QIAGEN N.V.

2020

FINANCIAL REPORT

Sample to Insight

QIAGEN

Sample to Insight is our strategic framework that puts the needs and challenges of our customers front and center.

We identify the key challenges holding customers back and deliver solutions so they can achieve greater success, ultimately helping them exceed their own expectations and gain the insights critical for their work.

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This document contains detailed financial information about QIAGEN prepared under U.S. generally accepted accounting standards (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.

Overview

Report of the Supervisory Board

Dear Stakeholders:

It is hard to imagine a larger and more dramatic challenge in our lifetime than what all of us are facing due to the coronavirus pandemic. It is also clear that 2020 was a year quite unlike any other for QIAGEN.

Our QIAGENers – more than 5,600 employees worldwide – have stepped up to the tremendous challenges of these times. We took steps to protect our associates as our highest priority, especially for those on the front lines working closely with our customers in laboratories and hospitals around the world. It is with our deepest gratitude that we were able to support them in delivering critical solutions that have been essential in the fight against this pandemic. This included developing more than 10 new solutions for COVID-19 testing, while also significantly ramping up manufacturing capacity at our key sites in Germany and the United States. The contributions of QIAGEN to society have never been more critical. All of this is being done with an overriding commitment to achieve our vision of helping to make improvements in life possible.

We would like to thank our shareholders, customers, business partners and other stakeholders for honoring QIAGEN with their continued collaboration and trust.

2020: A Year of Very Strong Results

QIAGEN delivered very strong results in 2020, supported by the demand for COVID-19 testing as well as improving sequential quarterly trends in our non-COVID product groups as the year progressed. We agree with our leadership team that QIAGEN is COVID-19 relevant, but not COVID-19 dependent.

QIAGEN exceeded our earnings and growth forecasts – which were repeatedly raised during the course of the year – for dynamic growth in net sales and adjusted earnings per share. (Adjusted EPS excludes purchased intangibles amortization, long-lived asset impairments and other items such as business integration, acquisition-related costs, litigation costs and restructuring.) We also generated significant benefits from the strategic initiative launched in 2019 to reallocate resources to support business expansion in our strategic growth areas.

Moving Forward After Tender Offer Outcome

As you know, the voluntary public takeover offer during 2020 by Thermo Fisher Scientific, Inc. did not achieve the minimum acceptance threshold from QIAGEN shareholders. From the time the proposal was announced in March through to the outcome in August, the magnitude and duration of the coronavirus pandemic have proven the increasingly critical importance of molecular testing to society, and also significantly improved QIAGEN's business prospects.

Our Managing Board members – Thierry Bernard, who was appointed Chief Executive Officer in early 2020 after serving on an interim basis since October 2019, and Roland Sackers, our long-standing Chief Financial Officer – along with our Executive Committee members subsequently announced that QIAGEN will continue to execute a successful growth strategy as an independent company aiming to create significant value for shareholders and other stakeholders.

The anchor of this strategy is our focus on five pillars of growth. These are all product portfolio areas addressing markets with significant growth potential and ones in which QIAGEN can achieve/maintain a leadership position: (1) Sample Technologies used to isolate nucleic acids from biological samples, (2) the QuantiFERON technology used to measure immune response in patients to diagnose life-threatening diseases such as latent tuberculosis (TB), (3) the automated clinical PCR testing platform NeuMoDx, (4) the QIAstat-Dx solution used for syndromic testing, and (5) the QIAcuity series of digital PCR platforms. We are also supporting our leadership team in developing QIAGEN's corporate culture as a new program called EMPOWER is implemented to enhance and strengthen a culture of greater accountability and agility with the organization.

My colleagues and I in the Supervisory Board have fully endorsed this strategy and look forward to working with our Managing Board members on the implementation. QIAGEN is moving forward from a position of strength with robust growth prospects, anchored by a differentiated portfolio and multiple new product launches in the pipeline. As we focus on greater value creation, QIAGEN has a disciplined capital allocation policy anchored by a healthy balance sheet to support investment in our business along with a commitment to increasing returns to shareholders.

Change in Supervisory Leadership and New Members

As is the case every year, the Supervisory Board carries out a review process as part of best-practice governance procedures. This process in 2020 came amid the leadership of the Supervisory Board transitioning in August 2020 with my appointment as the new Chairman. This came after Dr. Håkan Björklund decided to step down as Chairman and as a member of the Supervisory Board. On behalf of my colleagues in the Supervisory Board, I would like to thank Dr. Björklund for his contributions to QIAGEN during his time on the Board and wish him all the best in his future endeavors.

The review process for 2020 included a focus on the composition of the Supervisory Board and also the outcome of the tender offer for QIAGEN that did not receive sufficient shareholder approval. This review process also included extensive discussions with our top shareholders and other stakeholders. We intend to continue these discussions in the future as part of our commitment to pursue the highest level of excellence in corporate governance.

As one of the outcomes of this review, we decided to further complement and enhance the Supervisory Board's already extensive experience in Life Sciences and diagnostics. This led to the appointment of two leading international healthcare executives as new Supervisory Board members in recent months:

- Dr. Toralf Haag (appointed in January 2021) has served since October 2018 as Chairman of the Corporate Board of Management of Voith GmbH & Co. KGaA, a global technology company in Germany with more than EUR 4 billion in annual sales and over 19,000 employees. Before joining Voith in October 2016 as Chief Financial Officer, he served for more than 11 years as CFO and Member of the Executive Committee of Lonza Group AG.
- Thomas Ebeling (appointed in February 2021) has been an advisor in recent years to various businesses after having served as the CEO of the publicly-listed German media group ProSiebenSat.1 Media from 2009 to 2018. Prior to that, he worked for the global healthcare company Novartis from 1997 to 2008, including roles as CEO of Novartis Pharmaceuticals and also as CEO of Novartis Consumer Health.

The target profile of the Supervisory Board can be found on QIAGEN's website, as well as in the Governance section of this Annual Report. The current composition fully complies with this profile. Further information on the individual members of the Supervisory Board, such as gender, age, nationality and other positions relevant to the performance of their duties as Supervisor Board member, date of initial appointment and current term of office is set forth in the Corporate Governance and Compensation overview and on our website at www.qiagen.com.

The Supervisory Board considers all members of the Supervisory Board to fulfill the independence criteria as defined by the Dutch Corporate Governance Code.

Commitment to Sustainability

The actions of our leaders during 2020 and the response to the pandemic have brought scrutiny to what we do at QIAGEN as well as how we do it. Indeed, how we operate as a company is driven above all by operating in a sustainable way. This commitment includes reviewing our activities in terms of ESG – Environment, Social and Governance – perspectives.

QIAGEN has been implementing programs to reduce its environmental footprint. In 2019 we pledged to reduce our emissions in line with a 1.5-degree Celsius climate target as laid out by the 2015 Paris Agreement. We have made good headway in 2020, with a reduction of 9.4% in scope 1 and 2 greenhouse gas (GHG) emissions and a reduction in business travel emissions of 81.8% compared to 2019 (the latter, in part due to the impact of COVID-19). We also far exceeded our 2020 goal to decrease plastic

transportation packaging material by 3% below 2019. Our new goal for 2021 is to reduce by 9% below 2020 levels. Additionally, QIAGEN has a commitment to developing a diverse and inclusive culture. This is paramount for our success, and driven by creating a leadership team with a broad range of backgrounds, experience, skills and capabilities.

In nominating candidates for leadership roles, QIAGEN is committed to increasing diversity while pursuing individuals to join QIAGEN with a unique blend of scientific and commercial expertise and experience that will contribute to our future business success. 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 around the world at QIAGEN, with over 30% of its management roles currently held by women. In line with this commitment, the Supervisory Board has had at least two women as members since 2011 and continues to take diversity into account when proposing members for election or re-election without compromising QIAGEN's commitment to hiring the best individuals for positions without any discrimination.

In terms of governance, the Managing Board currently has two members, so achieving a diversity goal as measured solely by a percentage of overall membership is not foreseen in the near future. At the same time, QIAGEN has significantly increased the diversity of its senior leadership team and will continue to do so in the future. Our commitment remains as strong as ever to creating a diverse and inclusive environment for our employees.

Supervisory Board Discussions During 2020

In accordance with the Dutch Corporate Governance Code, the Supervisory Board devoted considerable time to discussing, monitoring and assessing QIAGEN's corporate strategy and its implementation, main risks and opportunities and the annual Management Board assessment of the design and effectiveness of internal risk management and control systems as well as any significant changes in them.

The Supervisory Board had five regular meetings and multiple ad-hoc meetings during 2020 that were held with the attendance of the members of the Managing Board. The Supervisory Board also met to review and discuss agenda items in the absence of the Managing Board members, such as performance and strategy as well as to discuss compensation matters.

All members of the Supervisory Board had adequate time available to give sufficient attention to the Company.

Committees of the Supervisory Board

The Supervisory Board has established the following committees:

- Audit Committee met seven times in 2020. The current members are Mr. Rosen (Chair), Elizabeth E. Tallett and Dr. Haag.
- Compensation Committee met five times in 2020. The current members are Ms. Tallett (Chair), Prof. Dr. Elaine Mardis and Mr. Rosen.
- Selection and Appointment Committee met five times in 2020. The current members are Mr. Rosen (Chair), Dr. Metin Colpan and Ms. Tallett.
- Science and Technology Committee met four times in 2020. The current members Dr. Metin Colpan (Chair), Prof. Dr. Ross Levine and Prof. Dr. Mardis.

The Supervisory Board reserves the right to establish other committees as deemed beneficial, and has approved charters under which each of these committees operates. Charters are available on our website at www.qiagen.com.

The deliberations and findings of the committees were reported by the committee chairs to the Supervisory Board in its meetings on a regular basis. All committee members attended all committee meetings in 2020 physically, by video conference or by phone.

Further detailed information on the composition of the Supervisory Board and its committees, the number of committee meetings held in 2020 and the main topics of discussion, the remuneration of its members, as well as other information on the Supervisory Board, can be found in the Corporate Governance and Compensation overview, which is an integral part of this Annual Report.

Evaluation

The Supervisory Board conducted a survey among its members to evaluate the functioning of the Supervisory Board, its individual members, its Committees, the Managing Board and the individual members of the Managing Board and discussed the results of the survey in one of its meetings. Over all, the Supervisory Board concluded that all of the aforementioned were functioning properly, especially in view of the regulations set forth in the Dutch Corporate Governance Code, and should continue in the same manner.

Corporate Governance

A key objective of the Supervisory Board is to increase shareholder value on a long-term and sustainable basis. This is aligned with the objectives of the Supervisory Board to represent the interests of all stakeholders, including shareholders, while pursing 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 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.

QIAGEN's common shares are registered and traded in the U.S. on the New York Stock Exchange (NYSE) as of January 2018 (formerly on the NASDAQ Global Select Market) and in Germany on the Frankfurt Stock Exchange in the Prime Standard segment.

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.

Financial Statements and Audits

In this Annual Report, the financial statements for 2020 are presented as prepared by the Managing Board and audited by KPMG Accountants N.V. (Independent Registered Public Accounting Firm). We examined the financial statements, the proposal for the use of the distributable profit, the consolidated financial statements and the Management report. The results have been approved by the Supervisory Board and we have received an unqualified opinion from the external auditors.

In closing, the Supervisory Board would like to again thank all QIAGEN employees for the outstanding performance and commitment during an eventful year.

Venlo, the Netherlands, April 2021

The Supervisory Board:

Lawrence A. Rosen
Chairman

The Executive Committee

Thierry Bernard
Chief Executive Officer and Managing Director

Stephany Foster
Senior Vice President, Head of Human Resources

Dr. Barthold Piening
Senior Vice President, Head of Global Operations

Roland Sackers
Chief Financial Officer and Managing Director

Dr. Thomas Schweins
Senior Vice President, Life Science Business Area

Dr. Jonathan Sheldon
Senior Vice President, QIAGEN Digital Insights Business Area

Jean-Pascal Viola
Senior Vice President, Head of Molecular Diagnostics Business Area and Corporate Business Development

Thierry Bernard
Chief Executive Officer and Managing Director

Mr. Bernard joined QIAGEN in February 2015 to lead our 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 having previously served in this role on an interim basis since late 2019. Mr. Bernard previously worked at bioMérieux, where he served in roles of increasing responsibility for 15 years, most recently as Corporate Vice President, Global Commercial Operations, Investor Relations and the Greater China Region. Prior to joining bioMérieux, he served in management roles in multiple international groups. Mr. Bernard was appointed a member of the Board of Directors of T2 BioSystems in 2020. He has earned from Sciences Po (Paris), Harvard Business School, London School of Economics and the College of Europe and is a member of French Foreign Trade Advisors.

Stephany Foster
Senior Vice President, Head of Human Resources

Joined QIAGEN in 2005 as Head of Global Internal Audit and was most recently Vice President, Head of Human Resources. Ms. Foster was also member of the NAELT (North America Executive Leadership Team) and steers the Diversity and Inclusion program at QIAGEN. She was named to her current role in October 2019. Prior to joining QIAGEN, Stephany Foster worked in internal audit at Morgan Franklin and Independence Air. She started her career at PricewaterhouseCoopers, specializing in Sarbanes Oxley Auditing. Ms. Foster has a master's degree in Accounting from the University of Notre Dame and is a Certified Public Accountant (CPA), a Certified Internal and Information Systems Auditor (CIA / CISA) and Certified Fraud Examiner (CFE).

Dr. Barthold Piening
Senior Vice President, Head of Global Operations

Joined QIAGEN in December 2018 as Senior Vice President, Head of Global Operations, and a member of the Executive Committee. Dr. Piening has more than 30 years of experience in strategy and operations in the pharmaceutical, life science and medical device industries. Prior to joining QIAGEN, he was Executive Board member in charge of production and technology for the German pharma company STADA. Dr. Piening had previously served as Chief Operating Officer and EC member of Acino Pharma, and before that as Head of Global Operations for Takeda Pharmaceuticals International. Earlier, he had roles of increasing responsibility at Byk Gulden, ALTANA Pharma and Nycomed. After studying pharmaceutical sciences at the University of Kiel in Germany and the University of Wales in Cardiff, U.K., he earned a degree in Pharmaceutics with Approbation and a Ph.D. in Pharmaceutical Chemistry from the University of Kiel. He also earned an MBA at WHU-Vallendar in Germany and Northwestern University in the United States.

Roland Sackers
Chief Financial Officer and Managing Director

Mr. Sackers joined QIAGEN in 1999 as Vice President Finance and has been Chief Financial Officer since 2004. He became a member of the Managing Board in 2006. Between 1995 and 1999, he served as an auditor with Arthur Andersen Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft. Mr. Sackers earned his Masters Degree in Business Administration (Diplom-Kaufmann) from the University of Münster, Germany. In 2019, he joined the Supervisory Board of Evotec SE and is chair of the audit committee. Mr Sackers is a board member of the industry association, BIO Deutschland. From 2011 to 2018, he was a non-executive director and chair of the audit committee of Immunodiagnostic Systems Holding PLC (IDS) in the United Kingdom.

Dr. Thomas Schweins
Senior Vice President, Life Science Business Area

Joined QIAGEN in 2004 as Vice President Corporate Strategy and was appointed Vice President Marketing & Strategy in 2005, where he was deeply involved in managing the global business toward Life Science customers. In late 2011, Dr. Schweins assumed responsibility for Human Resources and initiated a multi-year transformation process to increase efficiency and effectiveness of the function. In 2017, Dr. Schweins took over the leadership of the Life Science Business Area and consequently resigned from his role as head of HR. Dr. Schweins came to QIAGEN from The Boston Consulting Group. He previously worked as Technology Manager, and later as an Assistant to the Management Board at Hoechst / Aventis. Dr. Schweins earned an M.Sc. Degree in Biochemistry from the University of Hanover. He obtained his Ph.D. at the Max Planck Society and received an M.Sc. from the University of Southern California in Los Angeles, where he studied Business Administration and Chemistry.

Dr. Jonathan Sheldon
Senior Vice President, QIAGEN Digital Insights Business Area

Joined QIAGEN in 2018 as Senior Vice President, QIAGEN Digital Insights Business Area. He leads QIAGEN's growing presence in bioinformatics, enabling customers to transform raw data from biological samples into valuable molecular insights. Dr. Sheldon came to QIAGEN from Oracle, where he was Global Vice President leading Oracle's Healthcare business globally 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, as well as providing leadership in software firms serving the life science and healthcare sectors. He serves on the Board of Directors of the Drug Information Association (DIA). He received his B.Sc. 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

Joined QIAGEN in 2005 and worked in increasingly responsible roles until he was named Senior Vice President, Molecular Diagnostics Business Area and Corporate Business Development, in 2015. In October 2019, Mr. Viola was appointed member of the Executive Committee. He leads global efforts to expand QIAGEN's portfolio through acquisitions and strategic partnerships, as well as the protection of the company's intellectual property. Among other business transactions, his track record includes the acquisitions of Cellestis, Corbett Life Science, DxS and Enzymatics. Prior to joining QIAGEN, Mr. Viola served as President and CEO of Nextal Biotechnologies Inc., a provider of technologies for protein crystallization, and when QIAGEN acquired Nextal in 2005 he joined as Director of Protein Crystallization. Moving to Business Development in 2007, Mr. Viola led efforts in Asia-Pacific, the Americas, Global M&A and Corporate Ventures. He completed a Bachelor of Science in Biochemistry from the University of Montreal, Canada.

Common Shares

QIAGEN's common share price varied widely during 2020, although it closed the year significantly higher in both the U.S. and European markets. The performance was influenced by the unsuccessful tender offer for QIAGEN to be acquired, the effects of the COVID-19 pandemic and initiatives to expand the business post-pandemic. QIAGEN's senior executives and Investor Relations team have been recognized for proactive, transparent communications with the financial community. QIAGEN's Investor Relations was ranked second overall in Institutional Investor magazine's 2020 European small- and mid-cap survey. We thank shareholders for their continued support.

Market Environment

Stock markets globally moved up in 2020 despite the macro economic impact of the COVID-19 pandemic and against a strong performance in 2019. In reaction to the onset of the pandemic, the U.S. Federal Reserve and the European Central Bank initiated monetary policies to mitigate the economic uncertainty and also signaled interest rates will remain low to support economic recovery in the midterm. Other governments and central banks around the globe have taken steps to provide substantial stimulus measures to counter the negative economic impact of pandemic related shutdowns and restrictions. Markets rebounded during the second half after the initial steep decline amid encouraging signs of a vaccine and a potential rebound of sectors most negatively impacted by the pandemic.

Market benchmarks for the year were solid in 2020. The S&P 500 index in the United States finished up 16.3% in 2020. The DAX index of the 30 largest companies in Germany rose 3.5% during the year, and Germany's TecDAX, of which QIAGEN is a member, improved by 6.6% for 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, trading on the New York Stock Exchange since January 10, 2018, after listing for more than 20 years on NASDAQ markets. The global shares also have 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, increasing the potential market opportunity to attract investors, particularly those in the U.S. that can only invest in U.S. dollar-denominated investments, and enhances liquidity. 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 varied widely in 2020, increasing 56.4% in U.S. dollars to $52.85 on the NYSE and rising 39.4% in euros to EUR 42.45 on the Frankfurt Stock Exchange (XETRA). Our shares continued to offer high liquidity, with average daily trading volume of approximately three million shares in 2020 (two million on the NYSE and other U.S. trading venues, and about one million on the Frankfurt Stock Exchange (XETRA) and other German exchanges). QIAGEN continued its commitment to disciplined capital allocation and shareholder returns. In 2020, QIAGEN repurchased 1.3 million shares on the Frankfurt Stock Exchange, under a program announced in May 2019. This program ended December 17, 2020. Since 2019, a total of 3.3 million shares were repurchased for a total of EUR 118.9 million at the times of purchases. As of December 31, 2020, 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 300 identified institutional investors, including about half in North America, about one-third in Europe and the remaining shares in the Asia-Pacific/Japan region. Members of the Managing Board and the Supervisory Board, in total, own less than 1% of QIAGEN's outstanding common shares at the end of 2020.

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Annual Shareholder Meeting

At the Annual General Meeting on June 30, 2020, in Venlo, the Netherlands, shareholders voted on a number of annually recurring items as well as a number of items relating to the offer of acquisition by Thermo Fisher. 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 142.2 million shares, 61.6% 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 https://corporate.QIAGEN.com.

Investor Relations and Engagement with Shareholders

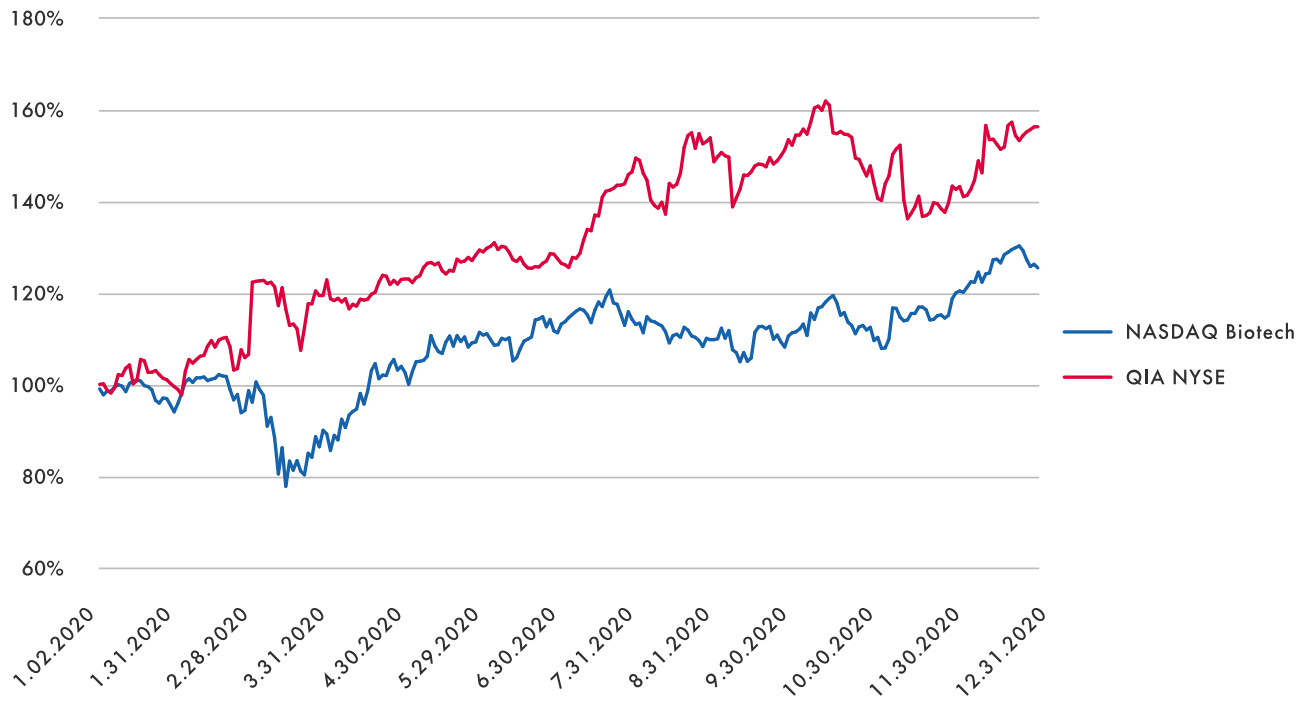
QIAGEN is committed to offering shareholders, analysts and communities around the world transparent, comprehensive and readily accessible information on our performance, strategy and future prospects, as well as our vision and mission.

Interactions with existing and potential investors ramped up after the August announcement that Thermo Fisher did not achieve the minimum acceptance threshold from QIAGEN shareholders. Due to the COVID-19 pandemic, many individual discussions with investors were held virtually during 2020 as roadshows and investor conferences.

QIAGEN hosted a Virtual Deep Dive event on December 8, 2020 to provide investors insight into strategy and focus on our five pillars of growth that was attended virtually by more than 125 market participants. More than 20 securities analysts, based in the United States, France, Germany and the United Kingdom, followed QIAGEN in 2020.

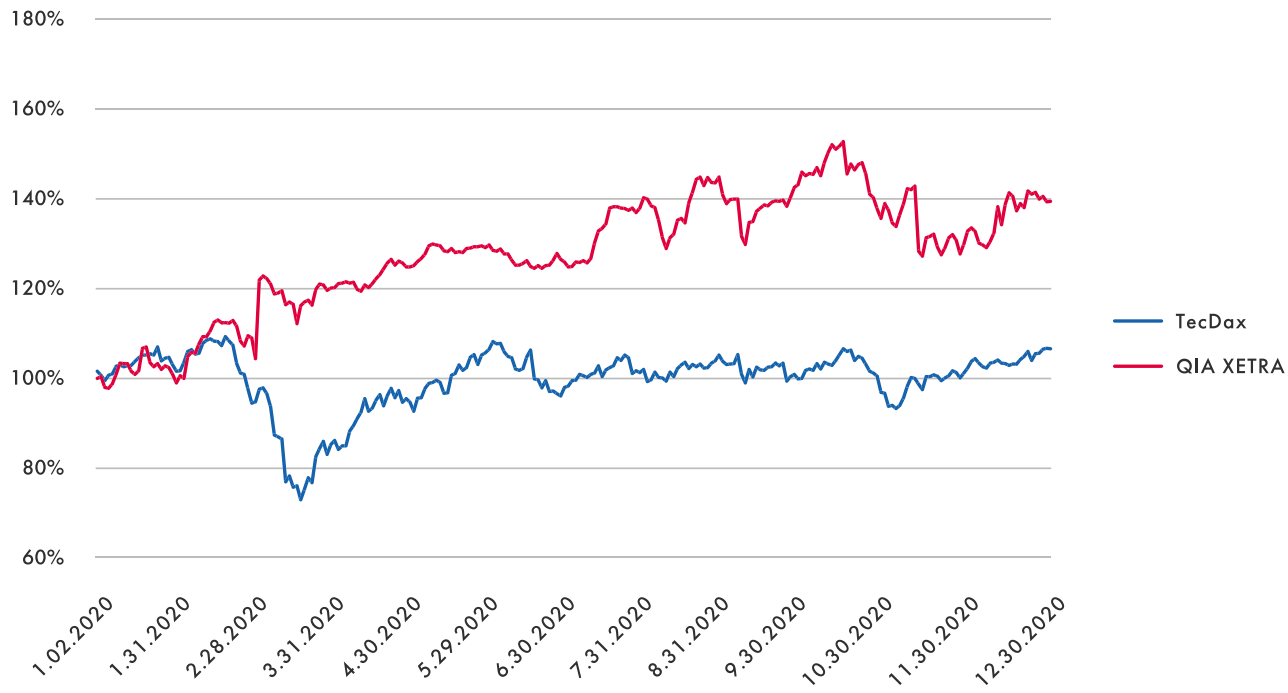
QIAGEN Share Price Development and Average Trading Volume - NYSE 2020

	2020
Year-end price	$ 52.85
High	$ 55.27
Low	$ 32.97
Average daily trading volume (in million shares)	1.59



QIAGEN Share Price Development and Average Trading Volume - Frankfurt Stock Exchange (XETRA) 2020

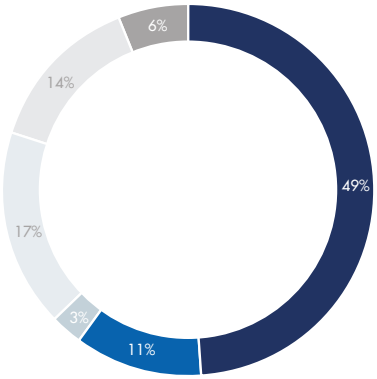
	2020
Year-end price	€ 42.45
High	€ 46.95
Low	€ 29.55
Average daily trading volume (in million shares)	0.90



Key Share Data

	2020
Year-end market capitalization (in $ million)	12,049
Year-end market capitalization (in € million)	9,678

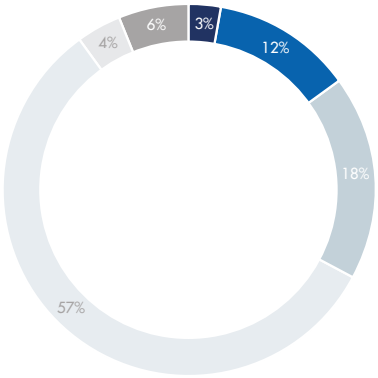
2020 Shareholder Structure by Geography



- United States
- Germany
- France
- England
- Other
- Non-institutional

Source: QIAGEN Shareholder ID

2020 Shareholder Structure by Investor Type



- GARP
- Value
- Index
- Growth
- Other
- Non-institutional

Source: QIAGEN Shareholder ID

Management Report

Business and Operating Environment

QIAGEN is a global leader in Sample to Insight solutions that transform biological samples into valuable molecular insights. Our mission is to enable customers across the continuum of molecular testing to unlock valuable insights faster, better and more efficiently - from the raw biological sample to the final interpreted result. Proven QIAGEN solutions and content are providing answers in hospitals and laboratories worldwide, helping make sense of the increasing volumes and complexity of biological information, in keeping with our vision of making improvements in life possible.

We began operations in 1986 as a pioneer in the emerging biotechnology sector, introducing a novel method that standardized and accelerated extraction and purification of nucleic acids from biological samples. As molecular biology and genomic knowledge have grown to influence many areas of life, we have expanded to serve the full spectrum of market needs. We believe our sample technologies are unmatched in quality for isolating and preparing DNA (deoxyribonucleic acid), RNA (ribonucleic acid) and proteins from blood or other liquids, tissue, plants or other materials. Our assay technologies amplify, enrich and make these biomolecules accessible for analysis, such as identifying the genetic information of a pathogen or a gene mutation in a tumor. Our industry-leading bioinformatics solutions allow users to analyze and interpret data with bioinformatics software and knowledge bases to provide relevant, actionable insights. Our automation systems can be used to tie these technologies together in seamless and cost-effective molecular testing workflows.

We have grown by developing new instruments, consumables and digital solutions to meet diverse and growing needs in the market, partnering with researchers and pharma companies, and acquiring companies or technologies to complement our portfolio. We believe the addressable global market for our portfolio of molecular testing products in life science research and molecular diagnostics totals more than $11 billion. We continue to accelerate the growth of our portfolio of Sample to Insight solutions, delivering efficiency and effectiveness, increasing the value of QIAGEN as an employer of choice and enhancing the customer experience. Our growth strategy is anchored in our Five Pillars of Growth: sample technologies, the digital PCR platform QIAcuity, the clinical PCR automation solutions QIAstat-Dx and NeuMoDx and the QuantiFERON technology platform used to detect diseases such as latent tuberculosis.

We have funded our growth through internally generated funds, debt offerings, and private and 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 Prime Standard 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 located throughout the world. Further information about QIAGEN can be found at *www.qiagen.com*. By referring to our website, we do not incorporate the website or any portion of the website by reference into this Annual Report.

Operating Environment in 2020

Economic Environment

Global economic growth retracted by around 4% in 2020 as repeated waves of the SARS-CoV-2 virus triggered unprecedented shutdowns that pushed economic activity to record lows. Advanced economies including the United States, the euro area and Japan did not contract as much as initially feared and the Chinese economy recovered relatively quickly from the beginning of the year slump. These economies were saved from worse by strong and quick policy responses from governments – including fiscal stimulus, state aid for companies, and support payments for citizens – and central banks – including monetary easing, liquidity injections and targeted credit support. On the other hand, most emerging market or developing economies had to deal with more acute problems than initially expected. Nevertheless, the U.S. dollar ended a two-year period of steady strength as the COVID-19 crisis gripped the United States. At the end of 2020, the U.S. Dollar Index, which tracks the currency's value against other major currencies, was down 13% from its March highs and down 7% over the year.

Industry Environment

The molecular diagnostics market expanded during 2020 due to the significant demand for COVID-19 related testing solutions. The expanding use of polymerase chain reaction (PCR), antigen, antibody and T-cell testing significantly raised public awareness of molecular diagnostics and its potential. This unprecedented global attention is expected to fuel further acceptance of molecular diagnostics in the coming years, likely spurring its expanded usage.

Molecular testing stepped up to meet additional demands for insights in diagnostics, life science research, pharmaceutical R&D and public safety. Technologies for next-generation sequencing (NGS) and PCR continued to disseminate and evolve, making molecular testing more accessible, faster and more efficient. Molecular diagnostics is growing dynamically and expanding into new areas of medicine – enabling clinicians to evaluate and monitor cancers, infectious diseases, immune status, and prenatal or neonatal health. The migration of genomic technologies from basic research into the mainstream remains a powerful driver for long-term growth of the industry, increasing the need for scalable, user-friendly and efficient workflows from beginning to end in molecular testing.

In 2020, QIAGEN delivered 23% growth in net sales at constant exchange rates (CER) and 52% growth in adjusted earnings per share CER. QIAGEN experienced significant demand for solutions used in the COVID-19 pandemic and saw improving trends in other areas of the business during the second half of 2020. QIAGEN finished the year as an independent, stronger, and more focused company, ready to execute on growth in the years after the pandemic.

QIAGEN aligned its strategy on five pillars of growth to focus on its largest and most attractive growth opportunities. In 2020, it significantly raised its output of key consumables products such as sample technologies kits and QIAstat-Dx and NeuMoDx testing cartridges. It innovated in anticipation of changing testing demands and overcame market challenges as the pandemic evolved.

QIAGEN developed over ten new solutions for use in the pandemic – and beyond the COVID-19 crisis. Having made over 3,300 new placements last year, the company's installed base of instruments saw accelerated growth – and is now ready to serve both ongoing COVID and returning non-COVID applications. After the launch of the QIAcuity digital PCR platform in September 2020, QIAGEN delivered over 200 devices by year-end. By acquiring the remaining 80.1% stake in NeuMoDx in September 2020, QIAGEN secured the rights to commercialize its integrated PCR platforms in the U.S.

Our Products

Our leadership in molecular testing solutions leverages our product portfolio across a wide range of applications. We provide more than 500 core consumable products (sample and assay kits), instruments and automation systems, and bioinformatics solutions for analysis and interpretation. These products comprise two main categories: consumables and related revenues accounted for between 86% and 89% of total net sales during the last three years and includes sample and assay kits, bioinformatics solutions, royalties, co-development milestone payments and services while instruments includes related services and contracts and accounted for between 11% and 14% of total net sales during the same time period.

In 2020, we worked closely with public authorities and customers to launch products based on molecular technologies to test for the SARS-CoV-2 pathogen and the COVID-19 disease it triggers. We have built a comprehensive portfolio of solutions to cover the phases of the pandemic including: a collection of RNA extraction kits and automation instrumentation from our sample technologies portfolio, PCR testing workflows including QIAstat-Dx, NeuMoDx, and other PCR solutions, OEM components used by other diagnostic suppliers, antigen and antibody tests, and genomic solutions. We are fully mobilized to serve our customers in the pandemic response, providing existing solutions and developing a series of differentiated products. Dedicated COVID-19 solutions brought to market in 2020 include:

- QIAstat-Dx Respiratory SARS-CoV-2 Panel - a multiplex PCR test with EUA-authorization for the detection of SARS-CoV-2 plus more than 20 other respiratory pathogens;
- NeuMoDx - single-plex (also approved for saliva sample type) and multiplex;
- QIAprep&amp rapid PCR test - a solution that streamlines RNA extraction and PCR analysis into one process, delivering a result in under one hour and requiring less disposable laboratory plastic-ware than standard PCR tests, helping to avoid resource bottlenecks;
- QIAreach Antibody test - allows clinicians to detect immune status of individuals and has applications in determining vaccine efficacy;
- QuantiFERON SARS-CoV-2 T cell assay - enables researchers to explore longer-term immune responses to the virus and vaccines; and
- a suite of next generation sequencing (NGS) and bioinformatics tools - used for epidemiological studies.

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	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	• QIAamp	• DNeasy	• RNeasy
	• PAXgene	• AdnaTest	• MagAttract
• Mainly based on silica membrane and magnetic bead technologies	• AllPrep	• QIAprep&amp	
Secondary sample technology consumables			
• Kits and components for purification of nucleic acids from secondary sample materials (e.g. gel, plasmid DNA)	• QIAprep	• QIAquick	• DyeEx
	• QIAGEN Plasmid	• QIAfilter	• R.E.A.L.
	• HiSpeed	• EndoFree	
Sample technology instruments			
• Instruments for nucleic acid purification, quality control and accessories	• QIAsymphony	• QIAcube Connect	• QIAcube HT
	• EZ1	• QIAxpert	• QIAxcel
	• TissueLyser		

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

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	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

Genomics/NGS includes our universal NGS solutions as well as the full QIAGEN Digital Insights portfolio.

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	• CLC Genomics Workbench	• QIAGEN Knowledge Base
	• N-of-One	• OmicSoft	• HGMD
	• Ingenuity Variant Analysis	• Ingenuity Pathway Analysis	
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 has a volume of about $11 billion per year. The five pillars of growth – sample technologies, immune response, digital PCR, integrated PCR, syndromic testing – account for $6 billion of this total.

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, growing at an estimated annual rate in the mid-single-digits at constant exchange rates even before COVID-19 struck. 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. We have more than 25 master collaboration agreements with pharmaceutical industry customers, some with multiple co-development projects. They have created a rich pipeline of molecular tests that are transforming the treatment of cancer and other diseases. Companion diagnostics can move through clinical trials and regulatory approvals, along with the paired drugs, to commercialization and marketing to healthcare providers.

Molecular Diagnostics customers accounted for $904 million, $737 million, and $732 million of our sales in 2020, 2019 and 2018, respectively.

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 secrets 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 $966 million, $789 million, and $770 million of our sales in 2020, 2019 and 2018, respectively.

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 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)	2020	2019	2018
Consumables and related revenues	$ 1,615.4	$ 1,354.1	$ 1,315.5
Instrumentation	254.9	172.3	186.4
Total	$ 1,870.3	$ 1,526.4	$ 1,501.8

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)	2020	2019	2018
United States	$ 728.6	$ 663.9	$ 632.7
Other Americas	96.9	58.1	60.4
Total Americas	825.5	722.0	693.0
Europe, Middle East and Africa	682.3	487.5	490.3
Asia Pacific, Japan and Rest of World	362.6	317.0	318.5
Total	$ 1,870.3	$ 1,526.4	$ 1,501.8

We have built an increasing presence in key emerging markets as a growth strategy. In 2020, the top seven emerging markets - Brazil, Russia, India, China, South Korea, Mexico and Turkey - contributed approximately 15% of net sales.

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 flu season.

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 procurement 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 2020, all new suppliers have signed our procurement 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. Raw materials are generally readily available at competitive, stable prices from a number of suppliers. 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. We believe we maintain inventories at a sufficient level to ensure reasonable customer service levels and to guard against normal volatility in availability.

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.

As a percentage of sales, our research and development investments are among the highest in our industry. 902 employees in research and development work in QIAGEN centers of excellence on three continents.

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 Medicine 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 kits to support our universal NGS franchise and our in vitro diagnostics partnership with Illumina. In 2020, we launched the QIAcuity digital PCR system which is designed to make digital PCR technology available to Life Sciences laboratories worldwide.

We collaborate with many institutions and companies to create innovative molecular solutions. In 2020, we partnered with Ellume, an Australian digital diagnostics company, to develop antigen and antibody tests. These tests provide rapid results through use of the QIAGEN eHub, which gives an automated read-out in less than 15 minutes.

Our QIAGEN Digital Insights teams are developing new software and adding proprietary cloud-based content to support the latest research and clinical trends in molecular testing, especially the interpretation of large volumes of NGS data. We also integrate digital solutions with instruments and molecular content to provide our customers seamless Sample to Insight workflows.

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 have initiated actions to drive the growth of our digital marketing channels - including our website (www.qiagen.com), product-specific sites and social media. 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 2020, additions to our intangible assets outside of business combinations totaled $24.0 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, 2020, we owned 368 issued patents in the United States, 284 issued patents in Germany and 1,813 issued patents in other major industrialized countries. We had 546 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 in Opportunities and Risks section of this Annual Report 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) have been regulated under EU-Directive 98/79/EC (IVD Directive) and corresponding national provisions. The IVD Directive requires that medical devices meet the essential requirements set out in an annex of the Directive. These requirements include information about the safety and efficacy of the devices. According to the IVD Directive, the Member States presume compliance with these essential requirements in respect of devices which are in conformity with the relevant national standards transposing the harmonized standards of which the reference numbers have been published in the Official Journal of the European Communities. These harmonized standards include ISO 13485:2016, the quality 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 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 procedure of the EC Declaration of conformity to obtain this CE marking.

Each European country must adopt its own laws, regulations and administrative provisions necessary to comply with the IVD Directive. Member States may not create any obstacle to the placing on the market or the putting into service within their territory of devices bearing the CE marking according to the conformity assessment procedures.

In May 2022, the Directive will be 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 Directive that specifies certain results that must be achieved by each Member State and permits each Member State to decide how to transpose the Directive into national law, the IVDR has binding legal force throughout every Member State and it will become effective on a set date in all the Member States. The major goals of the IVDR are 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), in vitro diagnostics will be subject to additional legal regulatory requirements after it comes into full effect. Among other things, the IVDR introduces a new risk-based classification system and requirements for conformity assessments. Products already certified by a Notified Body may remain on the market until 25 May 2024 under some conditions including fulfillment of specific requirements in the IVDR, but ultimately most products will have to be approved. Under the Directive nearly eighty (80) percent of QIAGEN products were under the self-declaration classification, while under IVDR nearly ninety (90) percent 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, there will also be a greater emphasis on post-market surveillance and submission of post-market performance follow-up reports.

With respect to the current COVID-19 pandemic, the EC has classified SARS-CoV-2 assays as high risk, and designated five (5) Notified Bodies under the IVDR, including QIAGEN's Notified Body, TÜV Rheinland. MedTech Europe has issued guidance 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.

United Kingdom

The UK's withdrawal from the EU will have major ramifications for IVD manufacturers that will, among other things have to follow new procedures that will 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 a new guidance on how the country will regulate IVDs after January 1, 2021. According to MHRA, IVDs in the future 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. As described in the guidance, MHRA will continue to recognize CE marks until June 30, 2023. Companies wishing to place IVDs on the UK market will be required to register with MHRA after January 1, 2021, but will still be able to sell CE-IVD marked products for the next two-and-a half years. After July 1, 2023, companies selling in the UK will have to obtain a new marking called a UK Conformity Assessed mark (UKCA). More information about the new UK requirements should become available in the near future.

U.S. Regulations

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.

They are subject to premarket review and postmarket controls which will differ depending on how the FDA classifies a specific IVD. Certain types of tests like some that we manufacture and sell for research use only in the United States have not been subject to 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 *in vitro* diagnostic tests that are designed, manufactured and used within a single laboratory, have generally been subject to enforcement discretion, which means that FDA generally has not enforced premarket review and other applicable FDA requirements. However, as LDTs have increased in complexity, the FDA has begun to take a risk-based approach to their regulation. Congress has also signaled interest in clarifying the regulatory landscape for LDTs. In 2020, the Verifying Accurate, Leading-edge IVCT Development ("VALID") Act was introduced in both chambers of Congress. If enacted, clinical laboratories that develop and offer LDTs and traditional IVD medical device manufacturers would be subjected to the same 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.

The FDA regulates the sale or distribution of medical devices, including *in vitro* diagnostic test kits and some LDTs. The information that must be submitted to the FDA in order to obtain clearance or approval to market a new medical device varies depending on how the medical device is classified by the FDA. Medical devices are classified into one of three classes depending on the controls deemed by the FDA to be necessary to reasonably ensure their safety and effectiveness. Class I devices are subject to general controls, including labeling requirements, and adherence to the FDA's quality system regulations (QSRs), which are device-specific current good manufacturing practices. Class II devices are subject to premarket notification, QSRs, general controls and sometimes special controls, including performance standards and post-market surveillance. Class III devices are subject to most of the previously identified requirements as well as to pre-market approval. Class I devices are exempt from premarket review; most Class II devices require 510(k) clearance, and all Class III devices must receive premarket approval before they can be sold in the United States. The payment of a user fee, that is typically adjusted annually, to the FDA is usually required when a 510(k) notice or premarket approval application is submitted.

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 for which a premarket approval was not required. A device is substantially equivalent to a predicate device if it has the same intended use and technological characteristics as the predicate; or has the same 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 believes that the device is not substantially equivalent to a predicate device, it will issue a "Not Substantially Equivalent" (NSE) determination and designate the device as a Class III device, which will require the submission and approval of a PMA before the new device may be marketed. A person who receives an NSE determination in response to a 510(k) submission may, within 30 days of receipt of the NSE determination, submit a de novo request for the FDA to make a risk-based evaluation for classification of

the device into Class I or II. Devices that are classified through the de novo process may be marketed and used as predicates for future 510(k) submissions. The FDA continues to reevaluate the 510(k) pathway and process and the de novo process, and has taken what it describes as a risk-based approach to develop innovative regulatory policy to propose a more "contemporary" approach. In October 2017, the FDA published a final guidance entitled, "De Novo Classification Process (Evaluation of Automatic Class III Designation)," and in December 2018, the FDA published a proposed rule which if finalized is intended to provide structure, clarity and transparency on the de novo classification process. In January 2021, it also published a final guidance entitled "Requests for Feedback and Meetings for Medical Device Submissions: The Q-Submission Program."

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. If the device is determined to present a "significant risk," the sponsor may not begin a clinical trial until it submits an investigational device exemption (IDE) 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. 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 changed medical device may be marketed.

Any products sold by us pursuant to FDA clearances or approvals will be subject to pervasive and continuing regulation by the FDA, including 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 US government declared a state of emergency which enabled the FDA to issue emergency use authorizations (EUAs) to provide more timely access to critical medical products (including medicines and tests) that may help during the emergency when there are no adequate, approved, and available alternative options. EUAs are in effect until the emergency declaration ends but can be revised or revoked as FDA considers the needs during the emergency and new data on a product's safety and effectiveness, or as products meet the criteria to become approved, cleared, or licensed by the FDA. Manufacturers of several types of SARS-CoV-2 assays have been granted EUAs, including QIAGEN. These authorizations are only intended for the duration of the emergency declaration, and afterwards will be revoked. The FDA has indicated the withdrawal of the EUA process will be done in a controlled ramp down.

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. FDA issued a final guidance document in 2014, entitled "*In Vitro* Companion Diagnostic Devices" that is intended to assist companies developing *in vitro* companion diagnostic devices and companies developing therapeutic products that depend on the use of a specific *in vitro* companion diagnostic for the safe and effective use of the product. The FDA defined 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 also noted that in some cases, if evidence is sufficient to conclude that the IVD companion diagnostic device is appropriate for use with a class of therapeutic products, the intended use/indications for use should name the therapeutic class, rather than each specific product within the class.

In April 2020, FDA published a final guidance entitled, "Developing and Labeling *In Vitro* Companion Diagnostic Devices for a Specific Group or Class of Oncology Therapeutic Products" that expands on that last issue in the 2014 final guidance and describes considerations for the development and labeling of *in vitro* companion diagnostic devices to support the indicated uses of multiple drug or biological oncology products, when appropriate.

The FDA also issued a draft guidance in July 2016, entitled, "Principles for Codevelopment of an *In Vitro* Companion Diagnostic Device with a Therapeutic Product" to serve as a practical guide to assist therapeutic product sponsors and IVD sponsors in developing a therapeutic product and an accompanying IVD companion diagnostic.

The FDA subsequently 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. The two primary types of marketing pathways for medical devices are clearance of a premarket notification under Section 510(k) of the Federal Food, Drug, and Cosmetic Act, or 510(k), and approval of a premarket approval application, or PMA. We expect that any IVD companion diagnostic device that we develop will utilize the PMA pathway and that a clinical trial performed under an investigational device exemption, or 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.

Unique Device Identifier Requirements

In September 2013, the FDA issued its final rule on the Unique Device Identifier. This rule now requires an additional registered identifier, including a special barcode, on all FDA regulated medical devices. The rule is implemented in phases with the first deadline of September 24, 2014 being established for all Class III medical devices. For QIAGEN, this impacted the HC2, QuantiFERON, *artus, and therascreen* products. We established a task force to ensure that the deadline was met but there is additional administrative and regulatory burden on us related to the annual reporting of compliance of these products to the new regulation. Class II and Class I products were required to have this same labeling as of September 24, 2016 and 2018, respectively. QIAGEN was fully compliant with the new rule by September 2018. The new rule will also require additional compliance oversight now that it has been implemented. The requirements are now confirmed as part of our annual reporting and PMA submissions. They are also assessed during site inspections by the U.S. FDA.

Regulation of Research Use Only Products

Some of our products are sold for research purposes in the U.S., and labeled "For Research Use Only" (RUO) or "for molecular biology applications." In November 2013, the FDA issued a final Guidance for Industry and Food and Drug Administration Staff entitled, "Distribution of In Vitro Diagnostic Products Labeled for Research Use Only or Investigational Use Only." In the Guidance, RUO refers to devices that are in the laboratory phase of development, and 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. 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 develop, validate and promote for clinical use. However, as previously noted, we do not promote these products for use in LDTs or assist in the development of the LDTs for clinical diagnostic use.

The 21st Century Cures Act (Cures Act) was enacted into law on December 13, 2016, after a bipartisan, multi-year effort. The Cures Act primarily affects activities of the Department of Health and Human Services (HHS) and its agencies, including the Food and Drug Administration (FDA or the Agency). On June 6, 2017, the Commissioner of Food and Drugs reported to Congress as required by the Cures Act. This report included the Food & Drug Administration Work Plan and Proposed Funding Allocations of FDA Innovation Account (Required by Section 1002 of the 21st Century Cures Act (Public Law 114-255). This is now being implemented with a broad spectrum of initiatives within the FDA with the goal to support patients with improved and timely access to safe and efficacious medical products. For industry, it is anticipated that some processes will become less burdensome with more rapid approval/clearance cycles while others will continue to require significant investment.

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 three types of organizations: health plans, healthcare clearing houses, and healthcare providers that conduct certain healthcare transactions electronically ("Covered Entities"). 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.

On February 17, 2009, Congress enacted Subtitle D of the Health Information Technology for Economic and Clinical Health Act, or 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. Regulations implementing major provisions of HITECH were finalized on January 25, 2013 through publication of the HIPAA Omnibus Rule (the "Omnibus Rule").

Under HITECH's breach notification requirements, Covered Entities must report breaches of protected health information that has not been encrypted or otherwise secured in accordance with guidance from the Secretary of the U.S. Department of Health and Human Services (the "Secretary"). 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.

We are currently subject to the HIPAA regulations and 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.

In addition to the federal privacy and security regulations, there are a number of state laws regarding the privacy and security of health information and personal data that are applicable to our clinical laboratories. 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.

The Genetic Information Nondiscrimination Act of 2008, also referred to as GINA, is a federal law that protects individuals from discrimination in the health insurance and employment contexts because of DNA characteristics that may affect their health. GINA prohibits covered employers from requesting, obtaining, or using employees' genetic information (subject to limited exceptions), and prohibits covered health insurers from requesting genetic information or using any such information they may already have for purposes of making eligibility, premium, or coverage-related decisions.

Many states have also adopted genetic testing and privacy laws. These laws typically require a specific, written consent for genetic testing as well as consent for the disclosure of genetic test results and otherwise limit uses and disclosures of genetic testing results. A few states have adopted laws that give their residents property rights in their genetic information.

Privacy and data security laws, including those relating to health information, are complex, overlapping and rapidly evolving. As our activities evolve and expand, additional laws may be implicated. For example, the California Consumer Privacy Act of 2018, which took effect on January 1, 2020, imposes requirements and protections upon the processing of personal data, aimed at giving California consumers more visibility and control over their personal information. There are also non-U.S. 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. We have implemented the requirements set forth by the GDPR, which took effect on May 25, 2018. All of these 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 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.

The General Data Protection Regulation ("GDPR"), which applies to all EU member states from May 25, 2018, also applies to some of our operations.

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, 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, the Office of Foreign Assets Control, and the International Air Transport Association. We generally use third-party vendors to dispose of regulated medical waste, hazardous waste and radioactive materials and contractually require them to comply with applicable laws and regulations.

Compliance with Fraud and Abuse Laws

We have to comply with various U.S. federal and state laws, rules and regulations pertaining to healthcare fraud and abuse, including anti-kickback laws and physician self-referral laws, rules and regulations. Violations of the fraud and abuse laws are punishable by criminal and civil sanctions, including, in some instances, exclusion from participation in federal and state healthcare programs, including Medicare and Medicaid.

Anti-Kickback Statute

The federal Anti-Kickback Statute prohibits persons from knowingly or willfully soliciting, receiving, offering or paying remuneration, directly or indirectly, in exchange for or to induce:

- The referral of an individual for a service or product for which payment may be made by Medicare, Medicaid or other government-sponsored healthcare program; or
- purchasing, ordering, arranging for, or recommending the ordering of, any service or product for which payment may be made by a government-sponsored healthcare program.

The definition of "remuneration" has been broadly interpreted to include anything of value, including such items as gifts, certain discounts, waiver of payments, and providing anything at less than its fair market value. In addition, several courts have interpreted the law to mean that if "one purpose" of an arrangement is intended to induce referrals, the statute is violated.

The Anti-Kickback Statute is broad and prohibits many arrangements and practices that are lawful in businesses outside of the healthcare industry. Recognizing that the Anti-Kickback Statute is broad and may technically prohibit many innocuous or beneficial arrangements, the Office of Inspector General of the Department of Health and Human Services (OIG) has issued regulations, commonly known as "safe harbors." These safe harbors set forth certain requirements that, if fully met, will insulate healthcare providers, medical device manufacturers, and others, from prosecution under the Anti-Kickback Statute. Although full compliance with these safe harbor provisions ensures against prosecution under the Anti-Kickback Statute, full compliance is often difficult and the failure of a transaction or arrangement to fit within a specific safe harbor does not necessarily mean that the transaction or arrangement is illegal or that prosecution under the Anti-Kickback Statute will be pursued. However, conduct and business arrangements that do not fully satisfy each applicable safe harbor may result in increased scrutiny by government enforcement authorities such as the OIG. The statutory penalties for violating the Anti-Kickback Statute include imprisonment for up to five years and criminal fines of up to $25,000 per violation. In addition, through application of other laws, conduct that violates the Anti-Kickback Statute can also give rise to False Claims Act lawsuits, civil monetary penalties and possible exclusion from Medicare and Medicaid and other federal healthcare programs. In addition to the Federal Anti-Kickback Statute, many states have their own 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 not only to payment made by a government health care program but also with respect to other payors, including commercial insurance companies.

We have and may in the future, enter into various agreements with health care providers who perform services for us, including some who make clinical decisions to use our products. All such arrangements have been structured with the intention of complying with all applicable fraud and abuse laws, including the Anti-Kickback Statute.

Other Fraud and Abuse Laws

The federal False Claims Act (FCA) prohibits any person from knowingly presenting, or causing to be presented, a false claim or knowingly making, or causing to be made, a false statement to obtain payment from the federal government. Those found in violation of the FCA can be subject to fines and penalties of three times the damages sustained by the government, plus mandatory civil penalties of between $5,500 and $11,000 for each separate false claim. Actions filed under the FCA can be brought by any individual on behalf of the government, a "qui tam" action, and such individual, known as a "relator" or, more commonly, as a "whistleblower," who may share in any amounts paid by the entity to the government in damages and penalties or by way of settlement. In addition, certain states have enacted laws modeled after the FCA, and this legislative activity is expected to increase. Qui tam actions have increased significantly in recent years, causing greater numbers of healthcare companies, including medical device manufacturers, to defend false claim actions, pay damages and penalties or be excluded from Medicare, Medicaid or other federal or state healthcare programs as a result of investigations arising out of such actions.

The federal ban on physician self-referrals, commonly known as the Stark Law, prohibits, subject to certain exceptions, physician referrals of Medicare and Medicaid patients to an entity providing certain "designated health services" if the physician or an immediate family member of the physician has any financial relationship with the entity. Penalties for violating the Stark Law include fines, civil monetary penalties and possible exclusion from federal healthcare programs. In addition to the Stark Law, many states have their own self-referral laws. Often, these laws closely follow the language of the federal law, although they do not always have the same scope, exceptions or safe harbors.

The anti-inducement law (Section 1128A(a)(5) of the Social Security Act), prohibits providers from offering anything of value to a Medicare or Medicaid beneficiary to induce the beneficiary to use items or services covered by either program. Additionally, the Civil Monetary Penalties Law (Section 1128A of the Social Security Act), authorizes the United States Department of Health and Human Services to impose civil penalties administratively for various fraudulent or abusive acts.

The OIG also has authority to bring administrative actions against entities for alleged violations of a number of prohibitions, including the Anti-Kickback Statute and the Stark Law. The OIG may seek to impose civil monetary penalties or exclusion from the Medicare, Medicaid and other federal healthcare programs. Civil monetary penalties can range from $2,000 to $50,000 for each violation or failure plus, in certain circumstances, three times the amounts claimed in reimbursement or illegal remuneration. Typically, exclusions last for five years.

In addition, we must comply with a variety of other laws, such as laws prohibiting false claims for reimbursement under Medicare and Medicaid, all of which can also be triggered by violations of federal anti-kickback laws; the Health Insurance Portability and Accounting Act of 1996, which makes it a federal crime to commit healthcare fraud and make false statements; and the Federal Trade Commission Act and similar laws regulating advertisement and consumer protections.

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. In addition, a federal law known as the Physician Payments Sunshine Act, requires manufacturers, including medical device manufacturers, to track and report to the federal government certain payments and other transfers of value made to physicians and teaching hospitals and ownership or investment interests held by physicians and their immediate family members. The federal government discloses the reported information on a publicly available website. If we fail to track and report as required by these laws or to otherwise comply with these laws, we could be subject to the penalty provisions of the pertinent state and federal authorities.

Despite extensive procedures to ensure compliance, we may also be exposed to liabilities under the U.S. Foreign Corrupt Practices Act, or 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.

Other Country Specific Requirements

In many countries outside of the United States and the EU, coverage, pricing and reimbursement approvals are also required. Additionally, many major markets are adopting regulations and requirements similar to those of the U.S. Food and Drug Administration (FDA), which require additional submission activities and management of country-specific regulatory requirements. This is being led by the International Medical Device Regulators Forum (IMDRF). This Forum consists of regulators from around the world that have signed governmental agreements to align global regulations, especially around submissions and approvals. In the long term this holds the promise of reducing volatility and complexity in the regulatory landscape.

Reimbursement

United States

In the United States, payments for diagnostic tests come from several sources, including third party payors such as health maintenance organizations and preferred provider organizations; government health care programs such as Medicare or Medicaid; and, in most 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. At present, Medicare payment rates are affected by across-the-board federal budget cuts commonly referred to as "sequestration." Under sequestration, the Centers for Medicare & Medicaid Services (CMS), the federal agency responsible for administering Medicare and Medicaid, reduced Medicare payments to providers by 2% annually beginning in 2013 and through 2023.

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, or CPT, code used to identify a test. The American Medical Association, or 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 HCPCS codes for medical billing and reimbursement purposes. Level I HCPCS codes reflect current CPT codes, while Level II codes primarily represent non-physician services and Level III codes are local codes developed by Medicaid agencies, Medicare contractors and private 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 the 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 private and government third-party 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 HCPS 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), CMS began calculating 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 extends to additional diagnostic testing codes on the CLFS. On December 20, 2019, the President signed the Further Consolidated Appropriations Act, which included the Laboratory Access for Beneficiaries Act, or the LAB Act. The LAB Act delays by one year the reporting of payment data under PAMA for clinical laboratory diagnostic tests that are not advanced diagnostic laboratory tests. CDLT data for the collection period of January 1, 2019 through June 30, 2019, which was supposed to be reported in 2020, must now be reported between January 1, 2021 and March 31, 2021. Data reporting will then resume on a three-year cycle beginning in 2024. Under PAMA, as amended by the LAB Act, any reduction to a particular payment rate resulting from the new methodology is limited to 10% per test per year in 2020 and to 15% per test per year in each of the years 2021 through 2023.

Coverage Decisions

When deciding whether to cover a particular diagnostic test, private and government 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 are usually 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. Private and government third-party payors have separate processes for making coverage determinations, and private third-party payors 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, private third-party payors 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 this Annual Report.

Description of Property

Our production and manufacturing facilities for consumable products are located in Germany, the United States 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 $132.8 million, $118.0 million and $109.8 million for 2020, 2019 and 2018, 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 cGMP production, special areas were built in our facilities in Hilden, Germany, Germantown, Maryland and Shenzhen, China. 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: 2008, ISO 13485:2012, ISO 13485:2003 CMDCAS. 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 facilities in Hilden, Germany, currently occupy a total of approximately 786,000 square feet. In 2020, we made additional investments to expand production lines to meet both current demand as well as future growth. Our production capacity is increased through our manufacturing and research facilities in the United States. QIAGEN Sciences, LLC owns a 24-acre site in Germantown, Maryland. The 285,000-square-foot Germantown facility consists of several buildings in a campus-like arrangement and can accommodate over 500 employees. There is room for future expansion of up to 300,000 square feet of facility space. In 2020, we announced our plans to renovate the manufacturing facility to accommodate expanded production of testing products, including for COVID-19.

We lease facilities in Frederick, Maryland, comprising 42,000 square feet for manufacturing, warehousing, distribution and research operations and also facilities in Beverly, Massachusetts, with 44,000 square feet for enzyme manufacturing. Additionally, we have leased facilities in Redwood City, California, with 12,700 square feet for bioinformatics and 19,000 square feet in Minden, Nevada, for Service Solutions. We have shared service centers that lease facilities in Wroclaw, Poland, (65,100 square feet) and Manila, Philippines (29,300 square feet). Additionally, we lease facilities in Shenzhen, China, and Manchester, United Kingdom, for research operations. Other subsidiaries throughout the world lease smaller amounts of space. Our corporate headquarters are located in leased office space in Venlo, The Netherlands.

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.

Opportunities and Risks

QIAGEN's business, like that of any other company, involves significant opportunities and risks. Effective management is paramount in delivering sustainable value creation, and the central task of the leadership team. To sustain our growth, effective execution is crucial in the development and commercialization of new products; structure and implementation of acquisitions and strategic partnerships; and response to the wide variety of developments in markets where we operate around the world. Managing opportunities and risks is an integral part of the corporate governance system in place throughout QIAGEN, not the task of one particular organizational unit. Management systems are in place to aggregate all risks and opportunities for review at the Managing Board and Supervisory Board levels of QIAGEN N.V., and these are reviewed on a routine basis. Based on our assessment at the end of 2020, we consider the opportunities and risks manageable and the survival of QIAGEN not in danger. This assessment is supported by our strong balance sheet and the current business outlook, and further supported by the positive historical response to our external financing needs. We are confident in the future earnings strength of QIAGEN and have access to the resources to pursue value-creating business opportunities.

Opportunities

Our mission is to make improvements in life possible by capturing growth opportunities as molecular technologies disseminate across two customer classes: Molecular Diagnostics and Life Science. Due to increased life expectancies worldwide and the dynamic growth of healthcare both in developed and emerging markets, the need for innovative diagnostics is increasing. The value of diagnostics is above all being significantly enhanced by the COVID-19 pandemic and the dramatic increase in demand for testing solutions. Diagnostics offer proven benefits to improve healthcare outcomes, particularly the use of companion diagnostics in precision medicine, while still representing a small fraction of overall healthcare expenditures. Internal R&D activities of QIAGEN and partnerships with other companies present major opportunities to develop new products and improve existing ones across our portfolio of Sample to Insight solutions. We also continuously evaluate potential targeted acquisition opportunities to add new technologies or enter growing markets. All of these factors represent future growth opportunities for QIAGEN.

Senior management at QIAGEN focuses strategic attention on identifying and assessing opportunities as early as possible, taking actions to maximize the value of those opportunities and executing on initiatives to deliver business success. We evaluate organic growth opportunities each year as part of our annual budget planning process, and during the year, especially in dynamically changing areas of the business portfolio. These evaluations are based on proposals for new products, services and technologies developed within QIAGEN. This cross-functional process involves a careful analysis of the market environment and competitive positioning, as well as factors such as expected development timelines, regulatory processes and reimbursement issues, when evaluating organic opportunities. Business plans include information about the product or service to be developed, along with profiles on target customers and competitors, market size and barriers to entry. It also outlines the resources required for implementation. As part of this process, these plans are subjected to a uniform profitability analysis to determine the net present value of an investment and the opportunities to create value (as measured with QIAGEN Value Added, or QVA) and generate returns that exceed our cost of capital after a multi-year period. The monitoring of growth initiatives is accomplished through regular reporting to the Supervisory Board on the status and progress of key initiatives during the year. Project management and the supporting central functions report directly to the Executive Committee.

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 the risk management 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 these risks 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 allow management on a timely basis the opportunity to successfully implement mitigation actions. 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 is based on a strong framework that outlines the responsibilities of our Managing and Supervisory Boards (discussed in more detail in the "Corporate Governance Report" section of this Annual Report) and the function of the Audit Committee of the Supervisory Board (discussed in more detail in the "Corporate Governance Report" section of this Annual Report). We maintain adequate internal controls over financial reporting to ensure the integrity of financial reporting, which is described further in the "Corporate Governance Report" section 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 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, high-quality product assurance
	• Ensuring ability to defend against intellectual property infringements and maintain competitive advantage after expiration
Business Growth Risk	• Managing development and success of key R&D projects
	• Managing successful integration of acquisitions to achieve anticipated benefits
Underlying Business Risk	• Evaluating financial risks, including economic risks and currency rate fluctuations
	• Monitoring financial reporting risks, including multi-jurisdiction tax compliance
	• Reviewing possible asset impairment events
	• Assessing 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.

Risks

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 evolving market requirements, for example products in response to SARS-CoV-2. We believe successful new product introductions provide a significant competitive advantage because customers make an investment of time in selecting and learning 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 in the market, 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 rate or otherwise have an adverse effect on our business. In the past, we have experienced delays in the development and introduction of products, including regulatory approvals, or decisions to stop development of projects, and we may experience delays or make decisions to stop certain products in the future.

As a result, we cannot assure you that we will keep pace with the rapid rate of change 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 new products include:

- availability, quality and price relative to existing competitor products;
- the timing of introduction of the new product relative to competitive products;
- opinions 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. 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 testing markets we serve and our ability to scale manufacturing capacities to meet customer demands. Important product programs include our modular medium-throughput QIAsymphony automation platform, QIAstat-Dx system for one-step, fully integrated molecular analysis of hard-to-diagnose syndromes, the high-throughput NeuMoDx 288 and mid-throughput NeuMoDx 96 fully integrated PCR automation systems, sample and assay technologies designed for use with QIAGEN instruments or with "universal" automation systems and instruments, and bioinformatics solutions to analyze and interpret complex genomic data. In addition, in 2020 we launched the QIAcuity digital PCR series of platforms with fully-integrated solutions that simplify digital PCR workflows.

The speed and level of adoption of our new automation platforms will affect sales not only of instrumentation but also of consumables – sample and assay kits – designed to run on the systems. The rollouts 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 each of these platforms and seeking regulatory approvals for a number of these new products. In turn, the availability and regulatory approval of more tests for processing on QIAsymphony, QIAstat-Dx and NeuMoDx systems, especially molecular assays for specific diseases or companion diagnostics paired with new drugs, will influence the value of the instruments to prospective buyers. Slower adoption of QIAsymphony, including the complete QIAsymphony RGQ system, the QIAstat-Dx, NeuMoDx and QIAcuity systems, could significantly affect sales of 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 $1.87 billion in 2020 from $1.34 billion in 2016. We have made a series of acquisitions in recent years, including the acquisitions of NeuMoDx Molecular, Inc. in 2020, N-of-One in January 2019, STAT-Dx Life, S.L. in 2018, and OmicSoft Corporation in 2017, to complement internal research and development activities. We intend to identify and acquire other businesses in the future that support our strategy to build on our global leadership position in Sample to Insight solutions focused on molecular 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. In addition, we have invested in establishing and expanding shared service centers in Poland and the Philippines, opening new commercial operations in emerging markets to expand our geographic footprint, and implementing digitization of business processes to increase sales growth while also enhancing operational efficiencies. 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 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 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 dilutive equity securities;
- incurrence or assumption of debt and contingent liabilities;
- 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. Potentially adverse changes that may come from the United Kingdom's exit from the European Union ("Brexit") are not fully understood, as the actual impact from Brexit will depend on many factors, including the ability of both the United Kingdom and European Union authorities to provide a path forward with minimal disruption. In the near term we anticipate the largest potential exposures to be on supply chain with our United Kingdom-based suppliers and the local operations for our domestic United Kingdom business and pharma development activities. There also is a risk of loss of revenue, penalties due to delayed deliveries and currency losses, or other unforeseen costs which would negatively impact margins.

During challenging economic times, access to financing in the global financial markets has also been adversely affected for many businesses. The uncertainty surrounding the resolution of the economic and sovereign debt crisis in Europe continues to have a negative impact on financial markets and economic conditions more generally. 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 by any governmental actions or inaction resulting in automatic government spending cuts (sequestration) that may take effect, particularly in terms of federal government funding in the United States. These conditions may add uncertainty to the timing and budget 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, 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 consumable manufacturing facilities are located in Germany, the U.S. and China. We have established sales subsidiaries in numerous countries and our products are sold through independent distributors serving more than 40 additional countries. Our global footprint exposes us to unforeseen events, such as the December 2019 outbreak of the novel coronavirus (COVID-19) and the resulting global pandemic. Our facilities may be harmed by unforeseen events, and in the event that we or our customers are affected by a disaster, we may experience delays or reductions in sales or production, increased costs, or we may 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 may adversely affect our results of operations for the affected 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 adverse effects to the extent these manufacturing operations are disrupted. While our global operations give us the ability to ship product from alternative sites, we may not be able to do so because our customers' facilities are shut down or the local logistics infrastructure is not functioning, and our sales will suffer.

Damage to our property due to unforeseen events and the disruption of our business may be covered by insurance, but this insurance may not be sufficient to cover all of our potential losses, and such insurance 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.

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 quantities or qualities to produce certain products, and this could have an adverse impact on our results of operations.

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

Our customers in the scientific research markets typically keep only a modest inventory of our products on hand, and consequently require overnight delivery of purchases. As a result, we rely heavily on air cargo carriers and logistic suppliers. If overnight services are suspended or delayed, and other delivery carriers and logistic suppliers cannot provide satisfactory services, customers may suspend a significant amount of their work. The lack of adequate delivery alternatives would have a serious adverse impact on our 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 Netherlands' statutory rate of 25%. 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 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 tax 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 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, or 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 modernizing 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 data or other operational disruption. Failures to 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. If we do experience a breach or failure of our systems, we could experience potentially significant operational delays resulting from 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 we maintain is lost or otherwise subject to misuse or other wrongful use, access or disclosure. Further, we could experience negative publicity resulting in reputation or brand damage with customers or partners.

Additionally, we are subject to privacy and data security laws across multiple jurisdictions, including those relating to the storage of health information, which are complex, overlapping 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, 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 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. We have implemented the requirements set forth by the GDPR, which took effect on May 25, 2018. 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. For example, we may be subject to regulatory action or lawsuits in the event we fail to comply with applicable privacy laws.

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

Changes in the availability or reimbursement of our diagnostic testing products by insurance providers and health maintenance organizations could also 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 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.

Approximately 26% of our sales are generated by demand for use of our products at 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 United States. 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 or industrial 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 FDA or similar non-U.S. authorities and market-approved products. Our competitors' development of alternative products offering superior technology, greater cost-effectiveness or 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 debates 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 pre-clinical studies, clinical trials and other tasks required to gain regulatory approvals and meet other requirements from 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 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 Medicine 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 emerging markets, which exposes us to risks.

Our top seven emerging markets are Brazil, China, India, South Korea, Mexico, Russia and Turkey, which together accounted for approximately 15% of total sales in 2020. 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. 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 customers' request, 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. 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 a substantial 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 are typically 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 and 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 for us to obtain financing in the future 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.

The Financial Conduct Authority of the United Kingdom plans to phase out the London Interbank Offered Rate (LIBOR) by the end of 2021. Presently, we do hold debt and derivative instruments that use LIBOR. While certain agreements do contain language for the determination of interest rates in the event the LIBOR rate is not available, changes to these agreements may be required, and we could be negatively impacted by any newly determined alternative benchmark.

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, 2020, we had outstanding long-term debt of $1.9 billion, of which $42.5 million was current. We may need 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 (Loss).

We will settle any conversions of the Cash Convertible Notes described under the heading “Other Factors Affecting Liquidity and Capital Resources” elsewhere in this report, entirely in cash. Accordingly, the conversion option that is part of the Cash Convertible Notes will be 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, 2020, our consolidated balance sheet reflected $2.4 billion of goodwill and $726.2 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 outside of the U.S. Our consumable manufacturing facilities are located in Germany, China and the U.S. We source raw materials and subcomponents to manufacture our products from different countries. We have established sales subsidiaries in many countries. In addition, our products are sold through independent distributors serving more than 40 other 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, exchange controls and changes in freight rates, as may occur as a result of rising energy costs. 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.

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 business in countries with a history of corruption and transactions with foreign governments increases the risks associated with our international activities. Based on our international operations, 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 such 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.

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, 2020, we owned 368 issued patents in the United States, 284 issued patents in Germany and 1,813 issued patents in other major industrialized countries. In addition, at December 31, 2020, we had 546 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 $55.27 to a low of $25.04. On the Frankfurt Stock Exchange our Common Shares have ranged from a high of €46.95 to a low of €22.54 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, 2020, a total of approximately 228.0 million Common Shares were outstanding along with approximately 5.6 million additional shares reserved for issuance upon exercise or release of outstanding stock options and awards, of which 0.4 million were vested. A total of approximately 14.4 million Common Shares are reserved and available for issuances under our stock plans as of December 31, 2020, 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, 2020, 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.

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 and the documents incorporated herein by reference 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 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.

Results of Operations

Overview

We are 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, such as identifying the DNA of a virus or a mutation of a gene. QIAGEN Digital insights integrate software and cloud-based resources to interpret increasing volumes of biological data and report relevant, actionable insights. Our automation solutions tie these together in seamless and cost-effective molecular testing workflows.

We sell our products - consumables, automated instrumentation systems using those technologies, and bioinformatics to analyze and interpret the data - to two major customer classes:

- **Molecular Diagnostics** - healthcare providers engaged in many aspects of patient care requiring accurate diagnosis and insights to guide treatment decisions in oncology, infectious diseases and immune monitoring. Includes Precision Medicine and companion diagnostics.
- **Life Sciences** - customers including government, biotechnology companies and researchers who utilize molecular testing and technologies who are generally served by public funding including areas such as medicine and clinical development efforts, forensics and exploring the secrets of life. Includes Pharma, Academia and Applied Testing customers.

We market products in more than 130 countries, mainly through subsidiaries in markets we believe have the greatest sales potential in Europe, Asia, the Americas and Australia. We also work with specialized independent distributors and importers. As of December 31, 2020, we employed more than 5,600 people in more than 35 locations worldwide.

Recent Acquisitions

We have made a number of strategic acquisitions and implemented other strategic transactions aiming to achieve market-leading positions with innovative technologies in high-growth areas of molecular diagnostics and research. These transactions have enhanced our product offerings and technology platforms, as well as our geographic footprint. They include:

- In September 2020, we acquired the remaining 80.1% of NeuMoDx, a company that designs and develops molecular diagnostic solutions for hospital and clinical reference laboratories. Prior to acquisition, we held a 19.9% investment in NeuMoDx and entered a strategic partnership in 2018 to commercialize next-generation, fully integrated automation systems for PCR testing. The NeuMoDx 288 (high-throughput version) and NeuMoDx 96 (mid-throughput) systems help clinical laboratories process increasing molecular test volumes and deliver more rapid diagnostic insights. We distribute these systems in Europe and other markets outside the United States.
- In January 2019, we began developing next-generation systems for digital PCR and acquired the digital PCR assets of Formulatrix, Inc., a developer of laboratory automation solutions. In 2020, we began commercialization of fully integrated digital PCR solutions, combining QIAGEN technologies and automation with the Formulatrix assets we acquired. Known as QIAcuity digital PCR, the system offers highly automated workflows, quicker time-to-result, and higher multiplexing and throughput flexibility than current digital PCR platforms. Digital PCR is one of the fastest-growing molecular testing applications in the life sciences industry. We paid Formulatrix $125.0 million in cash upon closing and paid $135.9 million during 2020 for the remaining milestone payments.
- Also in January 2019, we acquired N-of-One, Inc., a pioneer in molecular oncology decision support services, to strengthen our bioinformatics leadership in clinical NGS interpretation. The acquisition broadened the QIAGEN Digital Insights offering of software, content and service-based solutions. N-of-One's services and content have been integrated into QIAGEN Clinical Insights (QCI), adding medical interpretation and real-world evidence insights. The N-of-One somatic cancer database, drawing upon more than 125,000 anonymized patient samples, has increased our lead as the provider of the industry's largest genomics knowledge base.

Our financial results include the impacts of recent acquisitions from their effective dates.

Year Ended December 31, 2020, Compared to 2019

Net Sales

(in millions)	2020		2019		
Product type	**Net sales**	**% of net sales**	**Net sales**	**% of net sales**	**% change**
Consumables and related revenues	$ 1,615.4	86%	$ 1,354.1	89%	+19%
Instruments	254.9	14%	172.3	11%	+48%
Net Sales	$ 1,870.3		$ 1,526.4		+23%
Non-COVID-19 and COVID-19 products					
Non-COVID-19 products	$ 1,252.4	67%	$ 1,383.1	91%	-9%
COVID-19 products	617.9	33%	143.3	9%	+331%
Net Sales	$ 1,870.3		$ 1,526.4		+23%

In 2020, we experienced significant demand for solutions used in the COVID-19 pandemic and experienced improving trends in other areas of the business during the second half of 2020.

The instruments portfolio saw strong sales growth across multiple product categories including sample preparation platforms as well as general and integrated PCR equipment and platforms. Consumables and related revenues benefited from increased output of key consumable products including sample technologies kits and testing cartridges for QIAstat-Dx and NeuMoDx instruments. Net sales were positively impacted by two percentage points from favorable currency movements against the U.S. dollar.

(in millions)	2020		2019		
Customer class	**Net sales**	**% of net sales**	**Net sales**	**% of net sales**	**% change**
Molecular Diagnostics	$ 904.0	48%	$ 737.1	48%	+23%
Life Sciences	966.4	52%	789.3	52%	+22%
Net Sales	$ 1,870.3		$ 1,526.4		+23%
Product group					
Sample technologies	$ 803.9	43%	$ 548.4	36%	+47%
Diagnostic solutions	460.8	25%	465.5	30%	-1%
PCR / Nucleic acid amplification	363.6	19%	224.7	15%	+62%
Genomics / NGS	165.6	9%	183.8	12%	-10%
Other	76.6	4%	104.1	7%	-26%
Net Sales	$ 1,870.3		$ 1,526.4		+23%

Sample technologies were driven by strong growth in both consumables and instruments. Key drivers of this product group, which represents products involved in the first step in any molecular lab process, included COVID-19 solutions such as automated RNA extraction kits along with the launch of QIAprep&amp and improving trends in non-COVID products in the later portion of 2020.

Diagnostic solutions includes molecular testing platforms and products as well as Precision Medicine and companion diagnostic co-development revenues. This product group experienced growth due to sales of COVID testing solutions including QIAstat-Dx and NeuMoDx that was more than offset by the steep declines experienced earlier in 2020 for QuantiFERON-TB test sales that did see improving trends during the later portion of 2020 but finished the year down 21% compared to 2019.

PCR / Nucleic acid amplification involves research and applied PCR solutions and components and includes the QIAcuity digital PCR platform launched in September 2020. This product group was driven by strong growth across consumables and instruments in 2020 and also saw strong demand for OEM solutions and enzymes used in third-party diagnostic kits for COVID-19 testing.

Genomics / NGS includes universal NGS solutions as well as the full QIAGEN Digital Insights portfolio. This product group faced slower customer demand during the pandemic. Universal NGS sales were supported by initial orders of NGS-based kits used for epidemiological research of positive COVID-19 samples for viral variants during the second half of 2020.

Geographic region (in millions)	2020	2019	% change
Americas	$ 825.5	$ 722.0	+14%
Europe, Middle East and Africa	682.3	487.5	+40%
Asia Pacific, Japan and Rest of World	362.6	317.0	+14%
Net Sales	$ 1,870.3	$ 1,526.4	+23%

Top 7 emerging markets: Brazil, Russia, India, China, South Korea, Mexico and Turkey (2020: $287 million, 2019: $250 million, +14%)

EMEA led the geographic regions with 40% sales growth in 2020 due to strong performance in countries including France, the United Kingdom, Italy and Germany. EMEA was supported by one percentage point of sales growth from positive currency movements in 2020. Asia Pacific, Japan and Rest of World experienced gains during 2020 in China in part from strong QIAstat-Dx instrument sales as well as overall gains in other countries including Japan and Australia that more than offset a decline in South Korea particularly in QuantiFERON-TB tests. The Americas region benefited from significant increased demand in Brazil and Mexico throughout the year and gains in the United States in other areas of the portfolio more than offset the decline in QuantiFERON-TB tests for the full-year.

Gross Profit

(in millions)	2020	2019	% change
Gross Profit	$ 1,232.7	$ 1,005.3	+23%
Gross Margin	65.9%	65.9%	

Generally, our consumables and related products have a higher gross margin than our instrumentation products and service arrangements and fluctuations in the sales levels of these products and services can result in changes in gross margin between periods. Gross profit in 2020 includes the shift in product mix where lower margin instrument products advanced at a faster pace than consumable products as well as higher material costs. These adverse impacts were offset by lower amortization expenses related to developed technology and patent and license rights, which have been acquired in business combinations or asset acquisitions. The amortization expense on acquisition-related intangibles within cost of sales decreased to $63.2 million in 2020 from $71.5 million in 2019. The decrease follows the full amortization of assets previously acquired in 2007. We expect that our acquisition-related intangible amortization will increase as a result of the acquisition of NeuMoDx as further discussed in Note 5 *"Acquisitions and Divestitures"* and in the event of future acquisitions.

Operating Expenses

	2020		2019		
(in millions)	Expenses	% of net sales	Expenses	% of net sales	% change
Research and development	$ 149.1	8.0%	$ 157.4	10.3%	-5%
Sales and marketing	413.7	22.1%	391.9	25.7%	+6%
General and administrative	111.7	6.0%	112.3	7.4%	-1%
Acquisition-related intangible amortization	20.8	1.1%	30.0	2.0%	-31%
Restructuring, acquisition, integration and other, net	150.0	8.0%	199.8	13.1%	-25%
Long-lived asset impairments	1.0	0.1%	140.0	9.2%	-99%
Total operating expenses	$ 846.3	45.2%	$ 1,031.4	67.6%	
Income (loss) from operations	$ 386.4	20.7%	$ (26.1)	(1.7)%	

2020 results include the expenses from the discontinued tender offer while 2019 includes expense related to the decision to stop NGS instrument development and targeted efficiency improvement initiatives.

Research and Development

The overall decrease is the result of the suspended development of NGS-related instrument systems in connection with the 2019 restructuring measures discussed in Note 6 *"Restructuring"*. In 2020, additional costs include costs associated with QIAstat menu expansion, the launch of new products including QIAprep&amp and QIAcuity as well as costs incurred following the acquisition of NeuMoDx. 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 make investments in our research and development efforts.

Sales and Marketing

Sales and marketing expenses were primarily associated with personnel, commissions, advertising, trade shows, publications, freight and logistics expenses, and other promotional expense. Higher costs in 2020 reflect higher share-based compensation expense as a result of an increase in estimated performance achievement and increases in freight and commissions due to higher sales, partially offset from the lockdowns and limitations resulting from the COVID-19 pandemic, such as restricted travel and postponed trade shows and exhibits. When pandemic lockdowns and restrictions are lifted, we anticipate that absolute sales and marketing costs will increase along with new product introductions and growth in sales of our products.

General and Administrative

The decrease in general and administrative expenses reflects lower share-based compensation following the 2019 restructuring measures partially offset by continued investments in information technology systems, including cyber security, across the organization as well as an increase in the personnel expenses from performance achievements due to sales volume increases.

Acquisition-Related Intangible Amortization

Amortization expense related to developed technology and patent and license rights acquired in a business combination is included in cost of sales. Amortization of trademarks and customer base 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 cost of sales, research and development, or sales and marketing line items based on the use of the asset.

During 2020, amortization expense on acquisition-related intangibles within operating expense decreased to $20.8 million, compared to $30.0 million in 2019. The decrease follows the full amortization of assets previously acquired in 2007. Our acquisition-related intangible amortization will increase in the event of future acquisitions.

Restructuring, Acquisition, Integration and Other, net

Restructuring, acquisition, integration and other, net expenses totaled $150.0 million during the year ended December 31, 2020 and includes acquisition expenses related to the unsuccessful acquisition attempt by Thermo Fisher of $125.5 million, including a $95.0 million expense reimbursement. Additionally, we incurred net acquisition, integration and other expenses of $21.2 million, including charges for NeuMoDx as well as the $11.7 million gain on the value of our interest held on the acquisition date. We also incurred $3.3 million of charges related to the 2019 Restructuring program as discussed further in Note 6. As we continue the integration of NeuMoDx, we expect to incur additional integration costs in 2021.

During 2019, $199.8 million of restructuring, acquisition, integration and other, net expenses were incurred including $163.0 million for the 2019 Restructuring program. Additionally, we incurred net acquisition, integration and other expenses of $36.8 million, including charges for the 2019 acquisitions as well as a $7.4 million gain from the reduction in the fair value of contingent consideration.

Long-lived Asset Impairments

In 2020, $1.0 million impairments to property, plant and equipment were recorded and in 2019, $140.0 million impairments including both intangible assets and property, plant and equipment were recorded primarily in connection with the 2019 restructuring measures as further discussed in Note 6 "Restructuring and Impairments".

Other Income (Expense)

(in millions)	2020	2019	% change
Interest income	$ 10.0	$ 22.1	-55%
Interest expense	(71.3)	(74.2)	-4%
Other income, net	114.3	0.4	
Total other income (expense), net	$ 53.0	$ (51.6)	+203%

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. Interest income earned in 2019 included interest on higher cash balances following the issuance of cash convertible notes in November 2018.

Interest expense primarily relates to debt, discussed in Note 16 "Debt" in the accompanying consolidated financial statements. During 2020, the majority of the 2021 Notes were repaid and we issued new zero coupon convertible debt due in 2027.

Other income, net the for year ended December 31, 2020 includes a gain of $123.3 million for the sale of our investment in ArcherDX, $5.0 million of income from equity method investees and a total of $1.6 million in gains related to prior sales of assets. These gains were partially offset by $9.3 million in unrealized losses recognized for the change in fair market value of all marketable equity securities, $4.1 million net losses on foreign currency transactions and a $2.3 million loss from the sale of an equity security investment.

Other income, net was $0.4 million of income for the year ended December 31, 2019. Other income includes $7.8 million of upward adjustments resulting from observable price changes for non-marketable investments not accounted for under the equity method, $2.1 million in income from equity-method investments and a $0.7 million gain from receipt of shares in settlement of a zero-book value financial instrument held with a third party. This income was partially offset by impairments, including $4.8 million of impairments in non-marketable investments accounted for under the equity method and net losses on foreign currency of $5.7 million for the year ended December 31, 2019.

Income Tax Expense (Benefit)

(in millions)	2020	2019	% change
Income (loss) before income taxes	$ 439.5	$ (77.8)	+665%
Income tax expense (benefit)	80.3	(36.3)	+321%
Net income (loss)	$ 359.2	$ (41.5)	
Effective tax rate	18.3%	46.7%	

Our effective tax rates differ from The Netherlands statutory tax rate of 25% due in part to our operating subsidiaries being exposed to effective tax rates ranging from zero to 35%. Fluctuations in the distribution of pre-tax (loss) income among our operating subsidiaries can lead to fluctuations of the effective tax rate in the consolidated financial statements. In 2020 and 2019, our effective tax rates were 18.3% and 46.7%, respectively. The comparison is impacted by pre-tax book income which was higher in 2020 reflecting higher operating income in the current year due to the significant demand for solutions used in COVID-19 testing. This compares to pre-tax book loss in 2019 which reflects the restructuring charges incurred during the third quarter of 2019. Additionally, 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, including 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 or partially exempt. During 2020, we have intercompany financing arrangements through Dubai, and through mid-2019 had arrangements through Luxembourg and Ireland.

See Note 17 "Income Taxes" to the consolidated financial statements for a full reconciliation of the effective tax rate to The Netherlands statutory rate.

In future periods, our effective tax rate may fluctuate from similar or other factors as discussed in “Changes in tax laws or their application could adversely affect our results of operations or financial flexibility” in the “Opportunities and Risks” section.

Foreign Currencies

QIAGEN N.V.'s reporting currency is the U.S. dollar, and most of our subsidiaries' functional currencies 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 shareholders' equity at historical rates. Translation gains or losses are recorded in shareholders' equity, and transaction gains and losses are reflected in net income. The net loss on foreign currency transactions is included in other income, net, and in 2020, 2019 and 2018 was $4.1 million, $5.7 million, and $12.3 million, respectively.

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" to the accompanying consolidated financial statements.

Liquidity and Capital Resources

To date, we have funded our business primarily through internally generated funds, debt, and private and public sales of equity. Our primary use of cash has been to support continuing operations and our investing activities including capital expenditure requirements and acquisitions. As of December 31, 2020, we had cash and cash equivalents of $598.0 million and short-term investments of $117.2 million. As of December 31, 2019, we had cash and cash equivalents of $623.6 million, restricted cash of $5.7 million and short-term investments of $129.6 million. 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, 2020, cash and cash equivalents had decreased by $31.4 million from December 31, 2019, primarily as a result of cash used in investing activities of $443.3 million and cash used financing activities of $50.1 million, partially offset by cash provided by operating activities of $457.8 million. As of December 31, 2020 and 2019, we had working capital of $1.05 billion and $618.9 million, respectively.

Cash Flow Summary

(in millions)	2020	2019
Net cash provided by operating activities	$ 457.8	$ 330.8
Net cash used in investing activities	$ (443.3)	$ (222.3)
Net cash used in financing activities	$ (50.1)	$ (639.1)
Effect of exchange rate changes on cash, cash equivalents and restricted cash	$ 4.2	$ 0.8
Net decrease in cash, cash equivalents and restricted cash	$ (31.4)	$ (529.7)

Operating Activities

For the years ended December 31, 2020 and 2019, we generated net cash from operating activities of $457.8 million and $330.8 million, respectively. While net income was $359.2 million in 2020, non-cash components in income included $205.0 million of depreciation and amortization, a gain of $121.8 million on sales of investments primarily related to the sale of the investment in ArcherDX as discussed in Note 10 "Investments", $42.3 million of amortization of debt discount and issuance costs and $40.9 million of share-based compensation expense. Operating cash flows include a net decrease in working capital of $130.2 million excluding changes in fair value of derivative instruments. The current period change in working capital is primarily due to increased inventories in order to meet the increase in demand and decreased accrued and other current liabilities following cash payments made in connection with the 2019 restructuring measures. Because we rely heavily on cash generated from operating activities to fund our business, a decrease in demand for our products, longer collection cycles or significant technological advances of competitors would have a negative impact on our liquidity.

Investing Activities

Approximately $443.3 million of cash was used in investing activities during 2020, compared to $222.3 million during 2019. Investing activities during 2020 consisted principally of $239.6 million in cash paid for acquisitions, net of cash acquired primarily for NeuMoDx, $171.5 million paid for intangible assets including $135.9 million of the remaining milestone payments for the digital PCR assets acquired from Formulatrix in 2019, $132.8 million in cash paid for purchases of property and equipment which includes the investments we are making in expanded production capacity, $53.4 million paid for collateral assets and $49.8 million for purchases of short-term investments. This was partially offset by $181.2 million from the sale of short-term investments and $25.6 million net proceeds from sales of investments in privately held companies as discussed in Note 10 "Investments".

Cash used in investing activities during 2019 includes $156.9 million paid for intangible assets primarily related to the asset acquisition from Formulatrix, $294.0 million for purchases of short-term investments and $118.0 million purchases of property, plant and equipment partially offset by $396.1 million from the sale of short-term investments.

Financing Activities

For the year ended December 31, 2020, cash used in financing activities was $50.1 million compared to cash provided by financing activities of $639.1 million in 2019. Financing activities during 2020 consisted primarily of net payments of $468.6 million in connection with the final conversion, redemption and termination of the 2021 Cash Convertible Notes and warrants as discussed further in Note 16 "Debt" as well as $64.0 million for repurchases of QIAGEN shares. This was partially offset by $497.6 million in proceeds from issuance of the 2027 Zero Coupon Convertible Notes.

In 2019, cash used in financing activities totaled $639.1 million primarily due to $506.4 million repayments of long-term debt and repurchases of QIAGEN shares totaled $74.5 million in 2019.

Other Factors Affecting Liquidity and Capital Resources

As of December 31, 2020, we carry $1.9 billion of long-term debt, of which $42.5 million is current.

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 which is 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 which are 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.

Additionally in 2017, we completed a German private placement consisting of several tranches denominated in either U.S. dollars or Euro at either floating or fixed rates and due at various dates through June 2027 as described in Note 16 "Debt".

In December 2020, we obtained a €400 million syndicated revolving credit facility with a contractual life of three years with the ability to extend by one year two times. No amounts were utilized at December 31, 2020. The facility can be utilized in Euro and bears interest of 0.525% to 1.525% above EURIBOR, and is offered with interest periods of one, three or six months. The interest rate is linked to our environmental, social and governance (ESG) performance. We have additional credit lines totaling €27.0 million with no expiration date, none of which were utilized as of December 31, 2020.

In March 2014, we issued Cash Convertible Senior Notes of which $0.2 million remains outstanding as of December 31, 2020 and will be repaid at maturity on March 19, 2021.

In October 2012, we completed a U.S. private placement with three series at a weighted average interest rate of 3.66%. The following two series remain outstanding at December 31, 2020: (1) $300 million 10-year term due in 2022 (3.75%); and (2) $27 million 12-year term due in 2024 (3.90%).

In connection with certain acquisitions, we could be required to make additional contingent cash payments totaling up to $26.6 million based on the achievement of certain revenue and operating results milestones as further discussed in Note 20 "Commitments and Contingencies".

In May 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 in December 2020. Repurchased shares will be held in treasury in order to satisfy various obligations, which include employee share-based remuneration plans.

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 stock will impact the timing and volume of the issuances. Additionally, we may make future acquisitions or investments requiring cash payments, the issuance of additional equity or debt 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, will be sufficient to fund our planned operations and expansion during 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.

Off-Balance Sheet Arrangements

We did not use special purpose entities and do not have off-balance sheet financing arrangements as of and during the years ended December 31, 2020, 2019 and 2018.

Contractual Obligations

As of December 31, 2020, our future contractual cash obligations are as follows:

Contractual Obligations	Payments Due by Period						
(in millions)	Total	2021	2022	2023	2024	2025	Thereafter
Long-term debt [1]	$ 1,980.0	$ 64.7	$ 505.3	$ 370.2	$ 578.9	$ 0.3	$ 460.7
Purchase obligations	250.8	199.8	42.6	5.4	3.0	-	-
Operating leases	117.0	25.4	21.0	16.3	10.8	6.7	36.9
License and royalty payments	30.0	10.0	7.2	4.5	2.6	2.3	3.4
Total contractual cash obligations	$ 2,377.9	$ 299.9	$ 576.1	$ 396.3	$ 595.3	$ 9.3	$ 501.0

[1] Amounts include required principal, stated at the current carrying values, and interest payments.

In addition to the above, and pursuant to the purchase agreements for certain acquisitions and other contractual arrangements, we could be required to make additional contingent cash payments totaling up to $26.6 million based on the achievement of certain revenue and operating results milestones as follows:

(in millions)	
2021	$ 8.9
2022	17.7
	$ 26.6

Of the $26.6 million total contingent obligation, we have assessed the fair value at December 31, 2020 to be $23.6 million which is included in accrued and other current liabilities in the accompanying consolidated balance sheet.

Liabilities associated with uncertain tax positions, including interest and penalties, are currently estimated at $104.9 million as of December 31, 2020 and are not included in the table above, as we cannot reasonably estimate when, if ever, an amount would be paid to a government agency. 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.

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 is currently not rated by any credit rating agency.

Human Resources

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. 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. At the end of 2020, QIAGEN had 5,610 full-time equivalent employees, an increase of 10% from 5,096 at the end of 2019.

Recognizing that our employees are the key to our success, we seek to be a great place to work. In 2020, we were once again recognized as a "Top Employer" in Germany by the Top Employer Institute, a global authority on recognizing excellence in people practices. Also in 2020, our subsidiary in Brazil was certified for the first time as a "Great Place to Work," and awarded one of the "Best Workplaces" in healthcare as well as Top 5 in diagnostic medicine. Finally, our U.S. headquarters in Germantown, Maryland, was awarded five different awards by the Alliance for Workplace Excellence (AWE), including the Workplace Excellence Seal of Approval, Diversity Champion Award, and Best Practices Supporting Workers 50+.

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 contribute to our success based on their strengths and characteristics. In 2020, our multicultural workforce was composed of at least 80 nationalities with an average age of 40.1. With 48% 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 leadership roles rose from just under 28% in 2018 to just under 32% in 2020 as a result of a series of initiatives to drive awareness, engagement, and development of this area among our leadership team.

Employee development is viewed as integral to the success of creating lasting value for our customers, patients, colleagues, partners, and shareholders. 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. In 2020, we ran a mix of virtual instructor-led and e-learning courses. All in person trainings were put on hold in 2020 due to the COVID-19 pandemic.

Internal and external ratings have improved significantly and support our preferred position in the global working environment. Specific retention targets have been met with a 9% voluntary turnover rate for the total workforce and a voluntary turnover rate of 5% for the management level in 2020.

Since the creation of QIAGEN, management has formed a culture that seeks to attract and retain the best talent worldwide and reward associates for performance. This compensation system fosters a focus on achieving corporate strategic initiatives as well as personal accountability. We participate in various compensation benchmarking surveys that provide information on the level and mix of compensation awarded by companies and industries for a broad range of positions around the world. In the case of QIAGEN, these include many peer life science and diagnostics companies based in the U.S. QIAGEN has a "pay for performance" culture, with the compensation of employees linked to the achievement of corporate financial and individual performance goals. Business goals are established by senior management. These goals are set at ambitious levels each year 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.

In 2020 as a consequence of the global pandemic, a large portion of our employees worked remotely beginning in the first quarter of 2020 and continuing throughout the year. For our essential workers and in our locations where a small number of employees continued to work on site, we implemented safety measures including routine on-site testing at critical manufacturing facilities to reduce the risk of COVID-19 transmission.

Employees worldwide

	2018	2019	2020
Americas	1230	1132	1328
EMEA	2670	2820	3059
APAC & RoW	1052	1144	1223
Total	4952	5096	5610

2018

Production	22%
R&D	21%
Sales	40%
Marketing	6%
Admin	11%

2019

Production	23%
R&D	19%
Sales	40%
Marketing	6%
Admin	12%

2020

Production	28%
R&D	16%
Sales	39%
Marketing	6%
Admin	11%

Future Perspectives

QIAGEN Perspectives for 2021

With a differentiated portfolio of Sample to Insight solutions for molecular testing, QIAGEN announced in February 2021 that it expects an 18-20% rise in sales (at constant exchange rates, CER) in 2021 and adjusted earnings per share (EPS) to increase to $2.42-2.46 (CER) from $2.15 in 2020. We estimate the total addressable market at about $11 billion per year. QIAGEN's five pillars of growth – Sample technologies, QuantiFERON, QIAcuity digital PCR, NeuMoDx, QIAstat-Dx – account for more than $6 billion of this total.

QIAGEN expects its 2021 results to reflect both the ongoing strong demand for COVID-19 test solutions during the course of the first half of the year as widespread vaccines are expected to be available by the middle of 2021 as well as continued improvements in non-COVID-19 areas of its portfolio throughout the year. These expectations are also based on plans for significant investments in R&D and clinical trials to strengthen the competitive profile of QIAGEN's five pillars of growth. In particular, the company is planning initiatives to expand the test menu for the NeuMoDx and QIAstat-Dx automated PCR systems in the U.S. and Europe.

As vaccination programs gain traction around the world, the demand for COVID-19 testing is expected to change. QIAGEN anticipates demand for PCR and antigen testing solutions to continue during the first half of 2021, but could recede to a lower level during the second half. This outcome depends significantly on the impact of new viral variants. QIAGEN plans to continue investing in upscaling its production lines which are serving pandemic testing demands as well as supporting future growth of many products for non-COVID applications.

QIAGEN is encouraged for the future as it continues to serve COVID-19 testing demands while capturing strong growth opportunities in non-COVID related applications once the pandemic has been brought under control. The company is managing the increase in demand for non-COVID categories and planning for a steady sales increases as clinical testing volumes return for oncology and infectious diseases and research activities resume in academia and pharma projects. The company is focused on investments in its five pillars of growth to fuel its success beyond the pandemic and create long term shareholder value. QIAGEN aims to maintain our leading position in sample technologies, grow the QuantiFERON franchise anchored by its tuberculosis test, expand the QIAcuity digital PCR platforms and the NeuMoDx integrated PCR systems for clinical diagnostics, and drive the use of the QIAstat-Dx syndromic testing platform.

Global Economic Perspectives for 2021

The world economy entered a recession in 2020 as the COVID-19 pandemic took hold, but is now expected to grow again in 2021 as vaccination programs strengthen economic activity, especially in developed countries. In January 2021, the International Monetary Fund said the world economy would grow 5.5 percent this year, while the World Bank forecast a 4 percent annual increase. However, considerable pandemic-related risks mean any outlook is unusually uncertain: unforeseen changes to lockdown measures, vaccine rollouts, and general financial conditions and commodity prices could hamper – or boost – growth more than expected. Aside from indications that vaccination programs will gain pace this year, fiscal stimulus measures across major economies and a continuation of accommodative monetary policy by central banks are expected to underpin a positive economic development. But, even then, recovery is expected to be subdued and challenging. Economic momentum tends to benefit our performance, while downturn can limit spending by customers. Currency exchange rates also positively or negatively affect the company's results as these are reported in U.S. dollars.

Industry Perspectives for 2021

The demand for testing for active SARS-CoV-2 infections using PCR and antigen products is expected to decline to a lower base level as vaccination programs increase during the year. Viral immune-response monitoring using T-cell and antibody testing may increase along with population monitoring to stop new infection hotspots and multiplex PCR tests to discern between COVID-19 and other respiratory illnesses.

PCR testing volumes are expected to remain fairly robust in 2021. With COVID-19 hospitalizations expected to decrease during the year, elective procedures and laboratory volumes for non-COVID-19 issues are likely to recover – although some industry observers expect global demand trends to only normalize again in 2022.

The pandemic has cemented the trend of genomic insights moving rapidly from basic research laboratories into applications in medicine and other fields, delivering ever-greater value for patients and other users. As innovation drives market expansion, QIAGEN has a dynamic opportunity to continue its growth in 2021 and the years beyond.

COVID-19 has drawn attention to the fact that molecular testing can also evaluate and monitor patients for cancer, infectious diseases and other conditions. Molecular medicine is migrating from research-based institutions to hospitals and reference laboratories in need of quick, accurate results, increasing the demand for standardized tests and automated workflows. Customers embrace diverse technologies based on different settings and needs – from low-throughput to high-throughput, and from single-target or multiplex PCR analysis to in-depth next-generation sequencing. Customers increasingly want easy-to-use technologies that can also be used outside of a laboratory.

Life science researchers in Academia and the Pharma industry rely on novel sample and analytical technologies to explore disease pathways and biomarkers, and also to guide drug development and clinical trials. Genomic insights from molecular biology laboratories are increasingly leading to new drug approvals. Applications of molecular testing also are expanding for public safety needs such as forensics and environmental monitoring.

QIAGEN engages with customers across the continuum from discovery to routine molecular testing and aims to create value with differentiated solutions and automation systems that make improvements in life possible.

Corporate Governance Report

Corporate Governance Report

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 (the Dutch Code). The Dutch Code is applicable to QIAGEN N.V. (in the following also referred to as the "Company"), 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 the principles and concrete 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 Corporate Governance 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 of the principal differences follows.

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.

Managing Board

General

The Managing Board manages QIAGEN and is responsible for defining and achieving QIAGEN's aims, strategy, policies and results and is expected to act in a sustainable manner by focusing on long-term value creation in the performance of their work. 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. Under Dutch Law, QIAGEN's Managing Board, which has two members, has chosen to work with an Executive Committee and is accountable for the actions and decisions of the Executive Committee, which is comprised of the CEO, the CFO and certain experienced leaders who have responsibilities for the operational management of the Company and the achievement of its objectives and results. The Managing Board has ultimate responsibility for the Company's external reporting and is answerable to shareholders of the Company at the Annual General Meeting of Shareholders. Pursuant to the two-tier corporate structure, the Managing Board is required to render account for the performance of its duties to the Supervisory Board and the General Meeting of Shareholders (General Meeting). The Managing Board provides the Supervisory Board with timely 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 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, 2020 and their ages as of January 31, 2021, are as follows:

Name	Age	Position
Thierry Bernard	56	Managing Director, Chief Executive Officer
Roland Sackers	52	Managing Director, Chief Financial Officer

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

Thierry Bernard
Chief Executive Officer and Managing Director

Mr. Bernard joined QIAGEN in February 2015 to lead our 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 having previously served in this role on an interim basis since late 2019. Mr. Bernard previously worked at bioMérieux, where he served in roles of increasing responsibility for 15 years, most recently as Corporate Vice President, Global Commercial Operations, Investor Relations and the Greater China Region. Prior to joining bioMérieux, he served in management roles in multiple international groups. Mr. Bernard was appointed a member of the Board of Directors of T2 BioSystems in 2020. He has earned from Sciences Po (Paris), Harvard Business School, London School of Economics and the College of Europe and is a member of French Foreign Trade Advisors.

Roland Sackers
Chief Financial Officer and Managing Director

Mr. Sackers joined QIAGEN in 1999 as Vice President Finance and has been Chief Financial Officer since 2004. He became a member of the Managing Board in 2006. Between 1995 and 1999, he served as an auditor with Arthur Andersen Wirtschaftsprüfungsgesellschaft Steuerberatungsgesellschaft. Mr. Sackers earned his Masters Degree in Business Administration (Diplom-Kaufmann) from the University of Münster, Germany. In 2019, he joined the Supervisory Board of Evotec SE and is chair of the audit committee. Mr Sackers is a board member of the industry association, BIO Deutschland. From 2011 to 2018, he was a non-executive director and chair of the audit committee of Immunodiagnostic Systems Holding PLC (IDS) in the United Kingdom.

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 2020. 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 2020, the Supervisory Board had five regular meetings that were held with the attendance of the Managing Board, while certain agenda items were discussed exclusively between the Supervisory Board members. 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 appointed an Audit Committee, a Compensation Committee, a Selection and Appointment (Nomination) Committee and a Science and Technology Committee from among its members and can appoint 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 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. The Supervisory Board has appointed a chairman from its members who has the duties assigned to him 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.

Our Supervisory Directors for the year ended December 31, 2020 and their ages as of January 31, 2021, are as follows:

Supervisory Directors

Name [1]	Age	Nationality	Gender	Position
Stéphane Bancel	48	French	Male	Supervisory Director, Member of the Audit Committee
Dr. Metin Colpan	66	German	Male	Supervisory Director, Chair of the Science and Technology Committee and Member of the Selection and Appointment Committee
Dr. Ross L. Levine	49	U.S.	Male	Supervisory Director and Member of the Science and Technology Committee
Dr. Elaine Mardis	58	U.S.	Female	Supervisory Director and Member of the Science and Technology Committee and Member of the Compensation Committee
Lawrence A. Rosen	63	U.S.	Male	Chair of the Supervisory Board, Chair of the Audit Committee, Chair of the Selection and Appointment Committee and Member of the Compensation Committee
Elizabeth E. Tallett	71	U.S.	Female	Supervisory Director, Chair of the Compensation Committee, Member of the Audit Committee and Member of the Selection and Appointment Committee

[1] Dr. Håkan Björklund stepped down from his roles as Chair of the Supervisory Board, Member of the Compensation Committee and Selection and Appointment Committee effective August 21, 2020.

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:

Stéphane Bancel, 48, joined the Supervisory Board in 2013 and has been a member of the Audit Committee since 2014. He was a member of the Compensation Committee from 2013 through July 2020 and a member of the Science and Technology Committee from 2014 through July 2020. He is Chief Executive Officer of Moderna, Inc., a clinical-stage biotechnology company based in Cambridge, Massachusetts, which is advancing 24 drug development programs involving messenger RNA therapeutics. Before joining Moderna, Mr. Bancel served for five years as Chief Executive Officer of the French diagnostics company bioMérieux SA. Prior to bioMérieux, he was Managing Director of Eli Lilly in Belgium and Executive Director of Global Manufacturing Strategy and Supply Chain at Eli Lilly in Indianapolis, Indiana, after having started at Lilly in Great Britain. Before joining Eli Lilly, Mr. Bancel served as Asia-Pacific Sales and Marketing Director for bioMérieux while based in Tokyo, Japan. He holds a Master of Engineering degree from École Centrale Paris (ECP), a Master of Science in Chemical Engineering from the University of Minnesota and an M.B.A. from Harvard Business School.

Dr. Håkan Björklund, 64, joined the Supervisory Board Member in March 2017 and was Chair of the Supervisory Board from June 2018 until he stepped down in August 2020.

Dr. Metin Colpan, 66, is a co-founder of QIAGEN and was the Chief Executive Officer and a Managing Director from 1985–2003. Dr. Colpan has been a member of the Supervisory Board since 2004 and has served as Chair of the Science and Technology Committee since 2014. He has been a member of the Selection and Appointment Committee since 2015. Dr. Colpan obtained his Ph.D. and M.S. in Organic Chemistry and Chemical Engineering from the Darmstadt Institute of Technology in 1983. Prior to founding QIAGEN, Dr. Colpan was an Assistant Investigator at the Institute for Biophysics at the University of Düsseldorf. Dr. Colpan has extensive experience in separation technologies for the purification of nucleic acids, and has filed many patents in the field. Dr. Colpan also serves as a Supervisory Board member of CGR GmbH in Mettmann, Germany and Heilpflanzenwohl AG in Baar, Germany. Dr. Colpan previously served as a Supervisory Board member of Ingenium Pharmaceuticals AG, GenPat77 Pharmacogenetics AG, GPC Biotech AG and Morphosys AG, each in Munich, Germany and Qalovis Farmer Automatic Energy GmbH, in Laer, Germany.

Dr. Ross L. Levine, 49, joined the Supervisory Board and its Science and Technology Committee in 2016. He is a physician-scientist focused on researching and treating blood and bone marrow cancers as the Laurence Joseph Dineen Chair in Leukemia Research, the Chief of Molecular Cancer Medicine, and an Attending Physician at Memorial Sloan Kettering Cancer Center, as well as Professor of Medicine at Weill Cornell Medical College. He leads a research lab investigating genetics and targeted therapies in myeloid malignancies and is interested in application of next-generation sequencing technology in the practice of medicine in hematologic cancers. He trained in internal medicine at Massachusetts General Hospital and in hematology-oncology at the Dana-Farber Cancer Institute, earning board certification in these specialties. He received his M.D. from the Johns Hopkins University School of Medicine and his A.B. degree from Harvard College.

Dr. Elaine Mardis, 58, joined the Supervisory Board in 2014. She is also a member of the Science and Technology Committee and the Compensation 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 improve our understanding of human disease, and toward improving the precision of medical diagnosis, prognosis and treatment. Dr. Mardis is the former Robert E. and Louise F. Dunn Distinguished Professor of Medicine at Washington University School of Medicine in St. Louis, Missouri, where she was on the faculty for 22 years. As Co-Director of the McDonnell Genome Institute, she devised methods and automation that contributed to the Human Genome Project and has since played key roles in the 1000 Genomes Project, The Cancer Genome Atlas, and the Pediatric Cancer Genome Project. Prior to joining the Washington University faculty, she was a senior research scientist at BioRad Laboratories. Dr. Mardis is the immediate past President of the American Association for Cancer Research, and has scientific advisory roles at Kiadis Pharmaceuticals N.V., PACT Pharma LLC, and Scorpion Therapeutics LLC. Dr. Mardis received her Bachelor of Science degree in Zoology in 1984 and her Ph.D. in Chemistry and Biochemistry in 1989, both from the University of Oklahoma. She is an elected member of the U.S. National Academy of Medicine.

Lawrence A. Rosen, 63, joined the Supervisory Board in 2013 and was appointed Chair in 2020. He is also Chair of the Audit Committee and Chair of the Selection and Appointment Committee, in addition to being a member of the Compensation Committee. Mr. Rosen was a member of the Board of Management and Chief Financial Officer of Deutsche Post DHL from 2009–2016. Mr. Rosen was in charge of controlling, corporate accounting and reporting, investor relations, corporate finance, corporate internal audit and security, taxes, as well as the group's global business services. Prior to joining Deutsche Post DHL, Mr. Rosen served as Chief Financial Officer of Fresenius Medical Care AG & Co. KGaA in Germany from 2003–2009. Prior to that, he was Senior Vice President and Treasurer for Aventis SA in Strasbourg, France. Between 1984 and 2000, Mr. Rosen held different positions at the Aventis predecessor companies Hoechst AG and American Hoechst/Hoechst Celanese Inc. Since 2015, Mr. Rosen has served as a member of the Supervisory Board of Lanxess AG and previously served on the Supervisory Board of Postbank AG from 2009–2015. Mr. Rosen, who is a U.S. citizen, holds a Bachelor's degree in Economics from the State University of New York and an M.B.A. from the University of Michigan.

Elizabeth E. Tallett, joined the Supervisory Board, as well as the Audit Committee and Compensation Committee, in 2011. She is a member of the Selection and Appointment Committee, and since 2016 has served as Chair of the Compensation Committee. Ms. Tallett was a Principal of Hunter Partners, LLC, a management company for early to mid-stage pharmaceutical, biotechnology and medical device companies, from 2002 until February 2015. Ms. Tallett continues to consult with early stage health care companies. Her senior management experience includes President and CEO of Transcell Technologies Inc., President of Centocor Pharmaceuticals, member of the Parke-Davis Executive Committee, and Director of Worldwide Strategic Planning for Warner-Lambert Company. Ms. Tallett graduated from Nottingham University, England, with dual Bachelor's degrees with honors in mathematics and economics. She is a member of the Board of Directors of Anthem, Inc. (where she is currently Chair), Principal Financial Group, Inc. (from which she is retiring in May 2021), Meredith Corp. and Moderna, Inc. She is a former director of Coventry Health Care, Inc. Ms. Tallett was a founding board member of the Biotechnology Council of New Jersey and is Chair of the Trustees of Solebury School in Pennsylvania.

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. In 2020, 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.

Committees of the Supervisory Board

The Supervisory Board has established an Audit Committee, a Compensation Committee, a Selection and Appointment Committee and a Science and Technology Committee from among its members and can establish other committees as deemed beneficial. The Supervisory Board has approved charters under which each of the committees operates. These charters are published on our website www.QIAGEN.com. The committees were comprised of the following members in 2020:

Name of Supervisory Director	Member of Audit Committee	Member of Compensation Committee	Member of Selection and Appointment Committee	Member of Science and Technology Committee
Stéphane Bancel	•			
Dr. Metin Colpan			•	• (Chair)
Dr. Ross L. Levine				•
Dr. Elaine Mardis		•		•
Lawrence A. Rosen	• (Chair)	•	• (Chair)	
Elizabeth E. Tallett	•	• (Chair)	•	

We believe that all of our Supervisory Directors meet the independence requirements set forth in the Dutch Corporate Governance Code (the Dutch Code). We further believe that all Supervisory Board Directors 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.

Audit Committee

The Audit Committee consists of three members and meets at least quarterly. The Audit Committee members are appointed by the Supervisory Board and serve for a term of one year. We believe that all members of our Audit 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 Mr. Rosen as an "audit committee financial expert" as that term is defined in the United States 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 audit committee)*. The Audit Committee performs a self-evaluation of its activities on an annual basis.

The Audit 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 and internal risk management, control and compliance systems. The Audit 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 General Meeting. Further, the Audit 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 Management Board and the Supervisory Board. Our Internal Audit department operates under the direct responsibility of the Audit Committee. Further, the Audit Committee is responsible to establish procedures to allow for the confidential and or anonymous submission by employees of concerns. Additionally, this includes the receipt, retention and treatment of submissions received regarding accounting, internal accounting controls, or auditing matters. The Audit Committee discusses our financial accounting and reporting principles and policies and the adequacy of our internal accounting, financial and operating controls and procedures with the external auditor and management; considers and approves any recommendations regarding changes to our accounting policies and processes; reviews with management and the external auditor our quarterly earnings reports prior to their release to the press; and reviews the quarterly and annual reports (reported on Forms 6-K and 20-F) to be furnished to or filed with the Securities and Exchange Commission and the Deutsche Boerse as well as the half-year and annual reports filed with The Netherlands Authority for the Financial Markets. The Audit Committee met seven times in 2020 and met with the external auditor excluding members of the Managing Board in July and October 2020. The Audit Committee reviews major financial risk exposures, pre-approves related-party transactions between the Company and Supervisory Board or Managing Board, and reviews any legal matter including compliance topics that could have a significant impact on the financial statements.

Compensation Committee

The Compensation Committee's primary duties and responsibilities include, among other things, the preparation of a proposal for the Supervisory Board concerning the Remuneration Policy for the Managing Board to be adopted by the General Meeting, the preparation of a proposal concerning the individual compensation of Managing Board members to be adopted by the Supervisory Board and the preparation of the Remuneration Report on compensation policies for the Managing Board to be adopted by the Supervisory Board. The Compensation Committee reviews and approves all equity-based compensation, reviews and approves the annual salaries, bonuses and other benefits of executive officers, and reviews general policies relating to employee compensation and benefits. The Remuneration Report reviews the implementation of the Remuneration Policy in the most recent year and provides an outline of the Remuneration Policy for the future. The Compensation Committee engages 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 Committee consists of three members and members are appointed by the Supervisory Board and serve for a term of one year. The Compensation Committee met five times in 2020.

Selection and Appointment Committee

The Selection and Appointment (Nomination) Committee is primarily responsible for the preparation of selection criteria and appointment procedures for members of the Supervisory Board and Managing Board as well as the periodic evaluation of the scope and composition of the Managing Board and the Supervisory Board, including the profile of the Supervisory Board. Additionally, the Selection and Appointment Committee periodically evaluates the functioning of individual members of the Managing Board and Supervisory Board, reporting these results to our Supervisory Board. It also proposes the (re-) appointments of members of our Managing Board and Supervisory Board and supervises the policy of our Managing Board in relation to selection and appointment criteria for senior management. Members of the Selection and Appointment Committee are appointed by the Supervisory Board and serve for a one-year term. Following the departure of Dr. Björklund, the Supervisory Board discussed the composition of the Supervisory Board during Supervisory Board meetings and teleconferences. The Selection and Appointment committee met five times in 2020.

Science and Technology Committee

The Science and Technology Committee is primarily responsible for reviewing and monitoring research and development projects, programs, budgets, infrastructure management and overseeing the management risks related to the Company's portfolio and information technology platforms. The Science and Technology Committee provides understanding, clarification and validation of the fundamental technical basis of the Company's businesses in order to enable the Supervisory Board to make informed, strategic business decisions and vote on related matters, and to guide the Managing Board to ensure that powerful, global, world-class science is developed, practiced and leveraged throughout the Company to create shareholder value. The members of the Science and Technology Committee are appointed by the Supervisory Board and serve for a term of one year. The Science and Technology Committee met four times in 2020.

Diversity within the Management Board and Supervisory Board

QIAGEN is not subject to statutory requirements regarding gender diversity within the Managing Board and Supervisory Board. However, in nominating candidates for these boards, QIAGEN supports the trend toward higher participation of women. QIAGEN

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 Selection and Appointment 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

The objective of the Remuneration Policy for the Managing Board is to ensure a fair compensation in line with market conditions for the most talented, qualified leaders. This enables us to achieve our strategic initiatives and operational excellence. The Remuneration Policy aligns remuneration to reward individual performance as well as the overall performance of QIAGEN, and to foster sustainable growth and value creation.

The Remuneration Policy and overall remuneration levels are benchmarked regularly against a selected group of companies in key markets in which QIAGEN operates to ensure overall competitiveness. We participate in various compensation benchmarking surveys in which companies provide information on the level, as well as the structure, of compensation awarded for a broad range of positions around the world.

Remuneration of Managing Board members consists of a combination of base salary, short-term variable cash award and elements of long-term incentives. In addition, the members of the Managing Board can receive pension arrangements and other benefits in line with market practices. The total target remuneration package of the Managing Board members is appropriately set with consideration of a variety of factors that include external benchmarks and the individual's experience as well as the complexity of the position, scope and areas of responsibilities. This applies for all compensation components, both individually and in total.

The structure of the remuneration package for the Managing Board members is designed to balance incentives for short-term operational performance with incentives for long-term sustainable value creation while considering the interests of shareholders and other stakeholders. This means that a significant portion of total remuneration consists of variable awards, which can differ substantially from year to year and depend on the achievement of corporate goals as well as individual performance.

The Remuneration Policy for the Managing Board is generally aligned and consistent with the framework for remuneration of other senior managers of QIAGEN.

The current Remuneration Policy for the Managing Board was adopted by the General Meeting of Shareholder in 2014. A revised Remuneration Policy which considers changes to market trends, best practices and benchmarks, and an increased level of disclosure in line with best practices will be on the agenda for the General Meeting of Shareholders in 2021.

Managing Board Compensation

The compensation granted to the members of the Managing Board in 2020 consisted of a fixed salary and variable components, with the significant majority of compensation awarded in the form of QIAGEN stock units that are restricted for a long multi-year period to

align management with the interests of shareholders and other stakeholders. Variable compensation included long-term equity incentives that were awarded based on individual performance as well as equity awards in lieu of the value of the annual cash bonus.

The Remuneration Policy provides that annual regular equity-based compensation grants to members of the Managing Board will primarily consist of performance stock units. Grants of stock options and restricted stock units which are based on time vesting only shall no longer be granted on a regular basis and shall be reserved for use as special equity incentive rewards in certain situations.

Stock options, if granted, to the Managing Board members must have an exercise price that is higher than the market price at the time of grant. Restricted Stock Units granted to the Managing Board members, vest over a 10-year period. Performance Stock Units are subject to long-term vesting periods and contingent upon the achievement of several financial goals over a multi-year period.

In 2018, a grant of Performance Stock Units with mandatory minimum holding levels of QIAGEN shares was made under the Commitment Program linked to achievement of a three-year plan covering 2019 and 2021 including quantitative goals for net sales, earnings before interest and taxes (EBIT), QIAGEN Value Added (QVA), a steering metric that measures the ability of QIAGEN to generate returns and exceed its cost of capital and share price development as compared to peer companies. Under the Commitment Program, the financial targets for vesting are based on three-year goals as defined within QIAGEN's five-year business plan covering the period from 2019 until the end of 2023. The targets for vesting were set and approved by the Supervisory Board.

For the year ended December 31, 2020, 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	Stock Units Granted
Thierry Bernard	$ 900,000	1,492,000	18,000	$ 2,410,000	$ 90,000	140,000
Roland Sackers	$ 570,500	366,000	41,000	$ 977,500	$ 77,500	120,000

[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 tax 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 2020, a Remuneration Policy for the Supervisory Board was adopted. The objective of the Remuneration Policy is to attract, retain, and motivate high-qualified Supervisory Board members, taking into account the Company's identity, mission, values, strategic initiatives and value creation. It focuses on achieving a total remuneration level, both short-term and long term, which is comparable with levels provided by other European and United States-based companies.

Supervisory Board Compensation

The Supervisory Board remuneration is aligned to the applicable market standards, considering peer companies of similar size and complexity in similar industries, including biotechnology, life science supplies, diagnostics and pharmaceuticals, to reflect our nexus to the European Markets as a Dutch company as well as our U.S. focus as a NYSE listed company subject to U.S. regulations and the fact that several of the Supervisory Board members are residing in the United States.

The Supervisory Board compensation for 2020 consists of fixed retainer compensation and additional retainer 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
Chair of the Compensation Committee	$18,000
Chair of the Selection and Appointment Committee and other board committees	$12,000
Fee payable to each member of the Audit Committee	$15,000
Fee payable to each member of the Compensation Committee	$11,000
Fee payable to each member of the Selection and Appointment Committee and other board committees	$6,000

Further, the 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 fiscal 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.

For the year ended December 31, 2020, the Supervisory Board members received the following compensation:

Supervisory Board Member	Fixed Remuneration	Committee Chair	Committee Membership	Total[1]	Restricted Stock Units
Stéphane Bancel	$ 57,500	—	23,500	$ 81,000	9,426
Dr. Håkan Björklund[2]	$ 100,000	8,000	7,300	$ 115,300	9,426
Dr. Metin Colpan	$ 57,500	12,000	6,000	$ 75,500	9,426
Dr. Ross L. Levine	$ 57,500	—	6,000	$ 63,500	9,426
Dr. Elaine Mardis	$ 57,500	—	9,700	$ 67,200	9,426
Lawrence A. Rosen	$ 88,300	29,000	5,500	$ 122,800	9,426
Elizabeth E. Tallett	$ 57,500	18,000	21,000	$ 96,500	9,426

[1] Supervisory Directors 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. Håkan Björklund stepped down from his roles as Chair of the Supervisory Board, Member of the Compensation Committee and Selection and Appointment Committee effective August 21, 2020.

Share Ownership

The following table sets forth certain information as of January 31, 2021 concerning the ownership of Common Shares by our directors and officers. In preparing the following table, we have relied on information furnished by such persons.

	Shares Beneficially Owned[1]		
Name and Country of Residence	Number[2]		Percent Ownership
Thierry Bernard, United States	50,343	(3)	*
Roland Sackers, Germany	170,000	(4)	*
Stéphane Bancel, United States	15,926	(5)	*
Dr. Metin Colpan, Germany	1,172,698	(6)	0.51 %
Dr. Toralf Haag, Germany	700		*
Dr. Ross L. Levine, United States	2.151	(7)	*
Dr. Elaine Mardis, United States	—	(8)	—
Lawrence A. Rosen, United States	—	(9)	—
Elizabeth Tallett, United States	28,668	(10)	*

* Indicates that the person beneficially owns less than 0.5% of the Common Shares issued and outstanding as of January 31, 2021.

(1) The number of Common Shares outstanding as of January 31, 2021 was 227,871,296. The persons and entities 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 at January 31, 2021. See footnotes below for information regarding options now exercisable or that could become exercisable within 60 days of the date of this table.

(3) Does not include 61,590 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 88,299 shares issuable upon the release of unvested stock awards that could become releasable within 60 days from the date of this table.

(5) Does not include 10,392 shares issuable upon the release of unvested stock awards that could become releasable within 60 days from the date of this table.

(6) Includes 357,893 shares held by CC Verwaltungs GmbH, of which Dr. Colpan is the sole stockholder and 770,370 shares held by Colpan GbR. Does not include 10,860 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 3,946 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 10,392 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 10,392 shares issuable upon the release of unvested stock awards that could become releasable within 60 days from the date of this table.

(10) Does not include 1,563 shares issuable upon the exercise of options now exercisable having exercise prices of $15.59 per share. Options expire on February 2022. Does not include 10,392 shares issuable upon the release of unvested stock awards that could become releasable within 60 days from the date of this table.

The following table sets forth the options of our officers and directors as of January 31, 2021:

Name	Number of Options	Expiration Dates	Exercise Prices
Elizabeth E. Tallett	1,563	2/28/2022	$15.59

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 by one or more shareholders jointly representing at least 40% of QIAGEN's issued share capital. Furthermore, one or more shareholders, who jointly represent at least 10% of QIAGEN's issued share capital may, on their application, be authorized by the district court judge having applications for interim relief, to convene a General Meeting. 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 ten percent 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 2020.

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 of Shareholders

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 14.4 million Common Shares reserved and available for issuance under the 2005 and 2014 Plans at December 31, 2020.

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 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 Committee's decisions are subject to the approval of the Supervisory Board.

The Compensation 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 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, 2021, there were 0.3 million options outstanding with exercise prices ranging between $14.91 and $21.87 and expiring between May 31, 2021 and May 31, 2023. The exercise price of the options is the fair market value of the Common Shares as of the date of grant or a premium above fair market value. Additionally, there were 5.1 million stock unit awards outstanding as of January 31, 2021. These awards will be released between February 15, 2021 and May 31, 2028. As of January 31, 2021, 1.4 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 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 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 "Risk Management" and "Risks" section above.

Disclosure Controls and Procedures

Our Managing Director, 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, as that term is defined in Rules 13a-15(e) and 15d-15(e) of the Securities Exchange Act of 1934, as amended, within 90 days of the date of this report. Based on that evaluation, they concluded that as of December 31, 2020, our disclosure controls and procedures were effective to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms, 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.

Report of Management on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Securities Exchange Act of 1934, as amended. The Company's system of internal controls over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of the consolidated financial statements in accordance with generally accepted accounting principles.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements and even when determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation. 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.

Our management assessed the effectiveness of the Company's internal control over financial reporting as of December 31, 2020. In making this assessment, management used the updated criteria set forth in 2013 by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) in Internal Control-Integrated Framework.

Based on our assessment under the COSO Internal Control-Integrated Framework, management believes that, as of December 31, 2020, our internal control over financial reporting is effective. Management's assessment of and conclusion on the effectiveness of internal control over financial reporting did not include the internal controls of NeuMoDx Molecular, Inc, which is included in the 2020 consolidated financial statements of QIAGEN N.V. and Subsidiaries and constituted 6.31% of total assets as of December 31, 2020 and 0.53% of revenues for the year then ended. Securities and Exchange Commission guidelines permit companies to exclude acquisitions from their assessment of internal control over financial reporting during the first year following an acquisition.

Changes in Internal Control over Financial Reporting

There has been no change in our internal control over financial reporting during 2020 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 registered public accounting firm for our statutory consolidated financial statements prepared in accordance with International Financial Reporting Standards 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 the Audit Committee advises the Supervisory Board. At the Annual General Meeting in 2020, KPMG Accountants N.V. was appointed as external auditor for the Company for 2020 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, 2020 contained in this annual report.

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.

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 was last amended on December 8, 2016, and 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. A member may be reappointed for a term of additional 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 has joined the Supervisory Board in 2004 and Ms. Elizabeth Tallett has been a Supervisory Board member since 2011. We highly value the scientific and commercial experience of Dr. Colpan and his in-depth knowledge of QIAGEN and the broad industry knowledge, management and board experience of Ms. Tallett. QIAGEN therefore supports the reappointment of Dr. Colpan and Ms. Tallett beyond the eight-year term as recommended by the Dutch Code.

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, Executive Committee and in all other management levels of the Company, we do not consider the definition of concrete targets relating to diversity useful. 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 ethical 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 2020, our multicultural workforce was composed of at least 80 nationalities with an average age of 40.1. With 48.4% women, we are well balanced in terms of gender on an aggregate level. Information on the composition of our Managing and Supervisory Boards can be found above.

3. *Best practice provision 3.1.2 vi. recommends that when formulating the remuneration policy, it should be considered that shares awarded to 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 on a regular basis and shall be reserved for use as special equity incentive rewards in certain situations. 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. In 2019, the members of the Managing Board elected to receive in lieu of their 2018 cash bonus the value earned in the year in performance stock units which vest over five years from the grant date.

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 employment 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.

Non-Financial Statement

Non-Financial Statement

Our Approach to Sustainability

QIAGEN believes in sustainability as long-term economic success combined with respect for the natural environment and for the people who are our stakeholders – employees, customers, suppliers, neighbors. By reducing emissions, providing healthy, high-quality workplaces, and ensuring suppliers and partners uphold our environmental and social standards, QIAGEN sees itself as a good corporate citizen sincerely striving to make improvements in life possible.

The COVID-19 crisis has demonstrated these two facets of our responsibility to best effect. Our business success came hand in hand with our working closely with public officials and customers around the world to ensure the availability of critical testing components to fight the pandemic. At the same time, QIAGEN honored its commitment to its highly dedicated employees by ensuring workplace flexibility, support for those looking after families, and safe working conditions in essential production facilities and offices.

Like no other year in living memory, 2020 showed that social and environmental developments can quickly and sweepingly affect business. QIAGEN is affirmed in its commitment to sustainability, which goes beyond formal regulations. As a market and innovation leader in life sciences and molecular diagnostics, we believe innovation can drive sustainable development in our industry – and in our world. We are committed to continuing on this path.

Our dedicated Global Environment, Health and Safety (EHS) team continuously addresses, monitors, and manages sustainability topics. It oversees the company-wide implementation of EHS management systems and sets goals to limit the use of energy, water, and plastics. The team reports to the Head of Global Operations, who is a member of our Executive Committee.

We are committed to protecting the environment by driving more energy savings and further reducing the negative impacts of our operations. We pledge to look after the welfare and safety of our employees, providing a safe, inclusive working environment for their development and growth. We also pledge to collaborate and work with our suppliers to build a framework tailored around our social and environmental goals in 2021.

We will also continue to engage with all stakeholders to gain a better understanding of our operating environment, including market developments and cultural dynamics. We will continue to approach employees, customers, patients, suppliers, shareholders, non-governmental organizations (NGOs) and communities using means as diverse as standard questionnaires and one-on-one conversations. Employee-led volunteer sustainability committees contribute to environmental debates and improvements throughout the company.

In 2020, we demonstrated our sustainability commitment by executing a €400 million sustainability-linked credit facility with an interest rate linked to our environmental, social and governance (ESG) rating. We will donate margin gains of improved ESG rating to sustainability-linked causes. We are the first provider of molecular diagnostics solutions with a sustainability component built into its corporate borrowings. It reinforces our commitment to further integrate sustainability into every part of our business.

Our Management Report contains more information about our business model, structure, products, customers, and strategy – as well as a description of the main trends and most important issues of 2020. We will provide a separate content index report on our

website. This report will link our most material topics in scope for non-financial reporting with the standards provided by Global Reporting Initiative (GRI) and Sustainability Accounting Standards (SASB). This content index will make the reported information traceable and increases creditability and transparency. You also can find a summary report on QIAGEN's commitment to sustainability on our website: https://www.qiagen.com/us/sustainability

Material Non-financial Information

For guidance on materiality and non-financial disclosure, we base our non-financial reporting on the Reporting Standards as provided by GRI as well as on relevant guidance as issued by the SASB.

For management purposes, we also work on the basis of defined materiality topics relating to sustainability. In the reporting period, we reviewed the materiality analysis first conducted in 2019. Our senior management validated the following list of material topics:

- **Environmental matters:** energy and emissions, water consumption, resource efficiency, sustainable procurement;
- **Employee matters:** employee satisfaction, occupational safety and health protection, employee development, responsible employer, equal opportunities;
- **Social matters:** access to healthcare, quality and product safety, customer satisfaction, data and cyber security;
- **Respect for human rights:** conflict minerals; and
- **Anti-corruption and bribery matters:** antitrust, anti-corruption.

Please refer to our non-financial statement 2019 for a detailed description of the procedure.

Environment

At QIAGEN, we are committed to minimizing the impact of our business operations on the planet – from the energy we consume and the resources we use in our manufacturing processes, to the materials we use in our laboratories and offices. Reducing our environmental impact is a key corporate goal for 2021, and we encourage our employees to be actively engaged in pursuing this goal by continually looking for ways to eliminate harmful substances and reduce waste from our products.

We recognize that climate change is one of the most pressing global challenges and acknowledge climate change risks such as extreme weather events and changes in regulation or customer behavior. Operations could, for example, be negatively impacted by volatility in the cost of raw materials, components, freight, and energy. New laws or regulations adopted in response to climate change could increase energy costs, the costs of certain raw materials, components, packaging, and transportation. Our customers are generally very conscious of the environment and therefore of issues including plastic consumption and the recyclability and durability of products. These aspects influence their choice of supplier.

To proactively address climate change, we have committed to reducing emissions in line with a 1.5-degree Celsius climate target as demanded by the 2015 Paris Agreement. Our 2019 carbon footprint, which was calculated with market-based emissions factors, serves as the base year. By the end of 2020, we achieved a reduction of 9.1% in scope 1 and 2 emissions and a reduction in business travel emissions of 81.8% below base year. The 2020 reduction was mainly achieved through the implementation of energy efficiency measures as well as the overall effects of the COVID-19 crisis. QIAGEN is currently reviewing climate targets and will make an announcement in June 2021 on its revised climate goal against science-based targets by 2050.

Environmental Performance

To increase transparency regarding our own global energy consumption and greenhouse gas (GHG) emissions, QIAGEN extended the coverage of its energy consumption data in 2018 by integrating a centralized data collection process for all production sites, research centers and offices. This expansion has enabled us to more accurately calculate our corporate carbon footprint (CCF) for scope 1, 2 and 3 emissions for each reporting year (see QIAGEN Corporate Carbon Footprint 2020).

QIAGEN Corporate Carbon Footprint 2020

Emission category (in tCO2)	2020	2019	Change in % 2019 to 2020
Scope 1: Direct emissions	10,068	10,808	-6.9%
Scope 2: Indirect emissions	9,631	10,870	-11.4%
Scope 3.4: Transportation and distribution	28,900	17,082	+69.2%
Scope 3.6: Business travel	3,529	19,431	-81.8%
Total (market based)	52,128	**58,191**	**-10.4%**

Scope 1 covers direct GHG emissions from the combustion of fossil fuels on our own premises and with company vehicles.

Scope 2 emissions are reported using both a location-based and market-based approach, which cover our indirect emissions originating from external generation of electricity for our operational and business activities. A location-based calculation method for scope 2 emissions reflects the average emissions intensity of grids on which energy consumption occurs; a market-based method reflects emissions calculated with the energy source mix used by each QIAGEN site. Location based scope 2 emissions decreased by 14.5% to 15,854 tCO2 in 2020 compared to 18,540 tCO2 in 2019.

Continuing its progress, QIAGEN included additional scope 3 emissions data related to transportation and distribution for the years 2019 and 2020 in our GHG emissions calculations. In general, scope 3 emissions include emissions that occur along our value chain, for example through transport services, suppliers, and business travel.

QIAGEN's energy data used to calculate our scope 1 and 2 emissions can be viewed by source in Figure 1 QIAGEN GHG Emissions by Site.

QIAGEN Energy Consumption Scope 1 and 2

Energy consumption by source (in kWh)	2020	2019	2018
Natural gas	33,747,177	34,679,620	38,627,496
Petrol	6,766,864	8,677,185	7,910,565
Diesel	3,981,440	5,255,293	8,160,611
Liquefied Petroleum Gas (LPG)	66,363	50,179	72,702
Electricity procurement from conventional tariffs	30,903,763	36,130,248	30,346,347
Electricity procurement from green tariffs	1,148,642	1,142,240	1,238,345
Consumption from district heating, district cooling and steam	146,340	223,000	193,000
Total energy consumption	76,760,589	**86,157,765**	**86,549,066**

In addition to our energy data, we collect data regarding freshwater consumption, waste and recycling. We can confirm that none of our manufacturing sites are in water-stressed regions.

The table below lists the environmental performance data for 2018 through 2020. The data is shown as a ratio of our consolidated environmental data in relation to our net sales (NS in $ thousands), to establish a system for a long-term monitoring.

QIAGEN Environmental Indicators

	2020	Indicators 2020	2019	Indicators 2019	2018	Indicators 2018
Energy (in MWh)	76,761	0.041 MWh/NS	86,158	0.0564 MWh/NS	86,549	0.0576 MWh/NS
GHG emissions Scope 1 + 2 (in tCO2 ; location-based)	25,922	0.0139 t/NS	29,347	0.0192 t/NS	28,898	0.0192 t/NS
Freshwater use (in m^3)	113,736	60.81 l/NS	174,635 [1]	114.41 l/NS	119,621	79.65 l/NS
Total waste (in t)	1,183	0.633 kg/NS	1,155	0.757 kg/NS	633	0.421 kg/NS
Hazardous waste (in t)	509	0.272 kg/NS	330	0.216 kg/NS	250	0.166 kg/NS

(1) - Figures for 2019 were adjusted due to improved data availability

Beginning in 2018, all relevant scope 1 and 2 emissions were calculated following a location-based approach. The additional calculation using a market-based approach for scope 2 emissions was introduced for 2019 as part of our climate strategy. We will continue to report the location-based emissions to ensure consistent methodology (see QIAGEN Environmental Indicators).

Product Life Cycle Assessment

Last year, QIAGEN conducted a life cycle assessment (LCA) for one of its best-selling – and therefore representative – products, the QIAamp DNA Mini Kit. The aim was to assess the complete carbon footprint of the QIAmp DNA Mini Kit in order to gradually improve its environmental performance over the following years.

The scope of the study was the full life cycle of the product (so called "cradle to grave"), including extraction and processing of raw materials, transport to the customer, energy and material input required when using the product, as well as transport to the disposal facility and incineration of remaining materials. The LCA identified the largest relative environmental impacts within the life cycle of a QIAmp DNA Mini Kit, laying the foundation for a subsequent carbon-reduction process. A detailed report on the LCA can be found on QIAGEN's website in the Sustainability section.

Plastic Footprint Reduction

The environmental impact of plastic materials is becoming a major concern for customers. QIAGEN uses plastics in many of its products and production support materials, as well as for transport and packaging. We and our industry face a number of challenges in reducing plastic materials due to safety, hygiene, and regulatory concerns; however, we recognize that we must work to eliminate plastics where possible. In 2020, QIAGEN far exceeded its corporate goal to reduce plastic transportation packaging material by 3% below 2019 levels. The goal was achieved in 2020 with a 42-ton reduction in plastic transport packaging. This was primarily achieved by the reduction in gel packs used in cold room shipments in the European Union (EU) and a change in demand for cold room products during the pandemic. Our goal for 2021 is to reduce plastic transport packaging by 9% below 2020.

Our global, cross-functional, plastic footprint reduction team identifies opportunities to reduce plastic, investigates more environment-friendly alternative materials, and optimizes recyclability where possible. In 2020, we successfully switched some of our expanded polystyrene (EPS) boxes used in dry-ice shipments for the U.S. to ClimaCell liners, which use paper and starch for insulation. In 2021, this initiative is expanding to include more cold room shipments both in the U.S, Europe, and APAC regions.

Many of our existing plastic reduction initiatives are focused on packaging. As our responsibility extends throughout our supply chain, we are also working with our logistics suppliers on initiatives to reduce shipping waste. These include, for example, re-usable passive temperature control shipping systems for certain cold-chain products.

Environment-Friendly Facilities

We also aim to make our buildings environmentally friendly by seeking LEED certification for new construction. Hilden's research and development and the production facility were awarded LEED Gold certification, and an extension to the QIAGEN Germantown facility received Silver certification. Our initiatives to improve energy efficiency include energy modeling during the design phase of buildings, energy extraction from co-generators, improved insulation, heat recovery, lighting replacements, and installation of intelligent building systems.

To reduce the environmental impact of employee commuting, several QIAGEN sites have installed charging stations for electric cars and introduced bike-to-work schemes. These include Hilden, Germantown, and Manchester. Many facilities provide discounted train and bus tickets to encourage employees to use public transportation.

Our volunteer sustainability committees have initiated projects to reduce waste at their sites by introducing recycling and composting programs, replacing single-use items with reusable versions, and donating surplus office furniture and lab equipment to local community organizations.

Employees

QIAGEN's long-term success and growth are shaped decisively by 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 our customers, patients, colleagues, partners and shareholders. Being the industry's employer of choice by attracting and developing top talent is one of our global goals. To achieve that, QIAGEN creates a work environment that empowers and involves employees at all levels.

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. Around 76% of our workforce is employed in member states of the Organization for Security and Cooperation in Europe (OSCE), and in all regions where we operate, we comply with all applicable laws regarding freedom of association and collective bargaining and respect local laws and regulations concerning labor relations. Our commitment on this issue can also be found in our Human Rights Policy on our Sustainability webpage. This policy is communicated to all employees globally on an ongoing basis via the company intranet and also given to newly hired employees. QIAGEN strives to foster an open-door workplace culture where employees are able to approach management and/or Human Resources about their 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.

Among all QIAGEN guidelines, the following policies aim to incorporate QIAGEN's culture and values into all of our internal and external relationships. These are available internally for all employees:

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

Depending on local law and custom, there are different types of employment ranging from long-term fixed contracts to temporary positions, also including flexible time and programs for parents returning from childcare. In 2020, we employed 3.0% part-time employees (2019: 3.03%) and 2.1% temporary employees with a QIAGEN contract / fixed-term work contract (2019: 1.24%).

Employee Training

As a fast-growing technology and knowledge-based company, we consider high-quality training and career development to be an integral part of our success. We offer various training platforms as QIAlearn, QIAGEN Academy, and MasterControl 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.

In 2020, we ran a mix of virtual instructor-led and e-learning courses attended by 2,470 employees (2019: 3,951). In addition, 74 (2019: 46) top talented employees participated in our advanced leadership development programs, which took place in two groups in 2020. All trainings were conducted virtually in 2020 due to the COVID-19 pandemic.

As part of our talent and succession management, we have established transparent career paths with the QIAGEN Profile Navigator (QPN). It defines jobs, core competencies and approaches to advancement across the global organization.

In addition, QIAGEN's global Performance Enhancement System (PES) 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.

The supervisor feedback process provides the opportunity for employees to give anonymized feedback to their supervisors. For 2020, employees provided overall very positive feedback.

Diversity

At QIAGEN, 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 contribute to our success based on their strengths and characteristics.

We want to provide an environment where all individuals have the equal opportunity to grow and contribute to our progress, regardless of their age, educational background, sex (including gender identity, gender expression and sexual orientation), nationality, ethnicity, veteran status, physical abilities or religion. Diversity makes QIAGEN a great place to work.

Our strategic initiative on gender diversity started in 2018 has yielded remarkable results, particularly regarding leadership positions. The participation of women in leadership roles rose from approximately 28% in 2018 to approximately 32% in 2020 because of a series of initiatives to drive awareness, engagement and development of this area among our leadership team. More information about the policy on diversifying the Management Board and the Supervisory Board can be found in the Corporate Governance Report.

The QIAGEN Executive Council of Equal Opportunity (ECEO), made up of senior representatives from each of the business areas across the organization, has a lead function in driving change within QIAGEN around diversity and inclusion. Globally agreed cross-functional objectives are tied directly to our corporate goals on diversity and inclusion and drive initiatives within each organizational area. In addition, the ECEO works closely with the Diversity and Inclusion Ambassador Program. The ambassador program includes more than 25 employees from around the world who volunteer to champion diversity and inclusion across our global sites. The ambassadors host site-specific roundtables, organize trainings, workshops and events to educate the community – at QIAGEN and beyond – on diversity and inclusion topics throughout 2020. In 2019, our parental leave guidance in the U.S. was updated, which was a direct result of the diversity forums led by our ambassadors in conjunction with the executive committee members. The ambassadors have worked on updating our unconscious bias training package that will be rolled out in early 2021.

Employee Satisfaction and Retention

Recognizing that QIAGEN's employees are the key to our success, we seek to be a great place to work. QIAGEN offers 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. Internal and external ratings have improved significantly and show QIAGEN's reputation and preferred position in the global working environment. Specific targets for 2020 in terms of retention were reached – both the overall (under 10%) and the management level (under 5%) voluntary turnover were significantly lower.

A prudent work-life balance is an important measure to create and maintain employee satisfaction. We provide services to help employees balance their personal lives with the company's dynamic work environment, including in-house childcare, sabbatical programs, and flexible working hours. In the U.S., we recently updated our parental leave policies to allow 12 to 14 weeks of fully paid leave. We also allow short-term bereavement leave. With regard to the COVID-19 pandemic, we were and continue to be flexible and allow our employees to work from home as guided by local regulations as well as personal situations.

QIAGEN has implemented frameworks for performance-based compensation and equity-based compensation, and incentive programs for new ideas and innovation. These programs aim to ensure fair and attractive compensation and to encourage each employee to work for the company's long-term benefit. The QIAGEN remuneration report provides detailed information on the compensation practices regarding the QIAGEN Managing Board and can be found in our Renumeration Report online in our Corporate Governance pages.

An essential component of QIAGEN's 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 sports opportunities in the form of in-house gyms, on-site soccer fields and beach volleyball courts.

QIAGEN's commitment to being an employer of choice is also reflected in the high number of applications for open positions, which exceeded 40,000 applications in 2020 (2019: 27,000). At the same time, the average voluntary annual turnover rate has decreased from approximately 12% to less than 10% year over year. In 2020, QIAGEN was once again recognized as a "Top Employer" in Germany. The Top Employer Institute is a global authority on recognizing excellence in people practices. The title is awarded after a very rigorous process where companies must provide detailed information on their HR practices, have an onsite review and several employee interviews. In July 2020, our Brazil subsidiary was certified for the first time as a "Great Place to Work," and in November 2020, it was awarded one of the "Best Workplaces" in healthcare as well as Top 5 in diagnostic medicine. To receive the certification, at least 7 out of 10 employees must classify the company in a survey as a "Great Place to Work." For the ranking, an assessment of the cultural practices and a complementary questionnaire are taken into account. Finally, QIAGEN's US headquarters in Germantown, Maryland, received five different awards by the Alliance for Workplace Excellence (AWE), including the Workplace Excellence Seal of Approval, Diversity Champion Award, and Best Practices Supporting Workers 50+. All award recipients undergo a rigorous assessment process led by an independent review panel.

Occupational Safety and Health Protection

QIAGEN recognizes its responsibilities with respect to occupational health and safety in all our operations and meets all applicable regulatory requirements. A dedicated EHS manager provides direction and oversees the implementation of global EHS policies and procedures in alignment with the international standard ISO 45001 and our own quality management system.

All QIAGEN facilities coordinate, manage and monitor site-specific occupational health and safety risks and activities, which include the management of permits and licenses, risk analysis and assessments, planning for unplanned events, accident reporting, and health and safety inspections. In 2020, a senior manager for EHS was appointed at the Hilden manufacturing site as part of the company's commitment to improve the safety of its employees at this large manufacturing site. All employees of the company are required to adhere to local health and safety procedures and practices. Safety, orderliness, and cleanliness are a key success factor at QIAGEN.

QIAGEN committed to an all-company goal in 2020 to reduce the rate of lost days due to injuries per 100 employees based on calculated working hours, to drive and encourage initiatives to improve the safety culture in QIAGEN. The Days Away Restricted and Transferred (DART) are collected monthly from 13 QIAGEN sites located across Americas, EMEA and APAC. The DART goal was set in 2020 as <4.5 per 100 employees and we achieved 4.0.

	2020
Headcount average per month [1]	3,220
Total number of calculated work hours	5,658,706
Total OSHA recordable accidents	29
Total number of lost workdays	113
DART per 100 employees	4.0

(1) - Headcount average per month of employee at key manufacturing sites across APAC, US and EU

The table below shows the total number of recordable incidents (recordable accidents include lost workdays, restricted work, and medical treatment beyond first aid) and lost workdays for 2020, 2019 and 2018. The data is obtained from QIAGEN's key manufacturing sites in Germany, the U.S., China, Sweden and Spain. It also includes the research and development site in United Kingdom, and the large business service center located in Poland. Thus, the data equates to 56% of the total average number of employees. There were again zero reported fatalities during 2020 as in previous years.

	Total Recordable Incidents			Days Lost due to Injuries		
	2020	2019	2018	2020	2019	2018
Headcount average per month [1]	3,220	3,132	3,120	3,220	3,132	3,120
Europe / Middle East / Africa	23	17	28	64	121	261
Americas	6	3	26	49	5	16
Asia-Pacific / Japan	0	0	0	0	0	0

(1) - Headcount average per month of employee at key manufacturing sites across APAC, US and EU

In 2021, near misses reporting will be implemented at the sites that provide data to support the DART metrics. To promote further safety awareness and implement continuous improvement initiatives, health and safety training programs are planned for 2021. Sites that have implemented lean management processes will utilize the blue safety cross to capture this information. The blue safety cross is a visual data collection tool for recording metrics on the number of safety incidents. The tool is used to improve safety and promote good practice by raising awareness within the teams regarding safety incidents tracked. It provides real time incidence data and includes near misses, accidents that are recordable and incidents that are not recordable.

As the health of our employees is a significant priority, we established free coronavirus testing at our location in Hilden following the outbreak of the pandemic. Starting in March 2020, we implemented systems and processes so that all Hilden-based QIAGEN employees and external service providers could be tested voluntarily at least once a week. Our internal laboratory was able to analyze up to 380 samples per working day. On average, approximately 200 tests per working day were conducted. The provision of regular and free testing facilities was an important factor in ensuring the uninterrupted flow of production.

Human Rights

QIAGEN believes that the 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 foundations of international law.

In this sense, we acknowledge and endorse the UN Universal Declaration of Human Rights, the European Convention on Human Rights, and 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 Human Rights Policy is designed to provide guidance on all human rights issues in our sphere of influence such as in our relationship with customers, on the employee level, and in our supply chain. For more information on our due diligence processes with regard to human rights in our supply chain, please refer to the "Sustainable supply chain management" section. Our Human Rights Policy can be found online on our Sustainability webpage.

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 from our business partners. Our procurement policy includes specific requirements for corporate governance, environmental and social standards, which we expect from our suppliers as minimum standards. Among other issues, it includes the 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 procurement policy is available online in the Resources area of our website under Service and Support.

COVID-19 demanded that our supply chain increase its previous capacity by three to five times its former volume. This was achieved in close cooperation with our partners, mainly through investment in machinery and alternative shift models to reach the capacity required.

In alignment with QIAGEN's Compliance Program (especially QIAGEN's Corporate Code of Conduct and Ethics), every QIAGEN employee must 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.

Structure of our Supply Chain

QIAGEN operates in over 35 locations worldwide. Our sites are supported by a global supplier network that includes approximately 9,000 (2019: 9,000) suppliers in over 60 (2019: 60) countries, supplying resources such as chemicals and bioreagents, plastics, packaging materials, as well as other materials and services essential to our business. In 2020, 76% (2019: 83%) of our overall purchasing volume came from OECD countries.

Region of Origin of Suppliers

Region of origin	2020	2019
Europe	48%	53%
North America	22%	24%
Asia	25%	19%
Australia	2%	3%
South America	3%	1%
Africa	0%	0%
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 Nederlands platform financed by the Dutch Foreign Ministry as well as the Bertelsmann Stiftung's Sustainable Development Goals Index in 2020. As a result, 70 suppliers were identified for whom potential risks exist due to geographic location and sales to QIAGEN.

In 2020, all new suppliers signed QIAGEN's procurement policy. As a rule, all new suppliers need to sign the policy as part of the contracting process. The policy contains requirements regarding legal compliance, bribery and corruption, labor rights, non-discrimination and fair treatment, health and safety as well as environmental protection and conservation. QIAGEN provides a whistleblower hotline, which can be used by all employees. The contact details can be found on QIAGEN's website within the section Corporate Code of Conduct and Ethics. In addition, first-tier suppliers must confirm REACH, RoHS and conflict mineral compliance as appropriate.

As part of our supplier selection process, we additionally assess the suppliers' policy with a perspective on QIAGEN's requirements. Some suppliers are analyzed with a supplier risk tool. This includes all QSR suppliers, suppliers with a risk class of A, B or C and suppliers with a high critical impact on QIAGEN's security of supply. They are all analyzed once a year on several criteria including quality management, financial stability, embargos, risks of natural disaster. The relevant data for the assessment is either submitted via a questionnaire, or the suppliers are assessed on site during a visit. If all criteria are not fulfilled, the further procedure is decided on an individual basis.

Supplier audits are conducted if non-compliance is suspected. Audits are conducted on site at least every three years for all "A"-categorized direct suppliers. Audits are documented and results are being shared with audited suppliers. To our knowledge, there were no violations regarding corporate governance, environmental and social standards in the reporting period.

Conflict Minerals

The sourcing of certain minerals (known as "conflict minerals") has been linked with human rights abuses in the Democratic Republic of Congo (DRC) and other conflict zones. QIAGEN has performed an extensive inquiry into the company's supply chain to confirm that the products supplied to us are either DRC conflict-free or that the suppliers are not aware of any non-compliance in their supply base. QIAGEN has no indication that any conflict minerals from the Democratic Republic of Congo or adjoining countries are used in the company's laboratory instruments. To prove this, we receive compliance certificates from our vendors.

Our products consist of sample and assay kits, known as consumables, and automated instrumentation systems. We do not believe that any conflict minerals are necessary to the production or functionality of any of our consumable products. We conduct due diligence measures annually to determine the presence of conflict minerals in our instrumentation 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 their sources to us and declare their conflict minerals status. We disclosed our findings to the U.S. Securities and Exchange Commission (SEC) for the calendar year ending December 31, 2020, on Form SD on March 26, 2021, and will provide updated disclosure to the SEC annually.

Data and Cyber Security

As the external threat landscape continues to evolve, managing cyber security risk is a priority for QIAGEN. The company is committed to making investments in its capabilities to enhance the cyber resilience of our organization, products and services and to preserve the trust of our customers, partners, and employees.

QIAGEN's cyber security program continues to ensure that data and cyber security efforts and initiatives reflect evolving business requirements, regulatory guidance, and emerging threats. Our membership in private and public cyber security organizations (such as Health Information Sharing and Analysis Center, Information Security Forum, BSI Alliance for Cyber Security) facilitates close collaboration with peer organizations and government authorities to share industry-relevant best practices and threat information.

Business Ethics

For QIAGEN, conducting business in a responsible way includes looking beyond our day-to-day business operations into the ethical foundations of our company. This means, in particular, the respect for human rights and legally compliant business behavior.

QIAGEN's Approach to Tax

QIAGEN is committed to conducting business lawfully, ethically, and with the highest integrity. These fundamental values and principles, as defined in our three I's (Integrity, Inspiration, and Insight), are the undisputed key to the long-term success of our company and also the basis for our tax strategy.

Our tax strategy is embedded in the following guiding principles which reflects our status as a listed company and the regulated nature of our business.

› Tax accountability and governance
Tax is part of QIAGEN's corporate governance and is supervised by the QIAGEN Managing Board. The tax function of QIAGEN is centrally managed and controlled by its Global Tax Department, which is part of the Global Finance organization. It is led by the global Head of Tax, who is ultimately reporting to the Chief Financial Officer of the QIAGEN Group. Under the ultimate responsibility of our Audit Committee and Managing Board, the Chief Financial Officer regularly reviews, evaluates, approves and where necessary adjusts QIAGEN's 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. The volume of product and service flows among entities within the company is significant, and the price of transactions among QIAGEN entities is an important factor in QIAGEN's overall tax organization. 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 respected. Our objective is for all entities to be remunerated at "arm's length" in accordance with OECD guidelines and country-specific rules.

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, the U.S. and Spain.

We will only use business structures that are driven by commercial considerations, are aligned with business activity and which have genuine substance. QIAGEN does not operate in countries that are in the EU list of non-cooperative jurisdictions for tax purposes.

› Seeking and accepting tax incentives
Like many companies, QIAGEN seeks to optimize its global tax position by accepting tax incentives. In doing so, we always try to achieve an appropriate balance between corporate, employee and shareholder interests on the one hand and public interest on the other. QIAGEN is committed to conducting business lawfully, ethically, and with the highest integrity. We seek to comply with the letter and the spirit of the tax laws wherever we operate, and we anticipate paying tax on profits where our business activities take place. If possible and appropriate, we apply for tax incentives and exemptions.

› Compliance
We are committed to complying with the tax legislation of the countries in which we operate and pay the right amount of tax at the right time, in the countries where we create value. 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, QIAGEN collaborates with the respective authorities in a fair and positive spirit to find balanced solutions in accordance with the applicable laws.

During 2020, QIAGEN's tax policy received public interest. More specific, details on two former structures the company used to collect certain tax incentives have been disclosed. The structures that have been disclosed derive from a period in which there was no or limited discussion about base erosion and profit shifting and should been seen within the spirit of time. In line with QIAGEN's business requirements and considering the rapidly changing global tax developments and environment, the mentioned structures were abandoned.

› Transparency

Country-by-Country Reporting (CbCR) requires multinationals to provide information on their global allocation of profit, taxes paid, and certain indicators of economic activity among the countries in which they operate. This requires QIAGEN N.V., the ultimate parent of the QIAGEN Group, to file an annual Country-by-Country Report to the Dutch tax authorities.

QIAGEN submitted its 2019 CbCR to the Dutch tax authorities in 2020. The Dutch tax authorities will share the report with tax authorities in other jurisdictions where QIAGEN operates, subject to an international agreement that permits automatic exchange of data. QIAGEN has established appropriate processes to comply with CbCR requirements that ensures the integrity of the data.

Payments to Governments for Income Taxes

Income tax is paid on profits and not on revenues. If an affiliate makes marginal profit, for example following capital investment, significant R&D expenditure or restructuring expenses, it will accordingly pay less income tax.

We pay income tax related to the value added by QIAGEN's operational activities to the governments in the global regions of operations as follows:

EMEA

($ in thousands)	2020	2019
The Netherlands	$ 2,174	$ 4,236
Germany	4,915	9,719
United Kingdom	124	729
Switzerland	2,869	(47)
France	17,880	1,872
Sweden	1,705	893
Other	(1,022)	784
Total EMEA	$ 28,645	$ 18,186

Americas

($ in thousands)	2020	2019
United States	$ 4,544	$ 9,427
Brazil	1,451	238
Canada	463	526
Mexico	202	155
Total Americas	$ 6,660	$ 10,346

APAC

($ in thousands)	2020	2019
China	$ 2,553	$ 2,154
Japan	328	239
Australia	2,753	9,158
Singapore	594	1,004
South Korea	567	351
Other	472	36
Total APAC	$ 7,267	$ 12,942

($ in thousands)	2020	2019
Total income taxes paid, net	$ 42,572	$ 41,474

In addition to income taxes, QIAGEN also contributes significantly to local communities, directly and indirectly as collector on behalf of governments, through local taxes, custom duties, payroll taxes and social security payments.

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 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 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.

The company has received cost grants and investment grants. In 2020, the company received income from government grants in the amount of $3.0 million (2019: $1.4 million).

COVID-19 Related Grants

Since early 2020, we have been working closely with governments, public health authorities and customers to ensure availability of critical COVID-19 testing diagnostics across the globe, while also developing new dedicated COVID-19 tests to cover all stages of the infection cycle. In this regard, QIAGEN launched its largest investment program ever to increase production capacity in Hilden (Germany), Maryland (U.S.) and Barcelona (Spain). The program involves an investment of more than EUR 110 million.

This investment program is being supported by a grant of EUR 18 million from the government of North Rhine-Westphalia (Germany), a grant of $0.6 million from the U.S. government and a grant of EUR 0.5 million from the Spanish government.

COVID-19 Related Financial Measures

Governments around the world are acting decisively to protect their businesses and people from economic disruption resulting from the COVID-19 virus pandemic. QIAGEN has not proactively applied for any COVID-19-related financial stimulus. Some countries, however, have introduced generic measures that apply automatically to all or certain business areas. In this respect, QIAGEN was exempted from certain employer taxes the following local COVID-19 support in 2020 to retain local employees: $0.7 million under the Singapore "Jobs Support Scheme" and $1.8 million under the Chinese "Relief on Social Security Fees and Other Issues."

Compliance

As a publicly listed company with international operations, QIAGEN is 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 and our shareholders and to expose our employees to personal liability. QIAGEN has established a comprehensive Compliance Program, which translates legal and regulatory requirements as well as our fundamental values into clear, precise and understandable guidelines in our Corporate Code of Conduct and Ethics and supplementing specific policies for our employees. Our Corporate Code of Conduct and Ethics can be found here on our Compliance webpage under Investor Relations.

The policies include, but are not limited to, aspects such as conflicts of interest, insider trading, revenue recognition, confidentiality and social media. 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. Moreover, QIAGEN does not make or receive any payments to or from political parties or political action committees. Such actions are prohibited by QIAGEN's Code of Conduct.

Special attention is paid to antitrust and anti-corruption laws (see: https://corporate.qiagen.com/investor-relations/compliance-and-ethics). Our specific antitrust and anti-corruption policies set forth our commitment to ensure that QIAGEN and its subsidiaries 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 as distributors or agents. Third-party due diligence lies in the remit of the Sales Compliance Manager. This contains the following five elements:

- Anti-corruption questionnaire and certification for new distributors, resellers and agents
- Annual risk assessment based on a calculated risk score, which factors location of business (Transparency International Index Score, TIIS) and annual sales revenue for distributing QIAGEN products.
- Training.
- Contractual obligations.
- Due diligence (including selected background checks); also including payment monitoring.

All our policies are available to employees through the company's Compliance@QIAGEN intranet pages. Compliance awareness of our employees in all areas of the world is increased by regular trainings, which are held by external as well as inhouse legal and regulatory experts. In addition, QIAGEN has entered a long-term 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 reaches all employees in local language, supported by multiple communication resources. New employees are required to take online training on our Corporate Code of Conduct and Ethics at a minimum. Additional trainings customized to the specific area of responsibility are mandatory. Employees in sales and marketing as well as upper management are required to take training on anti-corruption and antitrust laws. These basic trainings are followed by refresher courses on a regular basis. In 2020, our employees completed more than 7,000 (2019: 10,000) online training modules. In addition, employees are informed through the company's Compliance@QIAGEN intranet page and regular updates on compliance topics via the company's internal communication platform Yammer and its Compliance Newsletter issued quarterly.

We provide a hotline for reporting accounting-related concerns on an anonymous basis in good faith. In accordance with the U.S. Sarbanes-Oxley Act and the listing standards of NYSE, QIAGEN follows as strict non-retaliation policy. QIAGEN will diligently investigate all such complaints and will protect the anonymity of the complainant. We also offer a direct e-mail and telephone hotline for employees to address questions or make suggestions for our Compliance Program.

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.

In the reporting period, QIAGEN had 0 (none) legal actions pending or completed regarding antitrust or corruption.

Social Matters

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 customers and their patients in delivering 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 of making improvements in life possible, which is therefore the direct responsibility of the Chief Executive Officer. Our customers have high expectations on reliability, safety and the environment-friendly manufacturing of our products. We develop our products and services in close contact with our customers and incorporate their feedback into our processes.

QIAGEN commits to continually improve the customer experience, taking into account their evolving needs and expectations. We established a global systematic approach to measure customer experience in the form of an aggregated Customer Experience Indicator (CEI). The CEI is measured monthly through a set of internal KPIs (product and delivery performance, phone support, etc.) and external customer feedback directly linked to customer experience in our transactions. Thus, we can identify quickly and systematically areas for improvement while staying closely connected with our customers.

Departmental and employee contributions to the CEI performance is embedded into our annual goal-setting process. For 2020, a full year score of 93 (2019: 96) points (out of a maximum 100 points) was achieved. The drop in CEI points compared to the previous year is caused by the steep demand increase for COVID-19-related test products that could not be fulfilled immediately. Since early 2020 we have been working closely with governments, public health authorities and customers to ensure availability of critical COVID-19 testing components across the globe. With several products listed in the U.S. CDC and WHO COVID-19 testing protocols, we have seen a rapid increase in orders of our RNA extraction kits and automation instrumentation, as well as for our newly developed COVID-19 single and multiplex syndromic tests, and antibody and antigen tests. We have been working around the clock to meet this testing demand.

We are currently supporting COVID-19 testing in more than 100 countries. Despite the vigorously increased production output, QIAGEN has not been able to immediately honor all of the COVID-19-related demand increase. Hence, the performance of the KPI "Product availability" scored lower and led to a decreased 2020 CEI value.

Quality and Product Safety

QIAGEN stands for quality. Since QIAGEN's founding 30 years ago, we have always been committed to the highest quality, and we always strive to exceed our customers' expectations. QIAGEN's reputation as a quality supplier is best-in-class in our industry and is the foundation of our loyal global customer base. Therefore, we offer a 100% satisfaction guarantee to all our customers. This means

that if our customers are not entirely satisfied with the performance of a QIAGEN product, we will exchange or refund it free of charge.

To achieve and maintain our quality standards, we established quality management systems (QMS) in all of our manufacturing facilities around the globe. These assure constant high quality as well as safe and effective medical devices. QIAGEN's QMS are certified according ISO 9001, ISO 13485, ISO 18385, and comply to 21 CFR 820 and all other applicable medical device standards around the globe (see section "Government Regulations" in the Management Report).

QIAGEN products and their components are safe to use by customers as well by our employees. In the early stages of product development, the Chemical Compliance Department provides a statement and guidance about the use of specific substances. During this evaluation, a special emphasis is laid on substances of very high concern (according to REACH in the EU), and care is taken to ensure that these substances are not added to new products. One tool to reach this goal is the component tree – a list of all materials that can be used in development, providing an overview of qualified substances, suppliers and components and also highlighting substances that must not be used (e.g. substances of concern). Further we have developed a strategy to reduce substances of concern in our production processes.

When assessing the manufacturability of a new product, the evaluation considers technical aspects, regulatory requirements, financial aspects, and timeline constraints. QIAGEN aims to fully eliminate the use of OPnEO and NpnEO (substance groups for substances of very high concern). Therefore, we set up a project to guarantee that within the next five years OPnEO and NpnEO are exchanged in non-regulated/non-in-vitro diagnostic (IVD) products, and within the next ten years in IVD and otherwise regulated products. For this, a detailed technical evaluation is being conducted to assess the scope and feasibility of substitution of substances of concern. A holistic analysis of multiple parameters will determine the prioritization and sequence of substitution. Such parameters consider:

- volume and concentration of substances of concern in an affected product;
- total annual volume turnaround of the affected product and substance;
- economic aspects (revenues and revenue projection) of the affected product;
- complexity of substitution; and
- product sustainability.

This systematic approach allows QIAGEN to determine the most effective substitution of substances of concern from affected products. All instruments are compliant according to RoHS.

Our transparent and responsible product and development policy also includes communication and marketing. As with all companies in the medical device/IVD industry, product claims and product properties are verified and validated during development and approved by regulatory bodies around the world as part of the product submission process. As part of their development process, all IVD products are specially tested for safety and usability. We market products only in accordance with their approved intended purpose and declare potential residual (or remaining) risks in the information for use of each product.

QIAGEN, like other companies, is exposed to the financial implications of potential recalls and other adverse events due to equipment failures, manufacturing defects, design flaws, or inadequate disclosure of product-related risks. In the event of a recall, QIAGEN has 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. Processes, responsibilities, and improvement programs are defined as required by regulating authorities to avoid the recurrence of recalls. There is full traceability of each product to the final customer; therefore, any recalls are executed by direct customer notifications. Required actions for recalls are for each case highly individual. They can range from providing additional information to physically recalling a product. Due to QIAGEN's stringent quality management, recalls rarely occur: 2020 (6), 2019 (3), 2018 (4), 2017 (0), 2016 (3), 2015 (1). The percentage of affected product is low as well: 2020 (0.14%), 2019 (0.15%), 2018 (0.09%), 2017 (0%), 2016 (0.21%), 2015 (0.022%). In past recalls, 90% to 100% of customers have been reached and confirmed recall notification.

Access to Healthcare

QIAGEN cares is the company's Corporate Social Responsibility program, an umbrella for supporting initiatives that improve lives by fighting diseases in which our products can play an important role. In developing countries with scarce resources, new ways are needed to ensure access to affordable diagnostics that play a critical role in helping to prevent and treat diseases. In particular, infectious diseases and various malignancies can be treated much more cost-effectively through early and precise detection – and with improved patient outcomes. However, many emerging countries lack properly trained lab personnel and technical infrastructure to utilize the latest molecular testing technologies.

Therefore, we collaborate with non-governmental health organizations, local nonprofits, and ministries of health to help ensure efficient distribution of donations. 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.

Tuberculosis Testing

One example is our global effort to advance diagnostics for tuberculosis (TB) in low-resource, high-disease burden countries. Tuberculosis is the world's leading infectious disease killer, claiming 1.25 million lives in 2019. In October 2019, we announced the addition of QuantiFERON TB Gold Plus (QFT-Plus) to the diagnostic catalogue of the Stop TB Partnership's Global Drug Facility (GDF). The GDF facilitates access and helps match demand for TB diagnostics and drugs with funding from donors, governments and NGOs on a global scale. The acceptance of QFT-Plus to the GDF catalogue advances our strategy to help expand screening with modern blood-based assays for latent TB infection in regions with high disease burden but limited resources.

To reach the highest risk populations needing TB testing, QIAGEN is building upon our high-volume, state-of-the-art QuantiFERON-TB Gold Plus assay with the development QuantiFERON-TB Access, a field-friendly test with ultrasensitive digital detection on a portable device. Launching in 2021, this public health solution has already gained recognition by the Joint United Nations Program on HIV/AIDS.

COVID-19 Testing

Since early 2020, we have been working closely with governments, public health authorities and customers to ensure availability of critical COVID-19 testing diagnostics across the globe, while also developing new dedicated COVID-19 tests to cover all stages of the infection cycle. In order to meet the rapid increase in orders of our RNA extra extraction kits and automation instrumentation, as well our new COVID-19 testing solutions, we have dramatically scaled up production, moving to 24-hour, seven-day-a week operations at our manufacturing sites, and are investing in additional equipment capacity.

Dedicated COVID-19 tests brought to market in 2020 to address the pandemic include:

- QIAstat-Dx Respiratory SARS-CoV-2 Panel - a multiplex PCR test with EUA-authorization for the detection of SARS-CoV-2 plus more than 20 other respiratory pathogens;
- NeuMoDx - single-plex (also approved for saliva sample type) and multiplex;
- QIAprep&amp rapid PCR test - a solution that streamlines RNA extraction and PCR analysis into one process, delivering a result in under one hour and requiring less disposable laboratory plastic-ware than standard PCR tests, helping to avoid resource bottlenecks;
- QIAreach Antibody test - allows clinicians to detect immune status of individuals and has applications in determining vaccine efficacy;
- QuantiFERON SARS-CoV-2 T cell assay - enables researchers to explore longer-term immune responses to the virus and vaccines; and
- a suite of next generation sequencing (NGS) and bioinformatics tools - used for epidemiological studies.

Support for Local Initiatives

QIAGEN supports a broad range of activities in communities where our businesses are based. These include sponsorship of science education, disease awareness campaigns, installation of school laboratories and promotion of biology in school curricula. Our local engagement goes beyond financial. In Hilden, for instance, QIAGEN is collaborating with the local Rotary Club to help integrate refugees from Syria and other war-torn countries through a program that includes language training and cultural orientation, assessment centers, and internships at QIAGEN. Since April 2019, QIAGEN has supported 18 candidates through the program, many of which are still employed with the company.

Hilden also works with Hephata, a local institution for citizens with disabilities, who undertake a broad array of operational tasks for the company, including certain packaging and production responsibilities.

In North America, our employees are granted 8 hours of paid community service time and in 2020 committed around 720 hours of 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.

Financial Results

Consolidated Financial Statement

QIAGEN N.V. AND SUBSIDIARIES CONSOLIDATED BALANCE SHEETS (in thousands)

	Note	As of December 31, 2020	2019
Assets			
Current assets:			
Cash and cash equivalents	(3)	$ 597,984	$ 623,647
Restricted cash	(3)	—	5,743
Short-term investments	(7)	117,249	129,586
Accounts receivable, net of allowance for credit losses of $27,052 in 2020 and allowance for doubtful accounts of $12,115 in 2019	(3, 24)	380,519	385,117
Income taxes receivable		59,335	42,119
Inventories, net	(3)	291,181	170,704
Prepaid expenses and other current assets (of which $25,429 and $13,697 in 2020 and 2019 due from related parties, respectively)	(8, 24)	206,921	105,464
Fair value of derivative instruments - current	(14)	14,127	107,868
Total current assets		1,667,316	1,570,248
Long-term assets:			
Property, plant and equipment, net of accumulated depreciation of $630,443 and $699,130 in 2020 and 2019, respectively	(9)	559,372	455,243
Goodwill	(11)	2,364,031	2,140,503
Intangible assets, net of accumulated amortization of $809,724 and $776,520 in 2020 and 2019, respectively	(11)	726,194	632,434
Deferred income tax assets	(17)	54,879	56,542
Fair value of derivative instruments — long-term	(14)	379,080	192,266
Other long-term assets (of which $9,594 and $16,830 in 2020 and 2019 due from related parties, respectively)	(10, 12, 24)	161,658	188,380
Total long-term assets		4,245,214	3,665,368
Total assets		$ 5,912,530	$ 5,235,616

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)

	Note	As of December 31, 2020	2019
Liabilities and equity			
Current liabilities:			
Current portion of long-term debt	(16)	$ 42,539	$ 285,244
Accounts payable	(24)	118,153	84,767
Fair value of derivative instruments — current	(14)	51,464	103,175
Accrued and other current liabilities (of which $1,380 and $15,404 due to related parties in 2020 and 2019, respectively)	(10, 13, 24)	345,665	444,303
Income taxes payable		57,265	33,856
Total current liabilities		615,086	951,345
Long-term liabilities:			
Long-term debt, net of current portion	(16)	1,880,210	1,421,108
Deferred income tax liabilities	(17)	39,216	23,442
Fair value of derivative instruments — long-term	(14)	393,455	196,929
Other long-term liabilities	(12, 15)	186,724	106,201
Total long-term liabilities		2,499,605	1,747,680
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 in 2020 and 2019, respectively		2,702	2,702
Additional paid-in capital		1,834,169	1,777,017
Retained earnings		1,323,091	1,178,457
Accumulated other comprehensive loss	(18)	(243,822)	(309,619)
Less treasury shares, at cost—2,844 and 3,077 shares in 2020 and 2019, respectively	(18)	(118,301)	(111,966)
Total equity		2,797,839	2,536,591
Total liabilities and equity		$ 5,912,530	$ 5,235,616

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

QIAGEN N.V. AND SUBSIDIARIES CONSOLIDATED STATEMENTS OF INCOME (LOSS)
(in thousands, except per share data)

		Years ended December 31,		
	Note	2020	2019	2018
Net sales	(3, 4, 24)	$ 1,870,346	$ 1,526,424	$ 1,501,848
Cost of sales:				
Cost of sales		574,467	449,651	444,165
Acquisition-related intangible amortization		63,164	71,511	56,723
Total cost of sales		637,631	521,162	500,888
Gross profit		1,232,715	1,005,262	1,000,960
Operating expenses:				
Research and development	(3)	149,072	157,448	161,852
Sales and marketing		413,684	391,906	392,281
General and administrative	(3)	111,678	112,262	104,568
Acquisition-related intangible amortization		20,811	29,973	39,032
Restructuring, acquisition, integration and other, net	(1, 6)	150,005	199,778	28,659
Long-lived asset impairments	(6)	1,034	140,031	7,987
Total operating expenses		846,284	1,031,398	734,379
Income (loss) from operations		386,431	(26,136)	266,581
Other income (expense):				
Interest income		10,032	22,113	20,851
Interest expense		(71,317)	(74,185)	(67,293)
Other income, net	(6)	114,326	432	5,598
Total other income (expense), net		53,041	(51,640)	(40,844)
Income (loss) before income tax (benefit) expense		439,472	(77,776)	225,737
Income tax expense (benefit)	(3, 17)	80,284	(36,321)	35,357
Net income (loss)		$ 359,188	$ (41,455)	$ 190,380
Basic earnings (loss) per common share	(19)	$ 1.57	$ (0.18)	$ 0.84
Diluted earnings (loss) per common share	(19)	$ 1.53	$ (0.18)	$ 0.82

	Note	Years ended December 31, 2020	2019	2018
Weighted-average common shares outstanding				
Basic	(19)	228,427	226,777	226,640
Diluted	(19)	234,214	226,777	233,456

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

QIAGEN N.V. AND SUBSIDIARIES CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS) (in thousands)

	Note	Years ended December 31, 2020	2019	2018
Net income (loss)		$ 359,188	$ (41,455)	$ 190,380
Other comprehensive income (loss) to be reclassified to profit or loss in subsequent periods:				
(Losses) gains on cash flow hedges, net of tax benefit of $2.8 million in 2020, tax expense of $0 in 2019 and tax expense of $2.8 million in 2018	(14)	(8,536)	11,547	8,526
Reclassification adjustments on cash flow hedges, net of tax expense of $4.7 million in 2020, tax expense of $0 in 2019 and tax benefit of $2.4 million in 2018	(14)	13,999	(3,888)	(7,331)
Cash flow hedges, net of tax		5,463	7,659	1,195
Net investment hedge		(26,442)	5,505	13,839
Gain on pension, net of tax expense of $0 in 2020, tax expense of $0.4 million in 2019 and tax benefit of $0.6 million in 2018		(38)	(437)	754
Foreign currency translation adjustments, net of tax expense of $0.9 million in 2020, tax benefit of $0.5 million in 2019 and tax benefit of $1.4 million in 2018		86,814	(11,702)	(106,615)
Total other comprehensive income (loss)		65,797	1,025	(90,827)
Comprehensive income (loss)		$ 424,985	$ (40,430)	$ 99,553

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)	Note	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, 2017		230,829	$ 2,702	$ 1,630,095	$ 1,247,945	$ (220,759)	(4,272)	$ (118,987)	$ 2,540,996
ASU 2016-01 impact of change in accounting policy		—	—	—	(942)	942	—	—	—
ASU 2016-16 impact of change in accounting policy		—	—	—	(16,096)	—	—	—	(16,096)
ASC 606 impact of change in accounting policy		—	—	—	(1,306)	—	—	—	(1,306)
Issuance of warrants	(18)	—	—	71,983	—	—	—	—	71,983
Net income		—	—	—	190,380	—	—	—	190,380
Unrealized gain, net on pension		—	—	—	—	754	—	—	754
Unrealized gain, net on hedging contracts	(14)	—	—	—	—	22,365	—	—	22,365
Realized gain, net on hedging contracts	(14)	—	—	—	—	(7,331)	—	—	(7,331)
Translation adjustment, net		—	—	—	—	(106,615)	—	—	(106,615)

(in thousands)	Note	Common Shares		Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Shares		Total Equity
		Shares	Amount				Shares	Amount	
Purchase of treasury shares	(18)	—	—	—	—	—	(2,871)	(104,685)	(104,685)
Issuance of common shares in connection with stock plan	(22)	—	—	—	(40,357)	—	1,823	44,769	4,412
Share-based compensation	(22)	—	—	40,113	—	—	—	—	40,113
Balance at December 31, 2018		230,829	$ 2,702	$ 1,742,191	$ 1,379,624	$ (310,644)	$ (5,320)	$ (178,903)	$ 2,634,970
ASC 842 impact of change in accounting policy		—	—	—	(316)	—	—	—	(316)
Net loss		—	—	—	(41,455)	—	—	—	(41,455)
Conversion of warrants	(18)	—	—	(31,067)	(37,698)	—	2,056	68,761	(4)
Unrealized loss, net on pension		—	—	—	—	(437)	—	—	(437)
Unrealized gain, net on hedging contracts	(14)	—	—	—	—	17,052	—	—	17,052
Realized gain, net on hedging contracts	(14)	—	—	—	—	(3,888)	—	—	(3,888)
Translation adjustment, net		—	—	—	—	(11,702)	—	—	(11,702)

(in thousands)	Note	Common Shares		Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Shares		Total Equity
		Shares	Amount				Shares	Amount	
Purchase of treasury shares	(18)	—	—	—	—	—	(1,987)	(74,450)	(74,450)
Issuance of common shares in connection with stock plan	(22)	—	—	—	(121,698)	—	3,622	123,773	2,075
Tax withholding related to vesting of stock awards	(22)	—	—	—	—	—	(1,448)	(51,147)	(51,147)
Share-based compensation	(22)	—	—	65,893	—	—	—	—	65,893
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
Unrealized loss, net on pension		—	—	—	—	(38)	—	—	(38)

(in thousands)	Note	Common Shares		Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Treasury Shares		Total Equity
		Shares	Amount				Shares	Amount	
Unrealized loss, net on hedging contracts	(14)	—	—	—	—	(34,978)	—	—	(34,978)
Realized loss, net on hedging contracts	(14)	—	—	—	—	13,999	—	—	13,999
Translation adjustment, net		—	—	—	—	86,814	—	—	86,814
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

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

QIAGEN N.V. AND SUBSIDIARIES CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)	Note	Years ended December 31, 2020	2019	2018
Cash flows from operating activities:				
Net income (loss)		$ 359,188	$ (41,455)	$ 190,380
Adjustments to reconcile net income to net cash provided by operating activities, net of effects of businesses acquired:				
Depreciation and amortization		205,014	231,458	206,436
Non-cash impairments	(6)	1,432	144,830	17,020
Amortization of debt discount and issuance costs		42,318	40,763	35,537
Share-based compensation expense	(22)	40,936	65,893	40,113
Deferred income tax benefit	(17)	(6,706)	(55,362)	(23,272)
(Gain) loss on marketable securities		(1,992)	2,867	(2,725)
Gain on sale of investment	(10)	(121,813)	—	—
Reversals of contingent consideration	(15)	—	(10,433)	—
Other items, net including fair value changes in derivatives		11,696	(3,394)	(8,834)
Net changes in operating assets and liabilities:				
Accounts receivable	(3)	(14,711)	(39,578)	(41,813)
Inventories	(3)	(107,573)	(30,028)	(36,918)
Prepaid expenses and other current assets	(8)	1,061	18,626	(9,942)
Other long-term assets		316	(1,406)	(30,312)
Accounts payable		8,442	9,252	6,993
Accrued and other current liabilities	(13)	(22,141)	19,913	(13,317)
Income taxes	(17)	4,682	(6,782)	14,239
Other long-term liabilities		57,657	(14,321)	15,911
Net cash provided by operating activities		457,806	330,843	359,496
Cash flows from investing activities:				
Purchases of property, plant and equipment		(132,787)	(117,950)	(109,773)
Purchases of intangible assets	(11)	(171,450)	(156,934)	(40,990)
Proceeds from (purchases of) investments, net	(10)	25,638	(5,170)	(9,398)
Cash paid for acquisitions, net of cash acquired	(5)	(239,572)	(68,058)	(172,832)
Purchases of short-term investments	(7)	(49,770)	(293,959)	(568,002)
Proceeds from redemptions of short-term investments	(7)	181,223	396,098	691,765

		Years ended December 31,		
(in thousands)	Note	2020	2019	2018
Proceeds from divestiture	(5)	1,845	1,000	16,394
Cash (paid) received for collateral asset	(14)	(53,417)	22,685	(3,461)
Other investing activities		(4,991)	10	(15,059)
Net cash used in investing activities		(443,281)	(222,278)	(211,356)
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)	497,646	—	—
Repayment of long-term debt	(16)	(296,400)	(506,400)	—
Payment for termination of warrants	(18)	(174,627)	—	—
Payment of intrinsic value of cash convertible notes	(16)	(237,438)	(133,763)	—
Proceeds from exercise of call option related to cash convertible notes	(16)	239,836	134,737	—
Purchase of treasury shares	(18)	(63,995)	(74,450)	(104,685)
Proceeds from issuance of common shares		7,662	2,075	4,412
Tax withholding related to vesting of stock awards		(13,841)	(49,998)	—
Other financing activities		(9,610)	(11,281)	(8,019)
Proceeds from issuance of cash convertible notes, net of issuance costs	(16)	—	—	494,879
Purchase of call option related to cash convertible notes	(16)	—	—	(97,277)
Proceeds from issuance of warrants, net of issuance costs	(18)	—	—	72,406
Principal payments on capital leases		—	—	(1,308)
Net cash (used in) provided by financing activities		(50,127)	(639,080)	360,408
Effect of exchange rate changes on cash, cash equivalents and restricted cash		4,196	826	(7,183)
Net (decrease) increase in cash, cash equivalents and restricted cash		(31,406)	(529,689)	501,365
Cash, cash equivalents and restricted cash, beginning of period		629,390	1,159,079	657,714
Cash, cash equivalents and restricted cash, end of period		$ 597,984	$ 629,390	$ 1,159,079
Supplemental cash flow disclosures:				
Cash paid for interest		$ 25,351	$ 29,721	$ 25,902
Cash paid for income taxes		$ 42,572	$ 41,474	$ 29,317

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

Notes to Consolidated Financial Statements

For the Year Ended December 31, 2020

1. Corporate Information and Basis of Presentation

Corporate Information

QIAGEN N.V. is a public limited liability company ('naamloze vennootschap') under Dutch law with 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, 2020, we employed more than 5,600 people in over 35 locations worldwide.

Announced Merger with Thermo Fisher Scientific Inc.

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 for €39.00 per share in cash. On July 16, 2020, Thermo Fisher and QIAGEN entered into an amendment to the Business Combination Agreement dated as of March 3, 2020 whereby Quebec B.V., the wholly-owned subsidiary of Thermo Fisher making the public tender offer, increased the cash consideration offered per QIAGEN share from €39.00 to €43.00. The amendment also provided for a reduction of the minimum acceptance threshold from 75% to 66.67% of QIAGEN's issued and outstanding ordinary share capital at the end of the acceptance period on August 10, 2020, as well as a $95.0 million expense reimbursement payable by QIAGEN to Thermo Fisher if the minimum acceptance threshold is not met. 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 expenses, net in the accompanying consolidated statement of income.

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. The consolidated financial statements have been prepared on a historical cost basis, except for derivative financial instruments, contingent consideration and available-for-sale financial instruments that have been measured at fair value.

We undertake acquisitions to complement our own internal product development activities. 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. In 2019, we completed three immaterial acquisitions, including the January 2019 acquisition of N-of-One, Inc., a privately-held U.S. molecular decision support company and pioneer in clinical interpretation services for complex genomic data located in Concord, Massachusetts. In April 2018, we acquired

all shares in STAT-Dx Life, S.L. ("STAT-Dx"), a privately-held company located in Barcelona, Spain and also completed the acquisition of the remaining shares of a privately held entity in which we held a minority interest. Accordingly, at their respective 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 date.

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 2020, 2019 and 2018:

Adoption of New Accounting Standards in 2020

ASU 2016-13, *Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments,* provides financial statement users with more decision-useful information about the expected credit losses on financial instruments and other commitments to extend credit held by a reporting entity at each reporting date. To achieve this objective, the amendments in ASU 2016-13 replace 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. The measurement of expected credit losses under Topic 326 is applicable to financial assets measured at amortized cost, including loan receivables and held-to-maturity debt securities. It also applies to off-balance sheet credit exposures not accounted for as insurance (loan commitments, standby letters of credit, financial guarantees, and other similar instruments) and net investments in leases recognized by a lessor in accordance with Topic 842 on leases. In addition, Topic 326 made changes to the accounting for available-for-sale debt securities. One such change is to require credit losses to be presented as an allowance rather than as a write-down on available-for-sale debt securities management does not intend to sell or believes is more likely than not they will be required to sell.

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. The guidance amends ASC 808 to refer to unit-of-account guidance in ASC 606 and requires it to be used only when assessing whether a transaction is in the scope of ASC 606. ASU 2018-18 is effective for us for annual periods beginning on January 1, 2020. Entities are required to apply the amendments retrospectively to the date they initially applied ASC 606. 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. The amendments have different effective dates with early adoption permitted. 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. The ASU is effective on January 1, 2021. Early adoption is permitted, including early adoption in an interim period. We adopted ASU 2020-01 on June 30, 2020 without any impact.

Adoption of New Accounting Standards in 2019

The FASB issued guidance codified in Accounting Standards Codification (ASC) Topic 842, *Leases (Topic 842)*, which supersedes the lease requirements in ASC Topic 840 and aims to increase transparency and comparability among organizations and requires disclosure of key information about leasing arrangements. The main principle of ASC 842 requires lessees to recognize the assets and liabilities that arise from nearly all leases on the consolidated balance sheet. Lessor accounting remains mainly consistent with the former guidance, with the majority of changes allowing for better alignment with the new lessee model and ASC Topic 606. We adopted these standards as per the effective date of January 1, 2019, using the modified retrospective approach and did not restate comparative periods. Under this approach, the cumulative effect of initially applying the standard was recognized as an adjustment to the opening balance of retained earnings on the date of initial application. As a lessee, the classification of our leases did not change, but we recognized a lease liability and corresponding right-of-use asset on our consolidated balance sheets for all our operating leases. We have elected the package of practical expedients which allows us to not reassess (1) whether existing contracts contain leases, (2) the lease classification for existing leases, and (3) whether existing initial direct costs meet the new definition. We also elected the hindsight practical expedient which permits entities to use hindsight in determining the lease term when transitioning to ASC 842. Our initial lease liabilities and right-of-use assets totaled $57.7 million and $57.4 million, respectively, as recorded in our consolidated balance sheet as of January 1, 2019, primarily relating to leased office space. The difference between the additional lease assets and lease liabilities was recorded as a $0.3 million adjustment to retained earnings. Further disclosure is found in Note 12 "Leases".

ASU 2017-12, *Derivatives and Hedging (Topic 815): Targeted Improvements to Accounting for Hedging Activities*, makes more financial and nonfinancial hedging strategies eligible for hedge accounting. It also amends the presentation and disclosure requirements and changes how companies assess effectiveness. It is intended to more closely align hedge accounting with companies' risk management strategies, simplify the application of hedge accounting, and increase transparency as to the scope and results of hedging programs. The new guidance became effective for public entities beginning on January 1, 2019 by applying a modified retrospective approach to existing hedging relationships as of the adoption date. Under the modified retrospective approach, entities with cash flow or net investment hedges will make (1) a cumulative-effect adjustment to accumulated other comprehensive income so that the adjusted amount represents the cumulative change in the hedging instruments' fair value since hedge inception (less any amounts that should have been recognized in earnings under the new accounting model) and (2) a corresponding adjustment to opening retained earnings as of the most recent period presented on the date of adoption. We adopted ASU 2017-12 on January 1, 2019 without any cumulative effect.

ASU 2017-04, *Intangibles—Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment*, removes Step 2 of the goodwill impairment test. A goodwill impairment will now be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. ASU 2017-04 is effective for public entities for annual periods beginning January 1, 2020 and early adoption is permitted. The new guidance is required to be applied on a prospective basis. We adopted ASU 2017-04 on January 1, 2019 and applied the new guidance prospectively as required.

ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework*, provides guidance that eliminates, adds and modifies certain disclosure requirements for fair value measurements. ASU 2018-13 is effective for public entities for annual periods beginning January 1, 2020. Entities are permitted to early adopt either the entire standard or only the provisions that eliminate or modify the requirements. We adopted ASU 2018-13 on January 1, 2019 and applied the entire standard to disclosures as required beginning in 2019.

ASU 2018-15, *Intangibles--Goodwill and Other--Internal-Use Software (Subtopic 350-40): Customer's Accounting for Implementation Costs Incurred in a Cloud Computing Arrangement That Is a Service Contract*, provides guidance on a customer's accounting for implementation, set-up, and other upfront costs incurred in a cloud computing arrangement that is hosted by the vendor, i.e. a service contract. Under the new guidance, customers will apply the same criteria for capitalizing implementation costs as they would for an arrangement that has a software license. ASU 2018-15 is effective for public entities for annual periods beginning January 1, 2020, and early adoption is permitted and should be applied either retrospectively or prospectively to all implementation costs incurred after the date of adoption. We adopted ASU 2018-15 on January 1, 2019 and applied the guidance to all implementation costs prospectively.

ASU 2018-17, *Consolidation (Topic 810): Targeted Improvements to Related Party Guidance for Variable Interest Entities*, amends how a decision maker or service provider determines whether its fee is a variable interest entity (VIE) when a related party under common control also has an interest in the VIE. We adopted ASU 2018-17 on January 1, 2019, on a prospective basis.

Adoption of New Accounting Standards in 2018

ASU 2014-09, *Revenue from Contracts with Customers (Topic 606)* and additional related accounting standard updates to clarify and provide implementation guidance were adopted with a date of initial application of January 1, 2018. The comparative information for 2017 has not been adjusted and continues to be reported under ASC Topic 605 Revenue Recognition. As a result, we changed our accounting policy for revenue recognition. We applied the Topic 606 using the "modified retrospective method" by recognizing the effect of initially applying Topic 606 as an $1.3 million decrease to the opening balance of retained earnings at January 1, 2018, for all contracts not completed at January 1, 2018.

ASU 2016-01, *Financial Instruments - Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial Liabilities* as well as an additional clarifying accounting standard update became effective for our financial statements beginning in the first quarter of 2018. This ASU makes targeted improvements to existing U.S. GAAP for both the recognition and measurement of financial assets and financial liabilities. Changes in accounting to our equity investments as a result of this standard are further discussed in Notes below. As required, we adopted using a cumulative-effect adjustment to the balance sheet as of the beginning of 2018 and recorded an adjustment to decrease opening retained earnings at January 1, 2018 by $0.9 million (pre-tax $1.1 million) as required for our equity investments recorded at fair value.

ASU 2016-05, *Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments and* ASU 2016-18, *Statement of Cash Flows (Topic 320): Restricted Cash*, addresses classification issues and presentation related to the statement of cash flows and was adopted on January 1, 2018 without any impact from the adoption.

ASU 2016-16, *Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory*, aims to improve the accounting for the income tax consequences of intra-entity transfers of assets other than inventory. This standard was adopted on a modified retrospective basis resulting in a decrease to opening retained earnings of $16.1 million at January 1, 2018.

ASU 2017-01, *Business Combinations (Topic 805): Clarifying the Definition of a Business*, clarifies and provides a more robust framework to use in determining when a set of assets and activities is a business. We adopted this update beginning January 1, 2018, without impact.

ASU 2017-09, *Compensation-Stock Compensation (Topic 718): Scope of Modification Accounting*, clarifies when to account for a change to the terms and conditions of a share-based payment award as a modification. This guidance is effective prospectively and was adopted as of January 1, 2018.

ASU 2018-02, *Income Statement - Reporting Comprehensive Income (Topic 220): Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*, permits reclassification of stranded tax effects of the U.S. Tax Cuts and Jobs Act (Tax Act). We adopted this standard as of April 1, 2018 with no impact as we had no stranded tax effects. This guidance only relates to the effects of the Tax Act. For all other tax law changes that have occurred or may occur in the future, we reclassify the tax effects to the consolidated statement of income (loss) on an item-by-item basis when the pre-tax item in accumulated other comprehensive income (loss) is reclassified to income.

ASU 2018-07, *Compensation-Stock Compensation (Topic 718): Improvements to Nonemployee Share-Based Payment Accounting*, aligns most of the accounting for share-based payment awards issued to employees and non-employees. We early adopted this standard as of July 1, 2018, without material impact.

New Accounting Standards Not Yet Adopted

The following new FASB Accounting Standards Updates, which are not yet adopted as of December 31, 2020, have been grouped by their required effective dates or early adoption date:

First Quarter of 2021

ASU 2019-12, *Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*, removes 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. ASU 2019-12 is effective for annual periods beginning on January 1, 2021, with earlier adoption permitted. 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. Ultimately, the impact in future periods will be dependent on the extent of future events or conditions that would be affected such as enacted changes in tax laws or rates.

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*, reduces the number of accounting models for convertible instruments. The ASU also amends diluted earnings per share (EPS) calculations for convertible instruments, which will result in more dilutive EPS results. The ASU also amends 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 is effective for annual periods beginning on January 1, 2022, with earlier adoption on January 1, 2021 permitted. We early adopted ASU 2020-06 on January 1, 2021 and as a result reclassified $54.1 million from equity for the conversion feature to the liability for our 2027 Convertible Notes further discussed in Note 16 "Debt".

Through December 31, 2022

ASU 2020-04, *Reference Rate Reform (Topic 848): Facilitation of the Effects of Reference Rate Reform on Financial Reporting*, and ASU 2021-01 *Reference Rate Reform (Topic 848): Scope*, provide companies with optional guidance to ease the potential accounting burden associated with transitioning away from reference rates that are expected to be discontinued. Companies can apply the ASU immediately. However, the guidance will only be available for a limited time, generally through December 31, 2022. We continue to evaluate the guidance.

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. 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 (loss) 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 (loss) as a component of other income, net. The net loss on foreign currency transactions was $4.1 million, $5.7 million, and $12.3 million in 2020, 2019 and 2018, respectively, 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)	2020	2019	2020	2019	2018
Euro (EUR)	1.2271	1.1234	1.1411	1.1196	1.1813
Pound Sterling (GBP)	1.3649	1.3204	1.2836	1.2768	1.3356
Swiss Franc (CHF)	1.1360	1.0350	1.0659	1.0062	1.0228
Australian Dollar (AUD)	0.7720	0.7023	0.6905	0.6954	0.7478
Canadian Dollar (CAD)	0.7849	0.7696	0.7463	0.7535	0.7719
Japanese Yen (JPY)	0.0097	0.0092	0.0094	0.0092	0.0091
Chinese Yuan (CNY)	0.1530	0.1437	0.1450	0.1448	0.1514

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, 2020, 2019 and 2018, shipping and handling costs totaled $32.1 million, $27.9 million and $28.4 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, 2020, 2019 and 2018 were $9.5 million, $8.1 million and $8.1 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.

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 income tax assets and liabilities established for the expected future tax consequences resulting from differences in 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 reporting bases for assets and liabilities by the enacted tax rates expected to be in effect when such differences are recovered 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 tax 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 tax 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 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 currency or interest rate 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 90 days at the date of purchase. Cash and cash equivalents as of December 31, 2020 and 2019 consist of the following:

(in thousands)	2020	2019
Cash at bank and on hand	$ 245,373	$ 189,569
Short-term bank deposits	352,611	434,078
Cash and cash equivalents	$ 597,984	$ 623,647

Restricted Cash

Restricted cash includes cash that is subject to legal restriction in connection with a tender offer and not available for general operating purposes. As of December 31, 2019, we had $5.7 million of restricted cash.

Short-Term Investments

Short-term investments consisting of marketable equity securities are reported at fair value with gains and losses recorded in earnings.

Short-term investments consisting of cash investments 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.

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 Private Placement Senior Notes 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 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. Accounts receivable are carried at face value less an allowance for doubtful accounts as of December 31, 2019, and following the adoption of ASU 2016-13, *Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments,* less an allowance for expected credit losses. We continually monitor accounts receivable balances, and until December 31, 2019, provided for an allowance for doubtful accounts at the time collection became questionable based on payment history or age of the receivable. 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.

The changes in the allowance for credit losses on accounts receivable for the year ended December 31, 2020 and in the allowance for doubtful accounts for the years ended December 31, 2019 and 2018 are as follows:

(in thousands)	2020	2019	2018
Balance at beginning of year	$ 12,115	$ 9,270	$ 8,008
ASC 326 adoption impact	8,089	–	–
Additions charged to expense	16,439	8,701	4,448
Deductions from allowance	(9,868)	(5,777)	(2,827)
Currency translation adjustments and other	277	(79)	(359)
Balance at end of year	$ 27,052	$ 12,115	$ 9,270

For the year ended December 31, 2020, additions charged to expense of $16.4 million include the forward-looking expected impact of the global economic uncertainty caused by COVID-19.

Loans and Other Receivables and Allowance for Credit Losses

Prepaid expenses and other current assets include other short-term receivables and other long-term assets include long-term loan receivables. 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 $10.2 million for other receivables and $1.3 million for loan receivables. As of December 31, 2020, allowances for credit losses of $7.9 million for other receivables are included in prepaid expenses and other current assets and $1.2 million for loan receivables are included in other long-term assets in the accompanying consolidated balance sheet. The allowances reflect the forward-looking expected impact of non-payment of the contractual amounts due.

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, 2020 and 2019:

(in thousands)	2020	2019
Raw materials	$ 65,449	$ 26,077
Work in process	74,398	45,729
Finished goods	151,334	98,898
Total inventories, net	$ 291,181	$ 170,704

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 is computed over the estimated useful life of the underlying patents, 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. Intangible asset impairments recorded during the year ended December 31, 2020, 2019 and 2018 are further discussed in Note 6 "Restructuring and Impairments".

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, using a fair-value-based approach. 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, 2020, 2019 and 2018, 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. Following the adoption of ASU 2016-01 on January 1, 2018, our non-marketable equity securities not accounted for under the equity method are either carried at fair value or 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 are 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 (VIE). 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 78-80% 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 a single performance obligation to transfer a 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 6-10% 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 are 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 11-14% 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, 2020, we had $23.7 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, 2020 and 2019 totaled $8.5 million and $5.5 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 SaaS arrangements. As of December 31, 2020 and 2019, contract liabilities totaled $68.9 million and $56.2 million, respectively, of which $57.1 million and $48.5 million is included in accrued and other current liabilities, respectively, and $11.8 million and $7.7 million in included in other long-term liabilities, respectively. During the twelve months ended December 31, 2020 and 2019, we satisfied the associated performance obligations and recognized revenue of $48.1 million and $48.3 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, 2020, 2019 and 2018:

(in thousands)	2020	2019	2018
Consumables and related revenues	$ 774,234	$ 665,866	$ 649,602
Instruments	129,742	71,266	82,197
Molecular Diagnostics	903,976	737,132	731,799
Consumables and related revenues	841,201	688,281	665,857
Instruments	125,169	101,011	104,192
Life Sciences	966,370	789,292	770,049
Total	$ 1,870,346	$ 1,526,424	$ 1,501,848

Additionally, we disaggregate our revenue based on product category as shown in the tables below for the years ended December 31, 2020, 2019 and 2018:

(in thousands)	2020	2019	2018
Sample technologies	$ 803,867	$ 548,365	$ 546,636
Diagnostic solutions	460,757	465,503	461,064
PCR / Nucleic acid amplification	363,552	224,685	236,952
Genomics / NGS	165,570	183,768	163,383
Other	76,600	104,103	93,813
Total	$ 1,870,346	$ 1,526,424	$ 1,501,848

Refer to Note 21 "Segment Information" for disclosure of revenue by geographic region.

5. Acquisitions and Divestitures

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 (loss) 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, shared 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.

2020 Business Combinations

In September 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, net of cash acquired totaled $239.4 million for the remaining shares. Of this amount, $8.5 million was retained in an escrow account as of December 31, 2020 which is expected to be fully utilized to cover claims for breach of any representations, warranties or indemnities.

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. The fair value of the minority interest investment was determined using an implied purchase price reduced by a 20% control premium.

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. Revenue and earnings in the reporting period since the acquisition date have not been significant.

The allocation of the purchase price is preliminary and not yet finalized. The preliminary allocation of the purchase price is based upon preliminary estimates which used information that was available to management at the time the consolidated financial statements were prepared and these estimates and assumptions are subject to change within the measurement period, up to one year from the acquisition date. Accordingly, the allocation may change. We continue to gather information about the fair value of all assets and liabilities, including intangible assets acquired, and the related deferred taxes.

The preliminary purchase price allocation for NeuMoDx as of December 31, 2020 and the difference to September 30, 2020 is as follows:

(in thousands)	As of December 31, 2020	As of September 30, 2020	Difference
Purchase Price:			
Cash consideration	$ 251,730	$ 251,730	$ —
Fair value of minority interest	52,727	52,727	—
	$ 304,457	$ 304,457	$ —
Preliminary Allocation:			
Cash and cash equivalents	$ 12,291	$ 12,291	$ —
Accounts receivable	5,691	5,691	—
Inventories	20,666	18,866	1,800
Prepaid expenses and other current assets	5,961	5,943	18
Accounts payable	(12,450)	(11,168)	(1,282)
Accruals and other current liabilities	(18,929)	(18,770)	(159)
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	157,627	149,877	7,750
Deferred tax asset	12,457	—	12,457
Deferred tax liability on fair value of identifiable intangible assets acquired	(39,002)	(46,440)	7,438
Total	$ 304,457	$ 304,457	$ —

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 three 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. For the year ended December 31, 2019, pro forma net sales would have been $1.53 billion, pro forma net loss would have been $69.1 million and pro forma diluted net loss per common share would have been $0.30. 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.

2019 Business Combinations

In January 2019, we completed the acquisition of N-of-One, Inc., a privately-held U.S. molecular decision support company and pioneer in clinical interpretation services for complex genomic data located in Concord, Massachusetts. The cash consideration, net of cash acquired, was $24.5 million. This acquisition was not significant to the overall consolidated financial statements and as of December 31, 2019, the allocation of the purchase price was final. 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.

In the third quarter of 2019, we acquired two additional companies for total cash consideration, net of cash acquired, of $43.5 million. The purchase price allocations for these acquisitions were final as of March 31, 2020. These acquisitions were not significant to the overall consolidated financial statements and the acquisitions did not have a material impact to net sales, net income or earnings per share. Thus, no pro forma information has been provided herein.

Other 2018 Business Combination

In April 2018, we acquired all remaining shares of a privately held entity in which we held a minority interest. The value of the minority interest investment was revalued in connection with the acquisition by $4.8 million and a corresponding gain was recorded in restructuring, acquisition, integration and other, net in the accompanying consolidated statement of income for the year ended December 31, 2018. This acquisition was not significant to the overall consolidated financial statements. 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.

2019 Asset Acquisition

On January 31, 2019, we acquired the digital PCR asset of Formulatrix, Inc., a developer of laboratory automation solutions. We paid Formulatrix $125.0 million in cash upon closing. During 2020, we paid the remaining $135.9 million of milestone payments.

Divestitures

In 2019, we sold a portfolio of protein catalysation products for $1.0 million. An immaterial gain was recorded on the sale. In 2018, we sold a portfolio of veterinary testing products for a total of €15.1 million ($18.5 million), of which €13.4 million ($16.4 million) was received during 2018 and the remaining €1.7 million ($1.8 million) was collected in 2020. An $8.0 million gain was recorded on the sale to other income, net in the accompanying consolidated statement of income for the year-ended December 31, 2018.

6. Restructuring and Impairments

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.

2019 Restructuring

In the second half of 2019, we decided to suspend development of NGS-related instrument systems and entered into a new strategic partnership with Illumina to commercialize IVD kits worldwide on Illumina's diagnostic sequencers. In order to align our business with this new strategy, we began restructuring initiatives to target resource allocation to growth opportunities in our Sample to Insight portfolio.

Impairments to property, plant and equipment primarily impacted computer software and machinery and equipment. Costs incurred to either purchase software or produce software products and the software components of products to be sold, leased or marketed after technological feasibility is established were previously capitalized during the development of certain NGS-related instrument systems. These long-lived assets were fully impaired due to the decision to suspend further development. In addition to computer software, certain machinery and equipment assets were fully impaired given that these assets had no alternative use following the changes announced for this program and it was estimated that no value was recoverable in a market disposal.

Due to the suspended development, intangible assets were also assessed for recoverability. The abandoned assets include developed technology related to the suspended projects as well as the termination of licenses which were used exclusively in connection with this program. As a result, we recorded intangible asset impairment charges due to the conclusion that the identified assets have no alternative use outside of the suspended program and thus are fully impaired.

We also conducted an impairment review of inventory and prepaid and other assets and recorded the charges noted in the table below. As these charges, including inventory, are a direct result of the decision to suspend further development of NGS-related instrument systems and are not related to external market factors, the impairment charges were recorded in the line item restructuring, acquisition, integration and other, net in the consolidated statements of income (loss) due to the assets being deemed excess and no longer utilized due to the discontinued development and related actions discussed above.

In addition, we implemented measures to:

- shift Commercial Operations activities into Business Areas;
- transition manufacturing activities into a regional structure; and
- expand the scope of activities at QIAGEN Business Services (QBS) centers in Wroclaw, Poland and Manila, Philippines

During 2020, certain of the planned measures were delayed during the acquisition attempt by Thermo Fisher or changed as a result of business needs during the pandemic. The following is a summary of the charges recorded in the consolidated statements of income (loss) during the years ended December 31, 2020 and 2019 and total program charges through December 31, 2020.

Classification and Type of Charge (in thousands)	Note	2020	2019	Total program charges through 2020
Restructuring, acquisition, integration and other, net				
Personnel related[1]	(22)	$ 904	$ 70,578	$ 71,482
Contract termination expense[1]		682	42,099	42,781
Consulting fees		1,153	10,150	11,303
Accounts receivable[2]		(622)	10,825	10,203
Inventories		1,014	12,336	13,350
Prepaid expenses and other assets[2]		127	17,012	17,139
		3,258	163,000	166,258
Long-lived asset impairments				
Property, plant and equipment	(9)	1,034	98,472	99,506
Intangible assets	(11)	–	40,301	40,301
		1,034	138,773	139,807
Other income, net				
Equity method investment impairment	(10)	–	4,799	4,799
Total		$ 4,292	$ 306,572	$ 310,864

[1] During the year ended December 31, 2019, personnel related and contract termination costs include $2,956 and $15,676, respectively, due to related parties.

[2] During the year ended December 31, 2019, accounts receivable and prepaid expenses and other assets includes $5,984 and $2,270, respectively due from related parties.

Of the total costs incurred, $11.2 million and $60.2 million are accrued as of December 31, 2020 and 2019, respectively, in accrued and other current liabilities in the accompanying consolidated balance sheets as summarized in the following table that includes the cash components of the restructuring activity.

(in thousands)	Personnel Related	Contract Termination	Consulting Fees	Total
Costs incurred in 2019	$ 44,640	$ 42,099	$ 10,150	$ 96,889
Payments	(17,272)	(18,294)	(2,162)	(37,728)
Foreign currency translation adjustment	631	493	(53)	1,071
Liability at December 31, 2019	$ 27,999	$ 24,298	$ 7,935	$ 60,232
Additional costs incurred in 2020	4,542	1,639	1,661	7,842
Release of excess accrual	(3,638)	(957)	(508)	(5,103)
Payments	(24,355)	(18,319)	(9,028)	(51,702)
Foreign currency translation adjustment	139	(230)	(12)	(103)
Liability at December 31, 2020	$ 4,687	$ 6,431	$ 48	$ 11,166

Future pre-tax costs between $5 - $10 million are expected to be incurred, primarily related to personnel and consulting, in the first half of 2021.

2017 Restructuring

We initiated restructuring initiatives in 2017 to mitigate the negative impacts stemming from the U.S. tax reform. Total pre-tax costs for the initiatives, which concluded in 2018, were $24.4 million. Cumulative costs for this program were as follows:

(in thousands)	Personnel Related	Contract and Other Costs	Inventory Write-offs & Asset Impairments	Total
Cost of sales	$ —	$ —	$ 3,039	$ 3,039
Restructuring, acquisition, integration and other, net	6,174	4,583	—	10,757
Total 2017 costs	6,174	4,583	3,039	13,796
Cost of sales	424	1,193	—	1,617
Restructuring, acquisition, integration and other, net	4,207	4,232	1,610	10,049
Total 2018 costs	4,631	5,425	1,610	11,666
Restructuring, acquisition, integration and other, net	(1,100)	—	—	(1,100)
Total 2019 releases	(1,100)	—	—	(1,100)
Total cumulative costs	$ 9,705	$ 10,008	$ 4,649	$ 24,362

During 2018, fixed asset impairments of $1.6 million were recorded in connection with this initiative and are included within long-lived asset impairments in the accompanying consolidated statement of income.

7. Short-Term Investments

As of December 31, 2020 and 2019, short-term investments consisted of the following:

(in thousands)	2020	2019
Marketable equity securities	$ 117,249	$ —
Money market deposits	—	87,468
Commercial paper	—	22,459
Loans receivable	—	19,659
Total	$ 117,249	$ 129,586

At December 31, 2020, short-term investments include the fair value of our marketable equity securities totaling $117.2 million. These investments, further discussed in Note 10 "Investments", are reported at fair value with gains and losses recorded in earnings.

At December 31, 2019 we had $129.6 million ($65.0 million and €57.5 million) of money market deposits, commercial paper and loan receivables due from financial and nonfinancial institutions. These instruments are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market and are carried at fair market value, which is equal to the cost. All instruments are classified as current assets in the accompanying balance sheet as they either have a maturity of less than one year or are redeemable at our discretion. 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, 2020 and 2019:

(in thousands)	Notes	2020	2019
Prepaid expenses		$ 61,159	$ 39,930
Cash collateral	(14)	56,100	2,683
Other receivables		32,901	29,486
Value added tax		31,128	20,347
Loan receivables		17,094	7,539
Contract assets	(4)	8,539	5,479
Total prepaid expenses and other current assets		$ 206,921	$ 105,464

9. Property, Plant and Equipment

Property, plant and equipment of December 31, 2020 and 2019 were as follows:

(in thousands)	Estimated useful life (in years)	2020	2019
Land	—	$ 18,903	$ 17,684
Buildings and improvements	5-40	362,902	341,032
Machinery and equipment	3-10	322,379	292,294
Computer software	3-7	260,730	301,604
Furniture and office equipment	3-10	108,339	102,901
Construction in progress	—	116,562	98,858
		1,189,815	1,154,373
Less: Accumulated depreciation and amortization		(630,443)	(699,130)
Property, plant and equipment, net		$ 559,372	$ 455,243

In 2019, we began restructuring initiatives to target resource allocation to growth opportunities in our Sample to Insight portfolio and in connection therewith, we recorded impairments. Asset impairment charges for the years ended December 31, 2020, 2019 and 2018 were as follows:

(in thousands)	2020	2019	2018
Machinery and equipment	$ 77	$ 9,177	$ —
Computer software	—	44,649	2,911
Furniture and office equipment	315	4,030	—
Construction in progress	642	41,870	4,979
Total impairment in property, plant and equipment	$ 1,034	$ 99,726	$ 7,890

During the year ended December 31, 2020, $1.0 million of impairments were related to the 2019 Restructuring program discussed in Note 6 "Restructuring and Impairments". In 2019, $98.5 million of impairments were related to the 2019 Restructuring program while the remaining $1.2 million were related to other identified impairments during the year. In 2018, we recorded asset impairment charges of $7.9 million of internal-use software of which $1.6 million were related to the 2017 Restructuring program discussed in Note 6 and $6.3 million were related to strategic shifts in our business.

For the years ended December 31, 2020, 2019 and 2018 depreciation and amortization expense totaled $78.6 million, $86.0 million and $87.9 million, respectively. For the years ended December 31, 2020, 2019 and 2018 amortization related to computer software to be sold, leased or marketed totaled $7.4 million, $18.3 million and $17.2 million, respectively. Impairment charges related to computer software to be sold, leased or marketed are included in computer software and construction in progress in the table above and totaled $65.9 million for the year ended December 31, 2019. As of December 31, 2020 and 2019, the unamortized balance of computer software to be sold, leased or marketed was $50.5 million and $36.6 million, respectively.

Repairs and maintenance expense was $13.8 million, $10.7 million and $12.1 million in 2020, 2019 and 2018, respectively. For the year ended December 31, 2020, construction in progress primarily includes amounts related to projects to expand production lines as well as increase capacity of manufacturing as well as ongoing software development projects. For the years ended December 31, 2020, 2019 and 2018, interest capitalized in connection with construction projects was not significant.

10. Investments

Marketable Equity Securities

We hold investments in marketable equity securities that have readily determinable fair values. Since January 1, 2018, these investments are reported at fair value with gains and losses recorded in earnings.

As of December 31, 2020, our investments in marketable equity securities totaled $117.5 million, of which $117.2 million are included in short-term investments and $0.3 million are included in other long-term assets in the accompanying consolidated balance sheet, as follows:

	Short-Term			Long-Term
(in thousands, except shares held)	Invitae Corporation (Invitae)	OncoCyte Corporation (OncoCyte)	Oncimmune Holdings plc (Oncimmune)	HTG Molecular Diagnostics, Inc (HTGM)
Shares held	2,769,189	88,101	560,416	55,556
Cost basis	$ —	$ —	$ —	$ 2,000
Fair value	$ 115,780	$ 211	$ 1,258	$ 266
Total cumulative unrealized gain (loss)	$ 115,780	$ 211	$ 1,258	$ (1,734)

In 2020, HTGM completed a 15:1 reverse stock split.

In 2020, we received 2.4 million shares of Invitae as part of the initial consideration for the sale of our ArcherDX shares, followed by an earn-out of an additional 0.4 million Invitae shares. Additionally in 2020, we received 0.1 million shares in OncoCyte. These transactions are discussed further below. In February 2021, we sold 2.4 million shares of Invitae for $101.5 million.

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 investments and $0.3 million to long-term investments.

As of December 31, 2019, these marketable securities are included in other long-term assets in the accompanying consolidated balance sheet as follows:

	Long-Term	
(in thousands, except shares held)	Oncimmune	HTGM
Shares held	560,416	833,333
Cost basis	$ —	$ 2,000
Fair value	$ 285	$ 585
Total cumulative unrealized gain (loss)	$ 285	$ (1,415)

During 2019, we received 0.6 million shares in Oncimmune in settlement of a zero-book value financial instrument held with a third party. On the date of receipt, these shares held a fair value of $0.7 million which was recorded as a gain in other income, net for the year ended December 31, 2019.

During the years ended December 31, 2019 and 2018 unrealized losses recognized for the change in fair market value of all marketable equity securities totaled $2.1 million and $0.1 million, respectively.

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	2020	2019	2020	2019	2018
PreAnalytiX GmbH	50.00 %	$ 4,761	$ 5,452	$ 3,070	$ 3,971	$ 4,062
Suzhou Fuda Business Management and Consulting Partnership	33.67 %	3,301	3,100	—	—	—
Apis Assay Technologies Ltd	19.00 %	1,940	719	1,221	(51)	—
TVM Life Science Ventures III	3.10 %	1,545	1,219	630	(330)	—
Hombrechtikon Systems Engineering AG	19.00 %	(530)	(761)	97	(1,124)	(668)
MAQGEN Biotechnology Co., Ltd	40.00 %	—	—	—	(383)	(579)
Biotype Innovation GmbH	0.00 %	—	—	—	—	(123)
Pyrobett	0.00 %	—	—	—	—	(100)
		$ 11,017	$ 9,729	$ 5,018	$ 2,083	$ 2,592

TVM Life Science Ventures III 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. Of the $11.0 million of non-marketable investments accounted for as equity method investments, $11.5 million is included in other long-term assets and $0.5 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, 2020.

During the year ended December 31, 2019, we recorded an impairment of $4.8 million in other income, net in the accompanying consolidated statements of income, following changes in circumstances of MAQGEN Biotechnology Co., Ltd that indicated the carrying value was no longer recoverable. Accordingly, the investment was fully impaired.

In 2018, we recorded impairments totaling $6.1 million in other income, net in the accompanying consolidated statements of income, following changes in the investees' circumstances that indicated the carrying value was no longer recoverable.

Three 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, 2020, these investments had a total net carrying value of $3.0 million, of which $3.5 million is included in other long-term assets and $0.5 million is included in other long-term liabilities in the accompanying consolidated balance sheet. As of December 31, 2019, these investments held a balance of $1.2 million, of which $1.9 million is included in other long-term assets and $0.8 million is included in other long-term liabilities in the accompanying consolidated balance sheet. These balances represent our maximum exposure to loss.

Non-Marketable Investments Not Accounted for Under the Equity Method

At December 31, 2020 and 2019, we had investments in non-publicly traded companies that do not have readily determinable fair values with carrying amounts that totaled $4.1 million and $70.8 million, respectively. The changes in 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 for the years ended December 31, 2020 and 2019 are as follows:

(in thousands)	2020	2019
Balance at beginning of year	$ 70,849	$ 59,484
Full acquisition of equity securities	(41,001)	—
Sale of equity securities	(23,812)	—
Loss on sale of equity securities	(2,250)	—
Impairments	(398)	—
Cash investments in equity securities, net	173	3,619
Net increases due to observable price changes	—	7,760
Foreign currency translation adjustments	581	(14)
Balance at end of year	$ 4,142	$ 70,849

2020 Changes in Non-Marketable Investments Not Accounted for Under the Equity Method

During 2020, we acquired the remaining shares of NeuMoDx as further discussed in Note 5 "Acquisitions and Divestitures".

In 2020, 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. For the year ended December 31, 2020, we recognized a total gain of $123.3 million in other income, net in the accompanying consolidated statement of income as a result of this transaction. We are entitled to up to 1.7 million additional Invitae shares subject to milestone achievement.

We sold an investment with a carrying value of $2.5 million in exchange for cash of $0.3 million including the shares in OncoCyte, as discussed above. A loss of $2.3 million was recognized in other income, net in the accompanying consolidated statement of income on the sale of this investment.

We sold another investment for its book value and received $3.7 million in cash.
In 2020, we recorded a $0.4 million impairment in other income, net in the accompanying consolidated statement of income due 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 December 31, 2020, 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.

11. Goodwill and Intangible Assets

The following sets forth the intangible assets by major asset class as of December 31, 2020 and 2019:

		2020		2019	
(in thousands)	Weighted Average Life(in years)	Gross Carrying Amount	Accumulated Amortization	Gross Carrying Amount	Accumulated Amortization
Amortized Intangible Assets:					
Patent and license rights	10.50	$ 298,395	$ (197,038)	$ 320,406	$ (216,554)
Developed technology	10.74	860,129	(378,705)	766,966	(346,085)
Customer base, trademarks, and non-compete agreements	12.02	314,876	(233,981)	314,638	(213,881)
	10.86	$ 1,473,400	$ (809,724)	$ 1,402,010	$ (776,520)
Unamortized Intangible Assets:					
In-process research and development		$ 62,518		$ 6,944	
Goodwill		2,364,031		2,140,503	
		$ 2,426,549		$ 2,147,447	

The in-process research and development as of December 31, 2020 is associated to 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.

Developed technology includes the acquired intangibles from NeuMoDx and the digital PCR asset from Formulatrix as discussed in Note 5 "Acquisitions and Divestitures" which are both being amortized over 10 years.

The changes in intangible assets for the years ended December 31, 2020 and 2019 are as follows:

(in thousands)	2020	2019
Balance at beginning of year	$ 632,434	$ 475,043
Additions	24,007	286,159
Additions from acquisitions	157,170	36,458
Amortization	(103,230)	(122,560)
Disposals	(537)	–
Impairments	–	(40,301)
Foreign currency translation adjustments	16,350	(2,365)
Balance at end of year	$ 726,194	$ 632,434

Cash paid for purchases of intangible assets during the twelve months ended December 31, 2020 totaled $171.5 million, of which $146.1 million is related to current year payments for assets that were accrued as of December 31, 2019, $24.0 million of current year additions and $1.4 million for prepayments recorded in other long-term assets in the accompanying consolidated balance sheet.

Cash paid for intangible assets during the year ended December 31, 2019 totaled $156.9 million of which $11.5 million is related to current year payments for licenses that were accrued as of December 31, 2018 and $0.5 million is related to prepayments recorded in other long-term assets in accompanying consolidated balance sheet. Intangible asset additions of $286.2 million includes $144.9 million of cash paid during the year ended December 31, 2019, together with $137.8 million of additions that were accrued as of December 31, 2019 and $3.5 million of additions which were previously recorded as prepayments.

Amortization expense on intangible assets totaled approximately $103.2 million, $122.6 million and $118.6 million, respectively, for the years ended December 31, 2020, 2019 and 2018. During the year ended December 31, 2019, we recorded an impairment charge of $40.3 million related to the restructuring activities discussed further in Note 6 "Restructuring and Impairments" of which $28.1 million is related to patent and license rights and $12.1 million is related to developed technology.

Amortization of intangibles for the next five years is expected to be approximately:

(in thousands)	Amortization
Years ended December 31:	
2021	$ 103,485
2022	$ 89,734
2023	$ 87,355
2024	$ 83,520
2025	$ 71,130

The changes in goodwill for the years ended December 31, 2020 and 2019 are as follows:

(in thousands)	2020	2019
Balance at beginning of year	$ 2,140,503	$ 2,108,536
Business combinations	157,627	34,807
Purchase adjustments	3,382	(236)
Disposals	—	(225)
Foreign currency translation adjustments	62,519	(2,379)
Balance at end of year	$ 2,364,031	$ 2,140,503

The changes in the carrying amount of goodwill during the year ended December 31, 2020 resulted primarily from the acquisition of NeuMoDx discussed in Note 5 "Acquisitions and Divestitures" and changes in foreign currency translation. The changes in goodwill during the year ended December 31, 2019 resulted primarily from the acquisition of N-of-One, Inc. and other acquisitions and divestitures also discussed in Note 5 "Acquisitions and Divestitures" and changes in foreign currency translation.

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, 2020 and 2019, 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 year ended December 31, 2020 and 2019, 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, 2020 and 2019, we recognized $25.0 million and $24.4 million in total lease costs, respectively.

Supplemental balance sheet and other information related to operating leases as of December 31, 2020 and 2019 are as follows:

(in thousands, except lease term and discount rate)	Location in balance sheet	2020	2019
Operating lease right-of-use assets	Other long-term assets	$ 102,522	$ 57,305
Current operating lease liabilities	Accrued and other current liabilities	$ 23,450	$ 18,739
Long-term operating lease liabilities	Other long-term liabilities	$ 85,585	$ 39,631
Weighted average remaining lease term		7.04 years	3.71 years
Weighted average discount rate		1.89 %	2.39 %

Supplemental cash flow information related to operating leases for the years ended December 31, 2020 and 2019 are as follows:

(in thousands)	2020	2019
Cash paid for operating leases included in operating cash flows	$ 24,193	$ 26,113
Operating lease right-of-use assets obtained in exchange for lease obligations	$ 58,992	$ 24,670

Future maturities of operating lease liabilities as of December 31, 2020 are as follows:

Years ending December 31, (in thousands)	
2021	$ 25,353
2022	20,993
2023	16,280
2024	10,790
2025	6,707
Thereafter	36,878
Total lease payments	117,001
Less: imputed interest	(7,966)
Total	$ 109,035

As of December 31, 2020, we do not have any material operating leases that have not yet commenced. We did not hold any material finance leases as of December 31, 2020 and 2019.

13. Accrued and Other Current Liabilities

Accrued and other current liabilities at December 31, 2020 and 2019 consist of the following:

(in thousands)	Note	2020	2019
Payroll and related accruals		$ 99,085	$ 66,866
Other liabilities		67,244	54,241
Deferred revenue	(4)	57,066	48,525
Accrued expenses		51,026	38,963
Accrued contingent consideration and milestone payments	(15)	23,593	142,604
Operating lease liabilities	(12)	23,450	18,739
Restructuring	(6)	11,599	62,227
Accrued royalties	(20)	7,427	5,481
Accrued interest on long-term debt	(16)	4,575	5,257
Cash collateral	(14)	600	1,400
Total accrued and other current liabilities		$ 345,665	$ 444,303

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, 2020, cash collateral positions consisted of $0.6 million recorded in accrued and other current liabilities and $56.1 million recorded in prepaid expenses and other current assets. As of December 31, 2019, we had cash collateral positions consisting of $1.4 million recorded in accrued and other current liabilities and $2.7 million recorded in prepaid expenses and other current assets in the accompanying consolidated balance sheets.

Non-Derivative Hedging Instrument

Net Investment Hedge

In 2017, we entered into 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 ("Schuldschein") which was issued 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 is designated 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, 2020 and 2019 is $26.9 million and $0.4 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, 2020 and 2019.

Derivatives Designated as Hedging Instruments

Cash Flow Hedges

As of December 31, 2020 and 2019, 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, 2020, we expect approximately $3.6 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. During 2015, we entered into 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. We determined that no ineffectiveness exists related to these swaps. As of December 31, 2020 and 2019, interest receivables of $1.1 million and $1.5 million, respectively are recorded in prepaid expenses and other current assets in the accompanying consolidated balance sheets.

Fair Value Hedges

As of December 31, 2020 and 2019, we held derivative instruments that qualify 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. To date, there has been no ineffectiveness. 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 hold interest rate swaps which effectively fix the fair value of a portion of our fixed rate private placement debt and qualify for hedge accounting as fair value hedges. We determined that no ineffectiveness exists related to these swaps. As of December 31, 2020 and 2019, interest receivables of $0.6 million and $0.1 million, respectively, are recorded in prepaid and other current assets in the accompanying consolidated balance sheets.

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.

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 requires mark-to-market accounting treatment due to the cash settlement features until the Call Options settle or expire. The Call Options are measured and reported at fair value on a recurring basis, within Level 2 of the fair value hierarchy. For further discussion of the inputs used to determine the fair value of the Call Options, refer to Note 15 "Financial Instruments and Fair Value Measurements".

The Call Options do not qualify for hedge accounting treatment. Therefore, the change in fair value of these instruments is recognized immediately in our consolidated statements of income (loss) in other income, net. Because the terms of the Call Options are substantially similar to those of the Cash Convertible Notes' embedded cash conversion option, discussed below, we expect the effect on earnings from the two derivative instruments to mostly offset each other.

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 (loss) 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. For further discussion of the inputs used to determine the fair value of the embedded cash conversion option, refer to Note 15 "Financial Instruments and Fair Value Measurements".

Embedded Conversion Option

During 2017, we purchased a convertible note for $3.0 million from a publicly listed company considered a related party. The embedded conversion option within the convertible note was required to be separated from the convertible note and accounted for separately as a derivative liability, with changes in fair value reported in our consolidated statements of income (loss) in other income, net. The embedded cash conversion option was measured and reported at fair value on a recurring basis, within Level 2 of the fair value hierarchy. During 2020, $3.2 million was collected including the principal including accrued interest. For further discussion of the inputs used to determine the fair value of the embedded cash conversion option, refer to Note 15 "Financial Instruments and Fair Value Measurements".

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, at December 31, 2020 and 2019, aggregate notional values of $1.3 billion and $701.4 million, respectively which expire at various dates through March 2021. 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, 2020 and 2019:

	2020		2019	
(in thousands)	Current Asset	Long-Term Asset	Current Asset	Long-Term Asset
Assets:				
Derivative instruments designated as hedges				
Interest rate contracts - fair value hedge[1]	$ —	$ 5,042	$ —	$ 2,474
Total derivative instruments designated as hedges	$ —	$ 5,042	$ —	$ 2,474
Undesignated derivative instruments				
Equity options	$ 2,415	$ 374,038	$ 101,179	$ 189,792
Foreign exchange forwards and options	11,712	—	6,689	—
Total undesignated derivative instruments	$ 14,127	$ 374,038	$ 107,868	$ 189,792
Total Derivative Assets	$ 14,127	$ 379,080	$ 107,868	$ 192,266

	2020		2019	
(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]	$ —	$ (17,409)	$ —	$ (6,027)
Total derivative instruments designated as hedges	$ —	$ (17,409)	$ —	$ (6,027)
Undesignated derivative instruments				
Equity options	$ (5,966)	$ (376,046)	$ (101,361)	$ (190,902)
Foreign exchange forwards and options	(45,498)	—	(1,814)	—
Total undesignated derivative instruments	$ (51,464)	$ (376,046)	$ (103,175)	$ (190,902)
Total Derivative Liabilities	$ (51,464)	$ (393,455)	$ (103,175)	$ (196,929)

[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, 2020, 2019 and 2018:

	2020	2019	2018
(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	$ 114,326	$ 432	$ 5,598
Gains (Losses) on Derivatives in Cash Flow Hedges			
Interest rate contracts			
Amount of gain (loss) reclassified from accumulated other comprehensive loss	$ 18,666	$ (3,888)	$ (9,774)
Amounts excluded from effectiveness testing	—	—	—
Gains (Losses) on Derivatives in Fair Value Hedges			
Interest rate contracts			
Hedged item	(2,568)	(3,668)	2,051
Derivatives designated as hedging instruments	2,568	3,668	(2,051)
Gains (Losses) Derivatives Not Designated as Hedging Instruments			
Embedded conversion option	—	(349)	131
Equity options	322,580	(104,125)	74,682
Cash convertible notes embedded cash conversion option	(321,213)	106,998	(76,500)
Foreign exchange forwards and options	(12,429)	1,835	(19,857)
Total gains (losses)	$ 7,604	$ 471	$ (31,318)

Balance Sheet Line Items in which the Hedged Item is Included

The following tables summarizes the balance sheet line items in which the hedged item is included as of December 31, 2020 and 2019:

	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)	2020	2019	2020	2019
Long-term debt	$ (131,923)	$ (129,290)	$ 5,042	$ 2,474

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.

Our assets and liabilities measured at fair value on a recurring basis consist of marketable securities discussed in Note 10 "Investments", which are classified in Level 1, short-term investments, which are classified in 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, 2020 and 2019 are classified within Level 3 in the fair value hierarchy. There were no transfers between levels for the year ended December 31, 2020.

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 6.9%), 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 (loss) in the line items commensurate with the underlying nature of milestone arrangements.

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, 2020 and 2019:

	2020				2019			
(in thousands)	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Assets:								
Short-term investments	$ —	$ —	$ —	$ —	$ —	$ 129,586	$ —	$ 129,586
Marketable equity securities	117,515	—	—	117,515	870	—	—	870
Non-marketable equity securities	—	—	4,142	4,142	—	—	70,849	70,849
Equity options	—	376,453	—	376,453	—	290,971	—	290,971
Foreign exchange forwards and options	—	11,712	—	11,712	—	6,689	—	6,689
Interest rate contracts	—	5,042	—	5,042	—	2,474	—	2,474
	$ 117,515	$ 393,207	$ 4,142	$ 514,864	$ 870	$ 429,720	$ 70,849	$ 501,439
Liabilities:								
Foreign exchange forwards and options	$ —	$ (45,498)	$ —	$ (45,498)	$ —	$ (1,814)	$ —	$ (1,814)
Interest rate contracts	—	(17,409)	—	(17,409)	—	(6,027)	—	(6,027)
Equity options	—	(382,012)	—	(382,012)	—	(292,263)	—	(292,263)

	2020				2019			
(in thousands)	Level 1	Level 2	Level 3	Total	Level 1	Level 2	Level 3	Total
Contingent consideration	—	—	(23,593)	(23,593)	—	—	(162,160)	(162,160)
	$ —	$ (444,919)	$ (23,593)	$ (468,512)	—	$ (300,104)	$ (162,160)	$ (462,264)

Refer to Note 10 "Investments" for the change in non-marketable equity securities with Level 3 inputs during the year ended December 31, 2020 and 2019. For contingent consideration liabilities with Level 3 inputs, the following table summarizes the activity for the years ended December 31, 2020 and 2019:

(in thousands)	2020	2019
Balance at beginning of year	$ (162,160)	$ (48,971)
Additions from acquisitions	(3,223)	(132,422)
Payments	141,790	11,800
Gain included in earnings	—	7,433
Balance at end of year	$ (23,593)	$ (162,160)

As of December 31, 2020, we had $23.6 million accrued for contingent consideration which is included in accrued and other current liabilities in the accompanying consolidated balance sheet. As of December 31, 2020, the $3.2 million of additions is related to the time value increases of existing contingent consideration liabilities related to both the 2019 asset acquisition of Formulatrix discussed in Note 5 "Acquisitions and Divestitures" as well as the 2018 acquisition of STAT-Dx. During 2019, a gain for the reduction in the fair value of contingent consideration related to unmet milestones of $7.4 million was recognized in restructuring, acquisition, integration and other, net in the accompanying consolidated statements of income (loss) and additions of $132.4 million primarily related to the asset acquisition of Formulatrix as discussed in Note 5.

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. The estimated fair value of long-term debt as disclosed in Note 16 "Lines of Credit and Debt" 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. There were no fair value differences in the years ended December 31, 2020 and 2019 for nonfinancial assets or liabilities required to be measured at fair value on a nonrecurring basis other than the impairments of non-marketable investments not accounted for under the equity method as discussed in Note 10.

The table below presents the carrying values and the estimated fair values of financial instruments not presented in the tables above as of December 31, 2020 and 2019.

(in thousands)	2020 Carrying Amount	2020 Level 1	2020 Level 2	2019 Carrying Amount	2019 Level 1	2019 Level 2
Long-term debt including current portion:						
Cash convertible notes	$ 791,000	$ 1,167,201	$ —	$ 1,046,511	$ 1,296,334	$ —
Convertible notes	442,481	510,930	—	—	—	—
U.S. Private placement	331,717	—	337,747	328,984	—	329,157
German private placement	357,551	—	361,957	330,857	—	334,371
	$ 1,922,749	$ 1,678,131	$ 699,704	$ 1,706,352	$ 1,296,334	$ 663,528

The fair values of the financial instruments presented in the tables above 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 2021, 2023 and 2024 as well as the Convertible Notes due in 2027.

U.S. Private Placement: Fair value of the outstanding bonds 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.

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. There were no adjustments in the twelve-month periods ended December 31, 2020, 2019 or 2018 for nonfinancial assets or liabilities required to be measured at fair value on a nonrecurring basis.

16. Debt

At December 31, 2020 and 2019, total current long-term debt, net of debt issuance costs of $10.7 million and $10.8 million, respectively, consists of the following:

(in thousands)	2020	2019
0.875% Senior Unsecured Cash Convertible Notes due 2021	$ 200	$ 285,244
0.500% Senior Unsecured Cash Convertible Notes due 2023	361,304	347,995
1.000% Senior Unsecured Cash Convertible Notes due 2024	429,496	413,272
0.000% Senior Unsecured Convertible Notes due 2027	442,481	—
3.75% Series B Senior Notes due October 16, 2022	304,761	302,040
3.90% Series C Senior Notes due October 16, 2024	26,956	26,944

(in thousands)	2020	2019
German Private Placement (Schuldschein)	357,551	330,857
Total long-term debt	1,922,749	1,706,352
Less current portion	42,539	285,244
Long-term portion	$ 1,880,210	$ 1,421,108

The notes are all unsecured obligations that rank pari passu. Interest expense on long-term debt was $63.5 million, $68.0 million and $61.2 million for the years ended December 31, 2020, 2019 and 2018, respectively.

In 2020, we repaid $296.4 million of the 2021 Notes, leaving $0.2 million outstanding as of December 31, 2020, which will be repaid at the original maturity on March 19, 2021.

In 2019, we repaid $506.4 million of long-term debt including $430.0 million for the amount due for the 2019 Cash Convertible Notes, $73.0 million for amounts due for the U.S. Private Placement and $3.4 million for a portion of the 2021 Cash Convertible Notes which was converted during the contingent conversion period as discussed further below.

Future maturities (stated at the carrying values) of long-term debt as of December 31, 2020, are as follows:

Years ending December 31, (in thousands)	
2021	$ 42,539
2022	485,795
2023	361,304
2024	572,870
2025	—
thereafter	460,241
	$ 1,922,749

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 debt issuance costs of $3.7 million, of which $1.3 million was accrued as of December 31, 2020.

In accounting for the issuance of the 2027 Notes, 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 does not meet the criteria for separate accounting as a derivative as it is indexed to our own stock.

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 cash conversion option over the remaining term of the 2027 Note.

We incurred issuance costs of $3.7 million related to the 2027 Notes. Issuance costs were allocated to the liability and equity components based on the same proportion used to allocate the proceeds. Issuance costs attributable to the liability component of $3.3 million are amortized to interest expense over the term of the 2027 Notes, and issuance costs attributable to the equity component of $0.5 million are included along with the equity component in equity.

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 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.

Cash Convertible Notes due 2019, 2021, 2023, and 2024

On March 19, 2014, we issued $730.0 million aggregate principal amount of Cash Convertible Senior Notes in two tranches consisting of $430.0 million due on March 19, 2019 (2019 Notes) and $300.0 million due on March 19, 2021 (2021 Notes). The aggregate net proceeds of the 2019 and 2021 Convertible Notes were $680.7 million, after payment of the net cost of the Call Spread Overlay described below and transaction costs. During 2019, $430.0 million was paid at maturity (2019 Notes) and $3.4 million of the 2021 Notes was redeemed. In 2020, a total of $296.4 million of the 2021 Notes was repaid, leaving $0.2 million outstanding as of December 31, 2020, which will be repaid at the original maturity on March 19, 2021.

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 2019 Notes, 2021 Notes 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 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
2021 Notes	0.875%	March 19 and September 19	March 19, 2021	From April 29, 2014 to September 18, 2020	7,063.1647
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 as defined in the agreement;
- during the five-business day period immediately after any 10 consecutive trading day period in which the quoted price for each trading day of the measurement period was less than 98% of the product of the last reported sale price of our common stock and the conversion rate on each such trading day;
- 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;
- 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.

The Contingent Conversion Conditions in the 2021, 2023, 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 2021, 2023 and 2024 Notes (i.e., the host contracts). As a result, pursuant to the accounting provisions of ASC 815, *Derivatives and Hedging*, the Contingent Conversion Conditions noted above are not required to be bifurcated as separate instruments.

No Contingent Conversion Conditions were triggered for the 2023 Notes and 2024 Notes as of December 31, 2020.

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 (loss) until the cash conversion option transaction settles or expires. The initial fair value liability of the embedded cash conversion option for the 2019 and 2021 Notes was $51.2 million and $54.0 million, respectively, $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, which is five and seven for the 2019 Notes and 2021 Notes, and six years for the 2023 Notes and 2024 Notes, respectively. 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 of the 2019 Notes, 2021 Notes, 2023 Notes and 2024 Notes is 2.937%, 3.809%, 3.997% and 4.782% respectively, 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.

In connection with the issuance of the 2019 and 2021 Cash Convertible Notes, we incurred approximately $13.1 million in transaction costs. We incurred approximately $6.2 million in transaction costs for the 2023 Cash Convertible Notes. For 2024 Cash Convertible Notes, we incurred $5.7 million transaction costs. 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.

Interest expense for the years ended December 31, 2020 and 2019 related to the 2027 Notes and the Cash Convertible Notes was comprised of the following:

(in thousands)	2020	2019
Coupon interest	$ 9,025	$ 9,954
Amortization of original issuance discount	38,229	36,966
Amortization of debt issuance costs	2,942	3,014
Total interest expense	$ 50,196	$ 49,934

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. During 2014, we used $105.2 million of the proceeds from the issuance of the 2019 and 2021 Cash Convertible Notes to pay for the Call Options, and simultaneously received $69.4 million from the sale of the Warrants, for a net cash outlay of $35.8 million for the Call Spread Overlay.

During 2017, we used $73.7 million of the proceeds from the from the issuance of the 2023 Cash Convertible Notes to pay for the premium for the Call Option, and simultaneously received $45.3 million from the sale of Warrants, for a net cash outlay of $28.3 million for the Call Spread Overlay. A total of $0.4 million in issuance costs were paid in connection with the Warrant and the Call Option.

In November 2018, we used $97.3 million of the proceeds from the from the issuance of the 2024 Cash Convertible Notes to pay for the premium for the Call Option, and simultaneously received $72.4 million from the sale of Warrants, for a net cash outlay of $24.9 million for the Call Spread Overlay. A total of $0.9 million in issuance costs were paid in connection with the Warrant and the Call Option.

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 of $105.2 million (2019 and 2021 Notes), $73.7 million (2023 Notes), and $97.3 million (2024 Notes) for the Call Option, 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.

During 2019, we received $133.2 million in cash upon the exercise of the call options in connection with the repayment of the 2019 Notes. In the same transaction, we paid $132.7 million for the intrinsic value of the 2019 Notes' embedded cash conversion option. The net effect of the cash paid and received of $0.5 million was recognized as a gain in other income, net. In connection with the early conversion of a portion of 2021 Notes during 2019, we received $1.5 million upon the exercise of the related call options. Also, we paid $1.1 million for the intrinsic value of the 2021 Notes' embedded cash conversion option. As a result of these early conversions, a gain of $0.4 million was recognized in other income, net.

During 2020, while the 2021 Notes were contingently convertible, we received conversion notices for $119.4 million of outstanding principal. In December 2020, we initiated a tender offer and repurchased a further $177.0 million of outstanding principal. In connection with these transactions, we received $239.8 million in cash upon the exercise of the call options and we paid $237.4 million for the intrinsic value of the 2021 Notes' embedded cash conversion option. The net effect of the cash paid and received of $2.4 million was recognized as a gain in other income, net. Following the completion of the tender offer, $0.2 million of 2021 Notes will remain outstanding and will be repaid or converted at their stated maturity date on March 19, 2021.

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 on October 16, 2022 (3.75%); and (3) $27.0 million 12-year term due on October 16, 2024 (3.90%). 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, 2020. Based on an estimation using the changes in the U.S. Treasury rates, the Level 2 fair value of these senior notes as of December 31, 2020 and 2019 was approximately $337.7 million and $329.2 million, respectively. During 2014, we entered into interest rate swaps, which effectively fixed the fair value of $200.0 million of this debt, which was reduced to $127.0 million following the 2019 $73.0 million repayment. These interest rate swaps qualify for hedge accounting as fair value hedges as described in Note 14 "Derivatives and Hedging".

German Private Placement (Schuldschein)

In 2017, we completed a German private placement bond ("Schuldschein") which was issued in several tranches totaling $331.1 million due in various periods through 2027. The 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, 2020 totaled $26.9 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 over the lifetime of the notes. A summary of the tranches is as follows:

				Carrying Value (in thousands) as of	
Currency	Notional Amount	Interest Rate	Maturity	December 31, 2020	December 31, 2019
EUR	€11.5 million	Fixed 0.4%	March 2021	$ 14,115	$ 12,905
EUR	€23.0 million	Floating EURIBOR + 0.4%	March 2021	28,224	25,811
EUR	€21.5 million	Fixed 0.68%	October 2022	26,361	24,112
EUR	€64.5 million	Floating EURIBOR + 0.5%	October 2022	79,083	72,335
USD	$45.0 million	Floating LIBOR + 1.2%	October 2022	44,948	44,919
EUR	€25.0 million	Floating EURIBOR + 0.5%	October 2022	30,642	28,026
EUR	€64.0 million	Fixed 1.09%	June 2024	78,429	71,747
EUR	€31.0 million	Floating EURIBOR + 0.7%	June 2024	37,989	34,753
EUR	€14.5 million	Fixed 1.61%	June 2027	17,760	16,249
				$ 357,551	$ 330,857

The financial markets regulators in the United Kingdom and the Eurozone have passed regulations that will become effective in 2021 under which LIBOR and EURIBOR in their current form will not be compliant. Market participants and regulators are working on establishing new interest rate benchmarks. While the outcome of this work is not clear yet, the Schuldschein, our syndicated loan facility, and our interest rate swaps continue to make reference to the current LIBOR and EURIBOR benchmark rates. These agreements contain language for the determination of interest rates in case the benchmark rate is not available. However, it appears likely that the agreements will need to be adjusted in line with still to be developed market practice once new benchmark rates become available.

Revolving Credit Facility

Our credit facilities available and undrawn at December 31, 2020 total €427.0 million (approximately $524.0 million). This includes a €400.0 million syndicated ESG-linked revolving credit facility expiring December 2023 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 0.525% to 1.525% 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. In 2020, $0.9 million of commitment fees were paid. 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, 2020. The credit facilities are for general corporate purposes and no amounts were utilized at December 31, 2020.

17. Income Taxes

Income (loss) before income taxes for the years ended December 31, 2020, 2019 and 2018 consisted of:

(in thousands)	2020	2019	2018
Pretax income in The Netherlands	$ (16,640)	$ 17,455	$ (1,675)
Pretax income (loss) from foreign operations	456,112	(95,231)	227,412
	$ 439,472	$ (77,776)	$ 225,737

Income tax expense (benefit) for the years ended December 31, 2020, 2019 and 2018 are as follows:

(in thousands)	2020	2019	2018
Current—The Netherlands	$ 270	$ 5,670	$ 5,794
—Foreign	86,720	13,371	52,835
	86,990	19,041	58,629
Deferred—The Netherlands	(6,921)	4,177	2,551
—Foreign	215	(59,539)	(25,823)
	(6,706)	(55,362)	(23,272)
Total income tax (benefit) expense	$ 80,284	$ (36,321)	$ 35,357

The Netherlands statutory income tax rate was 25% for the years ended December 31, 2020, 2019 and 2018. 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 rate and our effective tax rate for the years ended December 31, 2020, 2019 and 2018 are as follows:

(in thousands)	2020	2019	2018
Income taxes at The Netherlands statutory rate	25.0 %	25.0 %	25.0 %
Unrecognized tax benefits[1]	(8.2)	(14.1)	6.0
Valuation allowance[2]	(8.1)	(26.9)	1.5
Taxation of foreign operations, net[3]	(2.1)	33.1	(15.1)
Prior year taxes	(1.6)	(1.4)	0.2
Tax impact from intangible property transfer	(0.8)	27.2	–
Tax impact from (deductible) nondeductible items	(0.8)	(10.3)	1.3
Excess tax benefit related to share-based compensation	(0.6)	5.1	(2.1)
Government incentives and other deductions[4]	(0.6)	9.7	(1.2)
Changes in tax laws and rates	(0.3)	(0.4)	0.8
Other items, net	0.0	(0.3)	(0.7)
Effective tax rate	18.3 %	46.7 %	15.7 %

[1] During 2020, we analyzed accruals for tax contingencies, primarily related to the potential nondeductibility of the $95.0 million expense reimbursement paid in connection with the unsuccessful acquisition attempt by Thermo Fisher and ongoing income tax audits.

[2] Due to increased taxable income and deferred tax liability position in 2020, we released a net $35.6 million valuation allowance primarily related to U.S. disallowed interest.

[3] 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 rate of 25% as well as the benefit of some income being partially exempt from income taxes due to various intercompany operating and financing activities. These foreign tax benefits are due to a combination of favorable tax laws, regulations and exemptions in these 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 or partially exempt or subject to lower statutory tax rates. During 2020, we had intercompany arrangements through Dubai, and in 2018 through mid-2019 had arrangements through Luxembourg and Ireland.

[4] Government incentives include favorable tax regulations 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 2008 for income tax examinations by tax authorities. The German group is open to audit for the tax years starting in 2014

and in 2019, the German tax authority commenced an audit for the 2014-2016 tax years. The U.S. consolidated group is subject to federal and most state income tax examinations by tax authorities beginning with the year ending December 31, 2017 through the current period. Our other subsidiaries, with few exceptions, are no longer subject to income tax examinations by tax authorities for years before 2016.

Changes in the amount of unrecognized tax benefits for the years ended December 31, 2020, 2019, and 2018 are as follows:

(in thousands)	2020	2019	2018
Balance at beginning of year	$ 58,002	$ 55,780	$ 44,033
Additions based on tax positions related to the current year	31,758	5,770	3,359
Additions for tax positions of prior years	3,560	14,532	11,984
Decrease for tax position of prior years	(57)	(9,073)	—
Decrease related to settlements	—	(7,605)	—
Decrease due to lapse of statute of limitations	(520)	(409)	(1,238)
Increase (decrease) from currency translation	7,349	(993)	(2,358)
Balance at end of year	$ 100,092	$ 58,002	$ 55,780

At December 31, 2020 and 2019, our net unrecognized tax benefits totaled approximately $100.1 million and $58.0 million, respectively, which, if recognized, would favorably affect our effective tax rate in any future period. It is reasonably possible that approximately $38.0 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 tax 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 (loss) as part of income tax expense (benefit).

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, 2020, 2019 and 2018, we recognized a net expense for interest and penalties of $1.9 million, $1.6 million and $1.1 million, respectively. At December 31, 2020 and 2019, we have accrued interest of $4.4 million and $2.5 million, respectively, which are not included in the table above.

We have recorded net deferred tax assets of $15.7 million and $33.1 million at December 31, 2020 and 2019, respectively. The components of the net deferred tax asset and liability at December 31, 2020 and 2019 are as follows:

	2020		2019	
(in thousands)	Deferred Tax Asset	Deferred Tax Liability	Deferred Tax Asset	Deferred Tax Liability
Net operating loss and tax credit carryforward	$ 67,856	$ —	$ 50,274	$ —
Accrued and other liabilities	22,926	—	17,977	—
Inventories	3,872	(2,269)	4,726	(1,439)
Unrealized gain (loss) on investments	—	(25,779)	–	(4,973)
Property, plant and equipment	6,099	(23,376)	5,297	(20,332)
Intangible assets	2,817	(55,999)	1,078	(26,294)
Share-based compensation	18,377	—	13,787	—
Disallowed interest carryforwards	42,090	—	73,690	—
Convertible notes	6,512	(13,513)	7,104	—
Other	9,428	(6,046)	5,998	(6,174)
	179,977	(126,982)	179,931	(59,212)
Valuation allowance	(37,332)	—	(87,619)	—
	$ 142,645	$ (126,982)	$ 92,312	$ (59,212)
Net deferred tax assets		$ 15,663		$ 33,100

At December 31, 2020, we had $686.3 million in total net operating loss (NOL) carryforwards which included $318.6 million for Germany, $176.4 million for the U.S., $68.5 million for The Netherlands, $49.8 million for Spain, and $73.0 million for other foreign jurisdictions. The NOL carryforwards in Germany and Spain carryforward indefinitely and we expect them to be fully utilized in future years. 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 and in The Netherlands the NOL carryforwards expire between 2026 and 2028. NOL carryforwards of $25.3 million in other foreign jurisdictions expire between 2021 and 2030 while the remainder can be carried forward indefinitely. At December 31, 2020, we had $158.8 million of disallowed interest carryforwards which can be carried forward indefinitely. At December 31, 2020, tax credits total $3.0 million which expire between 2030 and 2039.

For the years ended December 31, 2020, 2019 and 2018, the changes in the valuation allowance charged to income tax expense totaled $36.8 million, $19.0 million and $0.8 million, respectively. For the year ended December 31, 2020, the changes in the valuation allowance charged to additional paid in capital totaled $13.5 million. The valuation allowance principally relates to disallowed interest carryforwards and net operating loss carryforwards. The Company can only recognize a deferred tax asset to the extent it is "more likely than not" that these assets will be realized. Judgments around realizability depend on the availability and weight of both positive and negative evidence.

As of December 31, 2020, 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 $538.3 million at December 31, 2020. 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 $28.1 million of undistributed earnings that we do not consider indefinitely reinvested and have recorded a deferred tax liability at December 31, 2020 and 2019, of $1.6 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. Like all shareholders' equity accounts, 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 "Lines of Credit and 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 (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
2019	March 19, 2014	15.2	$32.0560	$40.6	December 27, 2018
2021	March 19, 2014	10.6	$32.0560	$28.3	December 29, 2020
2023	September 13, 2017	9.7	$50.9664	$45.3	June 26, 2023
2024	November 13, 2018	10.9	$52.1639	$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.

During 2019, 2.1 million common shares were issued in connection with the conversion of the 15.2 million warrants related to the 2019 Notes which resulted in a $31.1 million decrease to additional paid in capital, a $37.7 million decrease in retained earnings, a decrease of $68.8 million in treasury shares and an approximately $4 thousand cash payment for fractional shares.

Share Repurchase Programs

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.

On January 31, 2018, we announced our fifth share repurchase program of up to $200 million of our common shares. During 2018, we repurchased 2.9 million QIAGEN shares for $104.7 million (including transaction costs). During 2019, we repurchased 2.0 million QIAGEN shares for $74.5 million (including transaction costs), bringing the total shares repurchased under this program to 4.9 million for $179.1 million (including transaction costs). This program ended on June 30, 2019.

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, 2020 and 2019:

(in thousands)	2020	2019
Net unrealized loss on hedging contracts, net of tax	$ (23,268)	$ (2,289)
Net unrealized loss on pension, net of tax	(599)	(561)
Foreign currency effects from intercompany long-term investment transactions, net of tax of $10.7 million and $9.7 million in 2020 and 2019, respectively	(25,717)	(22,587)
Foreign currency translation adjustments	(194,238)	(284,182)
Accumulated other comprehensive loss	$ (243,822)	$ (309,619)

19. Earnings per Common Share

We present basic and diluted earnings per share. Basic earnings per share is calculated by dividing the net income (loss) by the weighted average number of common shares outstanding. Diluted earnings per share reflect the potential dilution 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, 2020, 2019 and 2018:

(in thousands, except per share data)	2020	2019	2018
Net income (loss)	$ 359,188	$ (41,455)	$ 190,380
Weighted average number of common shares used to compute basic net income per common share	228,427	226,777	226,640
Dilutive effect of stock options and restrictive stock units	3,350	—	4,613
Dilutive effect of outstanding warrants	2,437	—	2,203
Weighted average number of common shares used to compute diluted net income per common share	234,214	226,777	233,456
Outstanding options and awards having no dilutive effect, not included in above calculation	11	107	272
Outstanding warrants having no dilutive effect, not included in above calculation	26,438	32,938	35,939
Basic earnings (loss) per common share	$ 1.57	$ (0.18)	$ 0.84
Diluted earnings (loss) per common share	$ 1.53	$ (0.18)	$ 0.82

For purposes of considering the 2027 Notes in determining diluted earnings (loss) 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, 2020, they were excluded from the diluted earnings (loss) per common share calculation in 2020.

Due to the net loss for the year ended December 31, 2019, stock options and restricted stock units representing approximately 3.9 million weighted-average shares of common stock and warrants representing 1.7 million shares of common stock were excluded from the computation of diluted net loss because the impact would have been antidilutive.

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 $7.4 million and $5.5 million at December 31, 2020 and 2019, respectively. Royalty expense relating to these agreements amounted to $12.2 million, $13.5 million, and $14.0 million for the years ended December 31, 2020, 2019 and 2018, 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, 2020, 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
2021	$ 199,843	$ 10,003
2022	42,628	7,217
2023	5,364	4,483
2024	3,000	2,623
2025	—	2,349
Thereafter	—	3,364
	$ 250,835	$ 30,039

As of December 31, 2020, $28.4 million of the total purchase commitments are with companies in which we hold an interest and are considered related parties.

Contingent Consideration Commitments

Pursuant to the purchase agreements for certain acquisitions and other contractual arrangements, we could be required to make additional contingent cash payments totaling up to $26.6 million based on the achievement of certain revenue and operating results milestones as follows:

Years ending December 31, (in thousands)	
2021	$ 8,850
2022	17,700
	$ 26,550

Of the $26.6 million total contingent obligation as discussed further in Note 9 "Financial Instruments and Fair Value Measurements," we have assessed the fair value at December 31, 2020 to be $23.6 million which is included in accrued and other current liabilities in the accompanying consolidated balance sheet.

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, 2020, the commitment under these agreements totaled $21.2 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, 2020 and 2019 are as follows:

(in thousands)	2020	2019
Balance at beginning of year	$ 3,141	$ 2,848
Provision charged to cost of sales	5,645	3,229
Usage	(3,978)	(2,921)
Adjustments to previously provided warranties, net	(125)	(1)
Currency translation	130	(14)
Balance at end of year	$ 4,813	$ 3,141

Litigation

From time to time, we may be party to legal proceedings incidental to our business. As of December 31, 2020, 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. 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 totaled $5.2 million as of December 31, 2020 and $0.8 million as of December 31, 2019. The estimated amount of a range of possible losses as of December 31, 2020, is between $4.7 million and $16.3 million. During the year ended December 31, 2020, $0.3 million was paid. 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 in accordance with the Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) Topic 280, *Segment Reporting*. We have a common basis of organization and our products and services are offered globally. Considering the acquisitions made during 2020 and our continued restructuring and streamlining of the growing organization, our chief operating decision maker (CODM) continues to make decisions with regards to business operations and resource allocation based on evaluations of QIAGEN as a whole. Accordingly, we operate and make decisions as one business segment. 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 and customer class.

Geographical Information

Net sales are attributed to countries based on the location of the customer. QIAGEN operates manufacturing facilities in Germany, China, and the United States that supply products to customers as well as QIAGEN subsidiaries in other countries. The intersegment 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 $17.8 million, $15.8 million and $15.9 million for the years ended 2020, 2019 and 2018, 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)	2020	2019	2018
Americas:			
United States	$ 728,577	$ 663,869	$ 632,660
Other Americas	96,880	58,121	60,359
Total Americas	825,457	721,990	693,019
Europe, Middle East and Africa	682,289	487,476	490,301
Asia Pacific, Japan and Rest of World	362,600	316,958	318,528
Total	$ 1,870,346	$ 1,526,424	$ 1,501,848

Long-lived assets include property, plant and equipment. The Netherlands, which is included in the balances for Europe, reported long-lived assets of $1.5 million and $1.3 million as of December 31, 2020 and 2019, respectively.

Long-lived assets (in thousands)	2020	2019
Americas:		
United States	$ 154,843	$ 147,027
Other Americas	2,436	3,507
Total Americas	157,279	150,534
Europe, Middle East and Africa:		
Germany	304,571	229,225
Other Europe, Middle East and Africa	71,444	49,004
Total Europe, Middle East and Africa	376,015	278,229
Asia Pacific and Japan	26,078	26,480
Total	$ 559,372	$ 455,243

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 5 or 10 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 14.4 million Common Shares reserved and available for issuance under the 2005 and 2014 Plans at December 31, 2020.

Stock Options

We have not granted stock options since 2013. A summary of the status of employee stock options as of December 31, 2020 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, 2020	792	$ 20.06		
Exercised	(365)	$ 20.97		
Outstanding at December 31, 2020	427	$ 19.28	1.25	$ 14,338
Vested at December 31, 2020	427	$ 19.28	1.25	$ 14,338
Vested and expected to vest at December 31, 2020	427	$ 19.28	1.25	$ 14,338

The total intrinsic value of options exercised during the years ended December 31, 2020, 2019 and 2018 was $6.5 million, $2.0 million and $5.0 million, respectively. The actual tax benefit for the tax deductions from option exercises totaled $1.3 million, $0.5 million, and $0.8 million during the years ended December 31, 2020, 2019 and 2018, respectively. At December 31, 2020, there was no unrecognized share-based compensation expense related to employee stock option awards.

At December 31, 2020, 2019 and 2018, 0.4 million, 0.8 million and 0.9 million options were exercisable at a weighted average price of $19.28, $20.06 and $20.04 per share, respectively. The options outstanding at December 31, 2020 expire in various years through 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, generally up to 5 or 10 years. 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 6.2%. At December 31, 2020, there was $73.1 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 2.25 years. The weighted average grant date fair value of stock units granted during the years ended December 31, 2020, 2019 and 2018 was $36.92, $37.28 and $35.37, respectively. The total fair value of stock units that vested during the years ended December 31, 2020, 2019 and 2018 was $29.3 million, $123.9 million and $54.3 million, respectively.

A summary of stock units as of December 31, 2020 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, 2020	5,183		
Granted	1,035		
Vested	(720)		
Forfeited	(365)		
Outstanding at December 31, 2020	5,133	2.25	$ 261,458
Vested and expected to vest at December 31, 2020	3,881	2.02	$ 205,097

Beginning in 2019, we began net share settlement 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, 2020, 2019 and 2018 totaled approximately $40.9 million, $65.9 million and $40.1 million, respectively, as shown in the table below.

(in thousands)	2020	2019	2018
Cost of sales	$ 2,897	$ 2,493	$ 2,879
Research and development	7,014	5,810	6,457
Sales and marketing	15,889	7,947	9,372
General and administrative	15,136	23,705	21,405
Restructuring, acquisition, integration and other, net	—	25,938	—
Share-based compensation expense	40,936	65,894	40,113
Less: income tax benefit (1)	9,552	12,153	8,277
Net share-based compensation expense	$ 31,384	$ 53,740	$ 31,836

(1) Does not include the excess tax benefit realized for the tax deductions of the share-based payment arrangements which totaled $2.5 million, $4.0 million and $4.7 million, respectively, for the years ended December 31, 2020, 2019 and 2018.

Share-based compensation expense includes amounts related to the restructuring programs discussed in Note 6 "Restructuring and Impairment"", including accelerated expense in 2019. No share-based compensation costs were capitalized for the years ended December 31, 2020, 2019 or 2018 as the amounts were not material.

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 $3.6 million, $4.0 million and $4.0 million for the years ended December 31, 2020, 2019 and 2018, 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 $0.2 million in each of the years ended December 31, 2020, 2019 and 2018.

We have five defined benefit, non-contributory retirement or termination plans that cover certain employees in Germany, France, Japan, Italy 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 $9.3 million at December 31, 2020 and $8.2 million at December 31, 2019, 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, 2020, 2019, and 2018 are as follows:

	For the years ended December 31,		
(in thousands)	2020	2019	2018
Net sales	$ 6,025	$ 20,002	$ 23,358

Net sales with related parties primarily reflects our ventures in China including our partnership to externalize the HPV test franchise for cervical cancer screening in China as well as our joint venture with Sichuan Maccura Biotechnology Co., Ltd which was terminated in conjunction with the 2019 restructuring activities discussed further in Note 6 "Restructuring and Impairments" which also details related party restructuring charges.

As of December 31, 2020 and 2019 balances with related parties are as follows:

(in thousands)	2020	2019
Accounts receivable	$ 3,961	$ 7,589
Prepaid expenses and other current assets	$ 25,429	$ 13,697
Other long-term assets	$ 9,594	$ 16,830
Accounts payable	$ 4,050	$ 1,775
Accrued and other current liabilities	$ 1,380	$ 15,404

Prepaid expenses and other current assets include supplier advances from companies with which we have an investment or partnership interest. As of December 31, 2019, this also included short-term loan receivables that were collected during 2020.

During 2018, we purchased a convertible note for $15.0 million from a privately held company due in December 2021. During 2020, we purchased an additional convertible note from the same company for $10.0 million due in August 2023. Both notes bear interest at 8%. In the event the company goes public, the notes will convert into common shares in the company ranking pari passu with existing common shares. As of December 31, 2020, $17.1 million is included in prepaid expenses and other current assets and $9.0 million is included in other long-term assets in the accompanying consolidated balance sheets related to the principal, accrued interest and allowance for credit loss upon adoption of ASC 326 on January 1, 2020. As of December 31, 2019, $16.3 million is included in other long-term assets related to the principal and accrued interest due from this company related to the convertible note.

In connection with the 2019 Restructuring further discussed in Note 6 "Restructuring and Impairments", we entered into an agreement with a non-publicly traded company considered a related party to reduce future purchase commitments. As of December 31, 2019 due to this agreement, $12.8 million was included in accrued and other current liabilities in the accompanying consolidated balance sheet. Payment occurred during the year ended December 31, 2020.

List of Subsidiaries

The following is a list of the Registrant's subsidiaries as of December 31, 2020, other than certain subsidiaries that did not in the aggregate constitute a significant subsidiary.

Company Name	Jurisdiction of Incorporation
Amnisure International, LLC	USA
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 China (Shanghai) Co. Ltd.	China
QIAGEN Luxembourg SARL	Luxembourg
QIAGEN Deutschland Holding GmbH	Germany
QIAGEN Finance (Malta) Ltd.	Malta
QIAGEN France S.A.S.	France
QIAGEN Gaithersburg LLC	USA
QIAGEN GmbH	Germany
QIAGEN Hamburg GmbH	Germany
QIAGEN Inc.	Canada
QIAGEN Instruments AG	Switzerland
QIAGEN K.K.	Japan
QIAGEN LLC	USA
QIAGEN Ltd.	UK
QIAGEN Manchester Ltd.	UK
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 S.r.l.	Italy
QIAGEN Treasury Management Services Ltd.	UAE
QIAGEN U.S. Finance LLC	USA

Auditor's Report

Report of the 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, 2020 and 2019, the related consolidated statements of income (loss), comprehensive income (loss), changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2020, and the related notes and financial statement schedule as listed in Item 18 (A) (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, 2020 and 2019, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2020, 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, 2020, 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 4, 2021 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 2020 the Company has changed its method of accounting for expected credit losses on financial instruments and other commitments due to the adoption of Accounting Standards Codification Topic 326 – *Measurement of Credit Losses on Financial Instruments*. In 2019, the Company has changed its method for accounting for leases due to the adoption of Accounting Standards Codification Topic 842 – *Leases*.

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 Matters

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

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 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 tax authorities. As at 31 December 2020, the Company recorded unrecognized tax benefits of $100.1m.

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 ultimate 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 tax authorities with respect to the results of inspections by tax 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 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 tax 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.

Initial measurement of fair value of developed technology and in-process research and development assets related to a business combination

As discussed in Note 1 and 5 to the consolidated financial statements, in September 2020, the Company acquired the remaining 80.1% shares of NeuMoDx Molecular, Inc. ("NeuMoDx") for a purchase price of $239.4m, net of cash acquired. In allocating the purchase price, the Company recognized intangible assets at fair value in the amount of $157.2m, including developed technology ($101.0m) and in-process research and development (IPR&D) assets ($55.0m), and goodwill in the amount of $157.6m.

We identified the assessment of the initial measurement of fair value of developed technology and IPR&D acquired in the NeuMoDx business combination as a critical audit matter. Evaluating the key fair value assumptions, including the projected revenue and related growth rates, the estimated customer attrition rates and discount rates, involved a high degree of auditor judgment. Minor changes in those assumptions could have a significant effect on the determination of fair value. In addition, the audit effort required specialized skills and knowledge.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of an internal control related to the Company's acquisition-date fair value measurement process of intangible assets, including the development of the key assumptions. We evaluated the growth rates used by the Company to determine projected revenue by comparing them to industry benchmarks and publicly available data. We assessed the customer attrition rates by comparing it to historical data of the Company. We involved valuation professionals with specialized skills and knowledge, who assisted in:

- performing sensitivity analyses to assess the impact of possible changes to the key assumptions on the fair value of these intangible assets, and
- developing an estimated range of fair values of the intangible assets acquired using the Company's key assumptions and an independently developed range of discount rates using publicly available market data for comparable entities and comparing them to the Company's selected discount rates.

/s/ KPMG AG Wirtschaftsprüfungsgesellschaft

We have served as the Company's auditor since 2015.

Düsseldorf, Germany

March 4, 2021

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.'s and subsidiaries' (the "Company") internal control over financial reporting as of December 31, 2020, 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, 2020, 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, 2020 and 2019, the related consolidated statements of income (loss), comprehensive income (loss), changes in equity, and cash flows for each of the years in the three-year period ended December 31, 2020, and the related notes and financial statement schedule as listed in Item 18 (A) (collectively, the consolidated financial statements), and our report dated March 4, 2021 expressed an unqualified opinion on those consolidated financial statements.

The Company acquired NeuMoDx Molecular, Inc. during 2020, and management excluded from its assessment of the effectiveness of the Company's internal control over financial reporting as of December 31, 2020, NeuMoDx Molecular, Inc.'s internal control over financial reporting associated with 6.31% of total assets and 0.53% of total revenues included in the consolidated financial statements of the Company as of and for the year ended December 31, 2020. Our audit of internal control over financial reporting of the Company also excluded an evaluation of the internal control over financial reporting of NeuMoDx Molecular, Inc.

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 4, 2021

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Financial Calendar

Annual General Meeting of Shareholders of QIAGEN N.V.

June 2021

Second Quarter 2021 Results

July 2021

Third Quarter 2021 Results

November 2021

Fourth Quarter 2021 Results (provisional)

February 2021

Publication Date

May 2021

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 under www.QIAGEN.com/trademarks_disclaimers.aspx.

As of February 2021, QIAGEN molecular diagnostics products included 24 FDA (PMA-approved or 510 (k)-cleared) products, 18 clinical sample concentrator products (14 kits and 4 instruments) 60 EU CE IVD assays, 17 EU CE IVD sample preparation products, 18 EU CE IVD instruments for sample purification or detection, 34 China CFDA IVD assays/sample preparations and 9 China CFDA IVD instruments.

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.