an accelerated method.

Forfeiture Rate - This is the estimated percentage of grants that are expected to be forfeited or canceled on an annual basis before becoming fully vested. We estimated the forfeiture rate based on historical forfeiture experience.

Restricted Stock Units and Performance Stock Units - Restricted stock units and performance stock units represent rights to receive Common Shares at a future date. The fair market value of restricted and performance stock units is determined based on the number of stock units granted and the fair market value of our shares on the grant date. The fair market value at the time of the grant, less an estimate for pre-vesting forfeitures, is recognized in expense over the vesting period. At each reporting period, the estimated performance achievement of the performance stock units is assessed and any change in the estimated achievement is recorded on a cumulative basis in the period of adjustment.

Cash and Cash Equivalents

Cash and cash equivalents consist of cash on deposit in banks and other cash invested temporarily in various instruments that are short-term and highly liquid, and having an original maturity of less than three months at the date of purchase. Cash equivalents are carried at amortized cost which approximates fair value. Cash and cash equivalents as of December 31, 2022 and 2021 were as follows:

(in thousands)	**2022**	2021
Cash at bank and on hand	$122,314	$235,381
Money market funds	289,394	366,117
Commercial paper	94,828	179,844
Short-term bank deposits	224,133	99,174
Cash and cash equivalents	**$730,669**	**$880,516**

Short-Term Investments

Short-term investments include cash investments with original maturities of more than three months which are classified as "available for sale" and stated at fair value, which is equivalent to the amortized cost, in the accompanying consolidated balance sheet. Interest income is accrued when earned and changes in fair market values are reflected in other income, net. The amortization of premiums and accretion of discounts to maturity arising from acquisition is included in interest income. A decline in fair value that is judged to be other-than-temporary is accounted for as a realized loss and the write-down is included in the consolidated statements of income. Realized gains and losses, determined on a specific identification basis on the sale of short-term investments, are included in income.

Short-term investments consisting of marketable equity securities are reported at fair value with gains and losses recorded in earnings.

Fair Value of Financial Instruments

The carrying amount of cash and cash equivalents, notes receivable, accounts receivable, accounts payable and accrued liabilities approximate their fair values because of the short maturities of those instruments. The carrying value of our variable rate debt and leases approximates their fair values because of the short maturities and/or interest rates which are comparable to those available to us on similar terms. The fair values of the zero coupon convertible debt and the Cash Convertible Notes are based on an estimation using available over-the-counter market information. The fair values of the U.S. Private Placement were estimated using the changes in the U.S. Treasury rates and the fair value of the German Private Placement is based on an estimation using changes in the euro swap rates.

Accounts Receivable, Loans and Other Receivables and Allowance for Credit Losses

Our accounts receivable consist of unsecured customer obligations and we are at risk to the extent such amounts become uncollectible. Since January 1, 2020, we maintain allowances for credit losses resulting from the expected failure or inability of our customers to make required payments. We recognize the allowance for expected credit losses at inception and reassess regularly considering historical experience with bad debts, the aging of the receivables, credit quality of the customer base, current economic conditions and other reasonable and supportable expectations for future conditions, if applicable. Once a receivable is determined to be uncollectible, the balance is charged against the allowance.

We sell our products worldwide through sales subsidiaries and distributors. There is no concentration of credit risk with respect to trade accounts receivable as we have a large number of internationally dispersed customers. Trade accounts receivable are non-interest bearing and mostly have payment terms of 30-90 days. For all years presented, no single customer represented more than ten percent of accounts receivable or consolidated net sales.

Following the adoption of Topic 326, we are required to use the new forward-looking expected credit loss model that replaced the previous incurred credit loss model. The new model generally results in earlier recognition of allowances for credit losses and requires consideration of a broader range of information to estimate expected credit losses over the entire lifetime of the assets. Accordingly, with the adoption of Topic 326, we recorded allowances for credit losses of $8.1 million for accounts receivable, $10.2 million for other receivables and $1.3 million for loan receivables. The allowances reflect the forward-looking expected impact of non-payment of the contractual amounts due.

The changes in the allowance for credit losses on accounts receivable and loans and other receivables for the years ended December 31, 2022 and 2021 and in the allowance for doubtful accounts for the year December 31, 2020 are as follows:

	Accounts Receivable			Loans and Other Receivables		
(in thousands)	**2022**	**2021**	**2020**	**2022**	**2021**	**2020**
Balance at beginning of year	$23,124	$27,052	$12,115	$5,142	$9,132	$—
ASC 326 adoption impact	—	—	8,089	—	—	11,543
Provisions for expected credit losses	4,483	18	16,439	5,574	2,155	1,325
Deductions from allowance	(2,685)	(1,249)	(9,868)	—	(6,049)	(3,916)
Recoveries collected	—	288	—	—	12	—
Currency translation adjustments and other	(2,042)	(2,985)	277	(118)	(108)	180
Balance at end of year	**$22,880**	**$23,124**	**$27,052**	**$10,598**	**$5,142**	**$9,132**

In 2020, the additions charged to expense include forward-looking expected impacts of the global economic uncertainty caused by COVID-19.

Inventories

Inventories are stated at the lower of cost or net realizable value, determined on either a weighted average cost basis or a standard cost basis which is regularly adjusted to actual. Inventories include material, direct labor and overhead costs and are reduced for estimated obsolescence. Inventories consisted of the following as of December 31, 2022 and 2021:

(in thousands)	**2022**	2021
Raw materials	$97,613	$94,748
Work in process	85,488	67,679
Finished goods	175,386	165,098
Total inventories, net	**$358,487**	**$327,525**

Property, Plant and Equipment

Property, plant and equipment are stated at cost less accumulated amortization. Capitalized internal-use software costs include only those direct costs associated with the actual development or acquisition of computer software solely to meet internal needs and cloud-based applications to deliver our service and comprise costs associated with the design, coding, installation and testing of the system. Costs associated with preliminary development, such as the evaluation and selection of alternatives, as well as training, maintenance and support are expensed as incurred. Costs for software to be sold, leased or otherwise marketed that are related to the conceptual formulation and design are expensed as incurred. Costs incurred to produce software products and the software components of products to be sold, leased or marketed after technological feasibility is established are capitalized and amortized in accordance with the accounting standards for the costs of software to be sold, leased, or otherwise marketed. All other depreciation is computed using the straight-line method over the estimated useful lives of the assets (3 to 40 years). Amortization of leasehold improvements is computed on a straight-line basis over the lesser of the remaining life of the lease or the estimated useful life of the improvement asset. We have a policy of capitalizing expenditures that materially increase assets' useful lives and charging ordinary maintenance and repairs to operations as incurred. When property or equipment is disposed of, the cost and related accumulated depreciation and amortization are removed from the accounts and any gain or loss is included in earnings.

Business Combinations

We include the results of operations of the businesses that we acquire as of the acquisition date. The purchase price of an acquired business is allocated to the individual assets acquired and liabilities assumed based on their fair values at the date of acquisition. Those fair values are determined using income, cost and market approaches, most of which depend upon significant inputs that are not observable in the market, or level 3 measurements. The excess of purchase price over the fair value of identifiable assets acquired and liabilities assumed is recorded as goodwill. Acquisition-related expenses are recognized separately from the business combinations and are expensed as incurred.

The purchase price for some business combinations includes consideration that is contingent on the achievement of net sales or earnings targets by the acquired business. Contingent consideration is measured initially and on a recurring basis at fair value. Payments to settle the acquisition-date fair value of contingent consideration are presented as financing activities on the statement of cash flows; any payments in excess of the acquisition-date fair value are presented as operating activities.

Acquired Intangibles and Goodwill

Acquired intangibles with alternative future uses are carried at cost less accumulated amortization and consist of licenses to technology held by third parties and other acquired intangible assets. Amortization related to patents are computed over the estimated useful life of the underlying patent, which has historically ranged from 1 to 20 years. Purchased intangible assets acquired in business combinations, other than goodwill, are amortized over their estimated useful lives unless these lives are determined to be indefinite. Intangibles are assessed for recoverability considering the contract life and the period of time over which the intangible will contribute to future cash flow. The unamortized cost of intangible assets, where cash flows are independent and identifiable from other assets, is evaluated periodically and adjusted, if necessary, if events and circumstances indicate that a decline in value below the carrying amount has occurred.

Amortization expense related to developed technology and patent and license rights which have been acquired in a business combination is included in cost of sales. Amortization of trademarks, customer base and non-compete agreements which have been acquired in a business combination is recorded in operating expense under the caption 'acquisition-related intangible amortization'. Amortization expenses of intangible assets not acquired in a business combination are recorded within either the cost of sales, research and development or sales and marketing line items based on the use of the asset.

We dispose the gross carrying amount and accumulated amortization of fully amortized intangible assets from historic business combinations once they are considered fully integrated into our business.

The fair value of in-process research and development (IPR&D) acquired in a business combination is capitalized as an indefinite-lived intangible asset until completion or abandonment of the related research and development activities. IPR&D is tested for impairment annually or when any event or circumstance indicates that the fair value may be below the carrying value. If and when research and development is complete, the associated asset is amortized over the estimated useful life.

Goodwill represents the difference between the purchase price and the estimated fair value of the net assets acquired arising from business combinations. Goodwill is subject to impairment tests annually or earlier if indicators of potential impairment exist. We have elected to perform our annual test for indications of impairment as of October 1st of each year. Following the annual impairment tests for the years ended December 31, 2022, 2021 and 2020, goodwill has not been impaired.

Non-Marketable Investments

We have investments in non-marketable equity securities issued by privately held companies. These investments are included in other long-term assets in the accompanying consolidated balance sheets. Non-marketable investments through which we exercise significant influence but do not have control are accounted for using the equity method. We monitor for changes in circumstances that may require a reassessment of the level of influence. Our non-marketable equity securities not accounted for under the equity method are accounted for under the measurement alternative. Under the measurement alternative, the carrying value is measured at cost, less any impairment, plus or minus changes resulting from observable price changes in orderly transactions for identical or similar investments of the same issuer. Adjustments are determined primarily based on a market approach as of the transaction date.

Investments are evaluated periodically, or when impairment indicators are noted, to determine if declines in value are other-than-temporary. In making that determination, we consider all available evidence relating to the realizable value of a security. This evidence includes, but is not limited to, the following:

- adverse financial conditions of a specific issuer, segment, industry, region or other variables;
- the length of time and the extent to which the fair value has been less than cost; and
- the financial condition and near-term prospects of the issuer.

We consider whether the fair values of any of our non-marketable investments have declined below their carrying value whenever adverse events or changes in circumstances indicate that recorded values may not be recoverable. If any such decline is considered to be other than temporary (based on various factors, including historical financial results, product development activities and the overall health of the affiliate's industry), then a write-down of the investment would be recorded in operating expense to its estimated fair value. Investment impairments recorded during the year ended December 31, 2020 is discussed in Note 10 "Investments".

Variable Interest Entities

We evaluate at the inception of each arrangement whether we have made an investment in an entity that is considered a variable interest entity (VIE) or if we hold other variable interests in an arrangement that is considered a variable interest entity. We consolidate VIEs when we are the primary beneficiary. The primary beneficiary of a VIE is the party that meets both of the following criteria: (1) has the power to make decisions that most significantly affect the economic performance of the VIE; and (2) has the obligation to absorb losses or the right to receive benefits that in either case could potentially be significant to the VIE. Periodically, we assess whether any changes in our interest or relationship with the entity affect our determination of whether the entity is still a VIE and, if so, whether we are the primary beneficiary. If we are not the primary beneficiary in a VIE, we account for the investment or other variable interests in a VIE as an investment in a non-marketable investment or in accordance with other applicable GAAP.

Impairment of Long-Lived Assets

We review our long-lived assets for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset or a group of assets may not be recoverable. We consider, amongst other indicators, a history of operating losses or a change in expected sales levels to be indicators of potential impairment. Assets are grouped and evaluated for impairment at the lowest level for which there are identifiable cash flows that are largely independent of the cash flows of other groups of assets. If an asset is determined to be impaired, the loss is measured as the amount by which the carrying amount of the asset exceeds fair value which is determined by applicable market prices, when available. When market prices are not available, we generally measure fair value by discounting projected future cash flows of the asset. Considerable judgment is necessary to estimate discounted future cash flows. Accordingly, actual results could differ from such estimates.

4. Revenue

Nature of Goods and Services

Our revenues are reported net of sales and value added taxes and accruals for estimated rebates and returns and are derived primarily from the sale of consumable and instrumentation products, and to a much lesser extent, from the sale of services, intellectual property and technology. Revenue is recognized upon transfer of control of promised products or services to customers in an amount that reflects the consideration we expect to receive in exchange for those products or services. We enter into contracts that can include various combinations of products and services, which are generally distinct and accounted for as separate performance obligations. The transaction price is allocated to performance obligations based on their relative stand-alone selling prices.

We offer warranties on our products. Certain of our warranties are assurance-type in nature and do not cover anything beyond ensuring that the product is functioning as intended. Based on the guidance in Topic 606, assurance-type warranties do not represent separate performance obligations. The Company also sells separately-priced service contracts which qualify as service-type warranties and represent separate performance obligations.

We sell our products and services both directly to customers and through distributors generally under agreements with payment terms typically less than 90 days and in most cases not exceeding one year and therefore contracts do not contain a significant financing component.

Consumable and Related Revenue

Consumable Products

In the last three years, revenue from consumable product sales has accounted for approximately 80-81% of our net sales and revenue is recognized when performance obligations under the terms of a contract with a customer are satisfied. The majority of our contracts have either a single performance obligation to transfer a single consumable product or multiple performance obligations to transfer multiple products concurrently. Accordingly, we recognize revenue when control of the products has transferred to the customer, which is generally at the time of shipment of products as this is when title and risk of loss have been transferred. In addition, invoicing typically occurs at this time so this is when we have a present right to payment. Revenue is measured as the amount of consideration we expect to receive in exchange for transferring products and is generally based upon a negotiated formula, list or fixed price.

Related Revenue

Revenues from related products include software-as-a-service (SaaS), licenses, intellectual property and patent sales, royalties and milestone payments and over the last three years has accounted for approximately 6-8% of our net sales.

SaaS arrangements: Revenue from SaaS arrangements, which allow customers to use hosted software over the contract period without taking possession of the software, is recognized over the duration of the agreement unless the terms of the agreement indicate that revenue should be recognized in a different pattern, for example based on usage.

Licenses: Licenses for on-site software, which allow customers to use the software as it exists when made available, are sold as perpetual licenses or term licenses. Revenue from on-site licenses is recognized upfront at the point in time at the later of when the software is made available to the customer and the beginning of the license term. When a portion of the transaction price is allocated to a performance obligation to provide support and/or updates, revenue is recognized as the updates/support are provided, generally over the life of the license. Fees from research collaborations include payments for technology transfer and access rights. Royalties from licensees of intellectual property are based on sales of licensed products and revenues are recognized at the later of (i) when the related sales occur, or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied (or partially satisfied).

Milestone Payments: At the inception of each companion diagnostic co-development arrangement that includes development milestone payments, which represent variable consideration, we evaluate whether the milestones are probable of being reached and estimate the amount to be included in the transaction price using the most likely amount method. If it is probable that a significant revenue reversal would not occur, the associated milestone value is included in the transaction price. Milestone payments that are not within our control, such as milestones which are achieved through regulatory approvals, are considered to be constrained and excluded from the transaction price until those approvals are received. Revenue is recognized following the input method as this is considered to best depict the timing of the transfer of control. This involves measuring actual hours incurred to date as a proportion of the total budgeted hours of the project. At the end of each subsequent reporting period, the proportion of completion is trued-up. We also re-evaluate the probability of achievement of development milestones and any related constraint on a periodic basis, and if necessary, adjust our estimate of the overall transaction price. Any such adjustments are recorded on a cumulative catch-up basis, which would affect revenues and earnings in the period of adjustment.

Instruments

Revenue from instrumentation includes the instrumentation equipment, installation, training and other instrumentation services, such as extended warranty services or product maintenance contracts and over the last three years has accounted for approximately 12-14% of net sales. Revenue from instrumentation equipment is recognized when the customer obtains control of the instrument which is predominantly at the time of delivery or when title has transferred to the customer. Service revenue is recognized over the term of the service period as the customers benefit from the service throughout the service period. Revenue related to services performed on a time-and-materials basis is recognized when performed.

Contract Estimates

The majority of our revenue is derived from contracts (i) with an original expected length of one year or less and (ii) contracts for which we recognize revenue at the amount in which we have the right to invoice as product is delivered. We have elected the practical expedient not to disclose the value of remaining performance obligations associated with these types of contracts.

However, we have certain companion diagnostic co-development contracts to provide research and development activities in which our performance obligations extend over multiple years. As of December 31, 2022, we had $54.5 million of remaining performance obligations for which the transaction price is not constrained related to these contracts which we expect to recognize over the next 12 to 18 months.

Revenue expected to be recognized in any future year related to remaining performance obligations, excluding revenue pertaining to contracts that have an original expected duration of one year or less, contracts where revenue is recognized as invoiced and contracts with variable consideration related to undelivered performance obligations, is not material.

Contract Balances

The timing of revenue recognition, billings and cash collections can result in billed accounts receivable, unbilled receivables (contract assets), and customer advances and deposits (contract liabilities) in the consolidated balance sheet.

Contract assets as of December 31, 2022 and 2021 totaled $9.8 million and $14.1 million, respectively, and are included in prepaid expenses and other current assets in the accompanying consolidated balance sheets and relate to the companion diagnostic co-development contracts discussed above.

Contract liabilities primarily relate to non-cancellable advances or deposits received from customers before revenue is recognized and is primarily related to instrument service and Software as a Service (SaaS) arrangements. As of December 31, 2022 and 2021, contract liabilities totaled $84.2 million and $74.7 million, respectively, of which $69.0 million and $63.4 million is included in accrued and other current liabilities, respectively, and $15.2 million and $11.3 million in included in other long-term liabilities, respectively. During the years ended December 31, 2022 and 2021, we satisfied the associated performance obligations and recognized revenue of $57.6 million and $54.9 million, respectively, related to advance customer payments previously received.

Disaggregation of Revenue

We disaggregate our revenue based on product type and customer class as shown in the tables below for the years ended December 31, 2022, 2021 and 2020:

(in thousands)	**2022**	2021	2020
Consumables and related revenues	$1,029,791	$1,027,215	$774,234
Instruments	96,436	116,449	129,742
Molecular Diagnostics	1,126,227	1,143,664	903,976
Consumables and related revenues	859,133	959,093	841,201
Instruments	156,158	148,900	125,169
Life Sciences	1,015,291	1,107,993	966,370
Total	**$2,141,518**	**$2,251,657**	**$1,870,346**

Additionally, we disaggregate our revenue based on the product categories as shown in the tables below for the years ended December 31, 2022, 2021 and 2020:

(in thousands)	**2022**	2021	2020
Sample technologies	$796,932	$850,636	$803,867
Diagnostic solutions	660,879	638,759	460,757
PCR / Nucleic acid amplification	390,804	433,972	363,552
Genomics / NGS	224,797	245,066	165,570
Other	68,106	83,224	76,600
Total	**$2,141,518**	**$2,251,657**	**$1,870,346**

Refer to Note 21 "Segment Information" for disclosure of revenue by geographic region.

5. Acquisitions

Business Combinations and Asset Acquisitions

For acquisitions which have been accounted for as business combinations, the acquired companies' results have been included in the accompanying consolidated statements of income from their respective dates of acquisition. Our acquisitions have historically been made at prices above the fair value of the acquired net assets, resulting in goodwill, due to expectations of synergies of combining the businesses. These synergies include use of our existing infrastructure, such as sales force, business service centers, distribution channels and customer relations, to expand sales of an acquired business' products; use of the infrastructure of the acquired businesses to cost-effectively expand sales of our products; and elimination of duplicative facilities, functions and staffing.

If the acquired net assets do not constitute a business under the acquisition method of accounting, the transaction is accounted for as an asset acquisition and no goodwill is recognized. In an asset acquisition, the amount allocated to acquired in-process research and development with no alternative future use is charged to expense at the acquisition date.

2023 Business Combinations

On January 3, 2023, we acquired Verogen, Inc., a leader in the use of next-generation sequencing (NGS) technologies to drive the future of human identification (HID) and forensic investigation. Verogen, a privately held company founded in 2017 and based in San Diego, California, supports the global human identification community with NGS tools and professional services to help resolve criminal and missing-persons cases. The cash consideration was $150.0 million, subject to adjustment. The acquisition is not significant to the overall consolidated financial statements.

2022 Business Combinations

In May 2022, we acquired BLIRT S.A., a supplier of standardized and customized solutions for proteins and enzymes as well as molecular biology reagents located in Gdańsk, Poland. Its offering includes proteins and enzymes that are critical to the life sciences industry and diagnostic kit manufacturers. The cash consideration, net of cash acquired was $63.7 million. The acquisition was not significant to the overall consolidated financial statements and as of December 31, 2022, the allocation of the purchase price was preliminary. At the acquisition date, all the assets acquired and liabilities assumed were recorded at their respective fair values and our consolidated results of operations include the operating results from the acquired company from the acquisition date. The acquisition did not have a material impact to net sales, net income or earnings per share and therefore no pro forma information has been provided herein.

2020 Business Combinations

On September 17, 2020, we completed the acquisition of the remaining 80.1% of NeuMoDx Molecular, Inc. (NeuMoDx) shares, a privately-held U.S. company in which we held a minority interest. NeuMoDx designs and develops molecular diagnostics solutions for hospital and clinical reference laboratories. Prior to acquisition, we held a 19.9% investment in NeuMoDx with a carrying value of $41.0 million. The cash consideration for the remaining shares totaled $251.7 million. We incurred $2.5 million acquisition related costs to effect the business combination, of which $1.8 million was incurred during the year ended December 31, 2020, and are included in restructuring, acquisition, integration and other, net.

The acquisition date fair value of the minority interest investment was $52.7 million and a gain of $11.7 million was recorded in restructuring, acquisition, integration and other, net in the accompanying consolidated statement of income for the year ended December 31, 2020. The fair value of the minority interest investment was determined using an implied purchase price reduced by a 20% control premium.

The final purchase price allocation differed from the preliminary purchase price allocation primarily as a result of updates to the acquisition date value of the liability related to acquired litigation, the final valuation and allocation of amounts among the acquired intangible assets as set forth in an independent appraisal, and related deferred tax impacts as follows:

(in thousands)	**Final**	Preliminary [1]	Difference
Purchase Price:			
Cash consideration	$251,730	$251,730	$—
Fair value of minority interest	52,727	52,727	—
	$304,457	**$304,457**	**$—**
Net Assets Acquired:			
Cash and cash equivalents	$12,291	$12,291	$—
Accounts receivable	5,691	5,691	—
Inventories	20,271	18,866	1,405
Prepaid expenses and other current assets	5,961	5,943	18
Accounts payable	(12,450)	(11,168)	(1,282)
Accruals and other current liabilities	(69,585)	(18,770)	(50,815)
Other long-term liabilities	(4,101)	(4,101)	—
Fixed and other long-term assets	7,076	6,698	378
Developed technology	101,000	119,100	(18,100)
In-process research and development	55,000	64,800	(9,800)
Patents and license rights	770	770	—
Customer backlog	400	900	(500)
Goodwill	191,343	149,877	41,466
Deferred tax asset	30,057	—	30,057
Deferred tax liability on fair value of identifiable intangible assets acquired	(39,267)	(46,440)	7,173
Total	**$304,457**	**$304,457**	**$—**

[1] As of September 30, 2020.

The final purchase price allocation includes $55.0 million for the acquisition date value of the liability related to acquired litigation. The final settlement amount, discussed further in Note 20 "Commitments and Contingencies" was $53.0 million. The $2.0 million difference between the final purchase price allocation and final settlement amount was recorded to restructuring, acquisition, integration and other expense, net in the year ended December 31, 2021. The in-process research and development recognized relates to technologies that remain in development and have not yet obtained regulatory approvals. The technologies within in-process research and development are expected to be completed within the next four years. The weighted average amortization period for the acquired intangibles is 10 years. The goodwill acquired is not deductible for tax purposes.

Pro forma results

The following unaudited pro forma information assumes that the above acquisition occurred at the beginning of the periods presented. For the year ended December 31, 2020, pro forma net sales would have been $1.90 billion, pro forma net income would have been $347.0 million and pro forma diluted net income per common share would have been $1.48. These unaudited pro forma results are intended for informational purposes only and are not necessarily indicative of the results of operations that would have occurred had the acquisition been in effect at the beginning of the periods presented, or of future results of the combined operations.

6. Restructuring

As part of our restructuring activities, we incur expenses that qualify as exit and disposal costs under U.S. GAAP including severance and employee costs as well as contract and other costs, primarily contract termination costs, as well as inventory write-offs and other implementation costs primarily related to consulting fees. Personnel related costs primarily relate to cash severance and other termination benefits including accelerated share-based compensation. We also incur expenses that are an integral component of, and are directly attributable to, our restructuring activities which do not qualify as exit and disposal costs under U.S. GAAP, which consist of asset-related costs such as intangible asset impairments and other asset related write-offs.

Personnel costs are primarily determined based on established benefit arrangements, local statutory requirements, or historical benefit practices. We recognize these benefits when payment is probable and estimable. Other benefits which require future service and are associated to non-recurring benefits are recognized ratably over the future service period. Other assets, including inventory, are impaired or written-off if the carrying value exceeds the fair value. All other costs are recognized as incurred.

2022 Restructuring

During the fourth quarter of 2022, we initiated a restructuring plan to discontinue our third-party instrument service business and realign certain management positions in order to improve the overall management structure. The total pre-tax costs are expected to total approximately $8.0 million, of which $5.0 million was incurred during the fourth quarter of 2022 and included $0.4 million recorded in cost of sales related to inventory write downs together with $4.1 million in personnel related costs, $0.5 million in consulting and other costs expensed to restructuring, acquisition, integration and other, net in the accompanying consolidated statement of income.

Of the total cost incurred, $4.6 million remains accrued as of December 31, 2022 in accrued and other current liabilities in the accompanying consolidated balance sheet as summarized in the following table for the restructuring activity:

(in thousands)	Personnel Related	Contract and Other Costs	Total
Cost incurred in 2022	$4,121	$491	$4,612
Foreign currency translation adjustment	24	3	27
Liability at December 31, 2022	**$4,145**	**$494**	**$4,639**

Future pre-tax costs of approximately $3.0 million are expected to be incurred in 2023 primarily are related to personnel and contract termination costs. The plan is expected to be completed by the end of 2023.

7. Short-Term Investments

As of December 31, 2022 and 2021, short-term investments were as follows:

(in thousands)	2022	2021
Commercial paper	$672,597	$139,785
Money market deposits	15,000	45,000
Total	**$687,597**	**$184,785**

At December 31, 2022 and 2021, we had $687.6 million and $184.8 million, respectively, of commercial paper and money market deposits due from financial and nonfinancial institutions. Short-term investments are highly liquid deposits and fixed-income securities denominated in U.S. dollars. Investments in commercial paper, a marketable debt security, are classified as available for sale investments and are carried at amortized cost, which approximates fair market value. Interest income is calculated and accrued using the effective interest method. Money market deposits are interest-bearing deposit accounts, valued at cost with interest income accrued as earned. All instruments are classified as current assets in the accompanying balance sheet as they have an original maturity of less than one year. Interest income is determined using the effective interest rate method.

8. Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets are summarized as follows as of December 31, 2022 and 2021:

(in thousands)	Notes	2022	2021
Fair value of derivative instruments	(14)	$111,617	$175,284
Income tax receivable	(17)	53,394	45,116
Prepaid expenses		50,958	60,629
Value added tax		28,130	22,884
Cash collateral	(14)	21,083	11,200
Other receivables		18,997	19,201
Contract assets	(4)	9,768	14,082
Loan receivables		29	6,249
Total prepaid expenses and other current assets		**$293,976**	**$354,645**

9. Property, Plant and Equipment

Property, plant and equipment of December 31, 2022 and 2021 were as follows:

(in thousands)	Estimated useful life (in years)	2022	2021
Land	—	$25,480	$26,732
Buildings and improvements	5-40	362,794	371,834
Machinery and equipment	3-10	294,156	343,968
Computer software	3-20	262,007	281,226
Furniture and office equipment	3-10	90,293	106,016
Construction in progress	—	130,407	140,823
		1,165,137	1,270,599
Less: Accumulated depreciation and amortization		(502,967)	(632,416)
Property, plant and equipment, net		**$662,170**	**$638,183**

For the years ended December 31, 2022, 2021 and 2020 depreciation and amortization expense totaled $89.5 million, $85.4 million and $78.6 million, respectively. For the years ended December 31, 2022, 2021 and 2020 amortization related to computer software to be sold, leased or marketed totaled $10.8 million, $9.2 million and $7.4 million, respectively. As of December 31, 2022 and 2021, the unamortized balance of computer software to be sold, leased or marketed was $69.2 million and $56.9 million, respectively.

Repairs and maintenance expense was $16.8 million, $16.2 million and $13.8 million in 2022, 2021 and 2020, respectively. For the year ended December 31, 2022, construction in progress primarily includes amounts related to projects to expand production lines and increase capacity of manufacturing as well as ongoing software development projects. For the years ended December 31, 2022, 2021 and 2020, interest capitalized in connection with construction projects was not significant.

10. Investments

Non-Marketable Investments

We have made strategic investments in certain privately-held companies without readily determinable market values.

Non-Marketable Investments Accounted for Under the Equity Method

A summary of our non-marketable investments accounted for as equity method investments is as follows:

		Equity investments as of December 31,		Share of income (loss) for the years ended December 31,		
(in thousands)	Ownership Percentage	2022	2021	2022	2021	2020
PreAnalytiX GmbH	50.00%	$6,856	$10,291	$4,377	$10,412	$3,070
Apis Assay Technologies Ltd	19.00%	4,102	3,713	389	1,773	1,221
TVM Life Science Ventures III	3.10%	3,872	3,669	(901)	(264)	630
Suzhou Fuda Business Management and Consulting Partnership	33.67%	2,608	2,832	—	—	—
Actome GmbH	12.50%	779	1,045	(201)	(31)	—
Hombrechtikon Systems Engineering AG	19.00%	(311)	(413)	94	97	97
		$17,906	**$21,137**	**$3,758**	**$11,987**	**$5,018**

Of the $17.9 million of non-marketable investments accounted for as equity method investments, $18.2 million is included in other long-term assets and $0.3 million, where we are committed to fund losses, is included in other long-term liabilities in the accompanying consolidated balance sheet as of December 31, 2022.

During 2021, we made a $1.1 million investment in Actome GmbH (Actome) and as of December 31, 2022, we hold a 12.5% ownership stake in this company that is accounted for under the equity method as we have the ability to exercise significant influence.

TVM Life Science Ventures III (TVM) is a limited partnership and we account for our 3.1% investment under the equity method as we have the ability to exercise significant influence over the limited partnership. This investment is valued at net asset value (NAV) reported by the counterparty, adjusted as necessary. During the years ended December 31, 2022 and 2021, we made $1.1 million and $2.4 million, respectively in additional cash payments to TVM and have $9.2 million of unfunded commitments through 2029 related to this investment. We do not have the right to redeem these funds under the normal course of operations of this partnership.

During the years ended December 31, 2022, 2021 and 2020, we received dividends of $7.5 million, $4.7 million and $4.4 million, respectively, from PreAnalytix GmbH. These dividends are included in other items, net including fair value changes in derivatives in the accompanying consolidated statements of cash flows as they are a return on investment and therefore classified as cash flows from operating activities.

As of December 31, 2022, four of our equity method investments are variable interest entities and we are not the primary beneficiary as we do not hold the power to direct the activities that most significantly impact the economic performance. Therefore, these investments are not consolidated. As of December 31, 2022, these investments had a total net carrying value of $8.4 million, of which $8.7 million, representing our maximum exposure to loss, is included in other long-term assets and $0.3 million is included in other long-term liabilities in the accompanying consolidated balance sheet. As of December 31, 2021, these investments held a balance of $8.0 million, of which $8.4 million is included in other long-term assets and $0.4 million is included in other long-term liabilities in the accompanying consolidated balance sheet.

Non-Marketable Investments Not Accounted for Under the Equity Method

At December 31, 2022 and 2021, we had investments in non-publicly traded companies that do not have readily determinable fair values with carrying amounts that totaled $5.3 million and $3.9 million, respectively. These investments which are measured at cost, less any impairment, plus or minus changes resulting from observable price changes in orderly transactions for the identical or a similar investment of the same issuer. Changes resulting from impairment and observable price changes are recognized in the statements of income during the period the change is identified.

The changes in non-marketable investments not accounted for under the equity method for the years ended December 31, 2022 and 2021 are as follows:

(in thousands)	**2022**	2021
Balance at beginning of year	$3,945	$4,142
Cash investments in equity securities, net	52	81
Shares received in exchange for services	1,475	—
Foreign currency translation adjustments	(143)	(278)
Balance at end of year	**$5,329**	**$3,945**

We made additional investments of $0.1 million in non-marketable investments not accounted for under equity method for the years ended December 31, 2022 and 2021. Additionally, during 2022, we received shares as payment for services performed.

In 2020, we acquired the remaining shares of NeuMoDx as further discussed in Note 5 "Acquisitions". Invitae Corporation (Invitae), a publicly traded company (NVTA), completed the acquisition of ArcherDX, Inc. (ArcherDX), a company in which we held an approximate 8% investment. In exchange for our shares in ArcherDX, we initially received cash of $21.1 million and 2.4 million shares in Invitae followed by an additional 0.4 million shares for milestone achievement, as shown in the marketable equity securities table below. For the year ended December 31, 2021, we recognized a total gain of $102.0 million in other income, net in the accompanying consolidated statement of income as a result of this transaction. Additionally in 2020, we sold two other investments. One investment was sold for its book value and we received $3.7 million in cash. The other investment had a carrying value of $2.5 million and was sold for cash of $0.3 million and the shares in OncoCyte Corporation (OncoCyte), shown in the marketable equity securities table below. A loss of $2.3 million was recognized in other income, net on the sale of this investment. We also recorded a $0.4 million impairment in other income, net following indications that the carrying value was no longer recoverable. Accordingly, the investment was fully impaired.

For non-marketable investments not accounted for under the equity method as of both December 31, 2022 and 2021, cumulative upward adjustments for price changes was $0.7 million. These adjustments were due to equity offerings at a higher price from the issuer in orderly transactions for identical or similar investments as those we hold.

Marketable Equity Securities

During the year ended December 31, 2021, we sold all previously held investments in marketable equity securities that had readily determinable fair values. These investments are reported at fair value with gains and losses recorded in earnings.

The changes in marketable equity securities during the year ended December 31, 2021 are as follows:

	Invitae		OncoCyte		Oncimmune Holdings plc (Oncimmune)		HTG Molecular Diagnostics, Inc (HTGM)	
(in $ thousands, except shares data)	Shares	Amount	Shares	Amount	Shares	Amount	Shares	Amount
Balance at December 31, 2020	**2,769,189**	**$115,780**	**88,101**	**$211**	**560,416**	**$1,258**	**55,556**	**$266**
Shares received upon milestone achievement	1,100,190	35,338	30,152	147	86,218	220	—	—
(Loss) gain on change in fair value	—	(3,066)	—	123	—	61	—	65
Sale of investment	(3,869,379)	(148,052)	(118,253)	(481)	(646,634)	(1,539)	(55,556)	(331)
Balance at December 31, 2021	**—**	**$—**	**—**	**$—**	**—**	**$—**	**—**	**$—**

During 2021, we sold all shares received from Invitae upon milestone achievement and realized a gain of $32.3 million in other income, net in the accompanying consolidated statement of income.

During the year ended December 31, 2020, unrealized losses recognized for the change in fair market value of all marketable equity securities totaled $5.7 million of which $5.4 million is attributable to short-term and $0.3 million to long-term investments.

11. Goodwill and Intangible Assets

The following sets forth the intangible assets by major asset class as of December 31, 2022 and 2021:

(in thousands)	Weighted Average Life (in years)	2022 Gross Carrying Amount	2022 Accumulated Amortization	2021 Gross Carrying Amount	2021 Accumulated Amortization
Amortized Intangible Assets:					
Patent and license rights	10.89	$203,549	($140,632)	$297,986	($202,569)
Developed technology	10.68	780,233	(407,401)	810,420	(400,021)
Customer base, trademarks, and non-compete agreements	12.38	227,171	(179,658)	263,878	(204,197)
	10.87	$1,210,953	($727,691)	$1,372,284	($806,787)
Unamortized Intangible Assets:					
In-process research and development		$61,534		$61,939	
Goodwill		2,352,569		2,350,763	
		$2,414,103		**$2,412,702**	

During 2022, certain fully amortized intangible assets with a gross carrying amount of $135.3 million were retired.

In-process research and development is from the acquisitions of NeuMoDx in 2020 and STAT-Dx in 2018. The estimated fair value of acquired in-process research and development projects which have not reached technological feasibility at the date of acquisition are capitalized and subsequently tested for impairment through completion of the development process, at which point the capitalized amounts are amortized over their estimated useful life. If a project is abandoned rather than completed, all capitalized amounts are written-off immediately.

The changes in intangible assets, excluding goodwill, for the years ended December 31, 2022 and 2021 are as follows:

(in thousands)	2022	2021
Balance at beginning of year	$627,436	$726,194
Additions	19,632	23,969
Additions from acquisitions	17,247	–
Amortization	(93,714)	(104,371)
Disposals	(35)	(4,571)
Impairments	(12,829)	–
Foreign currency translation adjustments	(12,941)	(13,785)
Balance at end of year	**$544,796**	**$627,436**

Intangible additions of $19.6 million in the above table include $10.9 million of cash paid during the year ended December 31, 2022 together with $7.0 million of additions which were previously recorded as prepayments and $1.7 million of additions that were accrued as of December 31, 2022. Cash paid for purchases of intangible assets during the year ended December 31, 2022 totaled $20.1 million of which $4.8 million is related to current year payments for assets that were accrued as of December 31, 2021 and $4.4 million is related to prepayments recorded in other long-term assets in the accompanying consolidated balance sheet.

Cash paid for intangible assets during the year ended December 31, 2021 totaled $16.6 million of which $8.4 million is related to payments in 2021 for licenses that were accrued as of December 31, 2020 and $0.2 million for prepayments recorded in other long-term assets in accompanying consolidated balance sheet. Intangible additions of $24.0 million in 2021 includes $15.0 million associated to a fully paid-up technology license received in exchange for a convertible note, $8.1 million of cash paid during the year and $0.9 million of additions which were previously recorded as prepayments.

Amortization expense on intangible assets totaled approximately $93.7 million, $104.4 million and $103.2 million, respectively, for the years ended December 31, 2022, 2021 and 2020. During the year ended December 31, 2022, we recorded a charge to restructuring, acquisition, integration and other, net in the accompanying statement of income, to fully impair a license with a carrying value of $12.8 million. This license was to use technology of Ellume Limited, Australia. In connection with Ellume starting insolvency proceedings in September 2022, we decided to cease all product development and manufacturing activities associated with this license and determined that there was no alternative use nor recoverable value. Accordingly, the license was fully impaired.

Amortization of intangibles for the next five years is expected to be approximately:

Years ended December 31, (in thousands)	
2023	$87,794
2024	$84,412
2025	$73,280
2026	$65,875
2027	$60,410

The changes in goodwill for the years ended December 31, 2022 and 2021 are as follows:

(in thousands)	**2022**	2021
Balance at beginning of year	$2,350,763	$2,364,031
Business combinations	42,201	—
Purchase adjustments	(303)	33,716
Foreign currency translation adjustments	(40,092)	(46,984)
Balance at end of year	**$2,352,569**	**$2,350,763**

The changes in the carrying amount of goodwill during the year ended December 31, 2022 resulted primarily from the acquisition of BLIRT S.A. in May 2022 and foreign currency translation adjustments driven by changes in the euro, Australian dollar, Swiss franc and British pound. The changes in goodwill during the year ended December 31, 2021 resulted primarily from changes in foreign currency translation partially offset by purchase adjustments related to the acquisition of NeuMoDx.

12. Leases

We have operating leases primarily for real estate. The leases generally have terms which range from one year to 15 years, some include options to extend or renew, and some include options to early terminate the leases. As of December 31, 2022 and 2021, no such options have been recognized as part of the right-of-use assets and lease liabilities.

Operating leases can contain variable lease charges based on an index like consumer prices or rates. During the years ended December 31, 2022 and 2021, amounts recorded as variable lease payments not included in the operating lease liability were not material.

When the interest rate implicit in each lease is not readily determinable, we apply our incremental borrowing rate in determining the present value of lease payments. All operating lease expense is recognized on a straight-line basis over the lease term. For the years ended December 31, 2022 and 2021, we recognized $27.0 million and $27.2 million in total lease costs, respectively.

Supplemental balance sheet and other information related to operating leases as of December 31, 2022 and 2021 are as follows:

(in thousands, except lease term and discount rate)	Location in consolidated balance sheet	2022	2021
Operating lease right-of-use assets	Other long-term assets	$95,523	$100,894
Current operating lease liabilities	Accrued and other current liabilities	$22,220	$22,048
Long-term operating lease liabilities	Other long-term liabilities	$71,406	$76,534
Weighted average remaining lease term		6.92 years	7.80 years
Weighted average discount rate		2.08%	1.90%

Supplemental cash flow information related to operating leases for the years ended December 31, 2022 and 2021 are as follows:

(in thousands)	2022	2021
Cash paid for operating leases included in cash flows from operating activities	$26,842	$27,429
Operating lease right-of-use assets obtained in exchange for lease obligations	$25,148	$26,784

Future maturities of operating lease liabilities as of December 31, 2022 are as follows:

Years ending December 31, (in thousands)	
2023	$23,747
2024	18,693
2025	13,598
2026	9,361
2027	7,285
Thereafter	28,256
Total lease payments	100,940
Less: Imputed interest	(7,314)
Total	**$93,626**

As of December 31, 2022, we had committed to $8.3 million of additional future operating lease liabilities that have not yet commenced. We did not hold any material finance leases as of December 31, 2022 and 2021.

13. Accrued and Other Current Liabilities

Accrued and other current liabilities at December 31, 2022 and 2021 consist of the following:

(in thousands)	Notes	2022	2021
Fair value of derivative instruments	(14)	$111,252	$181,858
Payroll and related accruals		99,885	100,756
Deferred revenue	(4)	69,000	63,368
Accrued expenses		62,469	54,271
Other liabilities		54,548	66,589
Operating lease liabilities	(12)	22,220	22,048
Cash collateral	(14)	21,755	9,200
Income taxes payable	(17)	13,980	27,669
Accrued royalties	(20)	12,877	12,559
Accrued contingent consideration and milestone payments	(15)	8,181	24,100
Accrued interest on long-term debt	(16)	5,431	4,488
Restructuring accruals	(6)	4,639	1,714
Total accrued and other current liabilities		**$486,237**	**$568,620**

14. Derivatives and Hedging

Objective and Strategy

In the ordinary course of business, we use derivative instruments, including swaps, forwards and/or options, to manage potential losses from foreign currency exposures and interest bearing assets or liabilities. The principal objective of such derivative instruments is to minimize the risks and/or costs associated with our global financial and operating activities. We do not utilize derivative or other financial instruments for trading or other speculative purposes. We recognize all derivatives as either assets or liabilities on the balance sheet on a gross basis, measure those instruments at fair value and recognize the change in fair value in earnings in the period of change, unless the derivative qualifies as an effective hedge that offsets certain exposures. We have agreed with almost all of our counterparties with whom we had entered into cross-currency swaps, interest rate swaps or foreign exchange contracts, to enter into bilateral collateralization contracts under which we will receive or provide cash collateral, as the case may be, for the net position with each of these counterparties. As of December 31, 2022, cash collateral positions consisted of $21.8 million recorded in accrued and other current liabilities and $21.1 million recorded in prepaid expenses and other current assets. As of December 31, 2021, we had cash collateral positions consisting of $9.2 million recorded in accrued and other current liabilities and $11.2 million recorded in prepaid expenses and other current assets in the accompanying consolidated balance sheets.

Non-Derivative Hedging Instrument

Net Investment Hedge

We are party to a foreign currency non-derivative hedging instrument that is designated and qualifies as net investment hedge. The objective of the hedge is to protect part of the net investment in foreign operations against adverse changes in the exchange rate between the euro and the functional currency of the U.S. dollar. The non-derivative hedging instrument is the German private corporate bond (2017 Schuldschein) which was issued in 2017 in the total amount of $331.1 million as described in Note 16 "Debt". Of the $331.1 million, which is held in both U.S. dollars and Euros, €255.0 million was designated as the hedging instrument as of December 31, 2021 against a portion of our Euro net investments in our foreign operations. As further described in Note 16, four tranches of the 2017 Schuldschein matured and were paid in October 2022 and two tranches of the 2017 Schuldschein matured and were paid during 2021. As a result, €109.5 million remained designated as a hedging instrument as of December 31, 2022. In July 2022, we issued an additional €370.0 million German private corporate bond (2022 Schuldschein) as described in Note 16, and it is designated in its entirety as the hedging instrument against a portion of our euro net investments in our foreign operations. The relative changes in both the hedged item and hedging instrument are calculated by applying the change in spot rate between two assessment dates against the respective notional amount. The effective portion of the hedge is recorded in the cumulative translation adjustment account within other accumulated comprehensive loss. Based on the spot rate method, the unrealized loss recorded in equity as of December 31, 2022 and 2021 is $22.6 million and $2.1 million, respectively. Since we are using the debt as the hedging instrument, which is also remeasured based on the spot rate method, there is no hedge ineffectiveness related to the net investment hedge as of December 31, 2022 and 2021.

Derivatives Designated as Hedging Instruments

Net Investment Hedge

In September 2022, we entered into a one-month interest rate derivative contract for a total notional amount €135.0 million, that matured in October 13, 2022, which qualified as net investment hedge. The objective of the hedge was to protect the additional investments in foreign operations in September 2022 against adverse changes in the exchange rate between the euro and the functional currency of the U.S. dollar. The relative changes in both the hedged item and derivative hedging instrument were calculated by applying the change in spot rate between two assessment dates against the respective notional amount. The effective portion of the hedge is recorded in the cumulative translation adjustment account within other accumulated comprehensive loss and will be reclassified to earnings upon the disposal or liquidation of the foreign operations. In October 2022, the interest rate derivative contract expired and the unrealized gain recorded in equity was $5.8 million as of December 31, 2022.

Cash Flow Hedges

As of December 31, 2022 and 2021, we held derivative instruments that are designated and qualify as cash flow hedges, where the effective portion of the gain or loss on the derivative is reported as a component of other comprehensive loss and reclassified into earnings in the same period or periods during which the hedged transaction affects earnings. Gains and losses on the derivative representing either hedge ineffectiveness or hedge components excluded from the assessment of effectiveness are recognized in current earnings. To date, we have not recorded any hedge ineffectiveness related to any cash-flow hedges in earnings. Based on their valuation as of December 31, 2022, we expect approximately $1.2 million of derivative losses included in accumulated other comprehensive loss will be reclassified into income during the next 12 months. The cash flows derived from derivatives are classified in the consolidated statements of cash flows in the same category as the consolidated balance sheets account of the underlying item.

We use interest rate derivative contracts to align our portfolio of interest bearing assets and liabilities with our risk management objectives. Since 2015, we have been a party to five cross currency interest rate swaps through 2025 for a total notional amount of €180.0 million which qualify for hedge accounting as cash flow hedges. In September 2022, we entered into five new cross currency interest rate swaps through 2025 for a total notional amount of CHF 542.0 million which qualify for hedge accounting as cashflow hedges. We determined that no ineffectiveness exists related to these swaps. As of December 31, 2022 and 2021, interest receivables of $5.5 million and $1.4 million, respectively are recorded in prepaid expenses and other current assets in the accompanying consolidated balance sheets.

Fair Value Hedges

Until October 2022, we held derivative instruments that qualified for hedge accounting as fair value hedges. For derivative instruments that are designated and qualify as a fair value hedge, the effective portion of the gain or loss on the derivative is reflected in earnings. This effect on earnings is offset by the change in the fair value of the hedged item attributable to the risk being hedged that is also recorded in earnings. The cash flows derived from derivatives are classified in the consolidated statement of cash flows in the same category as the consolidated balance sheet account of the underlying item.

We held interest rate swaps which effectively fixed the fair value of a portion of our fixed rate private placement debt and qualified for hedge accounting as fair value hedges. These interest rate swap derivative instruments expired along with the repayment of the private placement debt in October 2022, as described in Note 16 "Debt". As of December 31, 2021, interest receivables of $0.6 million is recorded in prepaid and other current assets in the accompanying consolidated balance sheets. There has been no ineffectiveness related to the interest rate swaps.

Derivatives Not Designated as Hedging Instruments

Call Options

We entered into Call Options which, along with the sale of the Warrants, represent the Call Spread Overlay entered into in connection with the Cash Convertible Notes and which are more fully described in Note 16 "Debt". In these transactions, the Call Options are intended to address the equity price risk inherent in the cash conversion feature of each instrument by offsetting cash payments in excess of the principal amount due upon any conversion of the Cash Convertible Notes. Accordingly, the derivative is presented as either current or long-term based upon the classification of the related debt. As of December 31, 2021, the 2023 Notes may be surrendered for conversion through the close of business on March 31, 2022 as discussed in Note 16 "Debt". Accordingly, the related call options were classified as current as of December 31, 2021. As of December 31, 2022, the 2023 Notes and the related call options have been reclassified as current.

Aside from the initial payment of premiums for the Call Options, we will not be required to make any cash payments under the Call Options. We will, however, be entitled to receive under the terms of the Call Options, an amount of cash generally equal to the amount by which the market price per share of our common stock exceeds the exercise price of the Call Options during the relevant valuation period. The exercise price under the Call Options is equal to the conversion price of the Cash Convertible Notes.

The Call Options, for which our common stock is the underlying security, are derivative assets that require mark-to-market accounting treatment. The Call Options are measured and reported at fair value on a recurring basis, within Level 2 of the fair value hierarchy. The change in fair value is recognized immediately in our consolidated statements of income in other income, net.

Cash Convertible Notes Embedded Cash Conversion Option

The embedded cash conversion option within the Cash Convertible Notes discussed in Note 16 "Debt" is required to be separated from the Cash Convertible Notes and accounted for separately as a derivative liability, with changes in fair value reported in our consolidated statements of income in other income, net until the cash conversion option settles or expires. The embedded cash conversion option is measured and reported at fair value on a recurring basis, within Level 2 of the fair value hierarchy.

Because the terms of the Cash Convertible Notes' embedded cash conversion option are substantially similar to those of the Call Options, discussed above, we expect the effect on earnings from these two derivative instruments to mostly offset each other.

Foreign Exchange Contracts

As a globally active enterprise, we are subject to risks associated with fluctuations in foreign currencies in our ordinary operations. This includes foreign currency-denominated receivables, payables, debt, and other balance sheet positions including intercompany items. We manage balance sheet exposure on a group-wide basis using foreign exchange forward contracts, foreign exchange options and cross-currency swaps.

We are party to various foreign exchange forward, option and swap arrangements which had an aggregate notional value of $466.0 million at December 31, 2022, which expire at various dates through July 2023. At December 31, 2021, these arrangements had an aggregate notional value of $1.3 billion, which expired at various dates through December 2022. The transactions have been entered into to offset the effects from short-term balance sheet exposure to foreign currency exchange risk. Changes in the fair value of these arrangements have been recognized in other income, net.

Fair Values of Derivative Instruments

The following table summarizes the fair value amounts of derivative instruments reported in the consolidated balance sheets as of December 31, 2022 and 2021:

	2022		2021	
(in thousands)	Current Asset	Long-Term Asset	Current Asset	Long-Term Asset
Assets:				
Derivative instruments designated as hedges				
Interest rate contracts - cash flow hedge [1]	$—	$12,256	$—	$—
Interest rate contracts - fair value hedge [1]	—	—	1,971	—
Total derivative instruments designated as hedges	$—	$12,256	$1,971	$—
Undesignated derivative instruments				
Equity options	$102,671	$119,098	$162,141	$190,430
Foreign exchange forwards and options	8,946	—	11,172	—
Total undesignated derivative instruments	$111,617	$119,098	$173,313	$190,430
Total Derivative Assets	**$111,617**	**$131,354**	**$175,284**	**$190,430**

	2022		2021	
(in thousands)	Current Liability	Long-Term Liability	Current Liability	Long-Term Liability
Liabilities:				
Derivative instruments designated as hedges				
Interest rate contracts - cash flow hedge [1]	$—	($36,982)	$—	($628)
Total derivative instruments designated as hedges	$—	($36,982)	$—	($628)
Undesignated derivative instruments				
Equity options	($102,896)	($119,736)	($162,608)	($191,251)
Foreign exchange forwards and options	(8,356)	—	(19,250)	—
Total undesignated derivative instruments	($111,252)	($119,736)	($181,858)	($191,251)
Total Derivative Liabilities	**($111,252)**	**($156,718)**	**($181,858)**	**($191,879)**

[1] The fair value amounts for the interest rate contracts do not include accrued interest.

Gains and Losses on Derivative Instruments

The following tables summarize the gains and losses on derivative instruments for the years ended December 31, 2022, 2021 and 2020:

	2022	2021	2020
(in thousands)	Other income, net	Other income, net	Other income, net
Total amounts presented in the Consolidated Statements of Income in which the effects of cash flow and fair value hedges are recorded	$6,741	$40,671	$114,326
Gains (Losses) on Derivatives in Cash Flow Hedges			
Interest rate contracts			
Amount of gain (loss) reclassified from accumulated other comprehensive loss	$21,940	($17,010)	$18,666
Amounts excluded from effectiveness testing	—	—	—
Gains (Losses) on Derivatives in Fair Value Hedges			
Interest rate contracts			
Hedged item	1,971	3,072	(2,568)
Derivatives designated as hedging instruments	(1,971)	(3,072)	2,568
Gains (Losses) Derivatives Not Designated as Hedging Instruments			
Equity options	(130,801)	(23,882)	322,580
Cash convertible notes embedded cash conversion option	131,227	28,154	(321,213)
Foreign exchange forwards and options	72,641	10,333	(12,429)
Total gains (losses) on derivative instruments	**$95,007**	**($2,405)**	**$7,604**

Balance Sheet Line Item in which the Hedged Item is Included

The following tables summarizes the balance sheet line item in which the hedged item is included as of December 31, 2022 and 2021:

	Carrying Amount of the Hedged Assets (Liabilities)		Cumulative Amount of Fair Value Hedging Adjustment Included in the Carrying Amount of Hedged Assets (Liabilities)	
(in thousands)	**2022**	2021	**2022**	2021
Balance Sheet line item in which the Hedged Item is included				
Current portion of long-term debt	$—	($128,916)	$—	$1,971

15. Financial Instruments and Fair Value Measurements

Assets and liabilities are measured at fair value according to a three-tier fair value hierarchy which prioritizes the inputs used in measuring fair value as follows:

- *Level 1*. Observable inputs, such as quoted prices in active markets;
- *Level 2*. Inputs, other than the quoted price in active markets, that are observable either directly or indirectly; and
- *Level 3*. Unobservable inputs in which there is little or no market data, which require the reporting entity to develop its own assumptions.

The following table presents our fair value hierarchy for our financial assets and liabilities measured at fair value on a recurring basis as of December 31, 2022 and 2021:

	2022				2021			
(in thousands)	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Assets:								
Cash equivalents	$289,394	$94,828	$—	$384,222	$366,117	$179,844	$—	$545,961
Short-term investments	79,600	592,997	—	672,597	—	139,785	—	139,785
Non-marketable equity securities	—	—	5,329	5,329	—	—	3,945	3,945
Equity options	—	221,769	—	221,769	—	352,571	—	352,571
Foreign exchange forwards and options	—	8,946	—	8,946	—	11,172	—	11,172
Interest rate contracts - cash flow hedge	—	12,256	—	12,256	—	—	—	—
Interest rate contracts - fair value hedge	—	—	—	—	—	1,971	—	1,971
	$368,994	**$930,796**	**$5,329**	**$1,305,119**	**$366,117**	**$685,343**	**$3,945**	**$1,055,405**
Liabilities:								
Foreign exchange forwards and options	$—	($8,356)	$—	($8,356)	$—	($19,250)	$—	($19,250)
Interest rate contracts - cash flow hedge	—	(36,982)	—	(36,982)	—	(628)	—	(628)
Equity options	—	(222,632)	—	(222,632)	—	(353,859)	—	(353,859)
Contingent consideration	—	—	(18,088)	(18,088)	—	—	(24,100)	(24,100)
	$—	**($267,970)**	**($18,088)**	**($286,058)**	**$—**	**($373,737)**	**($24,100)**	**($397,837)**

The carrying values of financial instruments, including cash and cash equivalents, accounts receivable, accounts payable and other accrued liabilities, approximate their fair values due to their short-term maturities.

Our assets and liabilities measured at fair value on a recurring basis consist of cash equivalents and short-term investments, which are classified in Level 1 and Level 2 of the fair value hierarchy, derivative contracts used to hedge currency and interest rate risk and derivative financial instruments entered into in connection with the Cash Convertible Notes discussed in Note 16 "Debt", which are classified in Level 2 of the fair value hierarchy, contingent consideration accruals which are classified in Level 3 of the fair value hierarchy, and are shown in the tables below and non-marketable equity securities remeasured during the year ended December 31, 2022 and 2021 are classified within Level 3 in the fair value hierarchy. There were no transfers between levels for the year ended December 31, 2022.

In determining fair value for Level 2 instruments, we apply a market approach, using quoted active market prices relevant to the particular instrument under valuation, giving consideration to the credit risk of both the respective counterparty to the contract and the Company. To determine our credit risk, we estimated our credit rating by benchmarking the price of outstanding debt to publicly-available comparable data from rated companies. Using the estimated rating, our credit risk was quantified by reference to publicly-traded debt with a corresponding rating. The Level 2 derivative financial instruments include the Call Options asset and the embedded conversion option liability. See Note 16 "Debt", and Note 14 "Derivatives and Hedging", for further information. The derivatives are not actively traded and are valued based on an option pricing model that uses observable market data for inputs. Significant market data inputs used to determine fair values included our common stock price, the risk-free interest rate, and the implied volatility of our common stock. The Call Options asset and the embedded cash conversion option liability were designed with the intent that changes in their fair values would substantially offset, with limited net impact to our earnings. Therefore, the sensitivity of changes in the unobservable inputs to the option pricing model for such instruments is substantially mitigated.

Our Level 3 instruments include non-marketable equity security investments. Under the measurement alternative, the carrying value is measured at cost, less any impairment, plus or minus changes resulting from observable price changes in orderly transactions for identical or similar investments of the same issuer. Adjustments are determined primarily based on a market approach as of the transaction date.

Our Level 3 instruments also include contingent consideration liabilities. We value contingent consideration liabilities using unobservable inputs, applying the income approach, such as the discounted cash flow technique, or the probability-weighted scenario method. Contingent consideration arrangements obligate us to pay the sellers of an acquired entity if specified future events occur or conditions are met such as the achievement of technological or revenue milestones. We use various key assumptions, such as the probability of achievement of the milestones (0% to 100%) and the discount rate (between 6.5% and 6.6%), to represent the non-performing risk factors and time value when applying the income approach. We regularly review the fair value of the contingent consideration, and reflect any change in the accrual in the consolidated statements of income in the line items commensurate with the underlying nature of milestone arrangements.

Refer to Note 10 "Investments" for the change in non-marketable equity securities with Level 3 inputs during the year ended December 31, 2022 and 2021. For contingent consideration liabilities with Level 3 inputs, the following table summarizes the activity for the years ended December 31, 2022 and 2021, all of which is related to 2018 acquisition of STAT-Dx:

(in thousands)	**2022**	2021
Balance at beginning of year	($24,100)	($23,593)
Changes in fair value	112	(507)
Payments	5,900	–
Balance at end of year	**($18,088)**	**($24,100)**

As of December 31, 2022, $18.1 million was accrued for contingent consideration, of which $8.2 million is included in accrued and other current liabilities and $9.9 million is included in other long-term liabilities in the accompanying consolidated balance sheet.

The estimated fair value of long-term debt as disclosed in Note 16 "Debt" was based on current interest rates for similar types of borrowings. The estimated fair values may not represent actual values of the financial instruments that could be realized as of the balance sheet date or that will be realized in the future.

The fair values of the financial instruments are presented in Note 16 "Debt" and were determined as follows:

Cash Convertible Notes and Convertible Notes: Fair value is based on an estimation using available over-the-counter market information on the Cash Convertible Notes due in 2023 and 2024 as well as the Convertible Notes due in 2027.

U.S. Private Placement: Fair value of the outstanding notes is based on an estimation using the changes in the U.S. Treasury rates.

German Private Placement: Fair value is based on an estimation using changes in the euro swap rates.

There were no adjustments in the years ended December 31, 2022 and 2021 for nonfinancial assets or liabilities required to be measured at fair value on a nonrecurring basis.

16. Debt

At December 31, 2022 and 2021, total long-term debt, net of debt issuance costs of $6.6 million and $8.4 million, respectively, consists of the following:

(in thousands)	**2022**	2021
0.500% Senior Unsecured Cash Convertible Notes due 2023	$389,552	$375,149
1.000% Senior Unsecured Cash Convertible Notes due 2024	464,331	446,503
0.000% Senior Unsecured Convertible Notes due 2027	497,336	496,804
3.75% Series B Senior Notes due October 16, 2022	—	301,843
3.90% Series C Senior Notes due October 16, 2024	—	26,967
German Private Placement (2017 Schuldschein)	116,699	294,504
German Private Placement (2022 Schuldschein)	393,532	—
Total long-term debt	**1,861,450**	**1,941,770**
Less current portion	389,552	847,626
Long-term portion	**$1,471,898**	**$1,094,144**

The notes are all unsecured obligations that rank pari passu. Interest expense on long-term debt was $55.1 million, $50.7 million and $63.5 million for the years ended December 31, 2022, 2021 and 2020, respectively.

At December 31, 2021, the 2023 Notes were classified as current due to contingent conversion features as discussed below. No Contingent Conversion Conditions were triggered as of December 31, 2022 but the 2023 Notes remain classified as current because they become due in less than 12 months.

Repayments of long-term debt for the years ended December 31, 2022, 2021 and 2020 consisted of:

(in thousands)	**2022**	2021	2020
German Private Placement (2017 Schuldschein)	$153,003	$41,145	$—
0.875% Senior Unsecured Cash Convertible Notes due 2021	—	200	296,400
3.75% Series B Senior Notes due October 16, 2022	300,000	—	—
3.90% Series C Senior Notes due October 16, 2024	27,000	—	—
	$480,003	**$41,345**	**$296,400**

The principal amount, carrying amount and fair values of long-term debt instruments are summarized below:

	As of December 31, 2022				
				Fair Value	
(in thousands)	Principal Amount	Unamortized debt discount and issuance costs	Carrying Amount	Amount	Leveling
Cash Convertible Notes due 2023	$400,000	($10,448)	$389,552	$493,436	Level 1
Cash Convertible Notes due 2024	500,000	(35,669)	464,331	596,485	Level 1
Convertible Notes due 2027	500,000	(2,664)	497,336	471,545	Level 1
German Private Placement (2017 Schuldschein)	116,821	(122)	116,699	255,911	Level 2
German Private Placement (2022 Schuldschein)	394,638	(1,106)	393,532	345,743	Level 2
	$1,911,459	**($50,009)**	**$1,861,450**	**$2,163,120**	

	As of December 31, 2021				
				Fair Value	
(in thousands)	Principal Amount	Unamortized debt discount and issuance costs	Carrying Amount	Amount	Leveling
Cash Convertible Notes due 2023	$400,000	($24,851)	$375,149	$547,256	Level 1
Cash Convertible Notes due 2024	500,000	(53,497)	446,503	647,100	Level 1
Convertible Notes due 2027	500,000	(3,196)	496,804	536,400	Level 1
U.S. Private Placement [1]	328,971	(161)	328,810	331,566	Level 2
German Private Placement (2017 Schuldschein)	294,738	(234)	294,504	296,587	Level 2
	$2,023,709	**($81,939)**	**$1,941,770**	**$2,358,909**	

(1) The principal amount of the U.S. Private Placement includes $2.0 million as of December 31, 2021 for the impact of the interest rate swaps which qualify for hedge accounting as fair value hedges which are further discussed in Note 14 "Derivatives and Hedging".

Future maturities (stated at the carrying values) of long-term debt as of December 31, 2022 are as follows:

Years ending December 31, (in thousands)	
2023	$389,552
2024	565,587
2025	54,803
2026	–
2027	610,134
Thereafter	241,374
	$1,861,450

Interest expense for the years ended December 31, 2022 and 2021 related to the 2027 Notes and the Cash Convertible Notes was comprised of the following:

(in thousands)	**2022**	2021
Coupon interest	$7,000	$7,000
Amortization of original issuance discount	30,170	28,864
Amortization of debt issuance costs	2,593	2,521
Total interest expense	**$39,763**	**$38,385**

Convertible Notes due 2027

On December 17, 2020, we issued zero coupon convertible notes in an aggregate principal amount of $500.0 million with a maturity date of December 17, 2027 (2027 Notes). The 2027 Notes carry no coupon interest. The net proceeds of the 2027 Notes totaled $497.6 million, after payment of debt issuance costs of $3.7 million.

In accounting for the issuance of the 2027 Notes in 2020 prior to the adoption of ASU 2020-06, we separated the 2027 Notes into liability and equity components. We allocated $445.9 million of the 2027 Notes to the liability component, representing the fair value of a similar debt instrument that does not have an associated convertible feature; and $54.1 million to the equity component, representing the conversion option, which did not meet the criteria for separate accounting as a derivative as it is indexed to our own stock. ASU 2020-06 was adopted on January 1, 2021, and this resulted in a decrease of $54.1 million to additional paid-in capital and an increase of $0.3 million to retained earnings for the conversion feature related to the liability for the 2027 Notes.

The effective interest rate of the 2027 Notes is 1.65%, which is imputed based on the amortization of the fair value of the embedded conversion option over the remaining term of the 2027 Notes.

The 2027 Notes are convertible into common shares based on an initial conversion rate, subject to adjustment, of 2,477.65 shares per $200,000 principal amount of notes (which represents an initial conversion price of $80.7218 per share, or 6.2 million underlying shares). At conversion, we will settle the 2027 Notes by repaying the principal portion in cash and any excess of the conversion value over the principal amount in shares of common stock.

The notes may be redeemed at the option of each noteholder at their principal amount on December 17, 2025 or in connection with a change of control or delisting event.

The 2027 Notes are convertible in whole, but not in part, at the option of the noteholders on a net share settlement basis, at the prevailing conversion price in the following circumstances beginning after January 27, 2021 through June 16, 2027:

- if the last reported sale price of our common stock for at least 20-consecutive trading days during a period of 30-consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price on each applicable trading day; or
- if we undergo certain fundamental changes, including a change of control, as defined in the agreement; or
- if parity event or trading price unavailability event, as the case maybe occurs during the period of 10 days, including the first business day following the relevant trading price notification date; or
- if we distribute assets or property to all or substantially all of the holders of our common stock and those assets or other property have a value of more than 25% of the average daily volume-weighted average trading price of our common stock for the prior 20 consecutive trading days; or
- in case of early redemption in respect of the outstanding notes at our option, where the conversion date falls in the period from (and including) the date on which the call notice is published to (and including) the 45th business day prior to the redemption date; or
- if we experience certain customary events of default, including defaults under certain other indebtedness, until such event of default has been cured or waived.

The noteholders may convert their notes at any time, without condition, on or after June 17, 2027 until the 45th business day prior to December 17, 2027.

No Contingent Conversion Conditions were triggered for the 2027 Notes as of December 31, 2022 or December 31, 2021.

Cash Convertible Notes due 2023 and 2024

On September 13, 2017, we issued $400.0 million aggregate principal amount of Cash Convertible Senior Notes which is due in 2023 (2023 Notes). The net proceeds of the 2023 Notes were $365.6 million, after payment of the net cost of the Call Spread Overlay described below and transaction costs.

On November 13, 2018, we issued $500.0 million aggregate principal amount of Cash Convertible Senior Notes which is due in 2024 (2024 Notes). The net proceeds of the 2024 Notes were $468.9 million, after payment of the net cost of the Call Spread Overlay described below and transaction costs.

We refer to the 2023 Notes and 2024 Notes, collectively as the "Cash Convertible Notes".

Interest on the Cash Convertible Notes is payable semi-annually in arrears and will mature on the maturity date unless repurchased or converted with their terms prior to such date. The interest rate and corresponding maturity of each Note are summarized in the table below. The Cash Convertible Notes that remain outstanding as of December 31, 2022 are solely convertible into cash in whole, but not in part, at the option of noteholders under the circumstances described below and during the contingent conversion periods as shown in the table below.

Cash Convertible Notes	Annual Interest Rate	Date of Interest Payments	Maturity Date	Contingent Conversion Period	Conversion Rate per $200,000 Principal Amount
2023 Notes	0.500%	March 13 and September 13	September 13, 2023	From October 24, 2017 to March 13, 2023	4,829.7279
2024 Notes	1.000%	May 13 and November 13	November 13, 2024	From December 24, 2018 to August 2, 2024	4,360.3098

Additionally, conversion may occur at any time following a Contingent Conversion Period through the fifth business day immediately preceding the applicable maturity date.

Upon conversion, noteholders will receive an amount in cash equal to the Cash Settlement Amount, calculated as described below. The Cash Convertible Notes are not convertible into shares of our common stock or any other securities.

Noteholders may convert Cash Convertible Notes into cash at their option at any time during the Contingent Conversion Periods described above only under the following circumstances (Contingent Conversion Conditions):

- if the last reported sale price of our common stock for at least 20-consecutive trading days during a period of 30-consecutive trading days ending on the last trading day of the immediately preceding calendar quarter is greater than or equal to 130% of the conversion price on each applicable trading day;
- if we undergo certain fundamental changes, including a change of control, as defined in the agreement;
- if parity event or trading price unavailability event, as the case maybe occurs for the 2023 Notes and 2024 Notes during the period of 10 days, including the first business day following the relevant trading price notification date;
- if we elect to distribute assets or property to all or substantially all of the holders of our common stock and those assets or other property have a value of more than 25% of the average daily volume-weighted average trading price of our common stock for the prior 20 consecutive trading days;
- if we elect to redeem the Cash Convertible Notes; or
- if we experience certain customary events of default, including defaults under certain other indebtedness until such event has been cured or waived or the payment of the Notes have been accelerated.

No Contingent Conversion Conditions were triggered for the 2023 Notes as of December 31, 2022. As of December 31, 2021, the 2023 Notes were contingently convertible. No Contingent Conversion Conditions were triggered for the 2024 Notes as of December 31, 2022 or December 31, 2021.

The Contingent Conversion Conditions in the 2023 Notes and 2024 Notes noted above have been analyzed under ASC 815, Derivatives and Hedging, and, based on our analysis, we determined that each of the embedded features listed above are clearly and closely related to the 2023 Notes and 2024 Notes (i.e., the host contracts). As a result, pursuant to the accounting provisions of ASC 815, Derivatives and Hedging, these features noted above are not required to be bifurcated as separate instruments.

Upon conversion, holders are entitled to a cash payment (Cash Settlement Amount) equal to the average of the conversion rate multiplied by the daily volume-weighted average trading price for our common stock over a 50-day period. The conversion rate is subject to adjustment in certain instances but will not be adjusted for any accrued and unpaid interest. In addition, following the occurrence of certain corporate events that may occur prior to the applicable maturity date, we may be required to pay a cash make-whole premium by increasing the conversion rate for any holder who elects to convert Cash Convertible Notes in connection with the occurrence of such a corporate event.

We may redeem the Cash Convertible Notes in their entirety at a price equal to 100% of the principal amount of the applicable Cash Convertible Notes plus accrued interest at any time when 20% or less of the aggregate principal amount of the applicable Cash Convertible Notes originally issued remain outstanding.

Because the Cash Convertible Notes contain an embedded cash conversion option, we have determined that the embedded cash conversion option is a derivative financial instrument, which is required to be separated from the Cash Convertible Notes and accounted for separately as a derivative liability, with changes in fair value reported in

our consolidated statements of income until the cash conversion option transaction settles or expires. The initial fair value liability of the embedded cash conversion option was $74.5 million for the 2023 Notes and $98.5 million for the 2024 Notes, which simultaneously reduced the carrying value of the Cash Convertible Notes (effectively an original issuance discount). For further discussion of the derivative financial instruments relating to the Cash Convertible Notes, refer to Note 14 "Derivatives and Hedging".

As noted above, the reduced carrying value on the Cash Convertible Notes resulted in a debt discount that is amortized to the principal amount through the recognition of non-cash interest expense using the effective interest method over the expected life of the debt, six years for both the 2023 Notes and 2024 Notes. This resulted in our recognition of interest expense on the Cash Convertible Notes at an effective rate approximating what we would have incurred had nonconvertible debt with otherwise similar terms been issued. The effective interest rate is 3.997% for 2023 Notes and 4.782% for the 2024 Notes, which is imputed based on the amortization of the fair value of the embedded cash conversion option over the remaining term of the Cash Convertible Notes.

We incurred approximately $6.2 million and $5.7 million in transaction costs for the 2023 Notes and 2024 Notes, respectively. Such costs have been allocated to the Cash Convertible Notes and deferred and are being amortized to interest expense over the terms of the Cash Convertible Notes using the effective interest method.

Cash Convertible Notes Call Spread Overlay

Concurrent with the issuance of the Cash Convertible Notes, we entered into privately negotiated hedge transactions (Call Options) with, and issued warrants to purchase shares of our common stock (Warrants) to, certain financial institutions. We refer to the Call Options and Warrants collectively as the "Call Spread Overlay". The Call Options are intended to offset any cash payments payable by us in excess of the principal amount due upon any conversion of the Cash Convertible Notes. The Call Options are derivative financial instruments and are discussed further in Note 14 "Derivatives and Hedging". The Warrants are equity instruments and are further discussed in Note 18 "Equity".

Aside from the initial payment of a premium, we will not be required to make any cash payments under the Call Options, and will be entitled to receive an amount of cash, generally equal to the amount by which the market price per share of our common stock exceeds the exercise price of the Call Options during the relevant valuation period. The exercise price under the Call Options is initially equal to the conversion price of the Cash Convertible Notes.

The Warrants that were issued with our Cash Convertible Notes, could have a dilutive effect to the extent that the price of our common stock exceeds the applicable strike price of the Warrants. For each Warrant that is exercised, we will deliver to the holder a number of shares of our common stock equal to the amount by which the settlement price exceeds the exercise price, plus cash in lieu of any fractional shares. We will not receive any proceeds if the Warrants are exercised.

U.S. Private Placement

In October 16, 2012, we completed a private placement through the issuance of new senior unsecured notes at a total amount of $400.0 million with a weighted average interest rate of 3.66% (settled on October 16, 2012). The notes were issued in three series: (1) $73.0 million 7-year term due and paid on October 16, 2019 (3.19%); (2) $300.0 million 10-year term due and paid on October 16, 2022 (3.75%); and (3) $27.0 million 12-year term due on October 16, 2024 (3.90%) but called and paid in October 2022. We paid $2.1 million in debt issuance costs which will be amortized through interest expense using the effective interest method over the lifetime of the notes. The note purchase agreement contains certain financial and non-financial covenants, including but not limited to, restrictions on priority indebtedness and the maintenance of certain financial ratios. We were in compliance with these covenants at December 31, 2022. During 2014, we entered into interest rate swaps, which effectively fixed the fair value of $200.0 million of this debt. The interest rate swaps expired in October 2022 following the repayments of $127.0 million in 2022 and $73.0 million in 2019. These interest rate swaps qualify for hedge accounting as fair value hedges as further described in Note 14 "Derivatives and Hedging".

German Private Placement (2017 Schuldschein)

In 2017, we completed a German private placement bond (2017 Schuldschein) which was issued in several tranches totaling $331.1 million due in various periods through 2027. In the first quarter of 2021, we repaid $41.1 million for two tranches that matured. In October 2022, we repaid $153.0 million for the four tranches that matured. The 2017 Schuldschein consists of one U.S. dollar and several Euro denominated tranches. The euro tranches are designated as a foreign currency non-derivative hedging instrument that qualifies as a net investment hedge as described in Note 14 "Derivatives and Hedging". Based on the spot rate method, the change in the carrying value of the euro denominated tranches attributed to the net investment hedge as of December 31, 2022 totaled $5.2 million of unrealized gain and is recorded in equity. We paid $1.2 million in debt issuance costs which are being amortized through interest expense over the lifetime of the notes.

A summary of the tranches is as follows:

				Carrying Value (in thousands) as of December 31,	
Currency	Notional Amount	Interest Rate	Maturity	**2022**	2021
EUR	€21.5 million	Fixed 0.68%	October 2022	$—	$24,340
EUR	€64.5 million	Floating EURIBOR + 0.5%	October 2022	—	73,020
USD	$45.0 million	Floating LIBOR + 1.2%	October 2022	—	44,976
EUR	€25.0 million	Floating EURIBOR + 0.5%	October 2022	—	28,298
EUR	€64.0 million	Fixed 1.09%	June 2024	68,215	72,405
EUR	€31.0 million	Floating EURIBOR + 0.7%	June 2024	33,041	35,071
EUR	€14.5 million	Fixed 1.61%	June 2027	15,443	16,394
				$116,699	**$294,504**

German Private Placement (2022 Schuldschein)

In July and August 2022, we completed another German private placement bond (2022 Schuldschein) which was issued in several tranches totaling €370.0 million due in various periods through 2035. The 2022 Schuldschein consists of only euro denominated tranches which have either a fixed or floating rate. All tranches except for the €70.0 million fixed 3.04% tranche due August 2035 are ESG-linked wherein the interest rate is subject to adjustment of +/- 0.025% if our ESG rating changes. The euro tranches are designated as a foreign currency non-derivative hedging instrument that qualifies as a net investment hedge as described in Note 14 "Derivatives and Hedging". Based on the spot rate method, the change in the carrying value of the euro denominated tranches attributed to the net investment hedge as of December 31, 2022 totaled $22.0 million of unrealized loss and is recorded in equity. We paid $1.2 million in debt issuance costs which are being amortized through interest expense using the effective interest method over the lifetime of the notes.

A summary of the tranches issued is as follows:

Currency	Notional Amount	Interest Rate	Maturity	Carrying Value (in thousands) as of December 31, 2022
EUR	€51.5 million	Floating 6M EURIBOR + 0.55%	July 2025	$54,803
EUR	€62.0 million	Fixed 2.741%	July 2027	65,967
EUR	€29.5 million	Floating 6M EURIBOR + 0.70%	July 2027	31,388
EUR	€37.0 million	Fixed 3.044%	July 2029	39,365
EUR	€103.0 million	Floating 6M EURIBOR + 0.85%	July 2029	109,585
EUR	€9.5 million	Fixed 3.386%	July 2032	10,107
EUR	€7.5 million	Floating 6M EURIBOR + 1.0%	July 2032	7,979
EUR	€70.0 million	Fixed 3.04%	August 2035	74,338
				$393,532

Revolving Credit Facility

Our credit facilities available and undrawn at December 31, 2022 total €427.0 million (approximately $455.4 million). This includes a €400.0 million syndicated ESG-linked revolving credit facility expiring December 2025 and three other lines of credit amounting to €27.0 million with no expiration date. The €400.0 million facility can be utilized in Euro and bears interest of 0.550% to 1.500% above EURIBOR, and is offered with interest periods of one, three or six months. The commitment fee is calculated based on 35% of the applicable margin. Commitment fees of $0.9 million and $1.3 million were paid for the years ended December 31, 2022 and 2021, respectively. The revolving facility agreement contains certain financial and non-financial covenants, including but not limited to, restrictions on the encumbrance of assets and the maintenance of certain financial ratios. We were in compliance with these covenants at December 31, 2022. The credit facilities are for general corporate purposes and no amounts were utilized at December 31, 2022.

17. Income Taxes

Income before income tax expense for the years ended December 31, 2022, 2021 and 2020 consisted of:

(in thousands)	**2022**	2021	2020
Pretax income (loss) in the Netherlands	$14,551	$7,062	($38,242)
Pretax income from foreign operations	498,050	618,771	477,714
	$512,601	**$625,833**	**$439,472**

Income tax expense for the years ended December 31, 2022, 2021 and 2020 are as follows:

(in thousands)	2022	2021	2020
Current:			
The Netherlands	$9,672	$1,714	$270
Foreign	89,321	116,808	86,720
	98,993	118,522	86,990
Deferred:			
The Netherlands	(683)	(1,776)	(6,921)
Foreign	(8,920)	(3,512)	215
	(9,603)	(5,288)	(6,706)
Total income tax expense	**$89,390**	**$113,234**	**$80,284**

The Netherlands' statutory income tax rate, the income tax rate of our country of domicile, was 25.8% for the year ended December 31, 2022 and 25% for the years ended December 31, 2021 and 2020. Income from foreign subsidiaries is generally taxed at the statutory income tax rates applicable in the respective countries of domicile.

The principal items comprising the differences between income taxes computed at the Netherlands' statutory income tax rate and our effective tax rate for the years ended December 31, 2022, 2021 and 2020 are as follows:

	2022	2021	2020
The Netherlands' statutory income tax rate	25.8%	25.0%	25.0%
Taxation of foreign operations, net[1]	(4.9)	(3.0)	(2.1)
Unrecognized tax benefits[2]	0.9	1.6	8.2
Excess tax benefit related to share-based compensation	(0.5)	(1.0)	(0.6)
Prior year taxes	(1.1)	0.6	(1.6)
Government incentives[3]	(0.5)	(0.6)	(0.6)
Changes in tax laws and rates	(0.2)	(0.4)	(0.3)
Tax impact from (deductible) nondeductible items	(1.9)	0.2	(0.8)
Valuation allowance	0.0	(4.4)	(8.1)
Other items, net	(0.2)	0.1	(0.8)
Effective tax rate	**17.4%**	**18.1%**	**18.3%**

(1) Our effective tax rate reflects the benefit of our global operations where certain income or loss is taxed at rates higher or lower than the Netherlands' statutory income tax rate of 25.8% as well as the benefit of some income being partially exempt from income taxes. These foreign tax benefits are due to a combination of favorable tax laws, regulations and exemptions in certain jurisdictions. Partial tax exemptions exist on foreign income primarily derived from operations in Germany, the Netherlands and Singapore. Further, we have intercompany financing arrangements in which the intercompany income is nontaxable in Dubai or partially exempt or subject to lower statutory income tax rates.

(2) In 2020, we recorded tax accruals related to the potential nondeductibility of the $95.0 million expense reimbursement paid in connection with the unsuccessful acquisition attempt by Thermo Fisher.

(3) Government incentives include tax credits in the U.S. relating to research and development expense and other government incentives.

We conduct business globally and, as a result, file numerous consolidated and separate income tax returns in the Netherlands, Germany, and the U.S. federal jurisdiction, as well as in various other state and foreign jurisdictions. In the normal course of business, we are subject to examination by taxing authorities throughout the world. Tax years in the Netherlands are potentially open back to 2010 for income tax examinations by the Netherlands taxing authority. The German group is open to examination for the tax years starting in 2017 and in 2022, the German taxing authority commenced an examination for the 2017-2019 tax years. The U.S. consolidated group is subject to federal and most state income tax examinations by taxing authorities beginning with the year ending December 31, 2019 through the current period. Our other subsidiaries, with few exceptions, are no longer subject to income tax examinations by taxing authorities for years before 2018.

Changes in the amount of unrecognized tax benefits for the years ended December 31, 2022, 2021 and 2020 are as follows:

(in thousands)	**2022**	2021	2020
Balance at beginning of year	$103,618	$100,092	$58,002
Additions based on tax positions related to the current year	9,754	6,629	31,758
Additions for tax positions of prior years	4,544	5,036	3,560
Decrease for tax position of prior years	(8,958)	(266)	(57)
Decrease related to settlements	(23,346)	—	—
Decrease due to lapse of statute of limitations	(580)	(344)	(520)
(Decrease) increase from currency translation	(5,749)	(7,529)	7,349
Balance at end of year	**$79,283**	**$103,618**	**$100,092**

At December 31, 2022 and 2021, our net unrecognized tax benefits totaled approximately $79.3 million and $103.6 million, respectively, which, if recognized, would favorably affect our effective tax rate in any future period. It is reasonably possible that approximately $17.4 million of the unrecognized tax benefits may be released or utilized during the next 12 months due to lapse of statute of limitations or settlements with taxing authorities. However, various events could cause our current expectations to change in the future. The above unrecognized tax benefits, if ever recognized in the financial statements, would be recorded in the statements of income as part of income tax expense.

Our policy is to recognize interest accrued related to an underpayment of income taxes in interest expense and penalties within income tax expense. For the years ended December 31, 2022, 2021 and 2020, we recognized (income) expense, net for interest and penalties of $(0.4) million, $(0.6) million and $1.9 million, respectively. At December 31, 2022 and 2021, we have accrued interest and penalties of $3.5 million and $3.8 million, respectively, which are not included in the table above.

At December 31, 2022 and 2021, in the consolidated balance sheets we have recorded deferred tax assets of $56.3 million and $72.9 million in other long-term assets, and deferred tax liabilities of $17.5 million and $37.6 million in other long-term liabilities, respectively. The components of the net deferred tax assets at December 31, 2022 and 2021 are as follows:

Deferred tax asset (liability) (in thousands)	**2022**	2021
Net operating loss and tax credit carryforward	$53,155	$67,853
Intangible assets	33,510	4,066
Accrued and other liabilities	27,544	26,513
Share-based compensation	21,792	20,464
Property, plant and equipment	4,032	6,046
Convertible notes	3,621	5,231
Inventories	3,003	4,790
Disallowed interest carryforwards	1,511	16,219
Other	6,479	7,287
Deferred tax assets before valuation allowance	154,647	158,469
Valuation allowance	(21,265)	(21,326)
Deferred tax assets, net after valuation allowance	$133,382	$137,143
Intangible assets	($55,921)	($62,585)
Property, plant and equipment	(33,847)	(29,241)
Inventories	(820)	(3,935)
Other	(3,997)	(6,077)
Deferred tax liabilities	($94,585)	($101,838)
Deferred tax assets, net	**$38,797**	**$35,305**

As of December 31, 2022, the valuation allowance principally relates to net operating loss carryforwards. A deferred tax asset can only be recognized to the extent it is "more likely than not" that the assets will be realized. Judgments around realizability depend on the availability and weight of both positive and negative evidence. At December 31, 2022, we had $375.1 million in total net operating loss (NOL) carryforwards which included $131.9 million for the U.S., $90.3 million for Germany, $49.4 million for UK, $39.5 million for the Netherlands, and $64.0 million for other foreign jurisdictions. The NOL carryforwards in Germany, the Netherlands and UK carryforward indefinitely. The entire NOL carryforward in the U.S. is subject to limitations under Section 382 of the U.S. Internal Revenue Code. The NOL carryforwards in the U.S. expire between 2024 and 2034. NOL carryforwards of $22.5 million in other foreign jurisdictions expire between 2023 and 2031 while the remainder can be carried forward indefinitely. At December 31, 2022, tax credits total $7.6 million and expire between 2031 and 2040.

The United States Coronavirus Aid, Relief, and Economic Security Act (CARES Act) was enacted on March 27, 2020. The CARES Act and related notices include several significant provisions. The primary impact from the CARES Act is that it allowed us to carry back U.S. NOLs for five years.

The changes in the valuation allowance for the years ended December 31, 2022, 2021 and 2020 were as follows:

(in thousands)	**2022**	2021	2020
Balance at beginning of year	($21,326)	($37,332)	($87,619)
Additions charged to income tax provision	(4,470)	(620)	(6,614)
Deductions charged to income tax provision	4,287	28,251	42,204
(Additions) reductions charged to additional paid-in capital	–	(13,513)	13,513
Currency translation	244	1,888	1,184
Balance at end of year	**($21,265)**	**($21,326)**	**($37,332)**

In 2021, $13.5 million of the valuation allowance, which had been established in additional paid-in capital in 2020 related to the 2027 Convertible Notes, was reversed due to adopting ASU 2020-06.

As of December 31, 2022, a deferred tax liability has not been recognized for residual income taxes in the Netherlands on the undistributed earnings of the majority of our foreign subsidiaries as these earnings are considered to be either indefinitely reinvested or can be repatriated tax free under the Dutch participation exemption. The indefinitely reinvested earnings retained of our subsidiaries that would be subject to tax if distributed amounted to $984.4 million at December 31, 2022. Estimating the amount of the unrecognized deferred tax liability on indefinitely reinvested foreign earnings is not practicable. Should the earnings be remitted as dividends, we may be subject to taxes including withholding tax. We have $16.8 million of undistributed earnings that we do not consider indefinitely reinvested and have recorded a deferred tax liability at December 31, 2022 and 2021 of $1.0 million and $1.5 million, respectively.

18. Equity

Shares

The authorized classes of our shares consist of Common Shares (410 million authorized), Preference Shares (450 million authorized) and Financing Preference Shares (40 million authorized). All classes of shares have a par value of €0.01. No Financing Preference Shares or Preference Shares have been issued. Common Shares are translated to U.S. dollars at the foreign exchange rates in effect when the shares are issued.

Issuance and Conversion of Warrants

In connection with the issuance of the Cash Convertible Notes as described in Note 16 "Debt", we issued Warrants as summarized in the table below. The number of warrants and exercise prices are subject to customary adjustments under certain circumstances. The proceeds, net of issuance costs, from the sale of the Warrants are included as additional paid-in capital in the accompanying consolidated balance sheets.

The Warrants are exercisable only upon expiration. For each Warrant that is exercised, we will deliver to the holder a number of shares of our common stock equal to the amount by which the settlement price exceeds the exercise price, divided by the settlement price, plus cash in lieu of any fractional shares. The Warrants could separately have a dilutive effect on shares of our common stock to the extent that the market value per share of our common stock exceeds the applicable exercise price of the Warrants (as measured under the terms of the Warrants).

Cash convertible notes	Issued on	Number of share warrants issued (in millions)	Exercise price per share	Proceeds from issuance of warrants, net of issuance costs (in millions)	Warrants expire over a period of 50 trading days beginning on
2023	September 13, 2017	9.7	$49.9775	$45.3	June 26, 2023
2024	November 13, 2018	10.9	$50.2947	$72.4	August 27, 2024

During 2020, 0.8 million common shares were issued in connection with the early conversion of 4.2 million warrants related to the 2021 Notes which resulted in a $7.5 million decrease to additional paid-in capital, a $22.7 million decrease in retained earnings, and a decrease of $30.3 million in treasury shares. The remaining warrants related to the 2021 Notes of 6.3 million were terminated in 2020, resulting in a cash payment of $174.6 million, a $30.3 million decrease to additional paid-in capital and a $144.3 million decrease in retained earnings.

Share Repurchase Programs

On July 12, 2021, we announced our seventh share repurchase program of up to $100 million of our common shares. During 2021, we repurchased 1.9 million QIAGEN shares for $100.0 million (including transaction costs). This program ended on October 29, 2021.

On May 6, 2019, we announced our sixth share repurchase program of up to $100 million of our common shares. During 2020, we repurchased 1.3 million QIAGEN shares for $64.0 million (including transaction costs). This program ended on December 17, 2020.

The cost of repurchased shares is included in treasury stock and reported as a reduction in total equity when a repurchase occurs. Repurchased shares will be held in treasury in order to satisfy various obligations, which include exchangeable debt instruments, warrants and employee share-based remuneration plans.

Accumulated Other Comprehensive Loss

The following table is a summary of the components of accumulated other comprehensive loss as of December 31, 2022 and 2021:

(in thousands)	**2022**	2021
Net unrealized (loss) income on hedging contracts, net of tax	($15,637)	$1,245
Net unrealized gain (loss) on pension, net of tax	645	(588)
Foreign currency effects from intercompany long-term investment transactions, net of tax of $13.2 million and $12.4 million, respectively	(33,311)	(30,768)
Foreign currency translation adjustments	(355,788)	(296,559)
Accumulated other comprehensive loss	**($404,091)**	**($326,670)**

19. Earnings Per Common Share

We present basic and diluted earnings per common share. Basic earnings per common share is calculated by dividing the net income by the weighted average number of common shares outstanding. Diluted earnings per common share reflect the potential dilution of earnings that would occur if all "in the money" securities to issue common shares were exercised.

The following schedule summarizes the information used to compute earnings per common share for the years ended December 31, 2022, 2021 and 2020:

(in thousands, except per share data)	**2022**	2021	2020
Net income	$423,211	$512,599	$359,188
Weighted average number of common shares used to compute basic earnings per common share	227,577	227,983	228,427
Dilutive effect of outstanding stock options and restrictive stock units	2,555	3,403	3,350
Dilutive effect of outstanding warrants	4	648	2,437
Weighted average number of common shares used to compute diluted earnings per common share	230,136	232,034	234,214
Outstanding stock options and awards having no dilutive effect, not included in above calculation	146	8	11
Outstanding warrants having no dilutive effect, not included in above calculation	20,556	19,912	26,438
Basic earnings per common share	$1.86	$2.25	$1.57
Diluted earnings per common share	$1.84	$2.21	$1.53

For purposes of considering the 2027 Notes, as discussed further in Note 16 "Debt", in determining diluted earnings per common share, only an excess of the conversion value over the principal amount would have a dilutive impact using the treasury stock method. Since the 2027 Notes were out of the money and anti-dilutive during the period from December 17, 2020 through December 31, 2022, they were excluded from the diluted earnings per common share calculation in 2020, 2021 and 2022.

20. Commitments and Contingencies

Licensing and Purchase Commitments

We have licensing agreements with companies, universities and individuals, some of which require certain up-front payments. Royalty payments are required on net product sales ranging from 0.45 percent to 25 percent of covered products or based on quantities sold. Several of these agreements have minimum royalty requirements. The accompanying consolidated balance sheets include accrued royalties relating to these agreements in the amount of $12.9 million and $12.6 million at December 31, 2022 and 2021, respectively. Royalty expense relating to these agreements amounted to $15.5 million, $18.5 million, and $12.2 million for the years ended December 31, 2022, 2021 and 2020, respectively. Royalty expense is primarily recorded in cost of sales, with a small portion recorded as research and development expense depending on the use of the technology under license. Some of these agreements also have minimum raw material purchase requirements and requirements to perform specific types of research.

At December 31, 2022, we had commitments to purchase goods or services, and for future license and royalty payments. They are as follows:

Years ending December 31, (in thousands)	Purchase Commitments	License & Royalty Commitments
2023	$49,311	$3,804
2024	32,559	2,075
2025	22,362	1,718
2026	11,296	1,133
2027	11,508	1,170
Thereafter	211	8,641
	$127,247	**$18,541**

Included in the table above are license and royalty commitments totaling $8.6 million that will be paid to related parties through 2040.

Contingent Consideration Commitments

Pursuant to the purchase agreements for certain acquisitions we could be required to make additional contingent cash payments for a previous business combination based on the achievement of certain FDA approval milestones. Potential milestone payments total $20.7 million, of which $8.9 million may be triggered by the end of 2023 and $11.8 million by the end of 2024. Of the total milestone payments, $8.2 million is included in accrued and other current liabilities and $9.9 million is included in other long-term liabilities in the accompanying consolidated balance sheet as of December 31, 2022.

Employment Agreements

Certain of our employment contracts contain provisions which guarantee the payments of certain amounts in the event of a change in control, as defined in the agreements, or if the executive is terminated for reasons other than cause, as defined in the agreements. At December 31, 2022, the commitment under these agreements totaled $9.4 million.

Contingencies

In the ordinary course of business, we provide a warranty to customers that our products are free of defects and will conform to published specifications. Generally, the applicable product warranty period is one year from the date of delivery of the product to the customer or of site acceptance, if required. Additionally, we typically provide

limited warranties with respect to our services. We provide for estimated warranty costs at the time of the product sale. The changes in the carrying amount of warranty obligations for the years ended December 31, 2022 and 2021 are as follows:

(in thousands)	**2022**	2021
Balance at beginning of year	$6,324	$4,813
Provision charged to cost of sales	4,606	7,518
Usage	(4,517)	(5,774)
Adjustments to previously provided warranties, net	(1,277)	(43)
Currency translation	(237)	(190)
Balance at end of year	**$4,899**	**$6,324**

Litigation

From time to time, we may be party to legal proceedings incidental to our business. As of December 31, 2022, certain claims, suits or legal proceedings arising out of the normal course of business have been filed or were pending against QIAGEN or our subsidiaries. These matters have arisen in the ordinary course and conduct of business, as well as through acquisition. Because litigation is inherently unpredictable and unfavorable resolutions could occur, assessing litigation contingencies is highly subjective and requires judgments about future events. Although it is not possible to predict the outcome of such litigation, we assess the degree of probability and evaluate the reasonably possible losses that we could incur as a result of these matters. We accrue for any estimated loss when it is probable that a liability has been incurred and the amount of probable loss can be estimated. Litigation accruals recorded in accrued and other current liabilities as of December 31, 2022 and 2021 totaled $6.5 million and $5.7 million, respectively. As of December 31, 2022, $4.7 million was accrued in other long-term liabilities in the accompanying consolidated balance sheet.

We are not party to any material legal proceeding as of the date of this report except for the matters listed below.

Patent Litigation

Archer DX

In 2018, ArcherDX (a company which spun out as an independent company in conjunction with QIAGEN's acquisition of Enzymatics in 2015 and was later acquired by Invitae in 2021) and Massachusetts General Hospital (MGH) sued QIAGEN for patent infringement. In August 2021, a federal jury ruled that QIAGEN infringed two patents owned by ArcherDX and awarded damages of $4.7 million which were accrued in 2021 and as of December 31, 2022 are included in other long-term liabilities in the accompanying consolidated balance sheet. We plan to appeal the verdict as soon as the final verdict is completed.

Bio-Rad Laboratories, Inc.

In April 2022, QIAGEN filed a lawsuit in a U.S. federal court against Bio-Rad Laboratories, Inc. (Bio-Rad) seeking a declaratory judgment of non-infringement of certain Bio-Rad patents related to digital PCR technology. We are seeking judgment that we have not infringed and do not infringe any claims of the Bio-Rad patents, and have not made, used, sold, offered for sale, or imported any products that infringe any of the patents' claims, directly or indirectly. We are also seeking attorneys' fees, costs, and expenses and any other relief determined by the court.

Becton Dickinson

On September 17, 2020, QIAGEN acquired NeuMoDx. As part of the purchase, QIAGEN also acquired preexisting contingencies and became defendant in ongoing litigation matters pertaining to preexisting claims made by Becton Dickinson (BD) and subsidiaries over patent infringement. In addition to patent infringement allegations, the litigation involved trade secret misappropriation and other non-patent claims relating to NeuMoDx and former NeuMoDx officers, before the acquisition by QIAGEN.

On September 26, 2021, through mediation, the parties reached a preliminary settlement of $53.0 million due to BD for the past infringements of NeuMoDx prior to QIAGEN's acquisition. On November 5, 2021, QIAGEN and BD reached an agreement to settle their ongoing litigation in the U.S. District Court of the District of Delaware and certain inter partes review proceedings. As part of the settlement, QIAGEN paid $53.0 million to BD in November 2021 and all claims asserted against QIAGEN, as well as counterclaims asserted against BD, were dismissed.

Other Litigation Matters

For all other matters, a total of $6.5 million is accrued as of December 31, 2022 in accrued and other current liabilities. The estimated range of possible losses for these other matters as of December 31, 2022 is between zero and $8.0 million.

Based on the facts known to QIAGEN and after consultation with legal counsel, management believes that such litigation will not have a material adverse effect on our financial position or results of operations above the amounts accrued. However, the outcome of these matters is ultimately uncertain, thus any settlements or judgments against us in excess of management's expectations could have a material adverse effect on our financial position, results of operations or cash flows.

21. Segment Information

We operate as one operating segment. We have a common basis of organization, we make decisions with regards to business operations and resource allocation based on evaluations of QIAGEN as a whole and our products and services are offered globally. Product category and geographic information follows below.

Product Category Information

Net sales for the product categories are attributed based on those revenues related to sample and assay products and similarly related revenues including bioinformatics solutions, and revenues derived from instrumentation sales. Refer to Note 4 "Revenue" for disaggregation of revenue based on product categories, product type and customer class.

Geographical Information

Net sales are attributed to countries based on the location of the customer. QIAGEN primary manufacturing facilities are located in Germany, China, and the United States that supply products to customers as well as QIAGEN subsidiaries in other countries. The intercompany portions of such net sales are excluded to derive consolidated net sales. No single customer represents more than ten percent of consolidated net sales. Our country of domicile is the Netherlands, which reported net sales of $31.5 million, $28.3 million and $17.8 million for the years ended 2022, 2021 and 2020, respectively, and these amounts are included in the line item Europe, Middle East and Africa as shown in the table below.

Net sales (in thousands)	2022	2021	2020
Americas:			
United States	$909,616	$909,690	$728,577
Other Americas	88,139	97,686	96,880
Total Americas	997,755	1,007,376	825,457
Europe, Middle East and Africa	733,469	814,417	682,289
Asia Pacific, Japan and Rest of World	410,294	429,864	362,600
Total	**$2,141,518**	**$2,251,657**	**$1,870,346**

Long-lived assets include property, plant and equipment. The Netherlands, which is included in the balances for Europe, reported long-lived assets of $1.1 million as of December 31, 2022 and 2021.

Long-lived assets (in thousands)	2022	2021
Americas:		
United States	$161,645	$158,949
Other Americas	2,997	2,805
Total Americas	164,642	161,754
Europe, Middle East and Africa:		
Germany	400,009	373,609
Other Europe, Middle East and Africa	75,045	78,608
Total Europe, Middle East and Africa	475,054	452,217
Asia Pacific and Japan	22,474	24,212
Total	**$662,170**	**$638,183**

22. Share-Based Compensation

We adopted the QIAGEN N.V. Amended and Restated 2005 Stock Plan (the 2005 Plan) in 2005 and the QIAGEN N.V. 2014 Stock Plan (the 2014 Plan) in 2014. The 2005 Plan expired by its terms in April 2015 and no further awards will be granted under the 2005 Plan. The plans allow for the granting of stock rights and incentive stock options, as well as non-qualified options, stock grants and stock-based awards, generally with terms of up to 3 years, with previous grants through 2020 having terms of 5 years subject to earlier termination in certain situations. The vesting and exercisability of certain stock rights will be accelerated in the event of a Change of Control, as defined in the plans. All option grants have been at the market value on the grant date or at a premium above the closing market price on the grant date. We issue Treasury Shares to satisfy option exercises and award releases and had approximately 11.8 million Common Shares reserved and available for issuance under the 2005 and 2014 Plans at December 31, 2022.

Stock Options

We have not granted stock options since 2013. A summary of the status of employee stock options as of December 31, 2022 and changes during the year then ended is presented below:

All Employee Options	Number of Shares (in thousands)	Weighted Average Exercise Price	Weighted Average Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding at January 1, 2022	18	$17.79		
Exercised	(7)	$16.55		
Expired	(2)	$18.68		
Outstanding at December 31, 2022	**9**	**$18.68**	**0.41**	**$272**
Vested at December 31, 2022	9	$18.68	0.41	$272
Vested and expected to vest at December 31, 2022	9	$18.68	0.41	$272

The total intrinsic value of options exercised during the years ended December 31, 2022, 2021 and 2020 was $0.2 million, $14.4 million and $6.5 million, respectively. The actual tax benefit for the tax deductions from option exercises totaled $0.1 million, $2.2 million and $1.3 million during the years ended December 31, 2022, 2021 and 2020, respectively. At December 31, 2022, there was no unrecognized share-based compensation expense related to employee stock option awards.

At December 31, 2022, 2021 and 2020, 9 thousand, 18 thousand and 0.4 million options were exercisable at a weighted average price of $18.68, $17.79 and $19.28 per share, respectively. The options outstanding at December 31, 2022 expire in 2023.

Stock Units

Stock units represent rights to receive Common Shares at a future date and include restricted stock units which are subject to time-vesting only and performance stock units which include performance conditions in addition to time-vesting. The final number of performance stock units earned is based on the performance achievement which for some grants can reach up to 200% of the granted shares. There is no exercise price and the fair market value at the time of the grant is recognized over the requisite vesting period. The fair market value is determined based on the number of stock units granted and the market value of our shares on the grant date. Pre-vesting forfeitures were estimated to be approximately 6.9%. At December 31, 2022, there was $79.7 million remaining in unrecognized compensation cost including estimated forfeitures related to these awards, which is expected to be recognized over a weighted average period of 1.58 years. The weighted average grant date fair value of stock units granted during the years ended December 31, 2022, 2021 and 2020 was $45.49, $48.77 and $36.92, respectively. The total fair value of stock units that vested during the years ended December 31, 2022, 2021 and 2020 was $55.8 million, $52.6 million and $29.3 million, respectively.

A summary of stock units as of December 31, 2022 and changes during the year are presented below:

Stock Units	Stock Units (in thousands)	Weighted Average Contractual Term (in years)	Aggregate Intrinsic Value (in thousands)
Outstanding at January 1, 2022	3,981		
Granted	955		
Vested	(1,164)		
Forfeited	(1)		
Outstanding at December 31, 2022	**3,771**	**1.58**	**$188,036**
Vested and expected to vest at December 31, 2022	3,467	1.55	$172,922

We net share settle for the tax withholding upon the vesting of awards. Shares are issued on the vesting dates net of the applicable statutory tax withholding to be paid by us on behalf of our employees. As a result, fewer shares are issued than the number of stock units outstanding. We record a liability for the tax withholding to be paid by us as a reduction to treasury shares.

Compensation Expense

Share-based compensation expense before taxes for the years ended December 31, 2022, 2021 and 2020 totaled approximately $49.5 million, $38.4 million and $40.9 million, respectively, as shown in the table below.

(in thousands)	2022	2021	2020
Cost of sales	$2,577	$40	$2,897
Research and development	6,504	4,909	7,014
Sales and marketing	16,076	13,630	15,889
General and administrative	24,350	19,812	15,136
Share-based compensation expense	49,507	38,391	40,936
Less: Income tax benefit[1]	10,703	8,956	9,552
Net share-based compensation expense	**$38,804**	**$29,435**	**$31,384**

(1) Does not include the excess tax benefit realized for the tax deductions of the share-based payment arrangements which totaled $2.7 million, $6.5 million and $2.5 million, respectively, for the years ended December 31, 2022, 2021 and 2020.

The lower share-based compensation expense in cost of sales in 2021 resulted from forfeitures upon the separation of an executive who received a cash severance payment in lieu of accelerated vesting upon separation per the terms of the arrangement. The cash separation accrual offset the share-based compensation forfeiture.

23. Employee Benefits

We maintain various benefit plans, including defined contribution and defined benefit plans. Our U.S. defined contribution plan is qualified under Section 401(k) of the Internal Revenue Code and covers substantially all U.S. employees. Participants may contribute a portion of their compensation not exceeding a limit set annually by the Internal Revenue Service. This plan includes a provision for us to match a portion of employee contributions. Total expense under the 401(k) plans, including the plans acquired via business acquisitions, was $4.5 million, $4.3 million and $3.6 million for the years ended December 31, 2022, 2021 and 2020, respectively. We also have a defined contribution plan which covers certain executives. We make matching contributions up to an established maximum. Matching contributions made to the plan, and expensed, totaled approximately $0.1 million for the year ended December 31, 2022 and $0.2 million for each year ended December 31, 2021 and 2020, respectively.

We have seven defined benefit, non-contributory retirement or termination plans that cover certain employees in Germany, France, Italy, Japan, Poland, Philippines and the United Arab Emirates. These defined benefit plans provide benefits to covered individuals satisfying certain age and/or service requirements. For certain plans, we calculate the vested benefits to which employees are entitled if they separate immediately. The benefits accrued on a pro-rata basis during the employees' employment period are based on the individuals' salaries, adjusted for inflation. The liability under the defined benefit plans was $7.2 million and $9.3 million as of December 31, 2022 and 2021, respectively, and is included as a component of other long-term liabilities on the accompanying consolidated balance sheets.

24. Related Party Transactions

From time to time, we have transactions with other companies in which we hold an interest, all of which are individually and in the aggregate immaterial, as summarized in the table below.

Net sales to related parties for the years ended December 31, 2022, 2021 and 2020 are as follows:

(in thousands)	2022	2021	2020
Net sales	$8,474	$9,089	$6,025

As of December 31, 2022 and 2021 balances with related parties are as follows:

(in thousands)	2022	2021
Accounts receivable	$5,136	$3,868
Prepaid expenses and other current assets	$11,929	$16,956
Accounts payable	$2,708	$4,149
Accrued and other current liabilities	$3,518	$1,558

Prepaid expenses and other current assets include loans receivable and supplier advances from companies with which we have an investment or partnership interest. As of December 31, 2022, prepaid expenses and other current assets includes a $10.6 million convertible note from Ellume Limited, Australia, which bears interest at 10% and was due on December 31, 2022. We retain this loan receivable, while fully reserved, as we await the outcome of the creditor arrangement. Additional financial impacts of these proceedings with this related party for the fiscal year ended December 31, 2022 include a $4.6 million write off on advances to suppliers and a $12.8 million impairment loss on intangible assets, both recognized in restructuring, acquisition, integration and other, net in the accompanying consolidated statement of income. Refer to Note 11 "Goodwill and Intangible Assets".

As of December 31, 2021, the convertible note balance from this privately held company was carried at $10.0 million in prepaid expenses and other current assets. In addition, $4.3 million of customer advances held at December 31, 2021 were subsequently written off as part of the $4.6 million write off in 2022.

25. Subsequent Event

On January 3, 2023, we completed the acquisition of Verogen, Inc. as further described in Note 5 "Acquisitions".

List of Subsidiaries

The following is a list of the Company's subsidiaries as of December 31, 2022, other than certain subsidiaries that did not in the aggregate constitute a significant subsidiary. A list of subsidiaries has been filed with the Chamber of Commerce in Roermond, the Netherlands, and is available from the company upon request.

Company Name	Jurisdiction of Incorporation
Amnisure International LLC	USA
BLIRT S.A.	Poland
Cellestis Pty. Ltd.	Australia
Life Biotech Partners B.V.	Netherlands
NeuMoDx Inc.	USA
STAT-Dx Life S.L.	Spain
QIAGEN Aarhus A/S	Denmark
QIAGEN AB	Sweden
QIAGEN AG	Switzerland
QIAGEN Australia Holding Pty. Ltd.	Australia
QIAGEN Benelux B.V.	Netherlands
QIAGEN Beverly LLC	USA
QIAGEN Business Management MEA Ltd.	UAE
QIAGEN Business Services (Manila), Inc.	Philippines
QIAGEN Business Services S.p.z.o.o.	Poland
QIAGEN China (Shanghai) Co. Ltd.	China
QIAGEN Luxembourg SARL	Luxembourg
QIAGEN Deutschland Holding GmbH	Germany
QIAGEN Distribution B.V.	Netherlands
QIAGEN France S.A.S.	France
QIAGEN Gaithersburg LLC	USA
QIAGEN GmbH	Germany
QIAGEN Hamburg GmbH	Germany
QIAGEN Hong Kong Pte. Ltd.	China
QIAGEN Inc.	Canada
QIAGEN India Pvt. Ltd.	India
QIAGEN K.K.	Japan
QIAGEN Korea Ltd.	Korea (South)
QIAGEN LLC	USA

Company Name	Jurisdiction of Incorporation
QIAGEN Ltd.	U.K.
QIAGEN Manchester Ltd.	U.K.
QIAGEN Marseille S.A.	France
QIAGEN North American Holdings Inc.	USA
QIAGEN Pty. Ltd.	Australia
QIAGEN Redwood City Inc.	USA
QIAGEN Sciences LLC	USA
QIAGEN Shared Services LLC	USA
QIAGEN Singapore Pte. Ltd.	Singapore
QIAGEN S.r.l.	Italy
QIAGEN U.S. Finance LLC	USA

Auditor's Report

Report of Independent Registered Public Accounting Firm

To the Shareholders and Supervisory Board

QIAGEN N.V.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of QIAGEN N.V. and subsidiaries (the Company) as of December 31, 2022 and 2021, the related consolidated statements of income, comprehensive income, changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2022, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2022, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission, and our report dated March 10, 2023 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, in 2021, the Company changed its method of accounting for convertible instruments due to the adoption of ASU 2020-06, Debt-Debt with Conversion and Other Options (Subtopic 470-20) and Derivatives and Hedging—Contracts in Entity's Own Equity (Subtopic 815-40): Accounting for Convertible Instruments and Contracts in an Entity's Own Equity.

Basis for Opinion

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

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

Critical Audit Matter

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

Assessment of unrecognized tax benefits

As discussed in Note 17 to the consolidated financial statements, the Company conducts its business globally and operates more than 50 consolidated subsidiaries in multiple tax jurisdictions. This multi-jurisdictional business operation involves complex intercompany operating and financing activities. The nature of these activities can result in uncertainties in the estimation of the related income tax exposures. The Company initially recognizes and subsequently measures the unrecognized tax benefit in its consolidated financial statements when it is more likely than not that the position will be sustained upon examination by the taxing authorities. As at December 31, 2022, the Company recorded unrecognized tax benefits of $79.3 million.

We identified the assessment of unrecognized tax benefits as a critical audit matter. Complex auditor judgment and specialized skills and knowledge were required in evaluating the Company's interpretation and application of tax laws in the jurisdictions where it operates and its estimate of the resolution of the tax position.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls related to the Company's unrecognized tax benefit process, including controls related to (1) its interpretation and application of tax statutes and legislation, and changes thereto, in the various jurisdictions in which it operates and (2) its determination of the estimate for the associated unrecognized tax benefit. We inspected the Company's legal composition to identify and assess changes in operating structures and financing arrangements. We inquired of the Company's tax department in combination with inspecting correspondence with the responsible taxing authorities with respect to the results of inspections by taxing authorities. We involved tax and transfer pricing professionals with specialized skills and knowledge, who assisted in:

- analyzing the Company's interpretation and application of multi-jurisdictional income tax laws, and changes thereto, and its impact on the unrecognized tax benefit by reading advice obtained from the Company's external specialists
- inspecting the lapse of statute of limitations and settlements with taxing authorities over a selection of unrecognized tax benefits to evaluate the amount in the settlement documents compared to the unrecognized tax benefit, and
- inspecting a selection of intercompany operating and financing activities between group entities to assess the sustainability of tax positions based on their technical merits and the probabilities of possible settlement alternatives

/s/ KPMG AG Wirtschaftsprüfungsgesellschaft

We have served as the Company's auditor since 2015.

Düsseldorf, Germany

March 10, 2023

Report of Independent Registered Public Accounting Firm

To the Shareholders and Supervisory Board

QIAGEN N.V.:

Opinion on Internal Control Over Financial Reporting

We have audited QIAGEN N.V. and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2022, based on criteria established in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated balance sheets of the Company as of December 31, 2022 and 2021, the related consolidated statements of income, comprehensive income, changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2022, and the related notes (collectively, the consolidated financial statements), and our report dated March 10, 2023 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

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

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audit also included performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

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

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

/s/ KPMG AG Wirtschaftsprüfungsgesellschaft

Düsseldorf, Germany

March 10, 2023

Appendix

Services

Corporate Communications

For Investors
Phone worldwide: +49 2103 29 11711
Phone U.S.: +1 240 686 2222
Email: IR@QIAGEN.com

For Media
Phone worldwide: +49 2103 29 11826
Phone U.S.: +1 240 686 7425
Email: PR@QIAGEN.com

QIAGEN on the web
www.QIAGEN.com
www.linkedin.com/company/qiagen
www.facebook.com/QIAGEN
www.twitter.com/QIAGEN
www.youtube.com/user/QIAGENvideos
www.instagram.com/QIAGEN

Financial Calendar

Annual General Meeting of Shareholders of QIAGEN N.V.
June 2023

Second Quarter 2023 Results
August 2023

Third Quarter 2023 Results
November 2023

Fourth Quarter 2023 Results (provisional)
February 2024

Publication Date
April 2023

Trademarks

Our name together with our logo is registered as a trademark in the United States and a number of other countries: QIAGEN®.

For a complete list of QIAGEN's trademarks and disclaimers, please refer to QIAGEN's webpage at www.QIAGEN.com/nl/trademarks-and-disclaimers.

This Annual Report may also contain trade names or trademarks of companies other than QIAGEN.

This document contains detailed financial information about QIAGEN prepared under generally accepted accounting standards in the U.S. (U.S. GAAP) and included in our Form 20-F annual report filed with the U.S. Securities and Exchange Commission. QIAGEN also publishes an Annual Report under IFRS accounting standards, which is available on our website at www.QIAGEN.com.

Imprint

QIAGEN N.V. – The Netherlands

Address

QIAGEN N.V.
Hulsterweg 82
5912 PL Venlo
The Netherlands

Commercial registration

Amtsgericht Düsseldorf
HRB 45822
USt-IdNr.: DE 121386819

Zuständige Aufsichtsbehörde

Bezirksregierung Düsseldorf
Cecilienallee 2
40474 Düsseldorf

Contact

Phone: +31 77 35566-00
Email: IR@QIAGEN.com
Website: www.QIAGEN.com