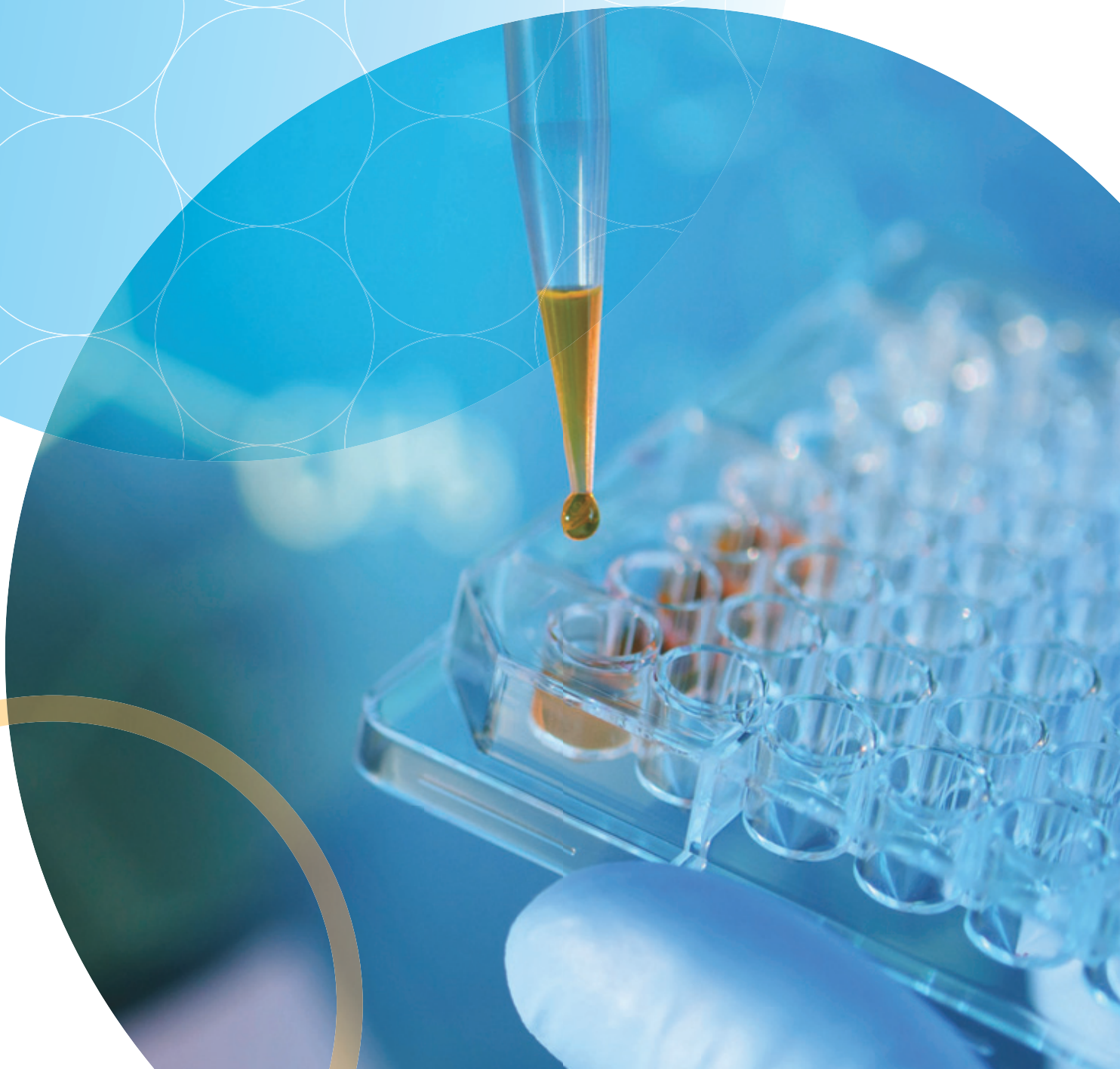
BIO-RAD

Bio-Rad Laboratories

2021 ANNUAL REPORT



Looking back, the year turned out largely as predicted. The pandemic continued to rage in those parts of the country and world with lower vaccination rates, while high levels of vaccination and adherence to safeguards have proven useful.

Managing through the pandemic and especially the safety of our employees was at the top of our list. All the efforts we deployed, including working remotely where possible, monitoring access to our facilities, following local guidelines, closely managing potential hot spots and mandating vaccination where possible, really paid off. In an employee base of nearly 8000 people around the world, we have only lost one to COVID.

By the time the year started, we had well adapted to our new environment. That environment proved to be a dynamic one as the year progressed. We saw our customers gradually returning to the lab over the last twelve months, as they too adapted to a changed environment. At this point, we are close to reaching a normal run rate for the base business, although regional COVID upswings still persist and can effect order flow. While our base business was tracking back to normal, our COVID-related business began to taper off, making for a fairly smooth transition. Remember that our biggest contribution to the Pandemic was instrumentation to perform tests.

In the midst of all of this, we reported sales of $2.9 billion, an increase of 14.8% over last year and we achieved operating income of $489 million. While the year was somewhat

2021 PRODUCT SPOTLIGHT

DROPLET DIGITAL PCR

EXPANDING OUR INNOVATION IN DIGITAL PCR

Bio-Rad's Droplet Digital PCR Systems provide ultrasensitive and absolute nucleic acid quantification. The applications for this technology continue to expand across academic research, applied markets, the biopharma industry, and beyond. Increasingly, ddPCR® is emerging as a valuable technology for advancing discovery.

In the ongoing efforts to combat the COVID-19 pandemic, our Droplet Digital PCR technology is proving to offer great benefit in detecting very low levels of the SARS-CoV-2 virus in some diagnostics lab settings and increasingly is becoming helpful in pinpointing areas of outbreaks through wastewater surveillance. To that end, Bio-Rad launched the PREvalence™ ddPCR® SARS-CoV-2 Wastewater Quantification Kit in June 2021 as a sensitive, accurate, and cost-effective tool used to detect SARS-CoV-2 in a community's wastewater. This kit includes all reagents needed to detect the virus in wastewater on Bio-Rad's ddPCR® systems along with software for automated analysis. It joins the company's expanding menu of COVID-19 products that are being used in the global fight against the pandemic, including molecular qPCR and ddPCR® instruments and reagents, antibody tests, quality controls, and ddPCR® assays to detect SARS-CoV-2 variants of concern.

Adding to our suite of offerings in digital PCR, Bio-Rad acquired Dropworks – a pre-commercial droplet digital PCR platform – in October 2021. Dropworks' development promises to provide an entry-level product that could streamline the digital PCR workflow for life science research and diagnostic applications. This platform accelerates our entry into the lower-end segment of digital PCR and allows for expansion in the real-time PCR segment. With an initial launch anticipated in 2023, Dropworks should expand the opportunity for our ddPCR® platforms.

2021 PRODUCT SPOTLIGHT

PROCESS CHROMATOGRAPHY

A CORNERSTONE OF OUR BIOPHARMA STRATEGY

Bio-Rad provides protein purification solutions for drug development from discovery to manufacturing. One of Bio-Rad's first successful and enduring products, "analytical grade" (AG) ion exchange resins have decades of longevity after being introduced in the 1950s. With their ability to separate a mixture based on differences in chemical charges of their components, these resins continue to be used today as a method of purification, with applications in both clinical diagnostics and life science research.

Today, our ion-exchange and mixed-mode chromatography resins play an important role in healthcare applications for the purification and characterization of biomolecules such as proteins, peptides, and nucleic acids. Our process chromatography media are used not only in life science research and diagnostics, but also by the pharmaceutical industry as part of the purification process at various stages in the manufacture of biological therapeutics and vaccines to treat a variety of diseases.

Recently, we introduced two new chromatography media: CHT Ceramic Hydroxyapatite XT media and Nuvia HP-Q Anion Exchange resin for process protein purification of biotherapeutics. CHT Ceramic Hydroxyapatite XT media offers high resolution and efficient single-step clearance of aggregates and other impurities. Nuvia HP-Q resin addresses customers' need for a high-performance resin compatible with the high-throughput purification of biotherapeutics such as plasma proteins.

As the biopharmaceutical industry continues to advance, biomolecules are becoming more complex. Our innovative resins combine multiple purification modalities to help overcome any purification challenge.

CHT CERAMIC HYDROXYAPATITE XT MEDIA

anomalous for expenses, given reduced travel and related expense, we have taken this opportunity to rethink some of our business practices and expect to continue to operate at an improved level.

While it is our expectation that COVID-related revenue will recede, we have continued to invest in a few areas where we feel there will be a sustaining need. One of the advantages of our ddPCR technology is its ability to capture rare events. This makes it an ideal platform for monitoring pathogens in wastewater. During the year, we developed and introduced the PREvalence wastewater kit to help municipalities in this regard. It has proven to be valuable, and it has the potential to become a standard monitoring tool.

Building on our molecular biology franchise, our Life Science Group acquired a new platform in development in the last half of the year. This will address a new area within digital biology. In concept, the price and performance characteristics will help to broaden adoption of droplet digital PCR into new areas of application. We have been gratified by the acceptance and value ddPCR has found in research and biopharma applications as measured by its use in over 3000 peer reviewed publications, to date.

As you might imagine, we have created and invested in a significant portfolio of intellectual property around ddPCR over the last several years and have found ourselves in a position to defend the innovation covered by those rights. The end of the year brought with it favorable resolution of outstanding litigation with several infringers, and reinforces the strength of our patented technology in this area.

In a closely allied area, you may recall that we acquired single cell analysis technology, just as the pandemic began to take hold in early 2020. We continue to move through the development process, with the goal of introducing the first in a line of products later this year. There is a lot of interest in single cell analysis as researchers look to isolate, analyze and interpret cell behavior. In addition, there is also a growing interest to apply the technology to monitoring disease progression and immune response.

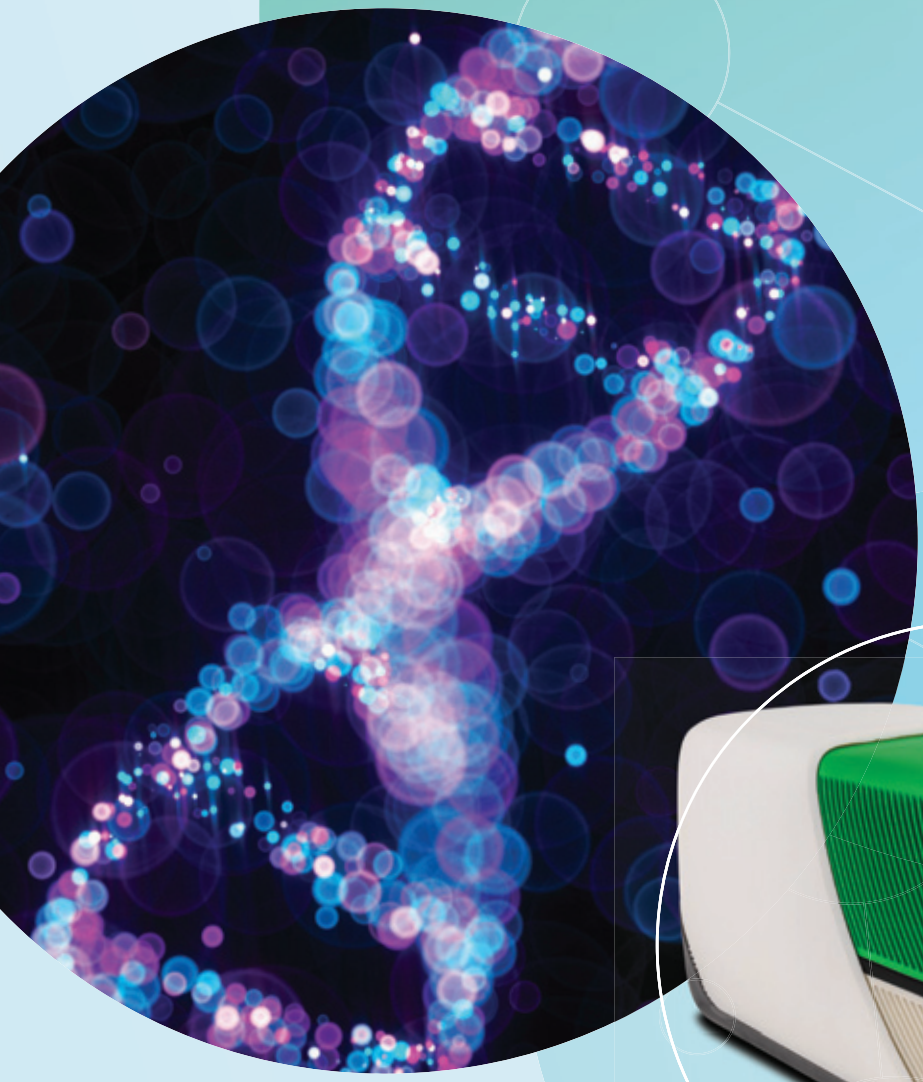
During the year, we also established an alliance with Seegene to bring their line of unique molecular diagnostic assays to the U.S. market. Having partnered with them in other parts of the world, we have come to understand the value of their assay design and multiplex capabilities which allow clinicians to detect multiple infectious disease targets, simultaneously, in syndromic panels. We are currently pursuing FDA approvals to allow introduction into the U.S. market.

We continue our journey to optimize our organizational and operational footprint and to gain the resulting efficiencies afforded us. A major project this past year was consolidation of our customer service and finance organizations across Europe into a central site in Budapest. We expect this to result in a more efficient and effective operating model for the region. We also re-thought our global manufacturing footprint and decided to relocate and consolidate some of our Europe-based instrument operations to Singapore. It will take a while for the results of these changes to be reflected in our financial results, but they will help us to reach our longer-term goals. In addition, we restructured our diagnostic sales channel in Europe to better reflect our customer profile and create a more efficient

2021 PRODUCT SPOTLIGHT

SEEGENE PARTNERSHIP

LEVERAGING OUR INSTALL BASE OF CFX REAL-TIME PCR INSTRUMENTS



In June 2021, Bio-Rad entered into a partnership with Seegene, Inc., a global leader in multiplex molecular diagnostics, for the clinical development and commercialization of infectious disease molecular diagnostic products. Seegene's unique assay design, chemistries and high-level multiplexing are optimized to work with Bio-Rad's CFX real-time PCR systems to detect multiple infectious disease targets simultaneously, making the assays well-suited for syndromic testing.

Under the terms of the agreement, Korea-based Seegene will supply diagnostic tests for use on Bio-Rad's Real-Time PCR platforms and Bio-Rad will exclusively market the tests in the U.S. – pending clinical development and regulatory clearance from the Food & Drug Administration (FDA).

CFX OPUS 96
REAL-TIME PCR SYSTEM

2021 PRODUCT SPOTLIGHT

INTELIQ QUALITY CONTROLS

EXTENDING OUR LEADERSHIP IN INDEPENDENT QUALITY CONTROLS

Bio-Rad offers enhanced value to the global clinical laboratory testing community to ensure the best possible testing accuracy for patients. We have been expanding our portfolio and recently introduced a complete menu of independent Quality Control ready-to-use reagents: InteliQ, designed to increase workflow efficiency for high-volume labs. Bio-Rad also offers a companion QC data management software: Unity, that improves overall laboratory analytical performance and enables labs to compare their results in real-time with over 25,000 other laboratories around the world.

InteliQ reagents are provided in barcoded tubes which are pre-formulated and ready-to-load onto high throughput clinical analyzers with no manual data entry or reagent manipulation required. They are universally compatible with most automated chemistry and immunoassay platforms. Innovations such as InteliQ allow clinical diagnostic labs to provide high-quality and consistent test reporting each time, and over time.

INTELIQ
QUALITY
CONTROLS

and effective sales and support organization. In general, the investments made over the past few years in systems and organization continue to bear fruit, allowing us to better manage a diverse, global enterprise and to improve alignment around our stated goals and initiatives. While there is much more to be accomplished, we are making good progress.

As the year draws to a close, so does the career of Annette Tumolo, who is retiring after over 30 years of service to the company. We wish her well and welcome the promotion of Simon May to lead our Life Science Group.

While the last few years have been anything but normal, the Bio-Rad team has demonstrated a real ability to continue to make progress on many fronts. As we transition into 2022, I think we have a lot to look forward to. Our core markets are recovering, the world has adjusted to a pandemic environment, and the funding outlook for life science and diagnostics is robust.

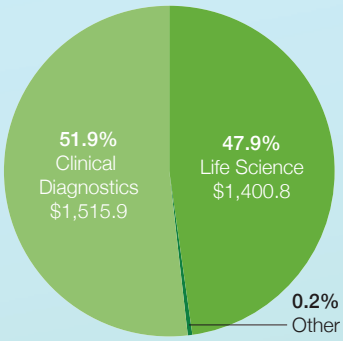
Thank you all, employees and investors, for being a valued part of this adventure.

Norman Schwartz
CHAIRMAN OF THE BOARD, PRESIDENT AND CEO

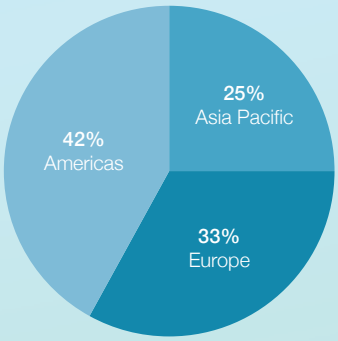
FINANCIAL HIGHLIGHTS

FIVE-YEAR RECORD (IN MILLIONS)	2017	2018	2019	2020	**2021**
Net Sales	$ 2,160.2	$ 2,289.4	$ 2,311.7	$ 2,545.6	**$ 2,922.5**
Gross Profit	$ 1,187.7	$ 1,223.2	$ 1,257.0	$ 1,437.8	**$ 1,640.7**
Operating Income (Loss)	$ 119.3	$ (103.3)	$ 229.7	$ 411.0	**$ 489.4**
Cash Flow from Operations	$ 104.1	$ 285.5	$ 457.9	$ 575.3	**$ 656.5**

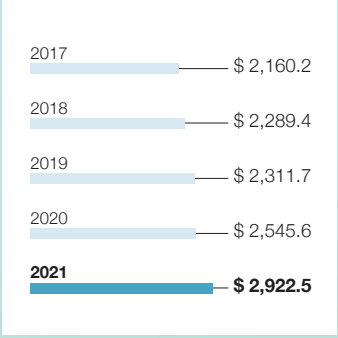
2021 SALES BY GROUP
(IN MILLIONS)



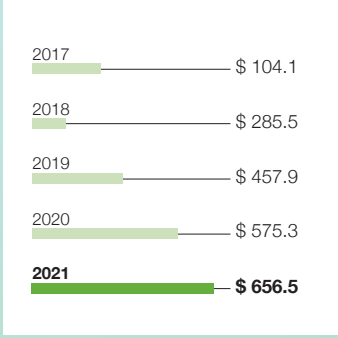
2021 SALES BY REGION



NET SALES
(IN MILLIONS)



CASH FLOW FROM OPERATIONS
(IN MILLIONS)



UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the year ended December 31, 2021

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from _____ to _____

Commission file number 1-7928

BIO-RAD LABORATORIES, INC.

(Exact name of registrant as specified in its charter)

Delaware	94-1381833
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
1000 Alfred Nobel Drive, Hercules, California	94547
(Address of principal executive offices)	(Zip Code)

Registrant's telephone number, including area code (510) 724-7000

Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Trading Symbols	Name of Each Exchange on Which Registered
Class A Common Stock Par Value $0.0001 per share	BIO	New York Stock Exchange
Class B Common Stock Par Value $0.0001 per share	BIOb	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: NONE

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act.

☒ Yes ☐ No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act.

☐ Yes ☒ No

Indicate by check mark whether the registrant: (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. ☒ Yes ☐ No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files).

☒ Yes ☐ No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated file	☐	Smaller reporting company	☐
		Emerging growth company	☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). ☐ Yes ☒ No

As of June 30, 2021, the last business day of the registrant's most recently completed second fiscal quarter, the aggregate market value of the Registrant's Class A Common Stock held by non-affiliates was approximately $13,641,153,999 and the aggregate market value of the registrant's Class B Common Stock held by non-affiliates was approximately $106,611,955.

As of February 9, 2022, there were 24,860,701 shares of Class A Common Stock and 5,071,736 shares of Class B Common Stock outstanding.

Documents Incorporated by Reference

	Document	Form 10-K Parts
(1)	Definitive Proxy Statement to be mailed to stockholders in connection with the registrant's 2022 Annual Meeting of Stockholders (specified portions)	III

BIO-RAD LABORATORIES, INC.

FORM 10-K DECEMBER 31, 2021

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INFORMATION RELATING TO FORWARD-LOOKING STATEMENTS

Other than statements of historical fact, statements made in this report include forward-looking statements, within the meaning of the Private Securities Litigation Reform Act of 1995. These forward-looking statements include, without limitation, statements we make regarding our future financial performance, operating results, plans and objectives, impact of the COVID-19 pandemic on Bio-Rad's results and operations, and steps governments, universities, hospitals and private industry, including diagnostic laboratories, are taking or may take as a result of the pandemic. Forward-looking statements generally can be identified by the use of forward-looking terminology, such as "believe," "expect," "anticipate," "may," "will," "intend," "estimate," "continue," or similar expressions or the negative of those terms or expressions. Such statements involve risks and uncertainties, which could cause actual results to vary materially from those expressed in or indicated by the forward-looking statements. We have based these forward-looking statements on our current expectations and projections about future events. However, actual results may differ materially from those currently anticipated depending on a variety of risk factors including, but not limited to, the duration, severity and impact of the COVID-19 pandemic, global economic conditions, supply chain issues, our ability to develop and market new or improved products, our ability to compete effectively, foreign currency exchange fluctuations, reductions in government funding or capital spending of our customers, international legal and regulatory risks, product quality and liability issues, our ability to integrate acquired companies, products or technologies into our company successfully, changes in the healthcare industry, natural disasters and other catastrophic events beyond our control, and other risks and uncertainties identified under "Item 1A, Risk Factors" of this Annual Report. We caution you not to place undue reliance on forward-looking statements, which reflect an analysis only and speak only as of the date hereof. We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events, or otherwise, except as required by law.

PART I.

ITEM 1. BUSINESS

General

Bio-Rad Laboratories, Inc. (referred to in this report as "Bio-Rad," "we," "us," and "our") is a multinational manufacturer and worldwide distributor of our own life science research and clinical diagnostics products. Bio-Rad manufactures and supplies the life science research, healthcare, analytical chemistry and other markets with a broad range of products and systems used to separate complex chemical and biological materials and to identify, analyze and purify their components.

We have direct distribution channels in over 35 countries outside the United States through subsidiaries whose focus is sales, customer service and product distribution. In some locations outside and inside these 35 countries, sales efforts are supplemented by distributors and agents.

Description of Business

Business Segments

Bio-Rad operates in two industry segments designated as Life Science and Clinical Diagnostics. Both segments operate worldwide. Our Life Science segment and our Clinical Diagnostics segment generated 48% and 52%, respectively, of our net sales for the year ended December 31, 2021. We generated approximately 39% of our consolidated net sales for the year ended December 31, 2021 from the U.S. and approximately 61% from our remaining worldwide markets.

Life Science Segment

Our Life Science segment is at the forefront of discovery, creating advanced tools to answer complex biological questions. These tools are typically used to separate, purify, characterize, or quantitate biological materials such as cells, proteins, and nucleic acids in the research laboratory or the biopharmaceutical manufacturing and quality control process, for food safety and science education and literacy. Many of our products are used in established research techniques, biopharmaceutical production processes and food testing regimes. We are focused on the translational research market segment where our products help accelerate the timelines from discovery in the lab to the clinic and the patient. We are a leader in the life sciences market and develop, manufacture and market approximately 9,000 reagents, apparatus and laboratory instruments that serve a global customer base. These techniques are typically used to separate, purify and identify biological materials such as proteins, nucleic acids and bacteria within a laboratory or production setting. We focus on selected segments of the life sciences market in proteomics (the study of proteins), genomics (the study of genes), biopharmaceutical production, cellular biology and food safety. We estimate that the worldwide market that our portfolios can address for products in these selected segments of our addressable markets is approximately $19 billion. Our principal life science customers include universities and medical schools, industrial research organizations, government agencies, pharmaceutical manufacturers, biotechnology researchers, food producers and food testing laboratories.

Clinical Diagnostics Segment

Our Clinical Diagnostics segment designs, manufactures, sells and supports test systems, informatics systems, test kits and specialized quality controls that serve clinical laboratories in the global diagnostics market. Our products currently address specific niches within the in vitro diagnostics (IVD) test market, and we seek to focus on the higher margin, higher growth segments of this market.

We supply more than 3,000 different products that cover more than 300 clinical diagnostic tests to the IVD test market. We estimate that the worldwide sales for products in the markets we serve is approximately $16 billion. IVD tests are conducted outside the human body and are used to identify and measure substances in a patient's tissue, blood or urine. Our products consist of reagents, instruments and software, typically provided to our customers as an integrated package to allow them to generate reproducible test results. Revenue in this business is highly recurring, as laboratories typically standardize test methodologies, which are dependent on a particular supplier's equipment, reagents and consumable products. An installed base of diagnostic test systems therefore typically creates an ongoing source of revenue through the sale of test kits for each sample analyzed on an installed system. Our principal clinical diagnostic customers include hospital laboratories, diagnostic reference laboratories, transfusion laboratories and physician office laboratories.

Raw Materials and Components

We utilize a wide variety of chemicals, biological materials, electronic components, machined metal parts, optical parts, computing and peripheral devices. Most of these materials and components are available from numerous sources, and while we have historically not experienced difficulty in securing adequate supplies, the impact of COVID-19 on our suppliers' operations has created on-going challenges in procuring materials. For more discussion relating to the impacts of the COVID-19 pandemic and the difficulty of securing adequate supplies, please see "Item 1A, Risk Factors" to this Annual Report. In certain instances, we acquire components and materials from a sole supplier. Due to the regulatory environment in which we operate, we may be unable to quickly establish additional or replacement sources for some components or materials.

Patents, Trademarks and Licenses

We own over 2,200 U.S. and international patents and numerous trademarks. We also hold licenses under U.S. and foreign patents owned by third parties and pay royalties on the sales of certain products under these licenses. In addition, we also receive royalties for licenses of our intellectual property. We view these patents, trademarks and license agreements as valuable assets; however, we believe that our ability to develop and manufacture our products depends primarily on our knowledge, technology and special skills rather than our patent, trademark and licensing positions.

Seasonal Operations

Our business is not inherently seasonal. However, the European custom of concentrating vacation during the summer months usually tempers third quarter sales volume and operating income.

Sales and Marketing

We conduct our worldwide operations through an extensive direct sales force, employing approximately 820 direct sales and sales management personnel around the world. Our sales force typically consists of experienced industry professionals with scientific training, and we maintain a separate specialized sales force for each of our segments. We believe that this direct sales approach allows us to sell a broader range of our products that creates more brand awareness and long-term relationships with our customers.

We also use a range of sales and marketing intermediaries (SMIs) in our international markets. The types of SMIs we utilize are distributors, agents, brokers and resellers. We have programs and policies in place with our SMIs to ensure their compliance with all applicable laws, including adhering to our anti-corruption standards to ensure a transparent sale to our customers.

Our customer base is broad and diversified. Our worldwide customer base includes (1) prominent university and research institutions; (2) hospital, public health and commercial laboratories; (3) other leading diagnostic manufacturers; and (4) leading companies in the biotechnology, pharmaceutical, chemical and food industries.

Our sales are affected by a number of external factors. For example, a number of our customers, particularly in the Life Science segment, are substantially dependent on government grants and research contracts for their funding.

Most of our international sales are generated by our wholly-owned international subsidiaries and their branch offices. Certain of these subsidiaries also have manufacturing operations. Bio-Rad's international operations are subject to certain risks common to foreign operations in general, such as changes in governmental regulations, import restrictions and foreign exchange fluctuations.

Competition

The markets served by our product groups are highly competitive. Our competitors range in size from start-ups to large multinational corporations with significant resources and reach. We seek to compete primarily in market segments where the technology and efficacy of our products offer customers specific advantages over the competition.

Our Life Science segment does not face the same competitors for all of its products due to the breadth of its product lines. Major competitors in this market include Becton Dickinson, GE Biosciences, Merck Millipore and Thermo Fisher Scientific. We compete primarily based on meeting performance specifications and offering comprehensive solutions.

Major competitors for our products in the Clinical Diagnostics segment include Roche, Abbott Laboratories, Siemens, Danaher, Thermo Fisher Scientific, Becton Dickinson, bioMérieux, Ortho Clinical Diagnostics, Tosoh, Immucor and DiaSorin. We compete across a variety of attributes including quality, service and product portfolio.

Research and Development

We conduct extensive research and development activities in all areas of our business. Research and development has played a major role in Bio-Rad's growth and is expected to continue to do so in the future. Our research teams are continuously developing new products and new applications for existing products. In our development of new products and applications, we interact with scientific and medical professionals at pharma and bio-pharma companies, universities, hospitals and medical schools, and within our industry. In addition, we regularly invest in companies that are engaged in the development of new technologies that either complement or expand our existing portfolio of products. We have approximately 950 employees worldwide focused on research and development, including degreed scientists, engineers, software developers and other technical support staff.

Regulatory Matters

The development, testing, manufacturing, marketing, post-market surveillance, distribution, advertising and labeling of certain of our products (primarily diagnostic and donor screening products) are subject to regulation in the United States by the Center for Devices and Radiological Health (CDRH) and/or the Center for Biologics Evaluation and Research (CBER) of the U.S. Food and Drug Administration (FDA) and in other jurisdictions by state and foreign government authorities. FDA regulations require that some new products have pre-marketing notification ("510(k)") or approval ("PMA" or Biologics License Application – "BLA") by the FDA and require certain products to be manufactured in accordance with FDA's "good manufacturing practice" regulations, to be extensively tested and to be properly labeled to disclose test results and performance claims and limitations. The FDA's 510(k) clearance process requires regulatory competence to execute and usually takes four to nine months, but it can last longer. The FDA's PMA and BLA processes require extensive regulatory competence to execute and may take one to two years.

A clinical trial is generally required to support a PMA or BLA application and is sometimes required for a 510(k) clearance or a de novo authorization. Conducting clinical trials is a complex and costly activity and frequently requires the use of outsourced resources that specialize in planning and conducting the clinical trial for the medical device manufacturer.

The European Union ("EU") has adopted the EU in-vitro Diagnostics Regulation (the "EU IVDR"), which imposes stricter requirements for the marketing and sale of in-vitro diagnostics products (as compared to the predecessor in-vitro Diagnostics Directive (IVDD)), including in the areas of clinical evaluation requirements, quality systems, economic operators and post-market surveillance. Manufacturers of currently marketed in-vitro diagnostics products will have until May 2022 to meet the requirements of the EU IVDR, though the EU Council and Parliament recently signed an amendment that delays certain previously mandated deadlines to allow more time for Notified Body to manage the entire portfolio of IVD products on the European market.

Our manufacturing facilities, as well as those of certain suppliers, are subject to periodic routine and for-cause inspections by the FDA and other regulatory bodies to verify compliance with regulatory requirements. Similar inspections are performed by Notified Bodies to verify compliance to applicable ISO standards (e.g. ISO 13485:2016), requirements under the Medical Device Single Audit Program ("MDSAP") applicable to regulatory requirements of Australia, Brazil, Canada, Japan and the U.S. and/or medical device regulations and requirements from the countries in which we distribute product and other specified audits by regulatory authorities. If a regulatory body were to find that we or certain suppliers have failed to comply with applicable regulations (e.g. recordkeeping, reporting of adverse events), it could institute a wide variety of enforcement actions, ranging from issuance of a warning or untitled letter to more severe sanctions, such as product recalls or seizures, civil penalties, consent decrees, injunctions, criminal prosecution, operating restrictions, partial suspension or shutdown of production, refusal to permit importation or exportation, refusal to grant, or delays in granting, clearances or approvals or withdrawal or suspension of existing clearances or approvals. Any of these actions could have an adverse effect on our business.

We are also subject to additional regulation and enforcement by the federal government and by authorities in the states and foreign jurisdictions in which we conduct our business. Such laws include, without limitation, state and federal anti-kickback, fraud and abuse, false claims, privacy and security and physician sunshine laws and regulations. If our operations are found to be in violation of any of such laws or any other governmental regulations that apply to us, we may be subject to penalties, including, without limitation, civil and criminal penalties, damages, fines, the curtailment or restructuring of our operations, exclusion from participation in federal and state healthcare programs and imprisonment.

Sales of our products will depend, in part, on the extent to which our products or diagnostic tests using our products will be covered by third-party payors, such as government health care programs, commercial insurance and managed healthcare organizations. These third-party payors are increasingly reducing reimbursements for certain medical products and services. In addition, the U.S. government, state legislatures and foreign governments have continued implementing cost containment programs, including price controls and restrictions on reimbursement. Adoption of price controls and cost-containment measures, and adoption of more restrictive policies in jurisdictions with existing controls and measures, could further limit our net revenue and results. Decreases in third-party reimbursement for our products or diagnostic tests using our products, or a decision by a third-party payor to not cover our products could reduce or eliminate utilization of our products and have a material adverse effect on our sales, results of operations and financial condition. In addition, healthcare reform measures have been and will be adopted in the future, any of which could limit the amounts that governments will pay for healthcare products and services, which could result in reduced demand for our products or additional pricing pressures.

As a multinational manufacturer and distributor of sophisticated instrumentation, we must meet a wide array of electromagnetic compatibility and safety compliance requirements to satisfy regulations in the United States, the European Union and other jurisdictions.

Our operations are subject to federal, state, local and foreign environmental laws and regulations that govern activities such as transportation of goods, emissions to air and discharges to water, as well as handling and disposal practices for solid, hazardous and medical wastes. In addition to environmental laws that regulate our operations, we are also subject to environmental laws and regulations that create liabilities and clean-up responsibility for spills, disposals or other releases of hazardous substances into the environment as a result of our operations or otherwise impacting real property that we own or operate. The environmental laws and regulations could also subject us to claims by third parties for damages resulting from any spills, disposals or releases resulting from our operations or at any of our properties.

These regulatory requirements vary widely among countries.

Human Capital Resources

At Bio-Rad, we consider our employees to be our most valuable asset, and critical to the effective development, manufacture, sale, distribution and servicing of our vast array of products and services. Our employees are essential to satisfying our customers' needs for products to advance science and healthcare. At December 31, 2021, we had approximately 7,900 employees, the overwhelming majority of which are full-time employees. Our employees are located throughout the world with roughly 46% in the Americas, 39% in Europe, the Middle-East and Africa, and 15% in Asia Pacific. Our employees work in over 140 locations in 36 different countries around the world.

Diversity, Equity and Inclusion

At Bio-Rad, we recognize that diversity is a strength. Our differences offer new and unique ideas and perspectives to our organization. We foster a work culture that embraces the diverse experience and knowledge of every employee, creating an inclusive culture regardless of race, gender, age, sexual orientation, disability, or nationality. We have been purposeful in our efforts to hire, develop and retain diverse talent as well as in our efforts to create an inclusive culture. We actively encourage employee engagement and regularly solicit feedback regarding job satisfaction, career growth and development, collaboration, empowerment, ethics, and manager effectiveness. We use employee input to help our managers make focused and strategic commitments to improve and sustain engagement in their teams. Bio-Rad requires that all management and employees participate in ongoing training intended to increase awareness of the importance of a diverse and inclusive culture.

Compensation and Benefits

We provide a competitive total rewards program consisting of broad-based salary and bonus plans as well as annual stock grants to management level employees. These programs combine to recognize and reward performance based on individual, group, and overall company performance. We provide competitive health and welfare programs which include medical, dental, vision and life insurance, a 401(k) plan, an employee stock purchase program, local pension plans, profit sharing, employee assistance, child and elder care programs, employee recognition and a host of other localized programs tied to the unique needs of our employees. Pay equity is an integral part of our compensation strategy. We have established ongoing processes and protocols to help us pay each individual employee appropriately based on the employee's skills, performance, experience, location, market practices, etc., regardless of race, gender and other non-performance related attributes.

Health, Wellness and Safety

The health and welfare of our employees is of the highest importance to Bio-Rad. We prioritize, manage, and carefully track safety performance at all locations globally and integrate sound safety practices in every aspect of our operations. We offer work site hazard evaluations, workplace safety surveys, safety equipment selection, safety program reviews, chemical and radiation exposure monitoring, safety training, and disposal of hazardous chemical, radioactive and infectious waste. In response to the COVID-19 pandemic and related mitigation measures, in March 2020 we began to implement certain changes in an effort to protect our employees and customers from COVID-related exposures. For example, we implemented social distancing in the workplace, extensive cleaning and sanitation processes for both production and office spaces, and broad work-from-home initiatives for employees in our administrative functions. While Bio-Rad’s essential workers continued to work at our facilities and provide vital service to our customers, most employees in our administrative functions effectively worked remotely starting in March 2020. Many employees in our administrative functions continue to work remotely, and we anticipate they will continue to do so until pandemic conditions improve. In 2021, we also instituted a COVID-19 vaccine requirement in the United States to help contribute to a safer workplace. We also require employees to isolate and quarantine when appropriate to protect their fellow workers and deploy rapid COVID-19 testing when appropriate.

Training and Talent Development

We provide training programs for managers and employees to support their growth and development. Our management series of courses cover essential management and leadership learning to provide our managers with the necessary skills and experience needed to more effectively lead and develop their teams. In addition, available courses for employees help them to be more effective at work, enhance interpersonal effectiveness, and help them achieve their full potential. We also support employees’ professional development by providing an educational reimbursement program for qualified educational expenses. We have moved our learning and development efforts to a virtual platform in response to the global pandemic.

Available Information

Bio-Rad files annual, quarterly, and current reports, proxy statements, and other documents with the Securities and Exchange Commission (SEC) under the Securities Exchange Act of 1934, as amended. The SEC maintains an Internet website that contains reports, proxy and information statements, and other information regarding issuers, including Bio-Rad, that file electronically with the SEC. The public can obtain any documents that we file with the SEC at http://www.sec.gov.

Bio-Rad's website address is www.bio-rad.com. We make available, free of charge through our website, our Form 10-Ks, 10-Qs and 8-Ks, and any amendments to these forms, as soon as reasonably practicable after filing with the SEC. The information on our website is not part of this Annual Report on Form 10-K.

ITEM 1A. RISK FACTORS

In evaluating our business and whether to invest in any of our securities, you should carefully read the following risk factors in addition to the other information contained in this report. We believe that any of the following risks could have a material effect on our business, results of operations or financial condition, our industry or the trading price of our common stock. We operate in a continually changing business environment, and new risks and uncertainties emerge from time to time. We cannot predict these new risks and uncertainties, nor can we assess the extent to which any such new risks and uncertainties or the extent to which the risks and uncertainties set forth below may adversely affect our business, results of operations, financial condition, our industry, the value of our equity holdings, or the trading price of our common stock. Please carefully consider the following discussion of significant factors, events and uncertainties that make an investment in our securities risky and provide important information for the understanding of the "forward-looking" statements discussed this report. In addition to the effects of the COVID-19 pandemic and resulting global disruptions on our business and operations discussed in this report, additional or unforeseen effects from the COVID-19 pandemic and the global economic climate may give rise to or amplify many of these risks discussed below.

Business, Economic, Legal and Industry Risks

Pandemics or disease outbreaks, such as the COVID-19 pandemic, have affected and could materially adversely affect our business, operations, financial condition, and results of operations.

Although we expect that vaccinations for COVID-19 will continue to improve conditions, the COVID-19 pandemic has had and if conditions deteriorate again, could continue to have an adverse effect on the United States and global economies, as well as on aspects of our operations and those of third parties on whom we rely. The COVID-19 pandemic has impacted and, we expect, to some extent, will continue to impact parts of our business, operations, financial condition and results of operations in a variety of ways.

Although we have experienced increased demand for certain of our products being used in fighting the COVID-19 pandemic, we previously experienced some decreases in product demand in certain of our other businesses. Many of our customers reduced or modified operations to various extents, resulting in labs, universities and other customers' facilities being opened at reduced capacity, hospital visits declined as people delayed elective surgeries and avoided non-essential trips to the hospital, and routine diagnostic testing slowed. If conditions related to the pandemic were to deteriorate, we expect that parts of our business could again suffer negative impacts from the pandemic. We expect that an improvement in the COVID-19 pandemic conditions will result in a decrease in demand for our products being used in fighting the COVID-19 pandemic which could have a negative impact on our financial results if the negative impact is not offset by the recovery of other parts of our businesses as a result of improved conditions related to the pandemic.

On the supply side, we are experiencing increased challenges with the supply of raw materials and components used in the production of our products, with some suppliers operating at reduced or modified capacity and otherwise unable to meet our demand for raw materials and inputs to manufacture our products. There are currently industry wide supply shortages of plastic materials, raw material resins, and certain electronic components as well. Shortages of raw materials have caused backorders, some of which we consider to be significant, and some delays in certain new product development activities, and we expect backorders and delays to continue in 2022. In addition, we continue to experience transportation challenges in moving goods across regions, including reduced freight availability as some airlines have scaled back flight operations, increased freight surcharges due to reduced freight capacity, and ocean freight capacity has been constrained by delays at ports on the West Coast of the U.S. and globally. Some countries continue to impose travel restrictions and may continue to impose measures that restrict the movement of our goods. We have experienced raw material cost increases as a result of the COVID-19 pandemic, which may continue. The invocation by the U.S. federal government of the Defense Production Act of 1950 with respect to our manufacturing operations, or the enforcement of comparable laws by other governmental entities, could disrupt our manufacturing and distribution operations.

With respect to our personnel, as a critical health care supplier, we have continued to keep essential production, distribution and service teams onsite working in manufacturing and supply chain facilities throughout the world. Many employees in our administrative functions continue to work remotely, and we anticipate they will continue to do so until pandemic conditions improve. Although we are adhering to government mandated and Environmental, Health and Safety protocols, an outbreak of COVID-19 at one or more of our facilities could nonetheless cause shutdowns of facilities and a reduction in our workforce, which could dramatically affect our ability to operate our business and our financial results.

The duration of the COVID-19 pandemic is unknown, even with the distribution of a vaccine and boosters, and it is difficult to predict the full extent of potential impacts the pandemic will have in the future on our business, operations, and financial results, or on our customers, suppliers, logistics providers, or on the global economy as a whole.

A reduction or interruption in the supply of components and raw materials could adversely affect our manufacturing operations and related product sales.

The manufacture of our products requires the timely delivery of sufficient amounts of quality components and materials. We manufacture our products in numerous manufacturing facilities around the world. We acquire our components and materials from many suppliers in various countries. We work closely with our suppliers to ensure the continuity of supply, but we cannot guarantee these efforts will always be successful. Further, while we seek to diversify our sources of components and materials, in certain instances we acquire components and materials from a sole supplier. The COVID-19 pandemic has created delays and shortages in the supply of components and raw materials. In addition, due to the regulatory environment in which we operate, we may be unable to quickly establish additional or replacement sources for some components or materials. If our supply is reduced or interrupted or of poor quality, and we are unable to develop alternative sources for such supply, our ability to manufacture our products in a timely or cost-effective manner could be adversely affected, which would adversely affect our ability to sell our products. See also our risk factor regarding the COVID-19 pandemic above.

Our international operations expose us to additional costs and legal and regulatory risks, which could have a material adverse effect on our business, results of operations and financial condition.

We have significant international operations. We have direct distribution channels in over 35 countries outside the United States, and during the twelve months ended December 31, 2021 our foreign entities generated 61% of our net sales. Compliance with complex foreign and U.S. laws and regulations that apply to our international operations increases our cost of doing business. These numerous and sometimes conflicting laws and regulations include, among others, data privacy requirements, labor relations laws, tax laws, anti-competition regulations, import and trade restrictions, tariffs, duties, quotas and other trade barriers, export requirements, U.S. laws such as the Foreign Corrupt Practices Act ("FCPA") and other U.S. federal laws and regulations established by the office of Foreign Asset Control, foreign laws such as the UK Bribery Act 2010 or other foreign laws which prohibit corrupt payments to governmental officials or certain payments or remunerations to customers. In addition, changes in laws or regulations potentially could be disruptive to our operations and business relationships in the affected regions. For example, the United Kingdom's withdrawal from the European Union (commonly referred to as "Brexit") has caused some disruption to the free movement of goods, services and people between the United Kingdom and the European Union and has resulted in increased regulatory complexities.

Given the high level of complexity of the foreign and U.S. laws and regulations that apply to our international operations, there is a risk that we may inadvertently breach some provisions, for example, through fraudulent or negligent behavior of individual employees, our failure to comply with certain formal documentation requirements, or otherwise. Our success depends, in part, on our ability to anticipate these risks and manage these challenges through policies, procedures and internal controls. However, we have a dispersed international sales organization, and we use distributors and agents in many of our international operations. This structure makes it more difficult for us to ensure that our international selling operations comply with laws and regulations, and our global policies and procedures.

Violations of these laws and regulations could result in fines, criminal sanctions against us, our officers or our employees, requirements to obtain export licenses, cessation of business activities in sanctioned countries, implementation of compliance programs, and prohibitions on the conduct of our business. Violations of laws and regulations also could result in prohibitions on our ability to offer our products in one or more countries and could materially damage our reputation, our brand, our international expansion efforts, our ability to attract and retain employees, or our business, results of operations and financial condition. See also our risk factors regarding the COVID-19 pandemic above and regarding government regulations and global economic conditions below.

The industries and market segments in which we operate are highly competitive, and we may not be able to compete effectively.

The life science and clinical diagnostics markets are each highly competitive. Some of our competitors have greater financial resources than we do, making them better equipped to license technologies and intellectual property from third parties or to fund research and development, manufacturing and marketing efforts. Moreover, competitive and regulatory conditions in many markets in which we operate restrict our ability to fully recover, through price increases, higher costs of acquired goods and services resulting from inflation and other drivers of cost increases. Many public tenders have become more competitive due to governments lengthening the commitments of their public tenders to multiple years, which reduce the number of tenders in which we can participate annually. Because the value of these multiple-year tenders is so high, our competitors have been more aggressive with their pricing. Our failure to compete effectively and/or pricing pressures resulting from competition could adversely affect our business, results of operations and financial condition.

We may not be able to grow our business because of our failure to develop new or improved products.

Our future growth depends in part on our ability to continue to improve our product offerings and develop and introduce new product lines and extensions that integrate technological advances. In particular, we may not be able to keep up with changes in the clinical diagnostics industry, such as the trend toward molecular diagnostics or point-of-care tests. If we are unable to integrate technological advances into our product offerings or to design, develop, manufacture and market new product lines and extensions successfully and in a timely manner, our business, results of operations and financial condition will be adversely affected. The COVID-19 pandemic has caused some delays to our ability to develop and introduce new products. We have experienced product launch delays in the past and may do so in the future. We cannot assure you that our product and process development efforts will be successful or that new products we introduce will achieve market acceptance. Failure to launch successful new products or improvements to existing products may cause our products to become obsolete, which could harm our business, results of operations and financial condition.

Breaches of our information systems could have a material adverse effect on our business and results of operations.

We have experienced and expect to continue to experience attempts by computer programmers and hackers to attack and penetrate our layered security controls, like the December 2019 Cyberattack that was previously discussed in Item 7 of our Annual Report for the period ended December 31, 2019. Through our sales and eCommerce channels, we collect and store confidential information that customers provide to, among other things, purchase products or services, enroll in promotional programs and register on our web site. We also acquire and retain information about suppliers and employees in the normal course of business. Such information on our systems includes personally identifiable information and, in limited instances, protected health information. We also create and maintain proprietary information that is critical to our business, such as our product designs and manufacturing processes. Despite recent initiatives to improve our technology systems, such as our enterprise resource planning implementation and the centralization of our global information technology organization, we could experience a significant data security breach. Increased use of remote work arrangements and rapidly evolving work scenarios in response to the COVID-19 pandemic expose us to additional risk of cyberattack and disruption. Because the techniques used to obtain unauthorized access, disable or degrade service, or sabotage systems change frequently and often are not recognized until launched against a target, we may not be able to anticipate all of these techniques or to implement adequate preventive measures. Computer hackers have attempted to penetrate and will likely continue to attempt to penetrate our and our vendors' information systems and, if successful, could misappropriate confidential customer, supplier, employee or other business information, such as our intellectual property. Third parties could also gain control of our systems and use them for criminal purposes while appearing to be us. As a result, we could lose existing customers, have difficulty attracting new customers, be exposed to claims from customers, financial institutions, payment card associations, employees and other persons, have regulatory sanctions or penalties imposed, incur additional expenses or lose revenues as a result of a data privacy breach, or suffer other adverse consequences. Our operations and ability to process sales orders, particularly through our eCommerce channels, could also be disrupted, as they were in the December 2019 Cyberattack. Any significant breakdown, intrusion, interruption, corruption, or destruction of our systems, as well as any data breaches, could have a material adverse effect on our business and results of operations. See also our risk factors regarding our information technology systems and our enterprise resource planning system (ERP) implementation below.

If our information technology systems are disrupted, or if we fail to successfully implement, manage and integrate our information technology and reporting systems, our business, results of operations and financial condition could be harmed.

Our information technology (IT) systems are an integral part of our business, and a serious disruption of our IT systems (which increasingly include cloud-based systems provided by third party vendors) could have a material adverse effect on our business, results of operations and financial condition. We depend on our IT systems to process orders, manage inventory and collect accounts receivable. Our IT systems also allow us to efficiently purchase products from our suppliers and ship products to our customers on a timely basis, maintain cost-effective operations and provide customer service. We may experience disruption of our IT systems due to redundancy issues with our network servers. We cannot assure you that our contingency plans will allow us to operate at our current level of efficiency.

Our ability to implement our business plan in a rapidly evolving market requires effective planning, reporting and analytical processes. We expect that we will need to continue to improve and further integrate our IT systems, reporting systems and operating procedures by training and educating our employees with respect to these improvements and integrations on an ongoing basis in order to effectively run our business. We may suffer interruptions in service, loss of data or reduced functionality when we upgrade or change systems or migrate to cloud-based systems. If we fail to successfully manage and integrate our IT systems, reporting systems and operating procedures, it could adversely affect our business, results of operations and financial condition. See also our risk factors regarding our data security above and ERP implementation and events beyond our control below.

We are subject to foreign currency exchange fluctuations, which could have a material adverse effect on our results of operations and financial condition.

As stated above, a significant portion of our operations and sales are outside of the United States. When we make purchases and sales in currencies other than the U.S. dollars, we are exposed to fluctuations in foreign currencies relative to the U.S. dollar that may adversely affect our results of operations and financial condition. Our international sales are largely denominated in local currencies. As a result, the strengthening of the U.S. dollar negatively impacts our consolidated net sales expressed in U.S. dollars. Conversely, when the U.S. dollar weakens, our expenses at our international sites increase. In addition, the volatility of other currencies may negatively impact our operations outside of the United States and increase our costs to hedge against currency fluctuations. In addition, we hold investments and a loan receivable that are subject to foreign exchange fluctuations. We cannot assure you that future shifts in currency exchange rates will not have a material adverse effect on our results of operations and financial condition.

Changes in the market value of our position in Sartorius AG materially impact our financial results and the value of our investments might cause us to be deemed an investment company.

Changes in the market value of our position in Sartorius AG will continue to materially impact our consolidated statements of income and other financial statements. A decline in the market value of our position in Sartorius AG will result in losses due to write-downs in the value of the equity securities. An increase in the market value of our position in Sartorius AG will result in a favorable impact to net income independent of the actual operating performance of our business. Depending on the extent of the decline or of the increase in the market value of our position in Sartorius AG, these negative or positive impacts on us could be significant and material. As a result of the market value of our position in Sartorius AG, we might be deemed to be an "investment company" under Section 3(a)(1)(C) of the Investment Company Act of 1940, as amended (the "Investment Company Act"), even though we are primarily engaged in a business other than that of investing, reinvesting, owning, holding or trading in securities. The Company does not believe it is an investment company and intends to continue to conduct our operations so that we will not be deemed an investment company. If the Company were deemed to be an investment company such determination could have a material adverse effect on our business.

Our share price may change significantly based upon changes in the market valuation of Sartorius AG, and such change are unrelated to the actual performance of our business. Non-operating income for a period may be significantly impacted by the timing of dividends paid by Sartorius AG, particularly in comparison to prior year periods.

We may incur losses in future periods due to write-downs in the value of financial instruments.

We have positions in a variety of financial instruments including asset backed securities and other similar instruments. Financial markets are volatile, particularly in light of the COVID-19 pandemic, and the markets for these securities can be illiquid. The value of these securities will continue to be impacted by external market factors including default rates, changes in the value of the underlying property, such as residential or commercial real estate, rating agency actions, the prices at which observable market transactions occur and the financial strength of various entities, such as financial guarantors who provide insurance for the securities. Should we need to convert these positions to cash, we may not be able to sell these instruments without significant losses due to current debtor financial conditions, low trading volume of the securities, or other market considerations.

As discussed further in Part 1, Item 7 of this Annual Report under the heading "Loan", we made a loan of 400 million Euros to Sartorius-Herbst Beteiligungen II GmbH in November 2021 that is secured by the pledge of certain trust interests which upon termination of the trust represent the right to receive Sartorius ordinary shares. Prior to a termination of the trust, the trust interests, which are provided as collateral for the Loan, are not tradable on the capital markets and may, in case of an enforcement, have to be sold with a significant discount to the value of the underlying shares.

We also have positions in equity securities, including our position in Sartorius AG. Financial markets are volatile and the markets for these equity securities can be illiquid as well. A decline in the market value of our investments in equity securities that we own could result in significant losses due to write-downs in the value of the equity securities. Also, if we need to convert these positions to cash, we may not be able to sell these equity securities without significant losses. In addition, a significant decline in the value of the Sartorius ordinary shares would reduce the value of the collateral for the Loan discussed in the previous paragraph, and in such circumstances the value of the collateral may be insufficient to cover the repayment of the Loan, and Sartorius-Herbst Beteiligungen II GmbH will likely have no other assets from which to repay the loan. Furthermore, the change in the market value of Sartorius ordinary shares will have an impact on the value appreciation rights acquired in connection with the Loan discussed in the previous paragraph.

We may experience difficulties implementing our new global enterprise resource planning system.

We are engaged in a multi-year implementation of a new global enterprise resource planning system (ERP). The ERP is designed to efficiently maintain our books and records and provide information important to the operation of our business to our management team. The ERP will continue to require significant investment of human and financial resources. In implementing the ERP, we may experience significant delays, increased costs and other difficulties, as we already have with some of our earlier deployments. Any significant disruption or deficiency in the design and implementation of the ERP could adversely affect our ability to process orders, ship product, send invoices and track payments, fulfill contractual obligations or otherwise operate our business. We expect to implement the remaining smaller phases of the ERP platform over the next few years. In addition, our efforts to centralize various business processes and functions within our organization in connection with our ERP implementation may continue to disrupt our operations and negatively impact our business, results of operations and financial condition.

Recent and planned changes to our organizational structure could negatively impact our business.

We made significant changes to our organizational structure over the past few years. At the beginning of 2020, we restructured the Clinical Diagnostics segment based on functional groups rather than product line divisions. We have continued to reorganize aspects of our European operations, including the reorganization announced in February 2021. These changes may have unintended consequences, such as distraction of our management and employees, labor unrest, business disruption, disruption of supply, attrition of our workforce, inability to attract or retain key employees, and reduced employee morale or productivity.

Risks relating to intellectual property rights may negatively impact our business.

We rely on a combination of copyright, trade secret, patent and trademark laws and third-party nondisclosure agreements to protect our intellectual property rights and products. However, we cannot assure you that our intellectual property rights will not be challenged, invalidated, circumvented or rendered unenforceable, or that meaningful protection or adequate remedies will be available to us. For instance, unauthorized third parties have attempted to copy our intellectual property, reverse engineer or obtain and use information that we regard as proprietary, or have developed equivalent technologies independently, and may do so in the future. Additionally, third parties have asserted patent, copyright and other intellectual property rights to technologies that are important to us and may do so in the future. If we are unable to license or otherwise access protected technology used in our products, or if we lose our rights under any existing licenses, we could be prohibited from manufacturing and marketing such products. From time to time, we also must enforce our patents or other intellectual property rights or defend ourselves against claimed infringement of the rights of others through litigation. As a result, we could incur substantial costs, be forced to redesign our products, or be required to pay damages or royalties to an infringed party. Any of the foregoing matters could adversely impact our business, results of operations and financial condition.

Global economic and geopolitical conditions could adversely affect our operations.

In recent years, we have been faced with very challenging global economic conditions. The COVID-19 pandemic, as discussed above, is currently causing disruptions to global economic conditions. It is unknown how long such disruptions will continue and whether such disruptions will become more severe. A deterioration in the global economic environment may result in a decrease in demand for our products, increased competition, downward pressure on the prices for our products and longer sales cycles. A weakening of macroeconomic conditions may, and currently is, also adversely affecting our suppliers, which could continue to result in interruptions in the supply of the components and raw materials necessary for our products. Additionally, the United States and other countries, such as China and India, recently have imposed tariffs on certain goods. While tariffs imposed by other countries on U.S. goods have not yet had a significant impact on our business, further escalation of tariffs or other trade barriers could adversely impact our profitability and/or our competitiveness. See also our risk factors regarding the COVID-19 pandemic and our international operations above and regarding government regulations below.

Reductions in government funding and the capital spending programs of our customers could have a material adverse effect on our business, results of operations or financial condition.

Our customers include universities, clinical diagnostics laboratories, government agencies, hospitals and pharmaceutical, biotechnology and chemical companies. The capital spending programs of these institutions and companies have a significant effect on the demand for our products. Such programs are based on a wide variety of factors, including the resources available to make such purchases, the availability of funding from grants by governments or government agencies, the spending priorities for various types of equipment and the policies regarding capital expenditures during industry downturns or recessionary periods. If government funding to our customers were to decrease, or if our customers were to decrease or reallocate their budgets in a manner adverse to us, our business, results of operations or financial condition could be materially and adversely affected.

Changes in the healthcare industry could have an adverse effect on our business, results of operations and financial condition.

There have been, and will continue to be, significant changes in the healthcare industry in an effort to reduce costs. These changes include:

- The trend towards managed care, together with healthcare reform of the delivery system in the United States and efforts to reform in Europe, has resulted in increased pressure on healthcare providers and other participants in the healthcare industry to reduce selling prices. Consolidation among healthcare providers and consolidation among other participants in the healthcare industry has resulted in fewer, more powerful groups, whose purchasing power gives them cost containment leverage. In particular, there has been a consolidation of laboratories and a consolidation of blood transfusion centers. These industry trends and competitive forces place constraints on the levels of overall pricing, and thus could have a material adverse effect on our gross margins for products we sell in clinical diagnostic markets.

- Third party payors, such as Medicare and Medicaid in the United States, have reduced their reimbursements for certain medical products and services. Our Clinical Diagnostics business is impacted by the level of reimbursement available for clinical tests from third party payors. In the United States payment for many diagnostic tests furnished to Medicare fee-for-service beneficiaries is made based on the Medicare Clinical Laboratory Fee Schedule (CLFS), a fee schedule established and adjusted from time to time by the Centers for Medicare and Medicaid Services (CMS). Some commercial payors are guided by the CLFS in establishing their reimbursement rates. Laboratories and clinicians may decide not to order or perform certain clinical diagnostic tests if third party payments are inadequate, and we cannot predict whether third party payors will offer adequate reimbursement for tests utilizing our products to make them commercially attractive. Legislation, such as the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act (PPACA) and the Middle Class Tax Relief and Job Creation Act of 2012, has reduced the payments for clinical laboratory services paid under the CLFS. In addition, the Protecting Access to Medicare Act of 2014 (PAMA) has made significant changes to the way Medicare will pay for clinical laboratory services, which has further reduced reimbursement rates.

To the extent that the healthcare industry seeks to address the need to contain costs stemming from reform measures such as those contained in the PPACA and the PAMA, or in future legislation, by limiting the number of clinical tests being performed or the amount of reimbursement available for such tests, our business, results of operations and financial condition could be adversely affected. If these changes in the healthcare markets in the United States and Europe continue, we could be forced to alter our approach in selling, marketing, distributing and servicing our products.

We are subject to substantial government regulation, and any changes in regulation or violations of regulations by us could adversely affect our business, prospects, results of operations or financial condition.

Some of our products (primarily our Clinical Diagnostic products), production processes and marketing are subject to U.S. federal, state and local, and foreign regulation, including by the FDA in the United States and its foreign counterparts. The FDA regulates our Clinical Diagnostic products as medical devices, and we are subject to significant regulatory clearances or approvals to market our Clinical Diagnostic products and other requirements including, for example, recordkeeping and reporting requirements, such as the FDA's medical device reporting regulations and reporting of corrections and removals. The FDA has broad regulatory and enforcement powers. If the FDA determines that we have failed to comply with applicable regulatory requirements, it can impose a variety of enforcement actions ranging from public warning letters, fines, injunctions, consent decrees and civil penalties to suspension or delayed issuance of approvals, seizure or recall of our products, total or partial shutdown of production, withdrawal of approvals or clearances already granted, and criminal prosecution.

The FDA can also require us to repair, replace or refund the cost of devices that we manufactured or distributed. In addition, the FDA may change its clearance and approval policies, adopt additional regulations or revise existing regulations, or take other actions, which may prevent or delay approval or clearance of our products or impact our ability to modify our currently approved or cleared products on a timely basis. Changes in the FDA's review of certain clinical diagnostic products referred to as laboratory developed tests, which are tests developed by a single laboratory for use only in that laboratory, could affect some of our customers who use our Life Science instruments for laboratory developed tests. In the past, the FDA has chosen to not enforce applicable regulations and has not reviewed such tests for approval. However, the FDA has issued draft guidance that it may begin enforcing its medical device requirements, including premarket submission requirements, to such tests. Any delay in, or failure to receive or maintain, clearance or approval for our products could prevent us from generating revenue from these products and adversely affect our business operations and financial results. Additionally, the FDA and other regulatory authorities have broad enforcement powers. Regulatory enforcement or inquiries, or other increased scrutiny on us, could affect the perceived safety and efficacy of our products and dissuade our customers from using our products.

Many foreign governments have similar rules and regulations regarding the importation, registration, labeling, sale and use of our products. Such agencies may also impose new requirements that may require us to modify or re-register products already on the market or otherwise impact our ability to market our products in those countries. For example, the EU adopted the EU in-vitro Diagnostics Regulation (the "EU IVDR") which includes broad changes regarding in vitro diagnostic devices and medical devices. The implementation date for the EU IVDR is May 2022, though the EU Council and Parliament recently signed an amendment that delays certain previously mandated deadlines to allow more time for Notified Body to manage the entire portfolio of IVD products on the European market. The EU IVDR will require us to modify or re-register some products and will result in additional costs. Failure to meet these requirements could adversely impact our business in the EU and other regions that tie their product registrations to the EU requirements. In addition, Russia has enacted more stringent medical product registration and labeling regulations, China has enacted stricter labeling requirements, and we expect other countries, such as Brazil and India, to impose more regulations that impact our product registrations. Brexit is resulting in additional regulatory requirements associated with goods manufactured and sold in the United Kingdom and additional complexities and delays with respect to goods, raw materials and personnel moving between the United Kingdom and the European Union. In addition, new government administrations may interpret existing regulations or practices differently. Due to these evolving and diverse requirements, we face uncertain product approval timelines, additional time and effort to comply, as well as the potential for reduced sales and/or fines for noncompliance. Increasing protectionism in such countries also impedes our ability to compete with local companies. For example, we may not be able to participate in certain public tenders in Russia because of increasing measures to restrict access to such tenders for companies without local manufacturing capabilities. Certain tenders in China and India also are including local manufacturing preferences or requirements. Such regulations could adversely affect our business, results of operations and financial condition. See also our risk factors regarding our international operations and regarding global economic and geopolitical conditions above.

We are also subject to government regulation of the use and handling of a number of materials and controlled substances. The U.S. Drug Enforcement Administration establishes registration, security, recordkeeping, reporting, storage, distribution and other requirements for controlled substances pursuant to the Controlled Substances Act of 1970. Failure to comply with present or future laws and regulations could result in substantial liability to us, suspension or cessation of our operations, restrictions on our ability to expand at our present locations or require us to make significant capital expenditures or incur other significant expenses.

We cannot assure you that we will be able to integrate acquired companies, products or technologies into our company successfully, or we may not be able to realize the anticipated benefits from the acquisitions.

As part of our overall business strategy, we pursue acquisitions of and investments in complementary companies, products and technologies. The benefits of any acquisition may prove to be less than anticipated and may not outweigh the costs reported in our financial statements. Completing any potential future acquisitions could cause significant diversion of our management's time and resources. If we acquire new companies, products or technologies, we may be required to assume contingent liabilities or record impairment charges for goodwill and other intangible assets over time. Goodwill and non-amortizable intangible assets are subject to impairment testing, and potential periodic goodwill impairment charges, amortization expenses related to certain intangible assets, and other write-offs could harm our operating results. Impairment tests are highly sensitive to changes in assumptions and minor changes to assumptions could result in impairment losses. If the results forecast in our impairment tests are not achieved, or business trends vary from the assumptions used in forecasts, or external factors change detrimentally, future impairment losses may occur, as they have occurred in the past. Increased antitrust enforcement and greater government scrutiny of mergers in the healthcare sector may impact our ability to consummate acquisitions. We cannot assure you that we will successfully overcome these risks or any other problems we encounter in connection with any acquisitions, and any such acquisitions could adversely affect our business, results of operations and financial condition.

Product quality and liability issues could harm our reputation and negatively impact our business, results of operations and financial condition.

We must adequately address quality issues associated with our products, including defects in our engineering, design and manufacturing processes, as well as defects in third-party components included in our products. Our instruments, reagents and consumables are complex, and identifying the root cause of quality issues, especially those affecting reagents or third-party components, is difficult. We may incur significant costs and expend substantial time in researching and remediating such issues. Quality issues could also delay our launching or manufacturing of new products. In addition, quality issues, unapproved uses of our products, or inadequate disclosure of risks related to our products, could result in product recalls or product liability or other claims being brought against us. These issues could harm our reputation, impair our relationship with existing customers and harm our ability to attract new customers, which could negatively impact our business, results of operations and financial condition.

Lack of key personnel could hurt our business.

Our products are very technical in nature, and we operate in a complex and competitive business environment. In general, only highly qualified and well-trained scientists have the necessary skills to develop, market and sell our products, and many of our manufacturing positions require very specialized knowledge and skills. In addition, the global nature of our business also requires that we have sophisticated and experienced staff to comply with increasingly complex international laws and regulations. We face intense competition for these professionals from our competitors, customers, marketing partners and other companies throughout our industry. In particular, the job market in Northern California, where many of our employees are located, is very competitive. If we do not offer competitive compensation and benefits, we may fail to retain or attract a sufficient number of qualified personnel, which could impair our ability to properly run our business. We have experienced increased turnover since the start of the COVID-19 pandemic. As conditions improve from the pandemic and more employees return to the workplace from working remotely, we anticipate further increases to turnover. In addition, our recently mandated COVID-19 vaccine policy in the Unites States has resulted in a loss of personnel.

We may have higher than anticipated tax liabilities.

We are subject to income taxes in the United States and many foreign jurisdictions. We report our results of operations based on our determination of the amount of taxes owed in various tax jurisdictions in which we operate. The determination of our worldwide provision for income taxes and other tax liabilities requires estimation, judgment and calculations where the ultimate tax determination may not be certain. Our determination of our tax liabilities is subject to review or examination by tax authorities in various tax jurisdictions. Tax authorities have disagreed with our judgment in the past and may disagree with positions we take in the future resulting in assessments of additional taxes. Any adverse outcome of such review or examination could have a negative impact on our operating results and financial condition.

Economic and political pressures to increase tax revenues in various jurisdictions may make resolving tax disputes more difficult. For example, in recent years, the tax authorities in Europe have disagreed with our tax positions related to hybrid debt, research and development credits, transfer pricing and indirect taxes, among others. We regularly assess the likelihood of the outcome resulting from these examinations to determine the adequacy of our provision for income taxes. Although we believe our tax estimates are reasonable, the final determination of tax audits and any related litigation could be materially different from our historical income tax provisions and accruals.

Changes in tax laws or rates, changes in the interpretation of tax laws or changes in the jurisdictional mix of our earnings could adversely affect our financial position and results of operations.

On December 22, 2017, the U.S. enacted comprehensive tax legislation commonly referred to as the Tax Cuts and Jobs Act (the "Tax Act") which made a number of substantial changes to how the United States imposes income tax on multinational corporations. The U.S Treasury, Internal Revenue Service and other standard setting bodies continue to issue guidance and interpretation relating to the Tax Act. As future guidance is issued, we may make adjustments to amounts previously reported that could materially impact our financial statements.

On March 31, 2021, the current U.S. presidential administration proposed the "American Jobs Plan" to create domestic jobs, rebuild national infrastructure and increase American competitiveness. To fund its cost, the administration also proposed the "Made in America Tax Plan". Furthermore, in third quarter of 2021, the House of Representatives proposed the "Build Back Better Act" and Senators Wyden, Brown and Warner unveiled draft international tax overhaul legislation. If any of the provisions are enacted, our effective tax rate and cash tax liability will increase, which could materially impact our financial statements.

The tax effect of our position in Sartorius AG and the jurisdictional mix of our earnings could continue to materially affect our financial results and cash flow. In addition, the adoption of some or all of the recommendations set forth in the Organization for Economic Co-operation and Development's project on "Base Erosion and Profit Shifting" (BEPS) by tax authorities in the countries in which we operate, could negatively impact our effective tax rate. These recommendations focus on payments from affiliates in high tax jurisdictions to affiliates in lower tax jurisdictions and the activities that give rise to a taxable presence in a particular country.

Environmental, health and safety regulations and enforcement proceedings may negatively impact our business, results of operations and financial condition.

Our operations are subject to federal, state, local and foreign environmental laws and regulations that govern such activities as transportation of goods, emissions to air and discharges to water, as well as handling and disposal practices for solid, hazardous and medical wastes. In addition to environmental laws that regulate our operations, we are also subject to environmental laws and regulations that create liability and clean-up responsibility for spills, disposals or other releases of hazardous substances into the environment as a result of our operations or otherwise impacting real property that we own or operate. The environmental laws and regulations also subject us to claims by third parties for damages resulting from any spills, disposals or releases resulting from our operations or at any of our properties. We must also comply with various health and safety regulations in the United States and abroad in connection with our operations.

We may in the future incur capital and operating costs to comply with currently existing laws and regulations, and possible new statutory enactments, and these expenditures may be significant. We have incurred, and may in the future incur, fines related to environmental matters and/or liability for costs or damages related to spills or other releases of hazardous substances into the environment at sites where we have operated, or at off-site locations where we have sent hazardous substances for disposal. We cannot assure you, however, that such matters or any future obligations to comply with environmental or health and safety laws and regulations will not adversely affect our business, results of operations or financial condition.

Our current and future debt and related covenants may restrict our future operations.

We have a revolving credit facility that provides for up to $200.0 million in borrowing capacity, $0.2 million of which has been utilized for domestic standby letters of credit as of December 31, 2021. Our existing credit facility and agreements we may enter in the future, contain or may contain covenants imposing restrictions on our business. These restrictions may affect our ability to operate our business and may limit our ability to take advantage of potential business opportunities as they arise. Existing covenants place restrictions on our ability to, among other things: incur additional debt; acquire other businesses or assets through merger or purchase; create liens; make investments; enter into transactions with affiliates; sell assets; in the case of some of our subsidiaries, guarantee debt; and declare or pay dividends, redeem stock or make other distributions to stockholders. Our existing credit facility also requires that we comply with certain financial ratios, including a maximum consolidated leverage ratio test and a minimum consolidated interest coverage ratio test. Our ability to comply with these covenants may be affected by events beyond our control, including prevailing economic, financial and industry conditions. The breach of any of these restrictions could result in a default. An event of default under our debt agreements would permit some of our lenders to declare all amounts borrowed from them to be due and payable, together with accrued and unpaid interest.

We are subject to healthcare laws and regulations and could face substantial penalties if we are unable to fully comply with such laws.

We are subject to healthcare regulation and enforcement by both the U.S. federal government and the U.S. states and foreign governments in which we conduct our business. These healthcare laws and regulations include, for example:

- the U.S. federal Anti-Kickback Statute, which prohibits, among other things, persons or entities from soliciting, receiving, offering or providing remuneration, directly or indirectly, in return for or to induce either the referral of an individual for, or the purchase order or recommendation of, any item or services for which payment may be made under a federal healthcare program such as the Medicare and Medicaid programs;

- U.S. federal false claims laws, which prohibit, among other things, individuals or entities from knowingly presenting, or causing to be presented, claims for payment from Medicare, Medicaid, or other third-party payors that are false or fraudulent. In addition, the U.S. federal government may assert that a claim including items or services resulting from a violation of the federal Anti-Kickback Statute constitutes a false or fraudulent claim for purposes of the false claims statutes;

- the U.S. Physician Payment Sunshine Act, which requires certain manufacturers of drugs, biologics, devices and medical supplies to record any transfers of value to U.S. physicians and U.S. teaching hospitals;

- the Health Insurance Portability and Accountability Act ("HIPAA"), as amended by the Health Information Technology for Economic and Clinical Health Act, which governs the conduct of certain electronic healthcare transactions and protects the security and privacy of protected health information; and

- state or foreign law equivalents of each of the U.S. federal laws above, such as anti-kickback and false claims laws, which may apply to items or services reimbursed by any third-party payor, including commercial insurers.

These laws will continue to impose administrative, cost and compliance burdens on us. The shifting compliance environment and the need to build and maintain robust systems to comply with multiple jurisdictions with different compliance and/or reporting requirements increases the possibility that a healthcare company may violate one or more of these requirements. In addition, any action against us for violation of these laws, even if we successfully defend against it, could cause us to incur significant legal expenses and divert our management's attention from the operation of our business. If our operations are found to be in violation of any of the laws described above or any other governmental regulations that apply to us, we may be subject to penalties, including civil and criminal penalties, damages, fines, exclusion from the Medicare and Medicaid programs, and the curtailment or restructuring of our operations, any of which could adversely affect our ability to operate our business, results of operations and financial condition.

Risks Related to Being a Public Company

Our failure to establish and maintain effective internal control over financial reporting could result in material misstatements in our financial statements, our failure to meet our reporting obligations and cause investors to lose confidence in our reported financial information, which in turn could cause the trading price of our common stock to decline.

Maintaining effective disclosure controls and procedures and internal controls over financial reporting are necessary for us to produce reliable financial statements. Material weaknesses in our internal control over financial reporting have adversely affected us in the past and could affect us in the future, and the results of our periodic management evaluations and annual auditor attestation reports regarding the effectiveness of our internal control over financial reporting required by Section 404 of the Sarbanes-Oxley Act of 2002. Any failure to maintain or implement new or improved internal controls, or any difficulties that we may encounter in their maintenance or implementation, could result in additional material weaknesses, result in material misstatements in our consolidated financial statements and cause us to fail to meet our reporting obligations. This could cause us to lose public confidence and could cause the trading price of our common stock to decline.

General Business Risks

Natural disasters, terrorist attacks, acts of war or other events beyond our control may cause damage or disruption to us and our employees, facilities, information systems, security systems, vendors and customers, which could significantly impact our business, results of operations and financial condition.

We have significant manufacturing and distribution facilities, including in the western United States, France, Switzerland, Germany and Singapore. In particular, the western United States has experienced a number of earthquakes, wildfires, floods, landslides and other natural disasters in recent years, some of which may be associated with climate change. These occurrences could damage or destroy our facilities which may result in interruptions to our business and losses that exceed our insurance coverage. In addition, electricity outages, strikes or other labor unrest at any of our sites or surrounding areas could cause disruption to our business. Acts of terrorism, bioterrorism, violence or war, or public health issues such as the outbreak of a contagious disease like COVID-19 could also affect the markets in which we operate, our business operations and strategic plans. Political unrest may affect our sales in certain regions, such as in Southeast Asia, the Middle East and Eastern Europe. Any of these events could adversely affect our business, results of operations and financial condition.

Risks Related to Our Common Stock

A significant majority of our voting stock is held by the Schwartz family, which could lead to conflicts of interest.

We have two classes of voting stock: Class A Common Stock and Class B Common Stock. With a few exceptions, holders of Class A and Class B Common Stock vote as a single class. When voting as a single class, each share of Class A Common Stock is entitled to one-tenth of a vote, while each share of Class B Common Stock has one vote. In the election or removal of directors, the classes vote separately and the holders of Class A Common Stock are entitled to elect 25% of the Board of Directors, with holders of Class B Common Stock electing the remaining directors. As a result of the Schwartz family's ownership of our Class A and Class B Common Stock, they are able to elect a majority of our directors, effect fundamental changes in our direction and control matters affecting us, including the determination of business opportunities that may be suitable for our company. The Schwartz family may exercise its control over us according to interests that are different from other investors' or debtors' interests. In particular, this concentration of ownership and voting power may have the effect of delaying or preventing a change in control of our company.

The forum selection provision in our bylaws could increase costs to bring a claim, discourage claims or limit the ability of the Company's stockholders to bring a claim in a judicial forum viewed by the stockholders as more favorable for disputes with the Company or the Company's directors, officers or other employees.

Our bylaws provide that unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware (or, if the Court of Chancery does not have jurisdiction, another state court located within the State of Delaware or, if no state court located within the State of Delaware has jurisdiction, the federal district court for the District of Delaware) shall be the sole and exclusive forum for (i) any derivative action or proceeding brought on behalf of the Company, (ii) any action asserting a claim of breach of a fiduciary duty owed by any director, officer or other employee of the Company to the Company or the Company's stockholders, (iii) any action arising pursuant to any provision of the General Corporation Law of the State of Delaware, the Certificate of Incorporation or the Bylaws (in each case, as may be amended from time to time) or (iv) any action asserting a claim against the Company or any of its directors, officers or other employees governed by the internal affairs doctrine of the State of Delaware. This choice of forum provision may increase costs to bring a claim, discourage claims or limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with the Company or the Company's directors, officers or other employees, which may discourage such lawsuits against the Company or the Company's directors, officers and other employees. Alternatively, if a court were to find the choice of forum provision contained in the Company's bylaws to be inapplicable or unenforceable in an action, the Company may incur additional costs associated with resolving such action in other jurisdictions.

Application of the choice of forum provision may be limited in some instances by applicable law. Section 27 of the Exchange Act creates exclusive federal jurisdiction over all suits brought to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder. As a result, the choice of forum provision will not apply to actions arising under the Exchange Act or the rules and regulations thereunder. Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over suits brought to enforce any duty or liability created by the Securities Act or the rules and regulations thereunder, subject to a limited exception for certain "covered class actions." There is uncertainty, particularly in light of current litigation, as to whether a court would enforce the choice of forum provision with respect to claims under the Securities Act. Our stockholders will not be deemed, by operation of the Company's choice of forum provision, to have waived claims arising under the federal securities laws and the rules and regulations thereunder.

ITEM 1B. UNRESOLVED STAFF COMMENTS

None.

ITEM 2. PROPERTIES

We own our corporate headquarters located in Hercules, California. The principal manufacturing and research locations for each segment are as follows:

Segment	Location	Owned/Leased
Life Science	Singapore	Leased
	Oxford, England	Leased
Clinical Diagnostics	Irvine, California	Leased
	Greater Seattle Area, Washington	Leased
	Lille, France	Owned
	Cressier, Switzerland	Owned/Leased
	Dreieich, Germany	Owned/Leased
Shared	Greater San Francisco Bay Area, California	Owned/Leased
	Greater Paris Area, France	Leased
	Leipzig, Germany	Leased

Most manufacturing and research facilities also house administration, sales and distribution activities. In addition, we lease office and warehouse facilities in a variety of locations around the world. The facilities are used principally for sales, service, distribution and administration for both segments.

ITEM 3. LEGAL PROCEEDINGS

We are a party to various claims, legal actions and complaints arising in the ordinary course of business. While we do not believe, at this time, that any ultimate liability resulting from any of these matters will have a material adverse effect on our results of operations, financial position or liquidity, we cannot give any assurance regarding the ultimate outcome of these matters and their resolution could be material to our operating results for any particular period, depending on the level of income for the period.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II.

ITEM 5. MARKET FOR REGISTRANT'S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Information Concerning Common Stock

Bio-Rad's Class A and Class B Common Stock are listed on the New York Stock Exchange with the ticker symbols BIO and BIOb, respectively.

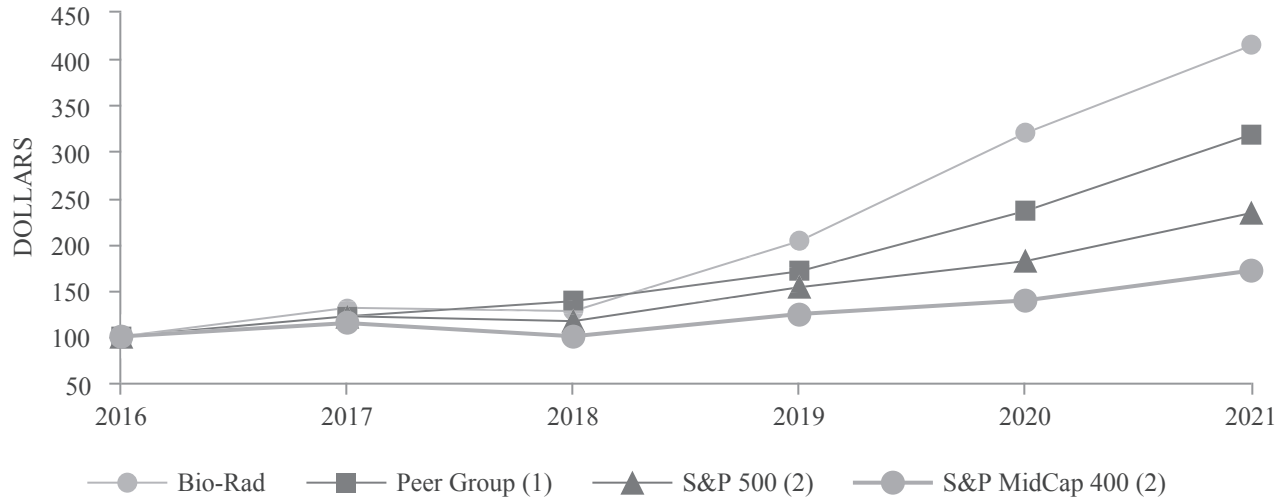
On February 9, 2022, we had 163 holders of record of Class A Common Stock and 92 holders of record of Class B Common Stock. Bio-Rad has never paid a cash dividend and has no present plans to pay cash dividends.

In November 2017, the Board of Directors authorized a new share repurchase program, granting Bio-Rad authority to repurchase, on a discretionary basis, up to $250.0 million of outstanding shares of our common stock ("Share Repurchase Program"). In July 2020, the Board of Directors authorized increasing the share repurchase program to allow the Company to repurchase up to an additional $200.0 million of stock. During the three months ended December 31, 2021, we did not purchase or otherwise acquire any shares of common stock. As of December 31, 2021, $223.1 million remained under the share repurchase program.

See Item 12 of Part III of this report for the security ownership of certain beneficial owners and management and for securities authorized for issuance under equity compensation plans.

Stock Performance Graph

The following graph compares the cumulative stockholder returns over the past five years for our Class A Common Stock, the S&P 500 and the S&P 400 MidCap Indices and a selected peer group, assuming $100 invested on December 31, 2016, and reinvestment of dividends if paid:



(1) The Peer Group consists of the following public companies: Danaher, Becton Dickinson, Thermo Fisher Scientific, Meridian Bioscience and PerkinElmer. Companies in our peer group reflect our participation in two different markets: life science research products and clinical diagnostics. No single public or private company has a comparable mix of products which serve the same markets. In many cases, only one division of a peer-group company competes in the same market as we do. Collectively, however, our peer group reflects products and markets similar to those of Bio-Rad.

(2) As a result of our addition to the S&P 500 stock market index, we are presenting both the S&P MidCap 400 and S&P 500 stock market indices for this year of transition.

This stock performance graph shall not be deemed incorporated by reference by any general statement incorporating by reference into any filing under the Securities Act or the Exchange Act, and shall not otherwise be deemed filed under these Acts.

ITEM 6. RESERVED

ITEM 7. MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

This discussion should be read in conjunction with the information contained in our consolidated financial statements and the accompanying notes which are an integral part of the statements.

Overview. We are a multinational manufacturer and worldwide distributor of our own life science research and clinical diagnostics products. Our business is organized into two reportable segments, Life Science and Clinical Diagnostics, with the mission to provide scientists with specialized tools needed for biological research and health care specialists with products needed for clinical diagnostics.

We sell more than 12,000 products and services to a diverse customer base comprised of scientific research, healthcare, education and government organizations worldwide. We do not disclose quantitative information about our different products and services as it is impractical to do so based primarily on the numerous products and services that we sell and the global markets that we serve.

We manufacture and supply our customers with a range of reagents, apparatus and equipment to separate complex chemical and biological materials and to identify, analyze and purify components. As our customers require standardization for their experiments and test results, much of our revenues are recurring in nature.

We are impacted by the support of many governments for both research and healthcare. The current global economic outlook is still uncertain as the need to control government social spending by many governments limits opportunities for growth. Approximately 39% of our 2021 consolidated net sales are derived from the United States and approximately 61% are derived from international locations, with Europe being our largest international region. The international sales are largely denominated in local currencies such as the Euro, Swiss Franc, Japanese Yen, Chinese Yuan and British Sterling. As a result, our consolidated net sales expressed in dollars benefit when the U.S. dollar weakens and suffer when the dollar strengthens. When the U.S. dollar strengthens, we benefit from lower cost of sales from our international manufacturing sites, and from lower international operating expenses. We regularly discuss our changes in revenue and expense categories in terms of both changing foreign exchange rates and in terms of a currency neutral basis, if notable, to explain the impact currency fluctuation has on our results.

COVID-19

The full impact of the COVID-19 pandemic continues to be inherently uncertain at the time of this report. The COVID-19 pandemic has impacted and, we expect to some extent, will continue to impact parts of our business, operations, financial condition and results of operations in a variety of ways. During 2021, we saw continued but moderating demand for products associated with COVID-19 testing and related research. The COVID-19 pandemic has created delays and shortages in the supply of components and raw materials. Shortages of raw materials have caused backorders, some of which we consider to be significant, and some delays in certain new product development activities, and we expect backorders and delays to continue in 2022. For more discussion relating to the impacts of the COVID-19 pandemic, please see "Item 1A, Risk Factors" to this Annual Report.

Acquisition

On October 15, 2021 (the "Acquisition Date"), we acquired all equity interests of Dropworks, Inc. ("Dropworks") for a total consideration of $125.5 million.

Dropworks is a development stage company focused on developing a digital PCR product. The strategic rationale for the transaction was to address additional opportunities in the PCR market. We believe this acquisition will complement our Life Science product offerings. The acquisition was included in our Life Science segment's results of operations from the Acquisition Date.

Restructuring

In February 2021, we announced our strategy-driven restructuring plan in furtherance of our ongoing program to improve operating performance. The restructuring plan primarily impacts our operations in Europe and includes the elimination of certain positions, the consolidation of certain functions, and the relocation of certain manufacturing operations from Europe to Asia. The restructuring plan is being implemented in phases and is expected to be substantially complete by the end of 2022. The amounts reflected in Cost of goods sold, Selling, general and administrative expense and Research and development expense were $25.0 million, $26.1 million and $13.3 million, respectively, in the consolidated statements of income for the year ended December 31, 2021. As of December 31, 2021, we have a restructuring accrual of $47.1 million. The amounts are estimates based on the information currently available to management.

Loan

In November 2021, we extended a collateralized loan to Sartorius-Herbst Beteiligungen II GmbH ("SHB"), a private limited company incorporated under the laws of Germany, with a principal amount of €400 million due at the latest on January 31, 2029, subject to certain events which could trigger payment prior to maturity (the “Loan”). The Loan proceeds will be used by SHB to partially finance the acquisition of interests under the Sartorius family trust (“Trust”) from a beneficiary of the Trust. The Loan is collateralized by the pledge of certain of the Trust interests, which upon termination of the Trust in mid-2028 represent the right to receive Sartorius ordinary shares. Interest on the loan is payable annually in arrears at 1.5% per annum, and the entire principal amount is due at maturity. In addition to contractual interest, we are entitled to certain value appreciation rights associated with the acquired Trust interests that are due upon repayment of the Loan.

Critical Accounting Policies and Estimates

The accompanying discussion and analysis of our financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with U.S. generally accepted accounting principles (GAAP). The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets, liabilities and contingencies as of the date of the financial statements and reported amounts of revenues and expenses during the reporting periods. We evaluate our estimates on an on-going basis. We base our estimates on historical experience and on other assumptions that are believed to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities that are not readily apparent from other sources. However, future events may cause us to change our assumptions and estimates, which may require adjustment. Actual results could differ from these estimates. We have determined that for the periods reported in this Annual Report on Form 10-K the following accounting policies and estimates are critical in understanding our financial condition and results of operations.

Accounting for Income Taxes

We operate in multiple jurisdictions and our profits are taxed pursuant to the tax laws of these jurisdictions. Our effective income tax rate may be affected by the changes in or interpretations of tax laws and tax agreements in any given jurisdiction, utilization of net operating loss and tax credit carryforwards, changes in geographical mix of income and expense, and changes in our assessment of matters such as the ability to realize deferred tax assets. As a result of these considerations, we must estimate income taxes in each of the jurisdictions in which we operate. This process involves estimating current tax exposure together with assessing temporary differences resulting from the different treatment of items for tax and accounting purposes. These differences result in deferred tax assets and liabilities, which are included in the consolidated balance sheet.

We assess the likelihood that our deferred tax assets will be recovered from future taxable income, considering all available evidence such as historical levels of income, expectations and risks associated with estimates of future taxable income and ongoing prudent and feasible tax strategies. When we determine that it is not more likely than not that we will realize all or part of our deferred tax assets, an adjustment is charged to earnings in the period when such determination is made. Likewise, if we later determine that it is more likely than not that all or a part of our deferred tax assets would be realized, the previously provided valuation allowance would be reversed.

We make certain estimates and judgments about the application of tax laws, the expected resolution of uncertain tax positions and other matters surrounding the recognition and measurement of uncertain tax benefits. In the event that uncertain tax positions are resolved for amounts different than our estimates, or the related statutes of limitations expire without the assessment of additional income taxes, we will be required to adjust the amounts of the related assets and liabilities in the period in which such events occur. Such adjustments may have a material impact on our income tax provision and our results of operations.

Business Acquisitions

Accounting for business acquisitions requires us to make significant estimates and assumptions, especially at the acquisition date with respect to tangible and intangible assets acquired and liabilities assumed and pre-acquisition contingencies. In a business combination, we allocate the purchase price to the acquired business' identifiable assets and liabilities at their acquisition date fair values. The excess of the purchase price over the amount allocated to the identifiable assets and liabilities, if any, is recorded as goodwill.

The assets acquired and liabilities assumed in our business combinations consist of acquired working capital and finite-lived and indefinite-lived intangible assets. The carrying value of acquired working capital approximates its fair value, given the short-term nature of these assets and liabilities. We estimate the fair value of finite-lived and indefinite-lived intangible assets acquired using a discounted cash flow approach, which includes an analysis of the future cash flows expected to be generated by such assets and the risk associated with achieving such cash flows. The key assumptions used in the discounted cash flow model include the discount rate that is applied to the discretely forecasted future cash flows to calculate the present value of those cash flows and the estimate of future cash flows attributable to the acquired intangible assets, which include revenue, operating expenses and taxes. Our estimates are inherently uncertain and subject to refinement. As a result, during the measurement period, which may be up to one year from the acquisition date, we may record adjustments to the fair value of assets acquired and liabilities assumed, with the corresponding offset to goodwill.

Goodwill and Intangible Assets

Goodwill represents the excess of (a) the aggregate of the fair value of consideration transferred in a business combination over (b) the fair value of assets acquired, net of liabilities assumed. Goodwill is not amortized, but is subject to annual impairment tests as described in the section "Impairment of Goodwill".

We acquired intangible assets in connection with certain of our business acquisitions. These assets were recorded at their estimated fair values at the acquisition date and are amortized over their respective estimated useful lives using a method of amortization that reflects the pattern in which the economic benefits of the intangible assets are used. Estimated useful lives are determined based on our historical use of similar assets and the expectation of future realization of cash flows attributable to the intangible assets. Changes in circumstances, such as technological advances or changes to our business model, could result in the actual useful lives differing from our current estimates. In those cases where we determine that the useful life of an intangible asset should be shortened, we amortize the net book value in excess of the estimated salvage value over its revised remaining useful life. We did not revise our previously assigned useful life estimates attributed to any of our intangible assets during the years ended December 31, 2021, 2020 and 2019.

Impairment of Goodwill

We conduct a goodwill impairment analysis annually in the fourth quarter or more frequently if indicators of impairment exist or if a decision is made to sell or exit a business. We test goodwill at the reporting unit level. Significant judgments are involved in determining if an indicator of impairment has occurred. Such indicators may include deterioration in general economic conditions, negative developments in equity and credit markets, adverse changes in the markets in which an entity operates, increases in input costs that have a negative effect on earnings and cash flows, a trend of negative or declining cash flows, a decline in actual or planned revenue or earnings compared with actual and projected results of relevant prior periods, or other relevant entity-specific events such as changes in management, key personnel, strategy or customers, contemplation of bankruptcy, or litigation. The fair value that could be realized in an actual transaction may differ from that used to evaluate the impairment of goodwill.

We first may assess qualitative factors to determine if it is more likely than not that the fair value of a reporting unit is less than its carrying amount as a basis for determining whether it is necessary to perform the quantitative goodwill impairment test included in U.S. GAAP. To the extent our assessment identifies adverse conditions, or if we elect to bypass the qualitative assessment, goodwill is tested at the reporting unit level using a quantitative impairment test. There were no impairments for the years ended December 31, 2021 and 2020.

Impairment of Long-Lived Assets

We review long-lived assets, such as property and equipment and finite-lived intangible assets, for impairment whenever events indicate that the carrying amounts might not be recoverable. Typical indicators that an asset may be impaired include, but are not limited to:

- a significant adverse change in the extent or manner in which a long-lived asset is being used or in its physical condition;
- a current-period operating or cash flow loss combined with a history of operating or cash flow losses or a projection or forecast that demonstrates continuing losses associated with the use of a long-lived asset; or
- a current expectation that, more likely than not, a long-lived asset will be sold or otherwise disposed of significantly before the end of its previously estimated useful life.

Recoverability of property, plant and equipment, and other finite-lived intangible asset is measured by comparing the projected undiscounted net cash flows associated with those assets to their carrying values. If an asset is considered impaired, it is written down to its fair value, which is determined based on the asset's projected discounted cash flows or appraised value, depending on the nature of the asset. For purposes of recognition of impairment for assets held for use, we group assets and liabilities at the lowest level for which cash flows are separately identifiable. There were no triggering events to cause us to record an impairment charge for the years ended December 31, 2021, 2020 and 2019.

Revenue Recognition

We recognize revenue from operations through the sale of products, services, license of intellectual property and rental of instruments. Revenue from contracts with customers 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 accounted for as distinct performance obligations. Revenue is recognized net of any taxes collected from customers (sales tax, value added tax, etc.), which are subsequently remitted to government authorities.

Our contracts from customers often include promises to transfer multiple products and services to a customer. Determining whether products and services are considered distinct performance obligations that should be accounted for separately versus together may require significant judgment, and may or may not impact the timing of revenue recognition. Revenue associated with equipment that requires factory installation is not recognized until installation is complete and customer acceptance, if required, has occurred. Certain equipment requires installation due to the fact that the instruments are being operated in a clinical/laboratory environment, and the installation services could result in modification of the equipment in order to ensure that the instruments are working according to customer specifications, which are subject to validation tests upon completion of the installation. In these arrangements, which require factory installation, the delivery of the equipment and the installation are separate performance obligations. We will recognize the transaction price allocated to the equipment only upon customer acceptance, as the transfer of control in relation to the equipment has occurred at that point as the customer has the ability to direct the use of and obtain substantially all of the remaining benefits from the asset. The transaction price allocated to the installation services is also recognized upon customer acceptance because without the completion of the installation services and related customer acceptance the customer cannot receive any of the benefits of the service.

At the time revenue is recognized, a provision is recorded for estimated product returns as this right is considered variable consideration. Accordingly, when product revenues are recognized, the transaction price is reduced by the estimated amount of product returns.

Service revenues on extended warranty contracts are recognized ratably over the life of the service agreement as a stand-ready performance obligation. For arrangements that include a combination of products and services, the transaction price is allocated to each performance obligation based on stand-alone selling prices. The method used to determine the stand-alone selling prices for product and service revenues is based on the observable prices when the product or services have been sold separately.

We recognize revenues for a functional license of intellectual property at a point in time when the control of the license and technology transfers to the customer. For license agreements that include sales or usage-based royalty payments to us, we recognize revenue at the later of (i) when the related sale of the product occurs, or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied, or partially satisfied.

The primary purpose of our invoicing terms is to provide customers with simple and predictable methods of purchasing our products and services, not to either provide or receive financing to or from our customers. We record contract liabilities when cash payments are received or due in advance of our performance.

We do not disclose the value of unsatisfied performance obligations for contracts with an original expected length of one year or less. Our payment terms vary by the type and location of our customer, and the products and services offered. The term between invoicing and when payment is due is not significant.

Reagent rental agreements are primarily a diagnostic industry sales method that provides use of an instrument and consumables (reagents) to a customer on a per test basis. These agreements may also include maintenance of the instruments placed at customer locations as well as initial training. We initially determine if a reagent rental arrangement contains a lease at contract commencement. Where we have determined that such an arrangement contains a lease, we next must ascertain its lease classification for purposes of applying appropriate accounting treatment as an operating, sales-type or direct financing lease. For purposes of determining the lease term used in performing the lease classification test, we include the noncancellable period of the lease together with those periods covered by the option to extend the lease if the customer is reasonably certain to exercise that option, the periods covered by an option to terminate the lease if the customer is reasonably certain not to exercise that option, and the periods covered by the option to extend (or not to terminate) the lease in which exercise of the option is controlled by the Company. The assessment of the lease term for reagent rental agreements, including the impact from any associated contractual termination penalties, are subject to an estimation process. While most of our reagent rental arrangements contain either the option for a lessee to extend and/or cancel, the period in which the contract is enforceable is a very short period and therefore the lease term has been limited to the noncancellable period. Generally, these arrangements do not contain an option for the lessee to purchase the underlying asset.

Valuation of Inventories

We value inventory at the lower of the actual cost to purchase and/or manufacture the inventory, or the current estimated net realizable value of the inventory. We review inventory quantities on hand and reduce the cost basis of excess and obsolete inventory based primarily on an estimated forecast of product demand, production requirements and the quality and efficacy of raw materials. This review is done at the end of each fiscal quarter. In addition, our industry is characterized by technological change, frequent new product development and product obsolescence that could result in an increase in the amount of obsolete inventory quantities on hand. Our estimates of future product demand may prove to be inaccurate, and if too high, we may have overstated the carrying value of our inventory. In the future, if inventory is determined to be overvalued, we would be required to write down the value of inventory to market and recognize such costs in our cost of goods sold at the time of such determination. Therefore, although we make efforts to ensure the accuracy of our forecasts of future product demand and perform procedures to safeguard overall inventory quality, any significant unanticipated changes in demand, technological developments, regulations, storage conditions, or other economic or environmental factors affecting biological materials, could have a significant impact on the value of our inventory and reported results of operations.

Fair Value Measurements

U.S. GAAP establishes three levels of inputs that may be used to measure fair value. Each level of input has different levels of subjectivity and difficulty involved in determining fair value. Valuation of Level 1 and 2 instruments generally do not require significant management judgment and the estimation is not difficult. Level 3 instruments include unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities. The determination of fair value for Level 3 instruments requires the most management judgment and subjectivity.

We elected the fair value option under ASC 825, Financial Instruments for accounting of the Loan to Sartorius-Herbst Beteiligungen II GmbH. The Loan includes certain value appreciation rights that are due upon repayment of the Loan. The fair value of the Loan and value appreciation right is estimated under the income approach using a discounted cash flow, and option pricing model, respectively, which results in a fair value measurement categorized in Level 3. The significant assumptions used to estimate fair value of the Loan include an estimate of the discount rate and cash flows of the Loan and the significant assumptions used to estimate the fair value of the value appreciation right include volatility, the risk-free interest rate, expected life (in years) and expected dividend. The inputs are subject to estimation uncertainty and actual amounts realized may materially differ. An increase in the expected volatility may result in a significantly higher fair value, whereas a decrease in expected life may result in a significantly lower fair value. All subsequent changes in fair value of the Loan and value appreciation right, including accrued interest are recognized in change in fair value of equity and debt securities in our consolidated statements of income.

Results of Operations - Sales, Gross Margins and Expenses - ***Incorporating by Reference the Results of Operations - Sales, Gross Margins and Expenses from our Annual Report on Form 10-K for the fiscal year ended December 31, 2020.***

The following shows cost of goods sold, gross profit, expense items and net income as a percentage of net sales:

	2021	2020
Net sales	100.0 %	100.0 %
Cost of goods sold	43.9	43.5
Gross profit	56.1	56.5
Selling, general and administrative expense	30.1	31.4
Research and development expense	9.3	8.9
Net income	145.3	149.5

Net sales

Percentage sales growth in currency neutral amounts are calculated by translating prior period sales in each local currency using the current period monthly average foreign exchange rates for that currency and comparing that to current period sales.

Net sales (sales) for the year ended December 31, 2021 were $2.92 billion, compared to $2.55 billion for the year ended December 31, 2020, an increase of 14.8%. Excluding the impact of foreign currency, for the year ended December 31, 2021 sales increased by approximately 12.7% compared to the year ended December 31, 2020. Currency neutral sales increased in all regions, led by growth in Asia Pacific and Europe. Excluding the impact of COVID related sales, currency neutral sales increased by 17% compared to the year ended December 31, 2020.

The Life Science segment sales for the year ended December 31, 2021 were $1.40 billion, an increase of 13.7% compared to the year ended December 31, 2020. On a currency neutral basis, sales increased 12.0% compared to the year ended December 31, 2020. Currency neutral sales were up in nearly all product lines but were primarily driven by growth in our Western Blotting, Digital PCR, and Process Media products. A significant portion of the Life Science segment growth came from products used to support COVID-19 research and testing. All regions experienced double digit currency neutral sales growth compared to the year ended December 31, 2020.

The Clinical Diagnostics segment sales for the year ended December 31, 2021 were $1.52 billion, an increase of 16.1% compared to the year ended December 31, 2020. On a currency neutral basis, sales increased 13.6% compared to the year ended December 31, 2020. Currency neutral sales increased across all product lines and regions as the overall diagnostics market continues to recover from the COVID-19 pandemic, including an increase in utilization in lab operations.

Gross margin

Consolidated gross margins were 56.1% for the year ended December 31, 2021 compared to 56.5% for the year ended December 31, 2020. Life Science segment gross margins for the year ended December 31, 2021 increased by approximately 0.6 percentage points compared to the year ended December 31, 2020, primarily related to increased sales volume, favorable product mix related to higher sales of Digital PCR and Process Media products, and lower production costs. Clinical Diagnostics segment gross margins for the year ended December 31, 2021 decreased by approximately 1.1 percentage points compared to the year ended December 31, 2020. The decrease in the Clinical Diagnostics segment gross margins for the year ended December 31, 2021 was primarily related to the costs associated with the restructuring plan announced in February 2021, partially offset by increased sales for the year ended December 31, 2021.

Selling, general and administrative expense

Consolidated selling, general and administrative expenses (SG&A) increased to $879.6 million or 30.1% of sales for the year ended December 31, 2021 compared to $800.3 million or 31.4% of sales for the year ended December 31, 2020. The increase to SG&A was primarily related to the restructuring plan announced in February 2021, as well as increased employee related expenses.

Research and development expense

Research and development (R&D) expense increased to $271.7 million or 9.3% of sales for the year ended December 31, 2021 compared to $226.6 million or 8.9% of sales for the year ended December 31, 2020. R&D expense increased for the year ended December 31, 2021 compared to the year ended December 31, 2020, in both the Life Science and Clinical Diagnostics segment. The increase was primarily from increases in investment in strategic projects and research initiatives, costs related to the restructuring plan announced in February 2021, and higher employee related expenses.

Results of Operations – Non-operating

Interest expense

Interest expense for the years ended December 31, 2021 and 2020 was $1.6 million and $21.9 million, respectively, a decrease of $20.3 million primarily due to the repayment of the $425.0 million principal amount of Senior Notes in December 2020.

Foreign currency exchange gains and losses

Foreign currency exchange gains and losses consist primarily of foreign currency transaction gains and losses on intercompany net receivables and payables and the change in fair value of our forward foreign exchange contracts used to manage our foreign currency exchange risk. Foreign currency exchange net losses for the years ended December 31, 2021 and 2020 were $2.8 million and $1.8 million, respectively. Gains and losses are primarily due to the estimating process inherent in the timing of product shipments and intercompany debt payments, market volatility, and the change in the fair value of our foreign exchange contracts.

Change in fair market value of equity and debt securities

Change in fair market value of equity and debt securities were gains of $4.93 billion for the year ended December 31, 2021 compared to $4.50 billion for the year ended December 31, 2020, primarily resulting from the recognition of holding gains on our position in Sartorius AG of $4.92 billion in 2021 and $4.48 billion in 2020, partially offset by a decrease in fair value of a loan to Sartorius-Herbst Beteiligungen II GmbH of $10.8 million.

Other income, net

Other income, net includes investment and dividend income, interest income on our cash and cash equivalents, short-term investments and long-term marketable securities. Other income, net for the year ended December 31, 2021 increased to $26.8 million compared to $24.5 million for the year ended December 31, 2020. Other income, net increased primarily due to a $10.1 million increase in the Sartorius AG dividends declared in 2021, and an increase in investment and other income of $3.9 million, partially offset by a gain of $11.7 million on the sale of our Informatics division in 2020.

Effective tax rate

Our effective tax rates were 21.9% and 22.4% for the years ended December 31, 2021 and 2020, respectively. The effective tax rates for the years ended December 31, 2021 and 2020 were driven by the unrealized gain in equity securities that is taxed at approximately 22% as well as the geographic mix of earnings and the taxation of our foreign earnings. Our effective tax rate may be impacted in the future, either favorably or unfavorably, by many factors including, but not limited to, changes in the geographic mix of earnings, changes to statutory tax rates, changes in tax laws or regulations, tax audits and settlements, and generation of tax credits.

Our income tax returns are routinely audited by U.S. federal, state and foreign tax authorities. We are currently under examination by many of these tax authorities. There are differing interpretations of tax laws and regulations, and as a result, significant disputes may arise with these tax authorities involving issues of the timing and amount of deductions and allocations of income among various tax jurisdictions. We do not believe any currently pending uncertain tax positions will have a material adverse effect on our consolidated financial statements, although an adverse resolution of one or more of these uncertain tax positions in any period may have a material impact on the results of operations for that period.

We record liabilities for unrecognized tax benefits related to uncertain tax positions. We do not believe the resolution of our uncertain tax positions will have a material adverse effect on our consolidated financial statements, although an adverse resolution of one or more of these uncertain tax positions in any period may have a material impact on the results of operations for that period.

As of December 31, 2021, based on the expected outcome of certain examinations or as a result of the expiration of statutes of limitation for certain jurisdictions, we believe that within the next twelve months it is reasonably possible that our previously unrecognized tax benefits could decrease by approximately $20.8 million. Substantially all such amounts will impact our effective income tax rate.

Comparison of the Year Ended December 31, 2020 to the Year Ended December 31, 2019

Refer to Item 7, Management's Discussion and Analysis of Financial Condition and Results of Operations located in our Annual Report on Form 10-K for the fiscal year ended December 31, 2020, filed on February 16, 2021, for the discussion of the comparison of the fiscal year ended December 31, 2020 to the fiscal year ended December 31, 2019, the earliest of the three fiscal years presented in the Consolidated Statements of Operations.

Liquidity and Capital Resources

Bio-Rad operates and conducts business globally, primarily through subsidiary companies established in the markets in which we trade. Goods are manufactured in a small number of locations, and are then shipped to local distribution facilities around the world. Our product mix is diversified, and certain products compete largely on product efficacy, while others compete on price. Gross margins are generally sufficient to exceed normal operating costs, and funding for research and development of new products, as well as routine outflows for capital expenditures, interest and taxes. In addition to the annual positive cash flow from operating activities, additional liquidity is readily available via the sale of short-term investments and access to our $200.0 million unsecured revolving credit facility (Credit Agreement) that we entered into in April 2019 and amended in November 2021 (see Note 5, "Notes Payable and Long-Term Debt," to the consolidated financial statements), and to a lesser extent international lines of credit. Borrowings under the Credit Agreement are available on a revolving basis and can be used to make permitted acquisitions, for working capital and for other general corporate purposes. We had no outstanding borrowings under the 2019 Credit Agreement as of December 31, 2021; however, $0.2 million was utilized for domestic standby letters of credit that reduced our borrowing availability. Management believes that this availability, together with cash flow from operations, will be adequate to meet our current objectives for operations, research and development, capital additions for manufacturing and distribution, plant and equipment, information technology systems and acquisitions of reasonable proportion to our existing total available capital.

At December 31, 2021, we had available $869.9 million in cash, cash equivalents and short-term investments, of which approximately 23% was held in our foreign subsidiaries. The amount of funds held in the United States can fluctuate due to the timing of receipts and payments in the ordinary course of business and due to other reasons, such as acquisitions. As part of our ongoing liquidity assessments, we regularly monitor the mix of domestic and foreign cash flows (both inflows and outflows).

It is generally our intention to repatriate certain foreign earnings to the extent that such repatriations are not restricted by local laws or accounting rules, and there are no substantial incremental costs.

Demand for our products and services could change more dramatically in the short-term than in previous years due to the impacts of the COVID-19 pandemic, as well as due to funding, reimbursement constraints and support levels from government, universities, hospitals and private industry, including diagnostic laboratories. The need for certain sovereign nations with large annual deficits to curtail spending, international trade disputes and increased regulation, could lead to slower growth of, or even a decline in, our business. Sovereign nations either delaying payment for goods and services or renegotiating their debts could impact our liquidity.

Cash Flows from Operations

Net cash provided by operations was $656.5 million and $575.3 million for the years ended December 31, 2021 and 2020, respectively. The net increase between the year ended December 31, 2021 and the year ended December 31, 2020 of $81.2 million was primarily due to higher cash received from customers as a result of the growth in sales, higher Sartorius AG dividends in 2021 compared to 2020, lower interest paid as a result of the repayment of the $425.0 million principal amount of Senior Notes in December 2020, proceeds from forward foreign exchange contracts in 2021 compared to payments for forward foreign exchange contracts in 2020, and higher investment income received in 2021 than in 2020. These increases were partially offset by higher cash paid to suppliers primarily for materials to support the increase in sales, cash paid for employee related expenses such as salaries, bonuses and benefits, and to a lesser extent for employee restructuring programs. The increases were also partially offset by higher income taxes paid.

Cash flows from operations during the first quarter have historically had larger payments for royalties, fourth quarter sales commissions and annual employee bonuses, and we expect this pattern to recur in the first quarter of 2022.

Cash Flows from Investing Activities

Our investing activities consisted primarily of cash used for extending a collateralized loan, activity related to the purchases, sales and maturities of marketable securities, acquisitions and capital expenditures.

Net cash used in investing activities was $784.4 million and $60.3 million for the years ended December 31, 2021 and 2020, respectively. The increase of $724.2 million was primarily attributable to a $453.4 million funding for a collateralized loan to Sartorius-Herbst Beteiligungen II GmbH, an increase of $204.3 million for net cash outflows from purchases, sales and maturities of marketable securities and investments, higher net cash outflows of $28.9 million for the acquisition of Dropworks, Inc. in 2021 compared to the acquisition of Celsee, Inc. in 2020, net payments of $21.9 million for higher capital expenditures, and proceeds of $12.2 million from a divestiture of a division that was received in 2020 compared to none in 2021.

Cash Flows from Financing Activities

Our financing activities have consisted primarily of cash used for repayment of debt, purchases of treasury stock, payments for contingent consideration, and cash proceeds from the issuance of common stock for share-based compensation.

Net cash used in financing activities was $55.4 million compared to $523.0 million for the years ended December 31, 2021 and 2020, respectively. This decrease was primarily attributable to the repayment of the $425 million principal amount of Senior Notes in 2020, and lower purchases of treasury stock in 2021 compared to 2020 of $50.0 million.

Treasury Shares

During the year ended December 31, 2021, 114,711 shares of Class A treasury stock with an aggregate total cost of $43.6 million were reissued to fulfill grants to employees under our restricted stock program. Upon reissuing the Class A treasury stock, a loss of $6.7 million was incurred as they were reissued at a lower price than their average cost, which reduced Retained earnings, while $37.0 million reduced Additional paid-in capital.

During the year ended December 31, 2020, 117,423 shares of Class A treasury stock with an aggregate total cost of $38.5 million were reissued to fulfill grants to employees under our restricted stock program. Upon reissuing the Class A treasury stock, a loss of $9.0 million was incurred as they were reissued at a lower price than their average cost, which reduced Retained earnings, while $29.5 million reduced Additional paid-in capital.

The re-issuance of the treasury stock for the years ended December 31, 2021 and 2020 did not require cash payments or receipts and therefore did not affect liquidity.

In November 2017, the Board of Directors authorized a new share repurchase program, granting Bio-Rad authority to repurchase, on a discretionary basis, up to $250.0 million of outstanding shares of our common stock ("Share Repurchase Program"). In July 2020, the Board of Directors authorized increasing the Share Repurchase Program to allow the Company to repurchase up to an additional $200.0 million of stock. As of December 31, 2021, $223.1 million remained under the Share Repurchase Program.

During the year ended December 31, 2021, we repurchased 89,506 shares of Class A common stock for $50.0 million under our Share Repurchase Program, compared to the repurchase of 291,941 shares of our common stock for $100.0 million during the year ended December 31, 2020. We designated these repurchased shares as treasury stock.

Contractual Obligations

The following summarizes certain of our contractual obligations as of December 31, 2021 and the effect such obligations are expected to have on our cash flows in future periods (in millions):

	Payments Due by Period				
Contractual Obligations	Total	Less Than One Year	1-3 Years	3-5 Years	More than 5 Years
Long-term debt, including current portion (1)	$ 11.0	$ 0.5	$ 0.9	$ 0.9	$ 8.7
Interest payments (1)	$ 7.8	$ 0.7	$ 1.5	$ 1.3	$ 4.3
Operating lease obligations (2)	$ 246.8	$ 42.5	$ 71.7	$ 53.1	$ 79.5
Purchase obligations (3)	$ 16.7	$ 12.2	$ 4.3	$ 0.2	$ —
Long-term liabilities (4)	$ 124.8	$ 10.6	$ 21.8	$ 9.1	$ 83.3

(1) These amounts represent expected cash payments, primarily from finance lease obligations, which are included in our December 31, 2021 consolidated balance sheet. See Note 5 of the consolidated financial statements for additional information about our debt.

(2) Operating lease obligations are described in Note 16 of the consolidated financial statements.

(3) Purchase obligations include agreements to purchase goods or services that are enforceable and legally binding to Bio-Rad and that specify all significant terms. Purchase obligations exclude agreements that are cancelable without penalty. Recognition of purchase obligations occurs when products or services are delivered to Bio-Rad.

(4) These amounts primarily represent recognized long-term obligations for other post-employment benefits mostly due in more than 5 years, and long-term deferred revenue. Excluded from this table are tax liabilities for uncertain tax positions and contingencies in the amount of $66.6 million. We are not able to reasonably estimate the timing of future cash flows of these tax liabilities, therefore, our income tax obligations are excluded from the table above. See Note 6 of the consolidated financial statements for additional information about our income taxes.

Recent Accounting Pronouncements Adopted and to be Adopted

See Note 1 to the consolidated financial statements for recent accounting pronouncements adopted and to be adopted.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Financial Risk Management

The main goal of Bio-Rad's financial risk management program is to reduce the variance in expected cash flows arising from unexpected foreign exchange rate and interest rate changes. Financial exposures are managed through operational means and by using various financial instruments, including cash and liquid resources, borrowings, and forward and spot foreign exchange contracts. No derivative financial instruments are entered into for the purpose of trading or speculation. Company policy requires that all derivative positions are undertaken to manage the risks arising from underlying business activities. These derivative transactions do not qualify for hedge accounting treatment. Derivative instruments used in these transactions are valued at fair value and changes in fair value are included in reported earnings.

Foreign Exchange Risk. We operate and conduct business in many countries and are exposed to movements in foreign currency exchange rates. We face transactional currency exposures that arise when we enter into transactions denominated in currencies other than U.S. dollars. Additionally, our consolidated net equity is impacted by the conversion of the net assets of our international subsidiaries for which the functional currency is not the U.S. dollar.

Foreign currency exposures are managed on a centralized basis. This allows for the netting of natural offsets and lowers transaction costs and net exposures. Where possible, we seek to manage our foreign exchange risk in part through operational means, including matching same-currency revenues to same-currency costs, and same-currency assets to same-currency liabilities. Moreover, weakening in one currency can often be offset by strengthening in another currency. Foreign exchange risk is also managed through the use of forward foreign exchange contracts. Positions are primarily in Euro, Swiss Franc, British Pound, Japanese Yen and Korean Won. The majority of forward contracts are for periods of 90 days or less. We record the change in value of our foreign currency receivables and payables as a Foreign exchange (gain) loss on our consolidated statements of income along with the change in fair market value of the forward exchange contract used as an economic hedge of those assets or liabilities.

Our forward contract holdings at year-end were analyzed to determine their sensitivity to fluctuations in foreign currency exchange rates. All other variables were held constant. Market risk associated with derivative holdings is the potential change in fair value of derivative positions arising from an adverse movement in foreign exchange rates. A 10% depreciation / appreciation on quoted foreign exchange rates related to the Company's contracts would result in an approximate net-present-value loss / gain of $32.8 million on our derivative position as of December 31, 2021. The gains or losses on forward currency-exchange contracts resulting from changes in currency exchange rates are expected to approximately offset losses or gains on the exposures being hedged. This impact of a change in exchange rates excludes the offset derived from the change in value of the underlying assets and liabilities, which could reduce the adverse effect significantly.

Interest Rate Risk of Debt Instruments. Bio-Rad centrally manages the short-term cash surpluses and shortfalls of its subsidiaries. Our holdings of variable rate debt instruments at year-end were analyzed to determine their sensitivity to movements in interest rates. Due to the relatively small amount of short-term variable rate debt instruments we have outstanding, there would not be a material impact to earnings or cash flows if interest rates moved adversely by 10%. Our holdings of long-term debt instruments consist primarily of fixed-rate instruments and are thus insulated from interest rate changes. As of December 31, 2021, the overall interest rate risk associated with our debt instruments was not significant.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

Index to Consolidated Financial Statements

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Bio-Rad Laboratories, Inc.:

Opinion on the Consolidated Financial Statements

We have audited the accompanying consolidated balance sheets of Bio-Rad Laboratories, Inc. and subsidiaries (the Company) as of December 31, 2021 and 2020, the related consolidated statements of income, comprehensive income, changes in stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2021, and the related notes (collectively, the consolidated financial statements). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and 2020, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2021, 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, 2021, 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 February 11, 2022 expressed an unqualified opinion on the effectiveness of the Company's internal control over financial reporting.

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 Lease Term for Reagent Rental Arrangements

As discussed in Note 1 to the consolidated financial statements, the Company earns revenue from reagent rental agreements with its customers. Each agreement generally includes lease elements subject to the lease accounting standards and non-lease elements subject to the revenue accounting standards. The classification of the lease component as an operating or sales-type lease can impact the timing of revenue recognition and cost attributable to the underlying lease elements. While most reagent rental arrangements contain an option for a lessee to extend and

the option for the lessee to cancel or both, the period in which the contract is enforceable is generally short, and the lease term has been determined to generally be the noncancelable period. The revenue allocated to the reagent rental lease elements was approximately 2% of total revenue for the year ended December 31, 2021 and it is included as part of Net Sales in the Consolidated Statement of Income.

We identified the assessment of the lease term for reagent rental agreements, including the impact from any associated contractual termination penalties, as a critical audit matter. The Company's determination of lease classification as operating, or sales-type lease is primarily dependent on the initial determination of the lease term. The Company's process is based on the manual examination of a high volume of agreements that are negotiated individually across the world with diverse terms. Testing the determination of the lease term, including consideration of contractual termination penalties, required a high degree of auditor judgment to design and execute the audit procedures.

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 lease classification process. This included controls related to the Company's process for determining the lease term including consideration of contractual termination penalties. We assessed the Company's policy for determining that the lease term of its reagent rental arrangements was in accordance with U.S generally accepted accounting principles. Additionally, for a selection of reagent rental agreements, we read the underlying contract, and compared relevant terms within the contract to the Company's determination of lease term analysis and evaluated management's judgment on the determination of the length of the lease term. We evaluated the sufficiency of the evidence obtained by assessing the results of procedures performed, including the appropriateness of the nature and extent of such evidence.

Accounting for the Investment in Sartorius AG

As discussed in Notes 1 and 3 to the consolidated financial statements, the Company owns 37% of the outstanding ordinary shares (excluding treasury shares) and 28% of the preference shares of Sartorius AG (Sartorius) as of December 31, 2021. The Sartorius family trust (the "Trust") (Sartorius family members are beneficiaries of the trust) holds a majority interest of the outstanding ordinary shares of Sartorius. The Company does not have the ability to exercise significant influence over the operating and financial policies of Sartorius primarily because it does not have any representative or designee on Sartorius' board of directors and has tried and failed to obtain access to operating or financial information necessary to apply the equity method of accounting. Management monitors its relationships with Sartorius for changes that could affect whether it has the ability to exercise significant influence.

We identified the evaluation of whether the Company has the ability to exercise significant influence over the operating and financial policies of Sartorius as a critical audit matter. The Company's determination of significant influence is based on management's judgments used in their assessment of the investment and impact of changes that could affect that conclusion. The evaluation of management's judgments required a high degree of challenging auditor judgment.

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 evaluation of accounting for investments.

We evaluated management's significant judgments by:

- assessing the Company's policy of determining whether they have significant influence over an investee for compliance with U.S. generally accepted accounting policies
- evaluating the Company's accounting analysis including consideration of the €400 million loan to Sartorius-Herbst Beteiligungen II GmbH and the criteria used to determine whether the Company has the ability to exercise significant influence over Sartorius AG

- inspecting legal documents, the minutes of meetings of the board of directors, and other correspondence used by management as the basis for its accounting analysis
- confirming legal determinations through inquiries of the Company’s legal counsel
- analyzing whether additional events or transactions that could impact its relationships with investees had occurred that had not been identified by the Company.

/s/ KPMG LLP

We have served as the Company's auditor since 2013.

Santa Clara, California
February 11, 2022

Report of Independent Registered Public Accounting Firm

To the Stockholders and Board of Directors
Bio-Rad Laboratories, Inc.:

Opinion on Internal Control Over Financial Reporting

We have audited Bio-Rad Laboratories, Inc. and subsidiaries' (the Company) internal control over financial reporting as of December 31, 2021, 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, 2021, 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, 2021 and 2020, the related consolidated statements of income, comprehensive income, changes in stockholders' equity, and cash flows for each of the years in the three-year period ended December 31, 2021, and the related notes (collectively, the consolidated financial statements), and our report dated February 11, 2022 expressed an unqualified opinion on those consolidated financial statements.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report 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 LLP

Santa Clara, California
February 11, 2022

BIO-RAD LABORATORIES, INC.
Consolidated Balance Sheets
(In thousands, except share data)

	December 31,	
	2021	2020
ASSETS		
Current assets:		
Cash and cash equivalents	$ 470,783	$ 662,205
Short-term investments	399,135	328,913
Restricted investments	5,560	5,560
Accounts receivable, less allowance for doubtful accounts of $15,142 and $19,807 as of December 31, 2021 and 2020, respectively	423,537	419,424
Inventories:		
Raw materials	116,880	126,911
Work in process	142,742	151,931
Finished goods	312,617	343,411
Total inventories	572,239	622,253
Prepaid expenses	107,745	90,621
Other current assets	10,089	10,859
Total current assets	1,989,088	2,139,835
Property, plant and equipment:		
Land and improvements	27,940	25,739
Buildings and leasehold improvements	385,798	363,048
Equipment	1,074,830	1,063,974
Total property, plant and equipment	1,488,568	1,452,761
Less: accumulated depreciation and amortization	(997,616)	(961,390)
Property, plant and equipment, net	490,952	491,371
Operating lease right-of-use assets	204,798	202,136
Goodwill, net	347,343	291,916
Purchased intangibles, net	253,939	199,497
Other investments	14,387,006	9,561,140
Other assets	102,669	86,723
Total assets	$ 17,775,795	$ 12,972,618

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

BIO-RAD LABORATORIES, INC.
Consolidated Balance Sheets
(continued)
(In thousands, except share data)

	December 31,	
	2021	2020
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 141,941	$ 139,451
Accrued payroll and employee benefits	276,986	222,875
Current maturities of long-term debt	489	1,798
Income taxes payable	10,319	23,282
Other taxes payable	35,980	34,053
Current operating lease liabilities	36,435	36,507
Deferred revenue	50,852	42,468
Other current liabilities	127,936	131,102
Total current liabilities	680,938	631,536
Long-term debt, net of current maturities	10,514	12,258
Deferred income taxes	3,059,080	2,076,785
Operating lease liabilities	175,938	175,128
Other long-term liabilities	182,191	196,971
Total liabilities	4,108,661	3,092,678
Commitments and contingent liabilities		
Stockholders' equity:		
Preferred stock, $0.0001 par value, 7,500,000 shares authorized; issued and outstanding - none	—	—
Class A common stock, $0.0001 par value; 80,000,000 shares authorized; shares issued - 25,133,530 and 25,072,619 at 2021 and 2020, respectively; shares outstanding - 24,853,986 and 24,767,870 at 2021 and 2020, respectively	2	2
Class B common stock, $0.0001 par value; 20,000,000 shares authorized; shares issued and outstanding - 5,078,452 and 5,076,186 at 2021 and 2020, respectively	1	1
Additional paid-in capital	441,733	429,376
Class A treasury stock at cost, 279,544 shares at 2021 and 304,749 shares at 2020	(106,290)	(99,907)
Retained earnings	13,507,241	9,268,012
Accumulated other comprehensive income (loss)	(175,553)	282,456
Total stockholders' equity	13,667,134	9,879,940
Total liabilities and stockholders' equity	$ 17,775,795	$ 12,972,618

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

BIO-RAD LABORATORIES, INC.
Consolidated Statements of Income
(In thousands, except per share data)

	Year Ended December 31,		
	2021	2020	2019
Net sales	$ 2,922,545	$ 2,545,626	$ 2,311,659
Cost of goods sold	1,281,884	1,107,804	1,054,663
Gross profit	1,640,661	1,437,822	1,256,996
Selling, general and administrative expense	879,574	800,267	824,625
Research and development expense	271,657	226,598	202,710
Income from operations	489,430	410,957	229,661
Interest expense	1,551	21,861	23,416
Foreign currency exchange losses, net	2,753	1,771	2,245
Change in fair market value of equity and debt securities	(4,926,248)	(4,495,825)	(2,030,987)
Other income, net	(26,775)	(24,488)	(26,094)
Income before income taxes	5,438,149	4,907,638	2,261,081
Provision for income taxes	(1,192,247)	(1,101,371)	(502,406)
Net income	$ 4,245,902	$ 3,806,267	$ 1,758,675
Basic earnings per share:			
Net income per basic share	$ 142.33	$ 127.86	$ 58.93
Weighted average common shares - basic	29,831	29,768	29,843
Diluted earnings per share:			
Net income per diluted share	$ 140.56	$ 126.20	$ 58.27
Weighted average common shares - diluted	30,208	30,160	30,184

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

BIO-RAD LABORATORIES, INC.
Consolidated Statements of Comprehensive Income
(In thousands)

	Year Ended December 31,		
	2021	2020	2019
Net income	$ 4,245,902	$ 3,806,267	$ 1,758,675
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	(469,088)	371,057	(36,953)
Foreign other post-employment benefits adjustments	15,099	(3,806)	(7,363)
Net unrealized holding gains (losses) on available-for-sale (AFS) investments	(4,020)	2,553	3,926
Other comprehensive income (loss), net of tax	(458,009)	369,804	(40,390)
Comprehensive income	$ 3,787,893	$ 4,176,071	$ 1,718,285

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

BIO-RAD LABORATORIES, INC.
Consolidated Statements of Cash Flows
(In thousands)

	Year Ended December 31,		
	2021	2020	2019
Cash flows from operating activities:			
Cash received from customers	$ 2,886,489	$ 2,531,135	$ 2,311,925
Cash paid to suppliers and employees	(2,140,882)	(1,886,988)	(1,818,575)
Interest paid, net	(2,251)	(21,639)	(22,330)
Income tax payments, net	(134,683)	(65,244)	(45,081)
Dividend proceeds and miscellaneous receipts, net	35,282	21,488	31,673
Proceeds from (payments for) forward foreign exchange contracts, net	12,566	(3,424)	285
Net cash provided by operating activities	656,521	575,328	457,897
Cash flows from investing activities:			
Payments for purchases of property, plant and equipment	(120,803)	(98,920)	(98,532)
Proceeds from dispositions of property, plant and equipment	52	70	129
Proceeds from divestiture of a division	—	12,240	—
Payments for acquisitions, net of cash received	(125,516)	(96,655)	(79,386)
Recovery of purchases of intangible assets	—	3,414	8,818
Payments for purchases of marketable securities and investments	(851,627)	(248,457)	(371,450)
Payments for investment in loan instrument	(453,440)	—	—
Proceeds from sales of marketable securities and investments	425,537	89,734	104,632
Proceeds from maturities of marketable securities and investments	341,359	278,324	226,900
Net cash used in investing activities	(784,438)	(60,250)	(208,889)
Cash flows from financing activities:			
Payments on long-term borrowings	(3,020)	(426,938)	(643)
Payments for credit agreement renewal fees	—	—	(486)
Proceeds from issuances of common stock for share-based compensation	20,632	20,198	13,113
Tax payments from net share settlement	(22,482)	(12,930)	(8,096)
Proceeds from reissuances of treasury stock for shared-based compensation, net	—	—	3,831
Payments for purchases of treasury stock	(49,998)	(100,004)	(28,000)
Payments of contingent consideration	(561)	(3,367)	(2,477)
Net cash used in financing activities	(55,429)	(523,041)	(22,758)
Effect of foreign exchange rate changes on cash	(12,636)	12,427	2,237
Net (decrease) increase in cash, cash equivalents and restricted cash	(195,982)	4,464	228,487
Cash, cash equivalents and restricted cash at beginning of year	667,115	662,651	434,164
Cash, cash equivalents and restricted cash at end of year	$ 471,133	$ 667,115	$ 662,651

The following table provides a reconciliation of cash, cash equivalents and restricted cash reported within the consolidated balance sheets that agrees to the same amounts shown in the consolidated statements of cash flows (in thousands):

	Year Ended December 31,		
	2021	2020	2019
Cash and cash equivalents	$ 470,783	$ 662,205	$ 660,672
Restricted cash included in Other current assets	14	3,994	93
Restricted cash included in Other assets	336	916	1,886
Total cash, cash equivalents and restricted cash shown in the consolidated statements of cash flows	$ 471,133	$ 667,115	$ 662,651

These restricted cash items are primarily related to performance guarantees and other restricted deposits.
The accompanying notes are an integral part of these consolidated financial statements.

BIO-RAD LABORATORIES, INC.
Consolidated Statements of Changes in Stockholders' Equity
(In thousands)

	Common Stock	Additional Paid-in Capital	Treasury Stock	Retained Earnings	Accumulated Other Comprehensive Income	Total Stockholders' Equity
Balance at December 31, 2018	$ 3	$ 394,342	$ (49,129)	$ 3,722,073	$ (46,958)	$ 4,020,331
Net income	—	—	—	1,758,675	—	1,758,675
Other comprehensive loss, net of tax	—	—	—	—	(40,390)	(40,390)
Issuance of common stock	—	5,017	—	—	—	5,017
Stock compensation expense	—	35,593	—	—	—	35,593
Purchase of treasury stock	—	—	(28,000)	—	—	(28,000)
Reissuance of treasury stock	—	(24,932)	38,732	(9,969)	0	3,831
Balance at December 31, 2019	3	410,020	(38,397)	5,470,779	(87,348)	5,755,057
Net income	—	—	—	3,806,267	—	3,806,267
Other comprehensive income, net of tax	—	—	—	—	369,804	369,804
Issuance of common stock	—	7,268	—	—	—	7,268
Stock compensation expense	—	41,556	—	—	—	41,556
Purchase of treasury stock	—	—	(100,004)	—	—	(100,004)
Reissuance of treasury stock	—	(29,468)	38,494	(9,034)	—	(8)
Balance at December 31, 2020	3	429,376	(99,907)	9,268,012	282,456	9,879,940
Net income	—	—	—	4,245,902	—	4,245,902
Other comprehensive loss, net of tax	—	—	—	—	(458,009)	(458,009)
Issuance of common stock	—	(1,850)	—	—	—	(1,850)
Stock compensation expense	—	51,160	—	—	—	51,160
Purchase of treasury stock	—	—	(49,998)	—	—	(49,998)
Reissuance of treasury stock	—	(36,953)	43,615	(6,673)	—	(11)
Balance at December 31, 2021	$ 3	$ 441,733	$ (106,290)	$13,507,241	$ (175,553)	$13,667,134

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

1. SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation

The consolidated financial statements include the accounts of Bio-Rad Laboratories, Inc. and all of our wholly and majority owned subsidiaries (referred to in this report as “Bio-Rad,” “we,” “us” and “our”) after elimination of intercompany balances and transactions. The preparation of financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

Variable Interest Entities

We enter into relationships with or make investments in other entities that may be variable interest entities ("VIE"). A VIE is consolidated in the financial statements if we are the primary beneficiary. The primary beneficiary has the power to direct activities that most significantly impact the economic performance of the VIE and has the obligation to absorb losses or the right to receive benefits from the VIE that could potentially be significant to the VIE.

In 2021, we extended a loan to a VIE, Sartorius-Herbst Beteiligungen II GmbH ("SHB"), a private limited company incorporated under the laws of Germany (See Note 3). We have not consolidated this entity because we do not have the power to direct the activities that most significantly impact the VIE’s economic performance related to repayment of the loan or cash management of the SHB and, thus, we are not considered the primary beneficiary of the VIE. We believe that our maximum exposure to loss as a result of our involvement with the VIE is limited to the receivable due to us from the VIE under the terms of the loan.

Cash and Cash Equivalents

Cash and cash equivalents consist of cash and highly liquid investments with original maturities of three months or less which are readily convertible into cash.

Short-term Restricted Investments

Short-term restricted investments of $5.6 million at both December 31, 2021 and 2020 represent a money market fund that is provided as collateral to secure worker's compensation and general liability insurance.

Available-for-Sale Investments

Available-for-sale investments consist of corporate obligations, municipal securities, asset backed securities and U.S. government sponsored agencies. Management classifies investments at the time of purchase and reevaluates such classification at each balance sheet date. Investments with maturities beyond one year may be classified as short-term based on their liquid nature and because such marketable securities represent the investment of cash that is available for current operations. Available-for-sale investments are reported at fair value based on quoted market prices and other observable market data. Unrealized gains and losses are reported as a component of other comprehensive income, net of any related tax effect. On January 1, 2020, we adopted Accounting Standards Update (ASU) 2016-13, "Measurement of Credit Losses on Financial Instruments." In accordance with the adopted guidance, we replaced the incurred loss approach with an expected loss model for instruments measured at amortized cost and record allowances for available-for-sale debt securities rather than to reduce the carrying amount for other-than-temporary impairment as was followed under the other-than-temporary impairment model prior to January 1, 2020. Realized gains and losses and other-than-temporary impairments on investments are included in Other income and expense, net (see Note 10).

Concentration of Credit Risk

Financial instruments that potentially subject us to concentration of credit risk consist primarily of cash and cash equivalents, investments, foreign exchange contracts, trade accounts receivable and loans receivable. Cash and cash equivalents and investments are placed with various highly rated major financial institutions located in different geographic regions.

The forward contracts used in managing our foreign currency 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 domestic and international financial institutions. In the event of non-performance by these counterparties, the carrying values of our financial instruments represent the maximum amount of loss we would have incurred as of our fiscal year-end.

Credit risk for trade accounts receivable is generally limited due to the large number of customers and their dispersion across many geographic areas. We manage our accounts receivable credit risk through ongoing credit evaluation of our customers' financial conditions. We generally do not require collateral from our customers.

Loans receivable represent the Loan extended to SHB and is collateralized by the pledge of certain trust interests under the Sartorius family trust ("Trust"), which upon termination of the Trust represent the right to receive Sartorius ordinary shares. The collateral is subject to market volatility based on fluctuation in value of the Sartorius ordinary shares.

Accounts Receivable and Allowance for Doubtful Accounts

We record trade accounts receivable at the net invoice value and such receivables are non-interest bearing. We consider receivables past due based on the contractual payment terms. Amounts later determined and specifically identified to be uncollectible are charged or written off against the allowance for doubtful accounts.

Any adjustments made to our historical loss experience reflect current differences in asset-specific risk characteristics, including, for example, accounts receivable by customer type (public or government entity versus private entity) and by geographic location of the customer.

Changes in our allowance for doubtful accounts were as follows (in millions):

December 31,	2021	2020	2019
Beginning balance	$ 19.8	$ 20.2	$ 26.7
Provision for expected credit losses (2021, 2020), bad debt (reversal) (2019)	1.4	1.2	(1.2)
Write-offs charged against the allowance	(6.4)	(1.6)	(6.6)
Recoveries collected	0.3	—	1.3
Ending balance	$ 15.1	$ 19.8	$ 20.2

Inventory

Inventories are valued at the lower of cost and net realizable value and include material, labor and overhead costs. Cost is determined using standard costs, which approximate actual costs, and are relieved from inventory on a first-in, first-out or average cost basis. We classify our inventories based on our historical and anticipated levels of sales; any inventory in excess of its normal operating cycle (1 – 3 years depending on our product line) is classified as long-term on our consolidated balance sheets. The long-term inventory was immaterial as of December 31, 2021 and 2020.

Property, Plant and Equipment

Property, plant and equipment are stated at cost, less accumulated depreciation and amortization. Additions and improvements are capitalized, and maintenance and repairs are expensed as incurred. Included in property, plant and equipment are buildings and equipment acquired under capital lease arrangements, reagent rental equipment and capitalized software, including costs for software developed or obtained for internal use.

Depreciation is computed on a straight-line basis over the estimated useful lives of the assets. The estimated useful lives of property, plant and equipment are generally as follows: buildings, 10-50 years; leasehold improvements, the life of the improvements or the term of the lease, whichever is shorter; reagent rental equipment, 1-5 years; equipment, 3-12 years; and computer software, 3-5 years.

When property and equipment is retired or otherwise disposed of, the cost and accumulated depreciation are relieved from the accounts and the net gain or loss is included in operating expenses.

Leases

We determine if an arrangement is a lease at inception. Operating leases are included in Operating lease right-of-use ("ROU") assets, Current operating lease liabilities, and Operating lease liabilities in our Consolidated Balance Sheets. Finance leases are included in Property, plant and equipment, Current maturities of long-term debt, and Long-term debt, net of current maturities in our Consolidated Balance Sheets.

ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized at the commencement date based on the present value of lease payments over the lease term. As our leases do not provide an implicit rate, we use our incremental borrowing rate based on the information available at the commencement date in determining the present value of lease payments. Operating lease ROU assets also include any lease payments made and excludes lease incentives. Our lease terms may include options to extend or terminate the lease. For purposes of determining the lease term used in the measurement of operating lease ROU assets and operating lease liabilities, we include the noncancellable period of the lease together with those periods covered by the option to extend the lease if we are reasonably certain to exercise that option, the periods covered by an option to terminate the lease if we are reasonably certain not to exercise that option, and the periods covered by the option to extend (or to not terminate) the lease in which exercise of the option is controlled by the lessor. Lease expense is recognized on a straight-line basis over the lease term. Where we act as lessee, we elected not to separate lease and non-lease components.

For our reagent rental contracts, which are classified as operating leases and we act as a lessor, are more fully described below under the caption "Reagent Rental Agreements."

Intangible Assets

Our intangible assets principally include goodwill, acquired technology / know how, license, tradenames, customer relationships, and in-process research and development. Intangible assets with finite lives, which include acquired technology / know how, tradenames, licenses and customer relationships, are carried at cost and amortized using the straight-line method over their estimated useful lives.

The estimated useful lives used in computing amortization of intangible assets are as follows:

Customer relationships/lists	4 – 16 years
Know how	14 years
Developed product technology	2 – 20 years
Licenses	12 – 13 years
Tradenames	6 – 15 years
Covenants not to compete	3 – 10 years

Intangible assets with indefinite lives, which include only goodwill and in-process research and development assets, are recorded at cost and evaluated at least annually for impairment.

Impairment of Long-Lived Assets

We review long-lived assets, such as property, plant and equipment and finite-lived intangible assets, for impairment whenever events indicate that the carrying amounts might not be recoverable. Recoverability of property, plant and equipment, and other finite-lived intangible asset is measured by comparing the projected undiscounted net cash flows associated with those assets to their carrying values. If an asset is considered impaired, it is written down to its fair value, which is determined based on the asset's projected discounted cash flows or appraised value, depending on the nature of the asset. For purposes of recognition of impairment for assets held for use, we group assets and liabilities at the lowest level for which cash flows are separately identifiable.

There were no impairments of finite-lived intangible assets for the years ended December 31, 2021, 2020 and 2019.

Impairment of Goodwill

Goodwill represents the excess of the purchase price over the fair value of the net tangible and identifiable intangible assets acquired in each business combination. We conduct an impairment analysis for goodwill annually in the fourth quarter or more frequently if indicators of impairment exist or if a decision is made to sell or exit a business. Significant judgments are involved in determining if an indicator of impairment has occurred. Such indicators may include deterioration in general economic conditions, negative developments in equity and credit markets, adverse changes in the markets in which an entity operates, increases in input costs that have a negative effect on earnings and cash flows, or a trend of negative or declining cash flows over multiple periods, among others. The fair value that could be realized in an actual transaction may differ from that used to evaluate the impairment of goodwill.

We first may assess qualitative factors to determine if it is more likely than not that the fair value of a reporting unit is less than its carrying amount as a basis for determining whether it is necessary to perform the quantitative goodwill impairment test included in U.S. GAAP. To the extent our assessment identifies adverse conditions, or if we elect to bypass the qualitative assessment, goodwill is tested at the reporting unit level using a quantitative impairment test.

In conjunction with our annual impairment assessment for 2021, we reassessed the reporting units based on changes resulting from internal reorganization and alignment, restructuring activities and changes in reporting structures. After our evaluation, we concluded on two reporting units, which are the operating segments, Life Science and Clinical Diagnostics. We elected to perform a qualitative assessment of goodwill and determined that it is not more likely than not that the fair values of our reporting units are less than their carrying amounts and that goodwill is not impaired for any of our reporting units.

Impairment of Indefinite-Lived Intangible Assets

For indefinite-lived intangible assets such as in-process research and development, we conduct an impairment analysis annually in the fourth quarter or more frequently if indicators of impairment exist. We first perform a qualitative assessment to determine if it is more likely than not that the carrying amount of each of the in-process research and development assets exceeds its fair value. The qualitative assessment requires the consideration of factors such as recent market transactions, macroeconomic conditions, and changes in projected future cash flows. If we determine it is more likely than not that the fair value is less than its carrying amount of the in-process research and development assets, a quantitative assessment is performed. The quantitative assessment compares the fair value of the in-process research and development assets to its carrying amount. If the carrying amount exceeds its fair value, an impairment loss is recognized for the excess. We elected to perform a qualitative assessment of indefinite-lived intangible assets and determined that it is not more likely than not that the fair value is less than its carrying amount and that in-process research and development are not impaired.

Income Taxes

We account for income taxes under the asset and liability method, which requires the recognition of deferred tax assets and liabilities for the expected future tax consequences of events that have been included in the financial statements. Under this method, deferred tax assets and liabilities reflect the tax effects of net operating losses, tax credits, and temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. They are determined using enacted tax rates in effect for the year in which such temporary differences are expected to reverse. The effect of a change in tax rates on deferred tax assets and liabilities is recognized in income in the period that includes the enactment date.

We record deferred tax assets to the extent we believe these assets will more likely than not be realized. In making such determination, we consider all available positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax planning strategies and recent financial operations. When we establish or reduce the valuation allowance against our deferred tax assets, our provision for income taxes will increase or decrease, respectively, in the period that determination to change the valuation allowance is made.

We recognize the tax benefit from an uncertain tax position only if it is more likely than not that the tax position will be sustained on examination by the taxing authorities based on the technical merits of the position. The tax benefits recognized in the financial statements on a particular tax position are measured based on the largest benefit that has a greater than a 50% likelihood of being realized upon settlement. The amount of unrecognized tax benefits is adjusted as appropriate for changes in facts and circumstances, such as significant amendments to existing tax law, new regulations or interpretations by the taxing authorities, new information obtained during a tax examination, or resolution of an examination. We recognize both accrued interest and penalties, where appropriate, related to unrecognized tax benefits in the provision for income taxes.

Revenue Recognition

We recognize revenue from operations through the sale of products, services, license of intellectual property and rental of instruments. Revenue from contracts with customers 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 accounted for as distinct performance obligations. Revenue is recognized net of any taxes collected from customers (sales tax, value added tax, etc.), which are subsequently remitted to government authorities.

Our contracts from customers often include promises to transfer multiple products and services to a customer. Determining whether products and services are considered distinct performance obligations that should be accounted for separately versus together may require significant judgment, and may or may not impact the timing of revenue recognition. Revenue associated with equipment that requires factory installation is not recognized until installation is complete and customer acceptance, if required, has occurred. Certain equipment requires installation due to the fact that the instruments are being operated in a clinical/laboratory environment, and the installation services could result in modification of the equipment in order to ensure that the instruments are working according to customer specifications, which are subject to validation tests upon completion of the installation. In these arrangements, which require factory installation, the delivery of the equipment and the installation are separate performance obligations. We will recognize the transaction price allocated to the equipment only upon customer acceptance, as the transfer of control in relation to the equipment has occurred at that point as the customer has the ability to direct the use of and obtain substantially all of the remaining benefits from the asset. The transaction price allocated to the installation services is also recognized upon customer acceptance because without the completion of the installation services and related customer acceptance the customer cannot receive any of the benefits of the service.

At the time revenue is recognized, a provision is recorded for estimated product returns as this right is considered variable consideration. Accordingly, when product revenues are recognized, the transaction price is reduced by the estimated amount of product returns.

Service revenues on extended warranty contracts are recognized ratably over the life of the service agreement as a stand-ready performance obligation. For arrangements that include a combination of products and services, the transaction price is allocated to each performance obligation based on stand-alone selling prices. The method used to determine the stand-alone selling prices for product and service revenues is based on the observable prices when the product or services have been sold separately.

We recognize revenues for a functional license of intellectual property at a point in time when the control of the license and technology transfers to the customer. For license agreements that include sales or usage-based royalty payments to us, we recognize revenue at the later of (i) when the related sale of the product occurs, or (ii) when the performance obligation to which some or all of the royalty has been allocated has been satisfied, or partially satisfied.

The primary purpose of our invoicing terms is to provide customers with simple and predictable methods of purchasing our products and services, not to either provide or receive financing to or from our customers. We record contract liabilities when cash payments are received or due in advance of our performance.

We do not disclose the value of unsatisfied performance obligations for contracts with an original expected length of one year or less. Our payment terms vary by the type and location of our customer, and the products and services offered. The term between invoicing and when payment is due is not significant.

In the third quarter of fiscal year 2021, we received approximately $32.5 million related to a settlement of an intellectual property litigation for sales of products infringing on our patents during the period from November 2018 through July 2021. Of the total amount, we recognized $31.6 million as revenue, based on the estimated stand-alone royalty rate associated with the infringed patents and is included as part of Net sales in our consolidated statements of income.

In the fourth quarter of fiscal year 2020, we received $35.3 million in court awarded damages related to an intellectual property litigation for sales of products infringing on our patents during 2015 to 2018. Of the total amount, we recognized $32.3 million as revenue upon receipt of the damages based on the estimated stand-alone royalty rate associated with the infringed patents and is included as part of Net sales in our consolidated statements of income.

Reagent Rental Agreements

Reagent rental agreements are primarily a diagnostic industry sales method that provides use of an instrument and consumables (reagents) to a customer on a per test basis. These agreements may also include maintenance of the instruments placed at customer locations as well as initial training. We initially determine if a reagent rental arrangement contains a lease at contract commencement. Where we have determined that such an arrangement contains a lease, we next must ascertain its lease classification for purposes of applying appropriate accounting treatment as an operating, sales-type or direct financing lease. For purposes of determining the lease term used in performing the lease classification test, we include the noncancellable period of the lease together with those periods covered by the option to extend the lease if the customer is reasonably certain to exercise that option, the periods covered by an option to terminate the lease if the customer is reasonably certain not to exercise that option, and the periods covered by the option to extend (or not to terminate) the lease in which exercise of the option is controlled by the Company. The assessment of the lease term for reagent rental agreements, including the impact from any associated contractual termination penalties, are subject to an estimation process. While most of our reagent rental arrangements contain either the option for a lessee to extend and/or cancel, the period in which the contract is enforceable is a very short period and therefore the lease term has been limited to the noncancellable period. Generally, these arrangements do not contain an option for the lessee to purchase the underlying asset.

We concluded that the use of the instrument (referred to as "lease elements") is not within the guidance of ASC 606 but rather ASC 842. Accordingly, we first allocate the transaction price between the lease elements and the non-lease elements based on relative standalone selling prices. The determination of the transaction price requires judgment and consideration of any fixed/minimum payments as well as estimates of variable consideration. After allocation, the amount of variable payments allocated to lease components will be recognized as income under ASC 842, while the amount of variable payments allocated to non-lease components will be recognized as income in accordance with ASC 606.

Maintenance services, along with the reagents, are allocated to the non-lease elements and are recognized as income. Generally, the terms of the arrangements result in the transfer of control for reagents upon either (i) when the consumables are delivered or (ii) when the consumables are consumed by the customer.

Our reagent rental arrangements are predominantly comprised of variable lease payments that fluctuate depending on the volume of reagents purchased, as very few of such arrangements contain any fixed/minimum lease payments. Further, our reagent rental arrangements are predominantly classified as operating leases, and any sales-type leases represent in aggregate an immaterial amount of lease income. Our reported lease income is primarily variable in nature and is recognized upon delivery or as the reagents are consumed by the customer.

Revenue allocated to the lease elements of these reagent rental arrangements represented approximately 2% of total revenue at December 31, 2021, and 3% at both December 31, 2020 and 2019, respectively and are included as part of the Net sales in our consolidated statements of income.

Contract costs:

As a practical expedient, we expense as incurred costs to obtain contracts as the amortization period would have been one year or less. These costs include our internal sales force and certain partner sales incentive programs and are recorded within Selling, general and administrative expense in our consolidated statements of income.

Disaggregation of Revenue:

The disaggregation of our revenue by geographic region is based primarily on the location of the use of the product or service, and by industry segment sources. The disaggregation of our revenues by industry segment sources are presented in our Segment Information footnote (see Note 14).

Deferred revenues primarily represent unrecognized fees billed or collected for extended service arrangements. The deferred revenue balance at December 31, 2021 and December 31, 2020 was $71.0 million and $60.0 million, respectively. The short-term deferred revenue balance at December 31, 2021 and December 31, 2020 was $50.9 million and $42.5 million, respectively.

We warrant certain equipment against defects in design, materials and workmanship, generally for a period of one year. We estimate the cost of warranties at the time the related revenue is recognized based on historical experience, specific warranty terms and customer feedback. These costs are recorded within Cost of goods sold in our consolidated statements of income.

Warranty liabilities are included in Other current liabilities and Other long-term liabilities in the consolidated balance sheets. Change in our warranty liability were as follows (in millions):

	2021	2020	2019
January 1	$ 9.8	$ 9.0	$ 10.1
Provision for warranty	14.8	9.4	9.9
Actual warranty costs	(11.9)	(8.6)	(11.0)
December 31	$ 12.7	$ 9.8	$ 9.0

Shipping and Handling

We classify all freight costs billed to customers as Net sales. Related freight costs are recognized upon transfer of control of the promised products to customers as a fulfillment cost and included in Cost of goods sold.

Research and Development

All research and development costs are expensed as incurred. Types of expense incurred in research and development include materials and supplies, employee compensation, consulting and third-party services, depreciation, facility costs and information technology.

Foreign Currency

Balance sheet accounts of international subsidiaries are translated at the current exchange rates as of the end of each accounting period. Income statement items are translated at average exchange rates for the period. The resulting translation adjustments are recorded as a separate component of stockholders' equity.

Foreign currency transaction gains and losses are included in Foreign exchange losses, net in the consolidated statements of income. Transaction gains and losses result primarily from fluctuations in exchange rates when intercompany receivables and payables are denominated in currencies other than the functional currency of our subsidiary that recorded the transaction.

Forward Foreign Exchange Contracts

As part of distributing our products, we regularly enter into intercompany transactions. We enter into forward foreign exchange contracts to manage foreign exchange risk of future movements in exchange rates that affect foreign currency denominated intercompany receivables and payables. We do not use derivative financial instruments for speculative or trading purposes, nor do we seek hedge accounting treatment for any of our contracts. As a result, these contracts, generally with maturity dates of 90 days or less and denominated primarily in currencies of industrial countries, are recorded as an asset or liability measured at their fair value at each balance sheet date. The resulting gains or losses offset exchange gains or losses, on the related receivables and payables, all of which are recorded in Foreign exchange losses, net in the consolidated statements of income. We classify the proceeds from (payments for) forward foreign exchange contracts as cash flows from operating activities in our consolidated statements of cash flows.

Share-Based Compensation Plans

Share-based compensation expense for all share-based payment awards granted is determined based on the grant-date fair value. We recognize these compensation costs over the requisite service period of the award, which is generally the vesting term of the share-based payment awards. Forfeitures are recognized as they occur. These plans are described more fully in Note 9.

Earnings Per Share

Basic earnings per share is computed by dividing net income attributable to Bio-Rad by the weighted average number of common shares outstanding for that period. Diluted earnings per share takes into account the effect of dilutive instruments, such as stock options and restricted stock, and uses the average share price for the period in determining the number of potential common shares that are to be added to the weighted average number of shares outstanding. Potential common shares are excluded from the diluted earnings per share calculation if the effect of including such securities would be anti-dilutive.

The weighted average number of common shares outstanding used to calculate basic and diluted earnings per share, and the anti-dilutive shares that are excluded from the diluted earnings per share calculation are as follows (in thousands):

	Year Ended December 31,		
	2021	**2020**	**2019**
Basic weighted average shares outstanding	29,831	29,768	29,843
Effect of potentially dilutive stock options and restricted stock awards	377	392	341
Diluted weighted average common shares	30,208	30,160	30,184
Anti-dilutive stock options and restricted stock awards excluded from the computation of diluted EPS	33	44	98

Fair Value of Financial Instruments

For certain financial instruments, including cash and cash equivalents, short-term investments, accounts receivable, marketable securities, notes payable, accounts payable and foreign exchange contracts, the carrying amounts approximate fair value.

The estimated fair value of financial instruments is based on the exchange price that would be received for an asset or paid to transfer a liability (an exit price) using available market information or other appropriate valuation methodologies in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants. Estimates are not necessarily indicative of the amounts that could be realized in a current market exchange as considerable judgment is required in interpreting market data used to develop estimates of fair value. The use of different market assumptions or estimation techniques could have a material effect on the estimated fair value (see Note 3).

Equity Investments

Investments in publicly traded companies in which we do not have the ability to exercise significant influence are reported at fair value, with unrealized gains and losses reported as a component of change in fair market value of equity and debt securities in our consolidated statements of income. Companies in which we do not have a controlling financial interest, but over which we have significant influence, are accounted for using the equity method. Our share of the after-tax earnings of equity method investees is included in other income, net in our consolidated statements of income. Investments in privately held companies in which we do not have the ability to exercise significant influence are accounted for using the cost method with adjustments for observable changes in price or impairments (see Note 3). We monitor our relationships with investees when changes occur that could affect whether we have the ability to exercise significant influence.

Recent Accounting Pronouncements Adopted

In March 2020, the FASB issued ASU No. 2020-04, "Facilitation of the Effects of Reference Rate Reform on Financial Reporting." The ASU provides optional expedients and exceptions for applying GAAP to transactions affected by reference rate (e.g., LIBOR) reform if certain criteria are met, for a limited period of time to ease the potential burden in accounting for (or recognizing the effects of) reference rate reform on financial reporting. The ASU is effective as of March 12, 2020 through December 31, 2022. We will evaluate transactions or contract modifications occurring as a result of reference rate reform and determine whether to apply the optional guidance on an ongoing basis. The ASU has not and is currently not expected to have a material impact on our consolidated financial statements.

In January 2020, the FASB issued ASU 2020-01, "Clarifying the Interactions between Topic 321 Investments—Equity Securities, Topic 323 Investments—Equity Method and Joint Ventures, and Topic 815 Derivatives and Hedging." ASU 2020-01 clarifies that a company should consider observable transactions that require a company to either apply or discontinue the equity method of accounting under Topic 323 for the purposes of applying the measurement alternative in accordance with Topic 321 immediately before applying or upon discontinuing the equity method. ASU 2020-01 also clarifies that, when determining the accounting for certain forward contracts and purchased options a company should not consider, whether upon settlement or exercise, if the underlying securities would be accounted for under the equity method or fair value option. ASU 2020-01 was effective for fiscal years beginning after December 15, 2020. The adoption of ASU 2020-01 did not have a material impact on our consolidated financial statements.

In December 2019, the FASB issued ASU 2019-12, "Simplifying the Accounting for Income Taxes," which eliminates certain exceptions within ASC 740, Income Taxes, and clarifies other aspects of the current guidance to promote consistency among reporting entities. ASU 2019-12 was effective for fiscal years beginning after December 15, 2020, with any adjustments reflected as of January 1, 2021. The adoption of ASU 2019-12 did not have a material impact on our consolidated financial statements.

Recent Accounting Pronouncements to be Adopted

In November 2021, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2021-10, "Government Assistance." The ASU includes tax credits but not within Topic 740, "Income Taxes," cash grants, grants of other assets and project grants. The ASU excludes transactions in which a government is a customer within Topic 606, "Revenue from Contracts with Customers." The ASU will be effective for fiscal years beginning after December 15, 2021, with early adoption permitted. We will not early adopt this ASU. We are currently evaluating the effect of adopting this pronouncement on our financial statements and disclosures.

In October 2021, the FASB issued ASU 2021-08, "Accounting for Contract Assets and Contract Liabilities from Contracts with Customers." ASU 2021-08 requires an acquirer in a business combination to recognize and measure contract assets and contract liabilities (deferred revenue) from acquired contracts using the revenue recognition guidance in Topic 606. Under this approach, the acquirer applies the revenue model as if it had originated the contracts. This is a departure from the current requirement to measure contract assets and contract liabilities at fair value. ASU 2021-08 is applied to business combinations occurring on or after January 1, 2023. We early adopted ASU 2021-08 on January 1, 2022.

2. ACQUISITIONS AND DIVESTITURES

ACQUISITIONS

Dropworks Acquisition:

On October 15, 2021 (the "Acquisition Date"), we acquired all equity interests of Dropworks, Inc. ("Dropworks") for a total consideration of $125.5 million.

Dropworks is a development stage company focused on developing a digital PCR product. The strategic rationale for the transaction was to address additional opportunities in the PCR market. We believe this acquisition will complement our Life Science product offerings. The acquisition was included in our Life Science segment's results of operations from the Acquisition Date. The amount of acquisition-related costs was not material.

Dropworks met the definition of a business, and therefore is accounted for as a business combination.

The following table summarizes the final fair values of the assets acquired and liabilities assumed at the Acquisition Date (in millions):

	Fair Value
Intangible assets	$ 83.6
Deferred tax assets	5.6
Deferred tax liabilities	(19.5)
Other identifiable assets acquired, net	0.4
Net identifiable assets acquired	70.1
Goodwill	55.4
Net assets acquired	$ 125.5

Goodwill related to the acquisition is primarily attributable to the opportunities in the digital PCR market from combining the know-how and technologies of Bio-Rad and Dropworks, and is not deductible for tax purposes.

The following table summarizes the final fair values and estimated useful life of the components of identifiable intangible assets acquired as of the Acquisition Date (in millions):

	Fair Value	Estimated Useful Life (years)
Covenants not to compete	$ 1.9	4.7
In-process research and development	81.7	
Total identifiable intangible assets acquired	$ 83.6	

The acquired covenants not to compete are being amortized over its estimated useful life using the straight-line method of amortization, which is the term based on the legal rights associated with the covenants not to compete asset. Amortization of the acquired covenants not to compete of $0.1 million, during the year ended December 31, 2021, is included in Selling, general and administrative expense in the consolidated statements of income.

In-process research and development (IPR&D) is accounted for as an indefinite-lived asset. Once the project is completed, the carrying value of the IPR&D will be amortized over the estimated useful life of the asset. IPR&D is assessed for impairment on an annual basis until the project is completed.

We believe the values of acquired intangible assets reported above represent their fair values and approximate the amounts a market participant would pay for these intangible assets as of the Acquisition Date.

We included Dropworks' estimated fair value of assets acquired and liabilities assumed in our consolidated balance sheets beginning on the Acquisition Date. The results of operations for Dropworks subsequent to the Acquisition Date have been included in, but are immaterial to, our consolidated statements of income for the year ended December 31, 2021. Pro forma results of operations for the Dropworks acquisition have not been presented because they are not material to the consolidated statements of income.

Celsee Acquisition:

On April 1, 2020 (the "Acquisition Date"), we acquired all equity interests of Celsee, Inc. ("Celsee") for total consideration of $99.3 million (as described in the table below), including the estimated fair value of contingent consideration. The contingent consideration of up to $60.0 million is payable in cash, upon the achievement of certain net revenues for the period beginning on January 1, 2021 and ending on December 31, 2022.

Celsee is a manufacturer of instruments and consumables for the isolation, detection, and analysis of single cells. We believe this acquisition will complement our Life Science product offerings. The acquisition was included in our Life Science segment's results of operations from the Acquisition Date. The amount of acquisition-related costs was minimal as Bio-Rad primarily represented itself during the acquisition process.

Celsee met the definition of a business, and therefore is accounted for as a business combination.

The fair value of consideration transferred for the Celsee acquisition consists of the following (in millions):

Purchase price (cash)	$	99.2
Fair value of contingent consideration (earn-out)		0.1
Fair value of total consideration transferred	$	99.3

The following table summarizes the final fair values of the assets acquired and liabilities assumed at the Acquisition Date (in millions):

	Fair Value
Cash and cash equivalents	$ 0.6
Intangible assets	79.9
Deferred tax assets	8.4
Deferred tax liabilities	(19.7)
Other identifiable assets acquired, net	0.3
Net identifiable assets acquired	69.5
Goodwill	29.8
Net assets acquired	$ 99.3

Goodwill related to the acquisition is primarily attributable to opportunities and economies of scale from combining the operations and technologies of Bio-Rad and Celsee, and is not deductible for tax purposes.

The following table summarizes the final fair values and estimated useful lives of the components of identifiable intangible assets acquired as of the Acquisition Date (in millions):

	Fair Value	Estimated Useful Life (years)
Developed product technology	$ 70.3	18.9
Customer relationships	3.6	4.0
Covenants not to compete	1.4	3.0
In-process research and development	4.6	
Total identifiable intangible assets acquired	$ 79.9	

Intangible assets acquired as a result of the Celsee acquisition are being amortized over their estimated useful lives using the straight-line method of amortization, which materially approximates the distribution of the economic value of the identified intangible assets. Amortization of acquired developed technology of $3.7 million and $2.8 million for the years ended December 31, 2021 and December 31, 2020, respectively, are included in Cost of goods sold in the consolidated statements of income. Amortization of the acquired customer relationships of $0.9 million and $0.7 million and covenants not to compete of $0.5 million and $0.4 million for the years ended December 31, 2021 and December 31, 2020, respectively, are included in Selling, general and administrative expense in the consolidated statements of income.

In-process research and development (IPR&D) is accounted for as an indefinite-lived asset. Once the project is completed, the carrying value of the IPR&D will be amortized over the estimated useful life of the asset. IPR&D is assessed for impairment on an annual basis until the project is completed.

We believe the values of acquired intangible assets reported above represent their fair values and approximate the amounts a market participant would pay for these intangible assets as of the Acquisition Date.

We included Celsee's fair value of assets acquired and liabilities assumed in our consolidated balance sheets beginning on the Acquisition Date. The results of operations for Celsee subsequent to the Acquisition Date have been included in, but are immaterial to, our consolidated statements of income for the years ended. Pro forma results of operations for the Celsee acquisition have not been presented because they are not material to the consolidated statements of income.

DIVESTITURE

Informatics Divestiture:

In April 2020, we received $12.2 million for the sale of our Informatics division, which focused on providing and developing comprehensive, high-quality spectral databases and associated software. The division was part of our Other Operations segment. In connection with this sale, we recorded an $11.7 million gain in Other income, net, in the consolidated statements of income for the year ended December 31, 2020.

3. FAIR VALUE MEASUREMENTS AND INVESTMENTS

We determine the fair value of an asset or liability based on the assumptions that market participants would use in pricing the asset or liability in an orderly transaction between market participants at the measurement date. The identification of market participant assumptions provides a basis for determining what inputs are to be used for pricing each asset or liability. A fair value hierarchy has been established which gives precedence to fair value measurements calculated using observable inputs over those using unobservable inputs. This hierarchy prioritizes the inputs into three broad levels as follows:

- Level 1: Quoted prices in active markets for identical instruments
- Level 2: Other significant observable inputs (including quoted prices in active markets for similar instruments)
- Level 3: Significant unobservable inputs (including assumptions in determining the fair value of certain investments)

Financial assets and liabilities carried at fair value and measured on a recurring basis as of December 31, 2021 are classified in the hierarchy as follows (in millions):

	Level 1	Level 2	Level 3	Total
Financial assets carried at fair value:				
Cash equivalents:				
Commercial paper	$ —	$ 39.8	$ —	$ 39.8
Time deposits	7.2	10.1	—	17.3
Asset-backed securities	—	0.1	—	0.1
Foreign Govt Obligations	—	0.8	—	0.8
Municipals obligations	—	0.3	—	0.3
U.S. government sponsored agencies	—	33.6	—	33.6
Money market funds	50.7	—	—	50.7
Total cash equivalents (a)	57.9	84.7	—	142.6
Restricted investments (b)	6.9	—	—	6.9
Equity Securities (c)	13,977.5	—	—	13,977.5
Loan under the fair value option (d)	—	—	443.1	443.1
Available-for-sale investments:				
Corporate debt securities	—	182.3	—	182.3
U.S. government sponsored agencies	—	44.3	—	44.3
Foreign government obligations	—	1.0	—	1.0
Other foreign obligations	—	3.8	—	3.8
Municipal obligations	—	9.0	—	9.0
Asset-backed securities	—	87.3	—	87.3
Total available-for-sale investments (e)	—	327.7	—	327.7
Forward foreign exchange contracts (f)	—	1.7	—	1.7
Total financial assets carried at fair value	$ 14,042.3	$ 414.1	$ 443.1	$ 14,899.5
Financial liabilities carried at fair value:				
Forward foreign exchange contracts (g)	$ —	$ 2.8	$ —	$ 2.8

Financial assets and liabilities carried at fair value and measured on a recurring basis as of December 31, 2020 are classified in the hierarchy as follows (in millions):

	Level 1	Level 2	Level 3	Total
Financial assets carried at fair value:				
Cash equivalents:				
Commercial paper	$ —	$ 41.7	$ —	$ 41.7
Time deposits	17.6	10.0	—	27.6
Asset-backed securities	—	0.9	—	0.9
U.S. government sponsored agencies	—	$ 2.5	—	2.5
Money market funds	60.1	—	—	60.1
Total cash equivalents (a)	77.7	55.1	—	132.8
Restricted investments (b)	6.7	—	—	6.7
Equity securities (c)	9,582.4	—	—	9,582.4
Available-for-sale investments:				
Corporate debt securities	—	133.2	—	133.2
U.S. government sponsored agencies	—	76.9	—	76.9
Foreign government obligations	—	4.0	—	4.0
Other foreign obligations	—	2.1	—	2.1
Municipal obligations	—	15.2	—	15.2
Asset-backed securities	—	36.2	—	36.2
Total available-for-sale investments (e)	—	267.6	—	267.6
Forward foreign exchange contracts (f)	—	1.0	—	1.0
Total financial assets carried at fair value	$ 9,666.8	$ 323.7	$ —	$ 9,990.5
Financial liabilities carried at fair value:				
Forward foreign exchange contracts (g)	$ —	$ 1.0	$ —	$ 1.0
Contingent consideration (h)	—	—	0.7	0.7
Total financial liabilities carried at fair value	$ —	$ 1.0	$ 0.7	$ 1.7

(a) Cash equivalents are included in Cash and cash equivalents in the consolidated balance sheets.

(b) Restricted investments are included in the following accounts in the consolidated balance sheets (in millions):

	December 31, 2021	December 31, 2020
Restricted investments	$ 5.6	$ 5.6
Other investments	1.3	1.1
Total	$ 6.9	$ 6.7

(c) Equity securities are included in the following accounts in the consolidated balance sheets (in millions):

	December 31, 2021	December 31, 2020
Short-term investments	$ 71.4	$ 61.4
Other investments	13,906.1	9,521.0
Total	$ 13,977.5	$ 9,582.4

(d) The Loan under the fair value option is included in Other investments in the consolidated balance sheets.

(e) Available-for-sale investments are included in the following accounts in the consolidated balance sheets (in millions):

	December 31, 2021	December 31, 2020
Short-term investments	$ 327.7	$ 267.5
Other investments	—	0.1
Total	$ 327.7	$ 267.6

(f) Forward foreign exchange contracts in an asset position are included in other current assets in the consolidated balance sheets.

(g) Forward foreign exchange contracts in a liability position are included in other current liabilities in the consolidated balance sheets.

(h) Contingent consideration liabilities in a liability position are included in the other long-term liabilities in the consolidated balance sheets.

Level 1 Fair Value Measurements

As of December 31, 2021, we own 12,987,900 ordinary voting shares and 9,588,908 preference shares of Sartorius AG (Sartorius), of Goettingen, Germany, a process technology supplier to the biotechnology, pharmaceutical, chemical and food and beverage industries. We did not purchase any incremental shares for the years ended December 31, 2021 and 2020. We own approximately 37% of the outstanding ordinary shares (excluding treasury shares) and 28% of the preference shares of Sartorius as of December 31, 2021. The Sartorius family trust (Sartorius family members are beneficiaries of the trust) holds a majority interest of the outstanding ordinary shares of Sartorius. We do not have the ability to exercise significant influence over the operating and financial policies of Sartorius primarily because we do not have any representative or designee on Sartorius' board of directors and have tried and failed to obtain access to operating or financial information necessary to apply the equity method of accounting.

The change in fair market value on our investment in Sartorius AG for the year ended December 31, 2021 was $4.92 billion gain and is recorded in our consolidated statements of income.

Level 2 Fair Value Measurements

To estimate the fair value of Level 2 debt securities as of December 31, 2021 and 2020, we used Refinitiv as the primary pricing source. Our pricing process allows us to select a hierarchy of pricing sources for securities held. If Refinitiv does not price a Level 2 security that we hold, then the pricing provider will utilize our custodian supplied pricing as the secondary pricing source.

Available-for-sale investments consist of the following (in millions):

	December 31, 2021				
	Amortized Cost	Unrealized Gains	Unrealized Losses	Allowances for Credit Losses	Estimated Fair Value
Short-term investments:					
Corporate debt securities	$ 181.9	$ 0.5	$ (0.2)	—	$ 182.2
Municipal obligations	9.0	—	—	—	9.0
Asset-backed securities	87.5	0.1	(0.2)	—	87.4
U.S. government sponsored agencies	44.3	—	—	—	44.3
Foreign government obligations	1.0	—	—	—	1.0
Other foreign obligations	3.8	—	—	—	3.8
	327.5	0.6	(0.4)	—	327.7
Long-term investments:					
Asset-backed securities	—	—	—	—	—
	—	—	—	—	—
Total	$ 327.5	$ 0.6	$ (0.4)	$ —	$ 327.7

The following is a summary of the amortized cost and estimated fair value of our debt securities at December 31, 2021 by contractual maturity date (in millions):

	Amortized Cost	Estimated Fair Value
Mature in less than one year	$ 135.5	$ 135.5
Mature in one to five years	153.7	153.9
Mature in more than five years	38.3	38.3
Total	$ 327.5	$ 327.7

Available-for-sale investments consist of the following (in millions):

	December 31, 2020			
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value
Short-term investments:				
Corporate debt securities	$ 130.5	$ 2.7	$ —	$ 133.2
Municipal obligations	15.0	0.2	—	15.2
Asset-backed securities	35.8	0.3	—	36.1
U.S. government sponsored agencies	74.7	2.2	—	76.9
Foreign government obligations	4.0	—	—	4.0
Other foreign obligations	2.1	—	—	2.1
	262.1	5.4	—	267.5
Long-term investments:				
Asset-backed securities	0.1	—	—	0.1
	0.1	—	—	0.1
Total	$ 262.2	$ 5.4	$ —	$ 267.6

There were no significant unrealized losses as of December 31, 2021 and December 31, 2020 in either the less than or greater than 12 month categories.

Our evaluation of credit losses for available-for-sale debt securities included the extent to which the fair value is less than the amortized cost basis, adverse conditions specifically related to the debt security, an industry or geographic area, and any changes in the rating of a security by a rating agency. Credit loss impairments are limited to the amount that the fair value of an instrument is less than its amortized cost basis.

At December 31, 2021, we have concluded that all payments related to our available-for-sale investments are expected to be made in full and on time at par value. The diminution of value in the intervening period is due to market conditions such as illiquidity and interest rate movements and not due to significant, inherent credit concerns surrounding the issuer. As a result, we have no allowances for credit losses on our available-for-sale investments portfolio as of December 31, 2021.

Included in other current assets are $2.2 million and $1.4 million of interest receivable as of December 31, 2021 and December 31, 2020, respectively, primarily associated with securities in our available-for-sale investments portfolio. Associated interest on these securities is typically payable semi-annually. Due to the short-term nature of our interest receivable asset, we have made an accounting policy election not to measure an allowance for credit losses for accrued interest receivable. We consider any uncollected interest receivable that is overdue greater than one year to be impaired for purposes of write-off. For the year ended December 31, 2021, we have not written-off any uncollected interest receivable.

As part of distributing our products, we regularly enter into intercompany transactions. We enter into forward foreign exchange contracts to manage foreign exchange risk of future movements in foreign exchange rates that affect foreign currency denominated intercompany receivables and payables. We do not use derivative financial instruments for speculative or trading purposes. We do not seek hedge accounting treatment for these contracts. As a result, these contracts, generally with maturity dates of 90 days or less and denominated primarily in currencies of industrial countries, are recorded at their fair value at each balance sheet date. The notional principal amounts provide one measure of the transaction volume outstanding as of December 31, 2021 and do not represent the amount of Bio-Rad's exposure to loss. The estimated fair value of these contracts was derived using the spot rates from Refinitiv on the last business day of the quarter and the points provided by counterparties. The resulting gains or losses offset exchange gains or losses on the related receivables and payables, both of which are included in foreign exchange losses, net in the consolidated statements of income.

The following is a summary of our forward foreign currency exchange contracts (in millions):

	December 31, 2021	
Contracts maturing in January through March 2022 to sell foreign currency:		
Notional value	$	125.0
Unrealized gain/(loss)	$	1.0
Contracts maturing in January through March 2022 to purchase foreign currency:		
Notional value	$	453.1
Unrealized gain/(loss)	$	(2.1)

Included in other investments in the consolidated balance sheet are investments without readily determinable fair value measured at cost with adjustments for observable price changes or impairments. The carrying value of these investments was $6.5 million and $0.5 million as of December 31, 2021 and December 31, 2020, respectively.

Also included in other investments in the consolidated balance sheet are our equity method investments, for which our share of the equity method investees earnings is included in other income, net in our consolidated statements of income. The carrying value of these investments was $59.1 million and $38.4 million as of December 31, 2021 and December 31, 2020, respectively.

Level 3 Fair Value Investments

During the fourth quarter of 2021, we extended a collateralized loan to SHB with a principal amount of €400 million due at the latest on January 31, 2029, subject to certain events which could trigger payment prior to maturity (the "Loan"). The Loan proceeds will be used by SHB to partially finance the acquisition of interests under the Sartorius family trust ("Trust") from a beneficiary of the Trust. Interest on the loan is payable annually in arrears at 1.5% per annum, and the entire principal amount is due at maturity. In addition to contractual interest, we are entitled to certain value appreciation rights associated with the acquired Trust interests, which upon termination of the Trust represent the right to receive Sartorius ordinary shares, that is due upon repayment of the Loan. We elected the fair value option under ASC 825, Financial Instruments for accounting of the Loan to SHB to simplify the accounting. The fair value of the Loan and value appreciation right is estimated under the income approach using a discounted cash flow, and option pricing model, respectively, which results in a fair value measurement categorized in Level 3. The significant assumptions used to estimate fair value of the Loan include an estimate of the discount rate and cash flows of the Loan and the significant assumptions used to estimate the fair value of the value appreciation right include volatility, the risk-free interest rate, expected life (in years) and expected dividend. The inputs are subject to estimation uncertainty and actual amounts realized may materially differ. An increase in the expected volatility may result in a significantly higher fair value, whereas a decrease in expected life may result in a significantly lower fair value. All subsequent changes in fair value of the Loan and value appreciation right, including accrued interest are recognized in Change in fair value of equity and debt securities in our consolidated statements of income. The overall change in fair value reflected in Change in fair value of equity and debt securities during the year ended December 31, 2021 was $10.8 million.

The following table provides a reconciliation of the Level 3 Loan measured at estimated fair value (in millions):

December 31, 2020	$	—
Purchases	$	453.4
Net decrease in estimated fair value of the Loan included in Change in fair value of equity and debt securities	$	(10.3)
Settlements	$	—
December 31, 2021	$	443.1

4. GOODWILL AND OTHER PURCHASED INTANGIBLE ASSETS

Changes to goodwill by segment were as follows (in millions):

	2021			2020		
	Life Science	Clinical Diagnostics	Total	Life Science	Clinical Diagnostics	Total
Balances as of January 1:						
Goodwill	$ 277.9	$ 349.2	$ 627.1	$ 250.1	$ 349.2	$ 599.3
Accumulated impairment losses and write-offs	(41.8)	(293.4)	(335.2)	(41.8)	(293.4)	(335.2)
Goodwill, net	236.1	55.8	291.9	208.3	55.8	264.1
Acquisitions (see Note 2)	55.4	—	55.4	29.8	—	29.8
Other adjustments	—	—	—	(2.0)	—	(2.0)
Period increase	55.4	—	55.4	27.8	—	27.8
Balances as of December 31:						
Goodwill	333.3	349.2	682.5	277.9	349.2	627.1
Accumulated impairment losses and write-offs	(41.8)	(293.4)	(335.2)	(41.8)	(293.4)	(335.2)
Goodwill, net	$ 291.5	$ 55.8	$ 347.3	$ 236.1	$ 55.8	$ 291.9

During the year ended December 31, 2020, goodwill for a U.S. private company acquired in March 2019 was decreased by $2.0 million due to the release from an escrow account setup during our acquisition, which should have been classified as a prepaid asset in the opening balance sheet as of acquisition date.

Information regarding our identifiable purchased intangible assets with finite and indefinite lives is as follows (in millions):

	December 31, 2021			
	Weighted-Average Amortization Period (years)	Purchase Price	Accumulated Amortization	Net Carrying Amount
Customer relationships/lists	5.27	$ 111.8	$ (90.7)	$ 21.1
Know how	3.75	171.6	(154.9)	16.7
Developed product technology	13.42	215.6	(115.6)	100.0
Licenses	6.79	64.9	(40.6)	24.3
Tradenames	7.33	6.3	(4.4)	1.9
Covenants not to compete	3.78	6.5	(2.9)	3.6
Total finite-lived intangible assets		576.7	(409.1)	167.6
In-process research and development		86.3	—	86.3
Total purchased intangible assets		$ 663.0	$ (409.1)	$ 253.9

	December 31, 2020			
	Weighted-Average Amortization Period (years)	Purchase Price	Accumulated Amortization	Net Carrying Amount
Customer relationships/lists	5.51	$ 116.6	$ (87.2)	$ 29.4
Know how	4.75	196.6	(175.4)	21.2
Developed product technology	14.00	218.1	(107.1)	111.0
Licenses	7.73	65.6	(37.4)	28.2
Tradenames	7.82	6.6	(4.2)	2.4
Covenants not to compete	3.87	4.5	(2.0)	2.5
Other	—	0.1	(0.1)	—
Total finite-lived intangible assets		608.1	(413.4)	194.7
In-process research and development		4.8	—	4.8
Total purchased intangible assets		$ 612.9	$ (413.4)	$ 199.5

Amortization expense related to purchased intangible assets for the years ended December 31, 2021, 2020 and 2019 was $28.4 million, $27.5 million and $23.5 million, respectively. Estimated future amortization expense (based on existing purchased finite-lived intangible assets) for the years ending December 31, 2022, 2023, 2024, 2025, 2026 and thereafter is $25.4 million, $23.9 million, $21.0 million, $19.0 million, $14.0 million, and $64.3 million, respectively.

No impairment losses related to goodwill and purchased intangibles were recorded in 2021 and 2020.

5. NOTES PAYABLE AND LONG-TERM DEBT

The principal components of long-term debt are as follows (in millions):

	December 31, 2021	December 31, 2020
Finance leases and other debt	11.0	14.1
Less current maturities	(0.5)	(1.8)
Long-term debt	$ 10.5	$ 12.3

Under domestic and international lines of credit, standby letters of credit and guarantee arrangements, we had $208.4 million available for borrowing and usage as of December 31, 2021, which was reduced by $4.7 million that was utilized for standby letters of credit and guarantee arrangements issued by our banks to support our obligations.

Credit Agreement

In April 2019, Bio-Rad entered into a $200.0 million unsecured revolving credit facility ("Credit Agreement"). Borrowings under the Credit Agreement are on a revolving basis and can be used to make permitted acquisitions, for working capital and for other general corporate purposes. In November 2021, Bio-Rad entered into Amendment No. 1 (“Amendment”) to the Credit Agreement to add LIBOR replacement language, expand the definition of EBITDA, and increase certain financial baskets in the Credit Agreement. We had no outstanding borrowings under the Credit Agreement as of December 31, 2021; however, $0.2 million was utilized for domestic standby letters of credit that reduced our borrowing availability as of December 31, 2021. The Credit Agreement matures in April 2024. If we had borrowed against our Credit Agreement, the borrowing rate would have been 1.334% at December 31, 2021, which is based on the 3-month LIBOR.

The Credit Agreement requires Bio-Rad to comply with certain financial ratios and covenants, among other things. These ratios and covenants include a leverage ratio test and an interest coverage test, as well as certain restrictions on our ability to declare or pay dividends, incur debt, guarantee debt, enter into transactions with affiliates, merge or consolidate, sell assets, make investments and create liens. We were in compliance with all of these ratios and covenants as of December 31, 2021 and 2020.

Maturities of finance leases and other debt at December 31, 2021 were as follows: 2022 - $0.5 million; 2023 - $0.5 million; 2024 - $0.5 million; 2025 - $0.4 million; 2026 - $0.5 million; and 2027 and thereafter - $8.6 million.

6. INCOME TAXES

The U.S. and international components of income before taxes are as follows (in millions):

	Year Ended December 31,		
	2021	2020	2019
U.S.	$ 2,930.8	$ 2,339.7	$ 1,034.0
International	2,507.3	2,567.9	1,227.1
Income before taxes	$ 5,438.1	$ 4,907.6	$ 2,261.1

The provision for income taxes consists of the following (in millions):

	Year Ended December 31,		
	2021	2020	2019
Current tax expense:			
U.S. Federal	$ 72.4	$ 69.9	$ 13.0
State	9.2	12.0	4.4
International	32.6	22.3	23.5
Current tax expense	114.2	104.2	40.9
Deferred tax expense:			
U.S. Federal	981.3	893.5	409.7
State	68.9	54.0	24.4
International	32.1	31.5	16.1
Deferred tax expense	1,082.3	979.0	450.2
Non-current tax expense (benefit)	(4.3)	18.2	11.3
Provision for income taxes	$ 1,192.2	$ 1,101.4	$ 502.4

The reconciliation between our effective tax rate on income before taxes and the statutory tax rate is as follows:

	Year Ended December 31,		
	2021	2020	2019
U. S. statutory tax rate	21.0 %	21.0 %	21.0 %
Impact of foreign operations	(8.6)	(9.9)	(9.7)
U.S. taxation of foreign income	8.9	10.2	10.3
State taxes	1.3	1.1	1.0
Other	(0.7)	—	(0.4)
Provision for income taxes	21.9 %	22.4 %	22.2 %

On December 22, 2017, the U.S. enacted comprehensive tax legislation (the "Tax Act"). The Tax Act made broad and complex changes to the U.S. tax code, including the imposition of a one-time mandatory deemed repatriation tax ("Transition Tax") on certain earnings accumulated offshore since 1986 and the reduction of the corporate tax rate from 35% to 21% for U.S. taxable income, resulting in a one-time remeasurement of U.S. federal deferred tax assets and liabilities.

Our effective income tax rates were 21.9%, 22.4% and 22.2% for the years ended December 31, 2021, 2020 and 2019, respectively. The effective tax rates for the years ended December 31, 2021, 2020 and 2019 were driven by the unrealized gain in equity securities that is taxed at approximately 22% as well as the geographic mix of earnings and the taxation of our foreign earnings.

Many jurisdictions in which we operate have statutory tax rates that differ from the U.S. statutory tax rate of 21%. Our effective tax rate is impacted, either favorably or unfavorably, by many factors including, but not limited to the jurisdictional mix of income before tax, changes to statutory tax rates, changes in tax laws or regulations, tax audits and settlements, and generation of tax credits.

Deferred tax assets and liabilities reflect the tax effects of losses, credits, and temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for income tax purposes. Significant components of deferred tax assets and liabilities are as follows (in millions):

	December 31,	
	2021	2020
Deferred tax assets:		
Bad debt, inventory and warranty accruals	$ 32.0	$ 29.6
Other post-employment benefits, vacation and other reserves	23.8	29.8
Tax credit and net operating loss carryforwards	104.5	93.5
Lease obligations	46.6	49.3
Other	64.8	44.8
Total gross deferred tax assets	271.7	247.0
Valuation allowance	(46.4)	(44.6)
Total deferred tax assets	225.3	202.4
Deferred tax liabilities:		
Property and equipment	35.0	37.0
Lease assets	44.5	46.8
Investments and intangible assets	3,155.7	2,143.4
Total deferred tax liabilities	3,235.2	2,227.2
Net deferred tax liabilities	$ (3,009.9)	$ (2,024.8)

The realization of deferred tax assets is dependent upon the generation of sufficient taxable income of the appropriate character in future periods. We regularly assess our ability to realize our deferred tax assets and establish a valuation allowance if it is more likely than not that some portion, or all, of our deferred tax assets will not be realized. In assessing the realizability of our deferred tax assets, we weigh all available positive and negative evidence. Due to the weight of objectively verifiable negative evidence, we believe that it is more likely than not that certain of our state and foreign deferred tax assets will not be realized as of December 31, 2021, and have maintained a valuation allowance on such deferred tax assets. The valuation allowance against our deferred tax assets in certain states and foreign jurisdictions increased by $1.8 million for the year ended December 31, 2021. The valuation allowance for deferred tax assets is as follows (in millions):

	December 31,		
	2021	2020	2019
Beginning balance	$ 44.6	$ 67.2	$ 70.8
Additions charged to expenses	1.8	—	—
Deductions from reserves	—	(22.6)	(3.6)
Ending balance	$ 46.4	$ 44.6	$ 67.2

As of December 31, 2021, our federal, state and foreign net operating loss carryforwards were approximately $40.0 million, $94.2 million and $297.4 million, respectively. Of our foreign net operating losses, $107.1 million may be carried forward indefinitely. The majority of the remaining foreign net operating losses, if not utilized, will begin to expire in 2025. Our federal and state net operating loss carryforwards, if not utilized, will begin to expire in 2028. As of December 31, 2021, our federal and state tax credit carryforwards were approximately $5.4 million and $38.1 million, respectively. Our federal tax credits, if not utilized, will begin to expire in 2029, and our state tax credits, generally, may be carried forward indefinitely.

Federal and state tax laws impose restrictions on the utilization of net operating loss and certain tax credit carryforwards in the event of a change in our ownership as defined by the Internal Revenue Code Sections 382 and 383. Under Section 382 and 383 of the Internal Revenue Code, substantial changes in our ownership and the ownership of acquired companies may limit the amount of net operating loss and research and development credit carryforwards that are available to offset taxable income. The annual limitation would not automatically result in the loss of net operating loss or research and development credit carryforwards but may limit the amount available in any given future period.

Our income tax returns are audited by U.S. federal, state and foreign tax authorities. We are currently under examination by many of these tax authorities. The tax years open to examination include the years 2012 and forward for the U.S. and certain foreign jurisdictions including France, Germany, India and Switzerland. There are differing interpretations of tax laws and regulations, and as a result, significant disputes may arise with these tax authorities involving issues of the timing and amount of deductions and allocations of income among various tax jurisdictions. We evaluate our exposures associated with our tax filing positions on a quarterly basis.

We record liabilities for unrecognized tax benefits related to uncertain tax positions. We do not believe any currently pending uncertain tax positions will have a material adverse effect on our consolidated financial statements, although an adverse resolution of one or more of these uncertain tax positions in any period may have a material impact on the results of operations for that period.

The following is a tabular reconciliation of the total amounts of unrecognized tax benefits (in millions):

	2021	2020	2019
Unrecognized tax benefits – January 1	$ 55.8	$ 39.2	$ 29.8
Additions to tax positions related to prior years	3.2	14.0	7.6
Reductions to tax positions related to prior years	(2.1)	(1.5)	(0.7)
Additions to tax positions related to the current year	18.1	3.4	3.0
Settlements	(2.4)	—	—
Lapse of statute of limitations	(10.8)	(0.6)	(0.4)
Currency translation	0.1	1.3	(0.1)
Unrecognized tax benefits – December 31	$ 61.9	$ 55.8	$ 39.2

Bio-Rad recognizes accrued interest and penalties related to unrecognized tax benefits as income tax expense. Related to the unrecognized tax benefits noted above, the cumulative amount of accrued interest and penalties as of December 31, 2021, 2020 and 2019 was $11.8 million, $14.3 million and $11.2 million, respectively. Bio-Rad accrued interest and penalties of $(2.5) million, $2.8 million, and $1.7 million for the years ended December 31, 2021, 2020, and 2019, respectively. The total unrecognized tax benefits and interest and penalties of $73.6 million as of December 31, 2021 was partially offset by deferred tax assets of $1.6 million and prepaid taxes of $13.7 million, for a net amount of $58.3 million.

As of December 31, 2021, based on the expected outcome of certain examinations or as a result of the expiration of statutes of limitation for certain jurisdictions, we believe that within the next twelve months it is reasonably possible that our previously unrecognized tax benefits could decrease by approximately $20.8 million. Substantially all such amounts will impact our effective income tax rate if recognized.

It is generally our intention to repatriate certain foreign earnings to the extent that such repatriations are not restricted by local laws or accounting rules, and there are no substantial incremental costs. The determination of the amount of the unrecognized deferred tax liability for foreign earnings that are indefinitely reinvested is not practicable to estimate.

7. STOCKHOLDERS' EQUITY

Bio-Rad's issued and outstanding stock consists of Class A Common Stock (Class A) and Class B Common Stock (Class B). Each share of Class A and Class B participates equally in the earnings of Bio-Rad, and is identical in all respects except as follows. Class A has limited voting rights. Each share of Class A is entitled to one tenth of a vote on most matters, and each share of Class B is entitled to one vote. Additionally, Class A stockholders are entitled to elect 25% of the directors, with Class B stockholders electing the remaining directors. Cash dividends may be paid on Class A shares without paying a cash dividend on Class B shares but no cash dividend may be paid on Class B shares unless at least an equal cash dividend is paid on Class A shares. Class B shares are convertible at any time into Class A shares on a one-for-one basis at the option of the stockholder. The founders of Bio-Rad, the Schwartz family, collectively hold a majority of Bio-Rad's voting stock. As a result, the Schwartz family is able to exercise significant influence over Bio-Rad.

Changes to Bio-Rad's issued common stock shares are as follows (in thousands):

	Class A Shares	Class B Shares
Balance at January 1, 2019	24,884	5,096
Class B to Class A conversions	24	(24)
Issuance of common stock	58	18
Balance at December 31, 2019	24,966	5,090
Class B to Class A conversions	32	(32)
Issuance of common stock	75	18
Balance at December 31, 2020	25,073	5,076
Class B to Class A conversions	16	(16)
Issuance of common stock	45	18
Balance at December 31, 2021	25,134	5,078

Treasury Shares

In November 2017, the Board of Directors authorized a share repurchase program, granting the Company authority to repurchase, on a discretionary basis, up to $250.0 million of outstanding shares of our common stock. In July 2020, the Board of Directors authorized increasing the Share Repurchase Program to allow the Company to repurchase up to an additional $200.0 million of stock. Repurchases may be made at management's discretion from time to time on the open market or through privately negotiated transactions. The share repurchase activity under

the share repurchase program through open market transactions for the years ended December 31, 2021, 2020 and 2019 are summarized as follows:

	Number of Shares Purchased	Weighted-Average Price per Share	Total Shares Repurchased To Date	Remaining Authorized Value (in millions)
May 1, 2019 - May 31, 2019	25,421	$ 291.70	218,571	$ 193.7
June 1, 2019 - June 30, 2019	25,977	$ 292.01	244,548	$ 186.1
August 1, 2019 - August 31, 2019	14,745	$ 339.05	259,293	$ 181.1
November 1, 2019 - November 30, 2019	22,343	$ 358.04	281,636	$ 173.1
March 1, 2020 - March 31, 2020	291,941	$ 342.55	573,577	$ 73.1
March 1, 2021 - March 31, 2021	89,506	$ 558.60	663,083	$ 223.1

For the years ended December 31, 2021 and 2020, we used 114,711 and 117,423, respectively, of the repurchased shares in connection with the vesting of restricted stock units. As of December 31, 2021, $223.1 million remained under the Share Repurchase Program.

8. *ACCUMULATED OTHER COMPREHENSIVE INCOME (LOSS)*

Accumulated other comprehensive income (loss) included in our consolidated balance sheets and consolidated statements of changes in stockholders' equity consists of the following components (in millions):

	Foreign currency translation adjustments	Foreign other post-employment benefits adjustments	Net unrealized holding gains (losses) on available-for-sale investments	Total Accumulated other comprehensive income (loss)
Balances as of January 1, 2020	$ (72.4)	$ (22.2)	$ 7.2	$ (87.4)
Other comprehensive (loss) income, before reclassifications	371.9	(5.3)	4.0	370.6
Amounts reclassified from Accumulated other comprehensive income	—	0.3	(0.6)	(0.3)
Income tax effects	(0.9)	1.2	(0.8)	(0.5)
Other comprehensive income (loss), net of income taxes	371.0	(3.8)	2.6	369.8
Balances as of December 31, 2020	$ 298.6	$ (26.0)	$ 9.8	$ 282.4
Other comprehensive income (loss), before reclassifications	(469.5)	17.9	(4.0)	(455.6)
Amounts reclassified from Accumulated other comprehensive income	—	0.3	(1.2)	(0.9)
Income tax effects	0.4	(3.1)	1.2	(1.5)
Other comprehensive income (loss), net of income taxes	(469.1)	15.1	(4.0)	(458.0)
Balances as of December 31, 2021	$ (170.5)	$ (10.9)	$ 5.8	$ (175.6)

All amounts reclassified out of accumulated other comprehensive income were reclassified into other income, net in the consolidated statements of income. Reclassification adjustments are calculated using the specific identification method.

9. SHARE-BASED COMPENSATION/EQUITY AWARD AND PURCHASE PLANS

Equity Award Plan

We have the 2017 Incentive Award Plan (2017 Plan) for officers and certain other employees. The 2017 Plan authorizes the grant of stock options, restricted stock, restricted stock units, and other types of equity awards to employees. Stock options are granted at exercise prices not less than the fair market value of the underlying common stock on the date of grant and have a maximum term of 10 years. We may issue stock options for either Class A or Class B common stock. Prior to September 2020, equity awards granted vest in increments of 20% per year on the yearly anniversary date of the grant. Starting in September 2020, equity awards granted vest in increments of 25% per year on the yearly anniversary date of the grant.

A total of 2,108,724 shares have been reserved for issuance of equity awards under the 2017 Plan and may be of either Class A or Class B common stock. At December 31, 2021, there were 1,377,044 shares available to be granted.

Employee Stock Purchase Plans

Our 2011 Employee Stock Purchase Plan (2011 ESPP) provides that eligible employees may contribute up to the greater of 10% of their compensation or $25,000 annually towards the quarterly purchase of our Class A common stock. The employees' purchase price is 85% of the lesser of the fair market value of the stock on the first business day or the last business day of each calendar quarter. We have authorized the sale of 1,300,000 shares of Class A common stock under the 2011 ESPP.

Share-Based Compensation

Included in our share-based compensation expense is the cost related to stock option grants, ESPP stock purchases and restricted stock unit awards. Share-based compensation expense is allocated in the consolidated statements of income as follows (in millions):

	Year ended December 31,		
	2021	2020	2019
Cost of goods sold	$ 4.9	$ 3.4	$ 2.9
Selling, general and administrative expense	38.0	31.8	27.9
Research and development expense	8.3	6.4	4.8
Share-based compensation expense	$ 51.2	$ 41.6	$ 35.6

The income tax benefit related to share-based compensation expense was $7.4 million, $6.0 million and $5.6 million for the years ended December 31, 2021, 2020 and 2019, respectively. We did not capitalize any share-based compensation expense as it was immaterial.

The tax benefit from equity awards vested or exercised during the years ended December 31, 2021, 2020 and 2019 was $18.5 million, $11.2 million and $5.4 million, respectively.

For equity awards, we amortize the fair value on a straight-line basis. All equity awards are amortized over the requisite service periods of the awards, which are generally the vesting periods. We recognize forfeitures as they occur.

Stock Options

The weighted-average fair value of stock options granted was estimated using a Black-Scholes option-pricing model with the following weighted-average assumptions:

	Year Ended December 31,		
	2021	2020	2019
Expected volatility	27 %	27 %	22 %
Risk-free interest rate	1.05 %	0.31 %	1.69 %
Expected life (in years)	7.3	7.4	7.5
Expected dividend	—	—	—
Weighted-average fair value of options granted	$ 251.93	$ 153.32	$ 93.96

Expected volatility is based on the historical volatilities of our common stock for a period equal to the stock option's expected life. The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of the grant. The expected life represents the number of years that we estimate, based primarily on historical experience, that the options will be outstanding prior to exercise. We do not anticipate paying any cash dividends in the future and therefore use an expected dividend yield of zero.

The following table summarizes stock option activity:

	Shares	Weighted-Average Exercise Price	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in millions)
Outstanding, December 31, 2020	285,123	$ 196.29		
Granted	16,004	$ 814.95		
Exercised	(50,686)	$ 144.01		
Forfeited	—	$ —		
Outstanding, December 31, 2021	250,441	$ 246.41	4.31	$ 128.5
Unvested, December 31, 2021	64,101	$ 493.51	7.59	$ 17.7
Exercisable, December 31, 2021	186,340	$ 161.41	3.18	$ 110.7

Intrinsic value for stock options is defined as the difference between the current market value and the exercise price. The total intrinsic value on the date of exercise of stock options exercised during the years ended December 31, 2021, 2020 and 2019 was $33.0 million, $24.4 million and $11.5 million, respectively.

Cash received from stock options exercised during the years ended December 31, 2021, 2020 and 2019 was $3.6 million, $3.8 million and $2.6 million, respectively.

As of December 31, 2021, there was $8.5 million of total unrecognized compensation expense from stock options. This amount is expected to be recognized in the future over a remaining weighted-average period of approximately three years.

Restricted Stock Units

Restricted stock units are rights to receive shares of company stock. The fair value of a restricted stock unit is the market value as determined by the closing price of the stock on the day of grant.

The following table summarizes restricted stock unit activity:

	Restricted Stock Units	Weighted-Average Grant-Date Fair Value	Weighted-Average Remaining Contractual Term (in years)	Aggregate Intrinsic Value (in millions)
Outstanding, December 31, 2020	386,363	$ 360.90		
Granted	85,541	$ 810.51		
Vested	(128,092)	$ 319.38		
Forfeited	(26,952)	$ 401.99		
Outstanding, December 31, 2021	316,860	$ 495.57	1.65	$ 239.4

The total fair value of restricted stock units vested for the years ended December 31, 2021, 2020 and 2019 was $104.4 million, $65.0 million and $44.8 million, respectively. As of December 31, 2021, there was approximately $139.7 million of total unrecognized compensation expense related to restricted stock units. This amount is expected to be recognized over a remaining weighted-average period of approximately three years.

Employee Stock Purchase Plans

The fair value of the employees' purchase rights under the 2011 ESPP was estimated using a Black-Scholes model with the following weighted-average assumptions:

	Year Ended December 31,		
	2021	2020	2019
Expected volatility	25 %	41 %	31 %
Risk-free interest rate	0.05 %	0.5 %	2.25 %
Expected life (in years)	0.25	0.25	0.25
Expected dividend	—	—	—
Weighted-average fair value of purchase rights	$127.16	$ 94.93	$ 60.39

The assumptions are primarily based on historical data. Volatility is based on the historical volatilities of our common stock for a period equal to the expected life of the purchase rights. The risk-free interest rate is based on the U.S. Treasury yield curve in effect at the time of the grant. We do not anticipate paying any cash dividends in the future and therefore use an expected dividend yield of zero.

We sold 31,639 shares for total employee contributions of $17.0 million, 47,548 shares for total employee contributions of $16.4 million and 58,717 shares for total employee contributions of $14.3 million under the 2011 ESPP to employees for the years ended December 31, 2021, 2020 and 2019, respectively. At December 31, 2021, 520,344 shares remain authorized and available for issuance under the 2011 ESPP.

10. OTHER INCOME AND EXPENSE, NET

Other (income) expense, net includes the following components (in millions):

	Year Ended December 31,		
	2021	2020	2019
Interest and investment income	$ (18.9)	$ (18.2)	$ (30.5)
Net realized gains on investments	(8.0)	(1.0)	(1.5)
Other-than-temporary impairment losses on investments	0.8	4.6	5.8
Gain on divestiture of a division	—	(11.7)	—
Other (income) expense	(0.7)	1.8	0.1
Other income, net	$ (26.8)	$ (24.5)	$ (26.1)

11. SUPPLEMENTAL CASH FLOW INFORMATION

The reconciliation of net income to net cash provided by operating activities is as follows (in millions):

	Year Ended December 31,		
	2021	2020	2019
Net income	$ 4,245.9	$ 3,806.3	$ 1,758.7
Adjustments to reconcile net income			
to net cash provided by operating activities			
Depreciation and amortization	133.8	138.1	134.2
Reduction in the carrying amount of right-of-use assets	39.3	37.1	40.3
Share-based compensation	51.2	41.6	35.6
Other-than-temporary impairment losses on investments	0.8	4.6	5.8
Changes in fair market value of equity and debt securities	(4,926.2)	(4,495.8)	(2,031.0)
Gain on divestiture of a division	—	(11.7)	—
Payments for operating lease liabilities	(40.7)	(36.5)	(38.6)
(Increase) decrease in accounts receivable	(20.4)	(15.0)	1.6
Decrease (increase) in inventories	46.1	(52.1)	24.2
(Increase) decrease in other current assets	(12.2)	(8.4)	61.8
Increase in accounts payable and other current liabilities	69.9	124.7	10.6
(Decrease) increase in income taxes payable	(28.8)	39.0	(4.2)
Increase in deferred income taxes	1,082.3	978.9	450.2
Increase in other long-term assets	(5.2)	(6.4)	(1.7)
Increase in other long-term liabilities	10.5	26.9	13.4
Other	10.2	4.0	(3.0)
Net cash provided by operating activities	$ 656.5	$ 575.3	$ 457.9
Non-cash investing activities:			
Purchased property, plant and equipment	$ 5.2	$ 1.2	$ 8.1
Purchased marketable securities and investments	$ 6.0	$ 4.6	$ 1.4
Sold marketable securities and investments	$ —	$ —	$ 1.3

12. COMMITMENTS AND CONTINGENT LIABILITIES

Deferred Profit Sharing Retirement Plan

We have a profit sharing plan covering substantially all U.S. employees. Contributions are made at the discretion of management. As of December 31, 2021 and 2020, the liability related to the U.S. profit sharing plan was $3.8 million and $3.0 million, respectively. The contribution expense was $18.4 million, $10.6 million and $16.1 million for the years ended December 31, 2021, 2020 and 2019, respectively.

Purchase Obligations

As of December 31, 2021, we had purchase obligations that have not been recognized on our balance sheet of $16.7 million, which include agreements to purchase goods or services that are enforceable and legally binding to Bio-Rad and that specify all significant terms and exclude agreements that are cancelable without penalty. Recognition of purchase obligations occurs when products or services are delivered to Bio-Rad.

The annual future fixed and determinable portion of our purchase obligations that have not been recognized on our balance sheet as of December 31, 2021 are as follows: 2022 - $12.2 million, 2023 - $3.2 million, 2024 - $1.1 million, 2025 - $0.2 million, 2026 - $0 million and after 2026 - $0 million.

Long-Term Liabilities

As of December 31, 2021, we had obligations that have been recognized on our balance sheet of $124.8 million, which primarily represent recognized long-term obligations for other post-employment benefits as indicated below that are mostly due in more than 5 years, and long-term deferred revenue. Excluded are tax liabilities for uncertain tax positions and contingencies. We are not able to reasonably estimate the timing of future cash flows of these tax liabilities, therefore, our income tax obligations are excluded.

The annual future fixed and determinable portion of our obligations that have been recognized on our balance sheet as of December 31, 2021 were as follows: 2022 - $10.7 million, 2023 - $14.4 million, 2024 - $7.4 million, 2025 - $5.2 million, 2026 - $3.8 million and after 2026 - $83.3 million.

Letters of Credit/Guarantees

In the ordinary course of business, we are at times required to post letters of credit/guarantees. The letters of credit/guarantees are issued by financial institutions to guarantee our obligations to various parties. We were contingently liable for $4.7 million of standby letters of credit/guarantees with financial institutions as of December 31, 2021.

Other Post-Employment Benefits

In several foreign locations we are statutorily required to provide retirement benefits or a lump sum termination indemnity to our employees upon termination for virtually any reason. These plans are accounted for as defined benefit plans and the associated net benefit obligation as of December 31, 2021 and 2020 of $76.1 million and $96.1 million, respectively, has been included in Accrued payroll and employee benefits and Other long-term liabilities in the Consolidated Balance Sheets. Most plans are not required to be funded, and as such, there is no trust or other device used to accumulate assets or settle these obligations. However, some of these plans require funding based on local laws in which there is a trust or other device administered by an external plan manager that is used to accumulate assets to assist in settling these obligations. The following disclosures include such plans, which are located in France, Switzerland, Germany, Korea, India, Thailand, Italy, Dubai and Japan.

Obligations and Funded Status

The following table sets forth the change in benefit obligations, fair value of plan assets and amounts recognized in the Consolidated Balance Sheets for the plans (in millions):

Change in benefit obligation:	2021	2020
Benefit obligation at beginning of year	$177.5	$153.8
Service cost	8.0	7.8
Interest cost	0.5	0.8
Plan participants' contributions	3.2	4.1
Actuarial (gain) loss	(10.2)	5.3
Gross benefits paid	(0.7)	(1.7)
Plan amendments	(1.7)	—
Curtailments	(3.3)	—
Settlements	(9.5)	(6.4)
Change attributable to foreign exchange	(8.3)	13.8
Benefit obligation at end of year	155.5	177.5
Change in plan assets:		
Fair value of plan assets at beginning year	81.4	72.3
Actual return on plan assets	1.3	0.6
Employer contributions	4.3	4.1
Plan participants' contributions	3.2	4.0
Gross benefits paid	1.3	0.2
Settlements	(9.5)	(6.4)
Change attributable to foreign exchange	(2.6)	6.6
Fair value of plan assets at end of year	79.4	81.4
Underfunded status of plans	$(76.1)	$(96.1)
Amounts recognized in the consolidated balance sheets:		
Current liabilities (Accrued payroll and employee benefits)	$(2.3)	$(1.3)
Noncurrent liabilities (Other long-term liabilities)	(73.8)	(94.8)
Net liability, end of fiscal year	$(76.1)	$(96.1)

Components of Net Periodic Benefit Cost

The following sets forth the net periodic benefit cost (income) for the periods indicated (in millions):

	2021	2020	2019
Service costs	$8.0	$7.8	$6.9
Interest costs	0.5	0.8	1.5
Expected returns on plan assets	(1.0)	(0.7)	(1.2)
Amortization of actuarial losses	1.8	1.3	1.0
Curtailments	(1.9)	—	—
Settlements	1.2	1.3	0.9
Net periodic benefit costs	$8.6	$10.5	$9.1

Assumptions

The above actuarial net gains were primarily based on financial, demographic and experience assumptions.

The weighted-average assumptions used in computing the benefit obligations are as follows:

	2021	2020
Discount rate	0.6 %	0.3 %
Compensation rate increase	1.5 %	1.7 %

The weighted-average assumptions used in computing the net periodic benefit costs are as follows:

	2021	2020	2019
Discount rate	0.3 %	0.5 %	1.1 %
Expected long-term rate of return on plan assets	1.1 %	1.5 %	1.8 %

The accumulated benefit obligation (ABO), an estimate based on the assumption if these plans were to be terminated immediately, as of December 31, 2021 and 2020 was $142.1 million and $159.5 million, respectively. The ABO and fair value of plan assets for these plans with ABO in excess of plan assets were $62.7 million and $78.1 million as of December 31, 2021 and 2020, respectively.

In some foreign locations we have service award plans that are paid based upon the number of years of employment. Under these plans, the liability as of December 31, 2021 and 2020 was $3.5 million and $4.1 million, respectively, and has been included in Accrued payroll and employee benefits and Other long-term liabilities in the Consolidated Balance Sheets.

Concentrations of Labor Subject to Collective Bargaining Agreements

At December 31, 2021, approximately seven percent of Bio-Rad's approximately 3,250 U.S. employees were covered by a collective bargaining agreement, which will expire on November 14, 2023. Many of Bio-Rad's non-U.S. full-time employees, especially in France, are covered by collective bargaining agreements.

13. LEGAL PROCEEDINGS

We are a party to various claims, legal actions and complaints arising in the ordinary course of business. While we do not believe, at this time, that any ultimate liability resulting from any of these matters will have a material adverse effect on our results of operations, financial position or liquidity, we cannot give any assurance regarding the ultimate outcome of these matters and their resolution could be material to our operating results for any particular period, depending on the level of income for the period.

14. SEGMENT INFORMATION

Bio-Rad is a multinational manufacturer and worldwide distributor of its own life science research products and clinical diagnostics products. We have two reportable segments: Life Science and Clinical Diagnostics. These reportable segments are strategic business lines that offer more than 12,000 different products and services and require different marketing strategies. We do not disclose quantitative information about our different products and services as it is impractical to do so based primarily on the numerous products and services that we sell and the global markets that we serve.

The Life Science segment develops, manufactures, sells and services reagents, apparatus and instruments used for biological research. These products are sold to university and medical school laboratories, pharmaceutical and biotechnology companies, food testing laboratories and government and industrial research facilities.

The Clinical Diagnostics segment develops, manufactures, sells and services automated test systems, informatics systems, test kits and specialized quality controls for the healthcare market. These products are sold to reference laboratories, hospital laboratories, state newborn screening facilities, physicians' office laboratories and transfusion laboratories.

Other Operations include our Analytical Instruments segment, and a small miscellaneous operation that was included in a prior acquisition.

Segment results are presented in the same manner as we present our operations internally to make operating decisions and assess performance. The accounting policies of the segments are the same as those described in Significant Accounting Policies (see Note 1). Our chief operating decision maker ("CODM") views all operating expenses, interest expense and corporate overhead as directly supporting the strategies of our segments. As a result, starting in 2021 these costs are fully allocated to our reportable segments. Prior to this change, the difference between the total segment allocated interest expense, depreciation and amortization, and the corresponding consolidated amounts was attributable to our corporate headquarters. The historical segment information has been recast to conform to the current allocation methodology of corporate operating and other expenses to the segments. Interest expense is charged to segments based on the carrying amount of inventory and receivables employed by that segment. Segments are expected to manage only assets completely under their control. Accordingly, segment assets include primarily accounts receivable, inventories and gross machinery and equipment. Goodwill balances have been included in corporate for segment reporting purposes.

Information regarding industry segments at December 31, 2021, 2020, and 2019 and for the years then ended is as follows (in millions):

		Life Science	Clinical Diagnostics	Other Operations
Segment net sales	2021	$ 1,400.8	$ 1,515.9	$ 5.8
	2020	1,231.8	1,305.2	8.6
	2019	885.9	1,412.0	13.8
Allocated interest expense	2021	$ 0.6	$ 1.0	$ —
	2020	8.0	13.8	0.1
	2019	7.4	15.9	0.1
Depreciation and amortization	2021	$ 32.5	$ 61.1	$ 1.6
	2020	32.8	65.1	1.0
	2019	29.4	71.7	0.9
Segment profit (loss)	2021	$ 316.0	$ 173.0	$ (1.1)
	2020	271.8	117.0	0.3
	2019	72.1	148.5	(1.5)
Segment assets	2021	$ 588.2	$ 1,038.4	$ 16.8
	2020	607.3	1,065.6	9.5
Capital expenditures	2021	$ 12.8	$ 63.5	$ 7.6
	2020	16.8	43.6	3.1

Net corporate operating expense consists of receipts and expenditures that are not the primary responsibility of segment operating management and therefore are not allocated to the segments for performance assessment by our chief operating decision maker. The following reconciles total segment profit to consolidated income before taxes (in millions):

	Year Ended December 31,		
	2021	2020	2019
Total segment profit	$ 487.9	$ 389.1	$ 206.2
Foreign currency exchange losses, net	(2.8)	(1.8)	(2.2)
Change in fair market value of equity and debt securities	4,926.2	4,495.8	2,031.0
Other income, net	26.8	24.5	26.1
Consolidated income before income taxes	$ 5,438.1	$ 4,907.6	$ 2,261.1

The following reconciles total segment assets to consolidated total assets (in millions):

	December 31,	
	2021	2020
Total segment assets	$ 1,643.4	$ 1,682.4
Cash, short-term investments and other current assets	993.3	1,098.2
Property, plant and equipment, net, and operating lease right-of-use assets, excluding segment specific balances	48.2	52.7
Goodwill, net	347.3	291.9
Other long-term assets	14,743.6	9,847.4
Total assets	$ 17,775.8	$ 12,972.6

The following presents net sales to external customers by geographic region based primarily on the location of the use of the product or service (in millions):

	Year Ended December 31,		
	2021	2020	2019
Europe	$ 946.9	$ 857.7	$ 770.3
Asia	688.4	546.5	505.0
United States	1,130.6	1,004.8	899.1
Other (primarily Canada and Latin America)	156.6	136.6	137.3
Total net sales	$ 2,922.5	$ 2,545.6	$ 2,311.7

The following presents Property, plant and equipment, net, Operating lease right-of-use assets and Other assets, excluding deferred income taxes, by geographic region based upon the location of the asset (in millions):

	December 31,	
	2021	2020
Europe	$ 211.4	$ 208.6
Asia	64.9	53.3
United States	456.5	454.4
Other (primarily Canada and Latin America)	16.5	12.0
Total Property, plant and equipment, net, Operating lease right-of-use assets and Other assets, excluding deferred income taxes	$ 749.3	$ 728.3

15. RESTRUCTURING COSTS

In February 2021, we announced our strategy-driven restructuring plan in furtherance of our ongoing program to improve operating performance. The restructuring plan primarily impacts our operations in Europe and includes the elimination of certain positions, the consolidation of certain functions, and the relocation of certain manufacturing operations from Europe to Asia. The restructuring plan is being implemented in phases and is expected to be substantially complete by the end of 2022. The liability of $47.1 million as of December 31, 2021 consisted of $46.7 million recorded in Accrued payroll and employee benefits and $0.4 million recorded in Other long-term liabilities in the consolidated balance sheets. The amounts reflected in Cost of goods sold, Selling, general and administrative expense and Research and development expense were $25.0 million, $26.1 million and $13.3 million, respectively, in the consolidated statements of income for the year ended December 31, 2021. The adjustments to expense recorded were primarily due to changes in the estimates of employee termination benefits and employees resigning or transferring to different positions within the company.

The following table summarizes the activity of our European reorganization restructuring reserves for severance (in millions):

	2021		
	Life Science	Clinical Diagnostics	Total
Balances as of January 1	$ —	$ —	$ —
Charged to expense - employee termination benefits	12.9	62.7	75.6
Adjustment to expense	(3.3)	(7.9)	(11.2)
Cash payments	(4.0)	(10.2)	(14.2)
Foreign currency translation gains	(0.4)	(2.7)	(3.1)
Balances as of December 31	$ 5.2	$ 41.9	$ 47.1

16. LEASES

We have operating leases and to a lesser extent finance leases, for buildings, vehicles and equipment. Our leases have remaining lease terms of 1 year to 17 years, which includes our determination to exercise renewal options.

The components of lease expense were as follows (in millions):

Twelve Months Ended December 31,	**2021**	**2020**	**2019**
Operating lease cost	$ 53.2	$ 45.4	$ 51.4
Finance lease cost:			
Amortization of right-to-use assets	$ 0.5	$ 0.6	$ 0.6
Interest on lease liabilities	0.8	0.8	0.9
Total finance lease cost	$ 1.3	$ 1.4	$ 1.5
Sublease income	$ 3.0	$ 3.0	$ 3.0

The sublease is for a building with a term that ends in 2025, with no options to extend or renew.

Operating lease cost includes original reduction in the carrying amount of right-of-use assets, the impact of remeasurements, modifications, impairments and abandonments.

Our short-term leases are expensed as incurred, reflecting leases with a lease term of one year or less, and are not significant for the years ended December 31, 2021, 2020 and 2019. Operating lease variable cost is primarily comprised of reimbursed actual common area maintenance, property taxes and insurance, which are immaterial for the years ended December 31, 2021, 2020 and 2019.

Supplemental cash flow information related to leases was as follows (in millions):

Twelve Months Ended December 31,	2021	2020	2019
Cash paid for amounts included in the measurement of lease liabilities:			
Operating cash flows from operating leases	$ 40.7	$ 44.4	$ 47.2
Operating cash flows from finance leases	$ 0.5	$ 0.6	$ 0.9
Financing cash flows from finance leases	$ 0.8	$ 0.8	$ 0.6
Right-of-use assets obtained in exchange for lease obligations:			
Operating leases	$ 45.5	$ 16.1	$ 28.7
Finance leases	$ —	$ 0.4	$ 0.2

Supplemental balance sheet information related to leases was as follows (in millions):

December 31,	2021	2020
Operating Leases		
Operating lease right-of-use assets	$ 204.8	$ 202.1
Current operating lease liabilities	$ 36.4	$ 36.5
Operating lease liabilities	175.9	175.1
Total operating lease liabilities	$ 212.3	$ 211.6

Finance leases are included in Property, plant and equipment, Current maturities of long-term debt, and Long-term debt and notes payable, net of current maturities.

December 31,	2021	2020
Finance Leases		
Property, plant and equipment, gross	$ 11.8	$ 12.2
Less: accumulated depreciation and amortization	(5.1)	(5.0)
Property, plant and equipment, net	$ 6.7	$ 7.2
Current maturities of long-term debt and notes payable	$ 0.5	$ 0.5
Long-term debt, net of current maturities	10.5	11.0
Total finance lease liabilities	$ 11.0	$ 11.5

December 31,	2021	2020
Weighted Average Remaining Lease Term		
Operating leases - in years	8	8
Finance leases - in years	15.5	16
Weighted Average Discount Rate		
Operating leases	3.3 %	3.9 %
Finance leases	6.3 %	6.2 %

Maturities of lease liabilities were as follows (in millions):

Year Ending December 31,	Operating Leases	Finance Leases
2022	$ 42.5	$ 1.2
2023	39.1	1.1
2024	32.6	1.2
2025	29.1	1.1
2026	24.0	1.1
Thereafter	79.5	13.0
Total lease payments	246.8	18.7
Less imputed interest	(34.5)	(7.7)
Total	$ 212.3	$ 11.0

The value of our operating lease portfolio is principally for facilities with longer durations than the lesser value vehicles and other equipment with shorter terms and higher-turn over.

As of December 31, 2021, operating leases that have not commenced are not material.

17. QUARTERLY FINANCIAL DATA (UNAUDITED)

Summarized quarterly financial data for the years ended December 31, 2021 and 2020 are as follows (in millions, except per share data):

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
2021				
Net sales	$ 726.8	$ 715.9	$ 747.0	$ 732.8
Gross profit	$ 400.6	$ 401.6	$ 437.4	$ 401.0
Net income (loss)	$ 977.4	$ 914.1	$ 3,928.0	$ (1,573.7)
Basic earnings (loss) per share	$ 32.77	$ 30.71	$ 131.75	$ (52.59)
Diluted earnings (loss) per share	$ 32.38	$ 30.32	$ 129.96	$ (52.59)
2020				
Net sales	$ 571.6	$ 536.9	$ 647.3	$ 789.8
Gross profit	$ 317.4	$ 293.0	$ 367.3	$ 460.1
Net income	$ 685.9	$ 966.4	$ 1,314.8	$ 839.2
Basic earnings per share	$ 22.97	$ 32.59	$ 44.24	$ 28.13
Diluted earnings per share	$ 22.72	$ 32.15	$ 43.64	$ 27.81

ITEM 9. CHANGES IN AND DISAGREEMENTS WITH ACCOUNTANTS ON ACCOUNTING AND FINANCIAL DISCLOSURE

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

(a) Evaluation of Disclosure Controls and Procedures

We maintain “disclosure controls and procedures”, as such term is defined in Rules 13a-15(e) and 15d-15(e) under the Securities Exchange Act of 1934, as amended (“Exchange Act”), that are designed to ensure that information required to be disclosed by us in reports that we file or submit under the Exchange Act is recorded, processed, summarized, and reported within the time periods specified in Securities and Exchange Commission rules and forms, and that such information is accumulated and communicated to our management, including our Chief Executive Officer ("CEO") and Chief Financial Officer ("CFO"), as appropriate, to allow for timely decisions regarding required disclosure. In designing and evaluating our disclosure controls and procedures, management recognized that disclosure controls and procedures, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the disclosure controls and procedures are met. Additionally, in designing disclosure controls and procedures, our management necessarily was required to apply its judgment in evaluating the cost-benefit relationship of possible disclosure controls and procedures. The design of any disclosure controls and procedures also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions.

Subject to the limitations noted above, our management, with the participation of our CEO and CFO, has evaluated the effectiveness of the design and operation of our disclosure controls and procedures as of the end of the year covered by this Annual Report on Form 10-K. Based on that evaluation, our CEO and CFO concluded that our disclosure controls and procedures were effective to meet the objective for which they were designed and operate at the reasonable assurance level.

(b) Management’s Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting for the Company as defined in Rule 13a-15(f) or 15(d)-15(f) of the Exchange Act. Our internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of consolidated financial statements for external purposes in accordance with U.S. generally accepted accounting principles, and includes those policies and procedures that: (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the Company’s assets; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of consolidated financial statements in accordance with U.S. generally accepted accounting principles, and that our receipts and expenditures are being made only in accordance with authorizations of our management and directors; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use or disposition of our assets that could have a material effect on our consolidated financial statements.

Our management assessed the effectiveness of the Company’s internal control over financial reporting as of December 31, 2021 using the criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based on this assessment and those criteria, management concluded that our internal control over financial reporting was effective as of December 31, 2021. Our internal control over financial reporting has been audited by KPMG, LLP, an independent registered public accounting firm, as stated in their report, which appears in Part II, Item 8 of this Form 10-K.

(c) Changes in Internal Control over Financial Reporting

Management continuously reviews disclosure controls and procedures, and internal control over financial reporting, and accordingly may, from time to time, make changes aimed at enhancing their effectiveness to ensure that its systems evolve with its business. There were no changes in our internal controls over financial reporting (as defined in Rules 13a-15(f) and 15(d)-15(f) under the Exchange Act) during the year ended December 31, 2021 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

(d) Inherent Limitations on Effectiveness of Internal Controls

Because of its inherent limitations, our 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.

ITEM 9B. OTHER INFORMATION

Departure of Directors or Certain Officers; Election of Directors; Appointment of Certain Officers; Compensatory Arrangements of Certain Officers.

On February 10, 2022, our board of directors adopted the Bio-Rad Laboratories, Inc. Executive Change in Control Severance Plan, or the Severance Plan. The Severance Plan provides for the payment of certain severance and other benefits to participants, including each of our named executive officers (Norman Schwartz, Ilan Daskal, Andrew J. Last, Dara Grantham Wright), in the event of a qualifying termination of employment with us.

Under the Severance Plan, in the event of a termination of the executive's employment that is (i) by the Company for any reason other than for "cause," (ii) as a result of the participant's death or "disability," or (iii) by the participant for "good reason," in each case, during the two-year period beginning on, and following, the date of a "change in control" (as defined in the Severance Plan), the executive will be eligible to receive the following payments and benefits:

- A cash payment equal to the product of (i) the executive's "applicable severance period" (as defined in the Severance Plan, and which for Messrs. Daskal and Last and Ms. Grantham Wright is 18 months) and (ii) the sum of (a) the participant's weekly rate of then-current annual base salary, plus (b) the participant's target annual incentive bonus for the year in which such termination occurs divided by fifty-two, payable in a single lump-sum no later than the fifteenth day of the third calendar month after the month in which such termination occurs (Mr. Schwartz does not receive this benefit);

- A cash payment equal to (i) the amount of any target annual cash incentive bonus for the year in which the termination occurs pro-rated as of the date of termination and (ii) the amount of any annual cash incentive bonus earned for any fiscal year that ended before the termination date that remains unpaid (if any), payable in a single lump-sum no later than the fifteenth day of the third calendar month after the month in which such termination occurs;

- Reimbursement of COBRA or Cal-COBRA premium payments for the executive and his or her dependents for up to 18 months for Messrs. Daskal and Last and Ms. Grantham Wright (Mr. Schwartz does not receive this benefit);

- Accelerated vesting of 100% of the total number of shares subject to each equity award held by the executive (with any awards subject to performance vesting to be determined pursuant to the applicable award agreement); and

- Company-paid outplacement services for 12 months (Mr. Schwartz does not receive this benefit).

Any executive's right to receive the severance payments and benefits described above is subject to the executive's delivery, and, as applicable, non-revocation of a general release of claims in our favor, the executive's resignation from all positions with us, and the executive's continued compliance with the terms of any confidential information agreement in our favor and agreement to not solicit any of our employees.

In addition, in the event that any payment under the Severance Plan, together with any other amounts paid to the executive by us, would subject such executive to an excise tax under Section 4999 of the Internal Revenue Code, such payments will be reduced to the extent that such reduction would produce a better net-tax result for the executive.

The Severance Plan is attached hereto as Exhibit 10.9, which is incorporated herein by this reference. The foregoing summary is qualified entirely by reference to the full text of the Severance Plan.

ITEM 9C. DISCLOSURE REGARDING FOREIGN JURISDICTIONS THAT PREVENT INSPECTIONS

Not applicable.

PART III.

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Part of the information required to be furnished pursuant to this item is incorporated by reference from portions of Bio-Rad's definitive proxy statement to be mailed to stockholders in connection with our 2022 annual meeting of stockholders (the "2022 Proxy Statement") under "Executive Officers," "Election of Directors," "Committees of the Board of Directors" and "Section 16(a) Beneficial Ownership Reporting Compliance."

Bio-Rad's Board of Directors has determined that each of Jeffrey L. Edwards, Gregory K. Hinckley and Melinda Litherland is an "audit committee financial expert," as defined in Item 407(d)(5) of Regulation S-K. Each of Jeffrey L. Edwards, Gregory K. Hinckley and Melinda Litherland is also an "independent" director, as determined in accordance with the independence standards set forth in Rule 10A-3 under the Securities Exchange Act of 1934, as amended, and Section 303A.02 of the New York Stock Exchange (NYSE) Listed Company Manual.

We have adopted a code of business ethics and conduct that applies to our principal executive officer, principal financial officer, controller (or persons performing similar functions), all other employees and our directors. It is available through the Corporate Governance section of our website (www.bio-rad.com). We will also provide a copy of the code of ethics to any person, without charge, upon request, by writing to us at "Bio-Rad Laboratories, Inc., Investor Relations, 1000 Alfred Nobel Drive, Hercules, CA 94547." We intend to satisfy any disclosure requirement under Item 5.05 of Form 8-K regarding an amendment to, or waiver from, a provision of the code of ethics by posting such information on the Corporate Governance section of our website (www.bio-rad.com) within four business days following the date of the amendment or waiver.

ITEM 11. EXECUTIVE COMPENSATION

The information required to be furnished pursuant to this item is incorporated by reference from portions of the 2022 Proxy Statement under “Compensation Discussion and Analysis,” “Summary Compensation Table,” “Grants of Plan-Based Awards,” “Outstanding Equity Awards at Fiscal Year-End,” “Option Exercises and Stock Vested Table,” “Pension Benefits,” “Nonqualified Deferred Compensation Plans,” “Potential Payments on Termination or Change in Control,” “Director Compensation,” “Compensation Committee Interlocks and Insider Participation” and "Pay Ratio Disclosure.” In addition, the information from a portion of the 2022 Proxy Statement under “Compensation Committee Report” is incorporated herein by reference and furnished on this Form 10-K and shall not be deemed “filed” for purposes of Section 18 of the Securities and Exchange Act of 1934, nor shall it be deemed incorporated by reference in any filing under the Securities Act of 1933.

ITEM 12. SECURITY OWNERSHIP OF CERTAIN BENEFICIAL OWNERS AND MANAGEMENT AND RELATED STOCKHOLDER MATTERS

Part of the information required to be furnished pursuant to this item is incorporated by reference from a portion of the 2022 Proxy Statement under “Principal and Management Stockholders.”

Equity Compensation Plan Information as of December 31, 2021

Plan category	Number of securities to be issued upon exercise of outstanding options, warrants and rights	Weighted-average exercise price of outstanding options, warrants and rights	Number of securities remaining available for future issuance under equity compensation plans (excluding securities reflected in column (a))
	(a)	(b)(3)	(c)
Equity compensation plans approved by security holders (1)	567,301	$ 246.41	1,897,388 (2)
Equity compensation plans not approved by security holders	—	—	—
Total	567,301	$ 246.41	1,897,388

(1) Consists of the Bio-Rad Laboratories, Inc. 2017 Incentive Award Plan, and the Bio-Rad Laboratories, Inc. 2011 Employee Stock Purchase Plan.
(2) Consists of 1,377,044 shares available under the Bio-Rad Laboratories, Inc. 2017 Incentive Award Plan and 520,344 shares available under the Bio-Rad Laboratories, Inc. 2011 Employee Stock Purchase Plan.
(3) Excludes Restricted Stock Units.

ITEM 13. CERTAIN RELATIONSHIPS AND RELATED TRANSACTIONS, AND DIRECTOR INDEPENDENCE

The information required to be furnished pursuant to this item is incorporated by reference from portions of the 2022 Proxy Statement under “Transactions with Related Persons” and “Committees of the Board of Directors.”

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

Our independent registered public accounting firm is KPMG LLP (185) Santa Clara, California.

The information required to be furnished by this item is incorporated by reference from a portion of the 2022 Proxy Statement under “Report of the Audit Committee of the Board of Directors.”

PART IV.

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

(a)1 Index to Financial Statements – See Item 8 of Part II of this report “Financial Statements and Supplementary Data" on page 38 for a list of financial statements.

2 Schedule II Valuation and Qualifying Accounts

All financial statement schedules are omitted because they are not required, or the required information is included in the consolidated financial statements or the notes thereto.

3. Index to Exhibits

The exhibits listed below in the accompanying Index to Exhibits are filed or incorporated by reference as part of this report.

BIO-RAD LABORATORIES, INC.
INDEX TO EXHIBITS ITEM 15(a)3

Exhibits 32.1 and 32.2 are furnished herewith and should not be deemed to be "filed under the Securities Exchange Act of 1934."

Exhibit No.	
3.1	Restated Certificate of Incorporation of Bio-Rad Laboratories, Inc. (1)
3.1.1	Certificate of Amendment to Restated Certificate of Incorporation of Bio-Rad Laboratories, Inc. (1)
3.2	Amended and Restated Bylaws of Bio-Rad Laboratories, Inc. (2)
4.1	Description of Bio-Rad Laboratories, Inc. Class A and Class B Common Stock (3)
10.1	Credit Agreement, dated as of April 15, 2019, by and among Bio-Rad Laboratories, Inc., the lenders referred to therein, JPMorgan Chase Bank, N.A., as administrative agent, Bank of America, N.A., HSBC Bank USA National Association, and Mug Bank, Ltd., as co-syndication agents, and Citibank, N.A., and Wells Fargo Bank, N.A., National Association as co-documentation agents. (4)
10.1.1	Amendment No. 1 dated as of November 15, 2021 to Credit Agreement dated as of April 15, 2019, by and among Bio-Rad Laboratories, Inc., the lenders referred to therein, and JPMorgan Chase Bank, N.A., as a lender and as administrative agent. (5)
10.2	Bio-Rad Laboratories, Inc. 2011 Employee Stock Purchase Plan. (6)*
10.2.1	First Amendment to the Bio-Rad Laboratories, Inc. 2011 Employee Stock Purchase Plan (7)*
10.3	Employees' Deferred Profit Sharing Retirement Plan (Amended and Restated effective January 1, 1997). (8)*
10.4	2007 Incentive Award Plan. (9)*
10.4.1	Restricted Stock Unit Award Grant Notice and Restricted Stock Unit Award Agreement under the 2007 Incentive Award Plan. (10)*
10.4.2	Amendment to the Bio-Rad Laboratories, Inc. 2007 Incentive Award Plan. (11)*
10.5	Bio-Rad Laboratories, Inc. 2017 Incentive Award Plan (12)*
10.5.1	Global Restricted Stock Unit Award Grant Notice and Global Restricted Stock Unit Award Agreement under 2017 Incentive Award Plan (13)*
10.5.2	Stock Option Grant Notice and Non-Qualified Stock Option Agreement under 2017 Incentive Award Plan (14)*
10.5.3	Global Restricted Stock Unit Award Grant Notice and Global Restricted Stock Unit Award Agreement under 2017 Incentive Award Plan (updated September 2020) (15)*
10.5.4	Stock Option Grant Notice and Non-Qualified Stock Option Agreement under 2017 Incentive Award Plan (updated September 2020) (16)*

10.6	Employment Offer Letter between the Company and Ilan Daskal dated March 15, 2019 (17)*
10.7	Employment Offer Letter between the Company and Andrew J. Last dated March 15, 2019 (18)*
10.8	Form of Indemnification Agreement. (19)
10.9	Executive Change in Control Severance Plan*
21.1	Listing of Subsidiaries.
23.1	Consent of Independent Registered Public Accounting Firm.
31.1	Certification of Chief Executive Officer Required by Rule 13a-14(a) (17CFR 240.13a-14(a)).
31.2	Certification of Chief Financial Officer Required by Rule 13a-14(a) (17CFR 240.13a-14(a)).
32.1	Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS	The instance document does not appear in the interactive data file because its XBRL tags are embedded within the inline XBRL document.
101.SCH	Inline XBRL Taxonomy Extension Schema Document
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document
101.LAB	Inline XBRL Taxonomy Extension Labels Linkbase Document
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document
104	The cover page Interactive Data File is formatted in Inline XBRL and is contained in Exhibits 101

(1) Incorporated by reference to the Exhibits to Bio-Rad's Form 10-K filing for the fiscal year ended December 31, 2010.

(2) Incorporated by reference to Exhibit 3.1 to Bio-Rad's Form 8-K filing, dated October 27, 2017.

(3) Incorporated by reference to Exhibit 4.1 to Bio-Rad's Form 10-K filing, dated March 2, 2020.

(4) Incorporated by reference to the Exhibit 10.1 to Bio-Rad's 8-K filing, dated April 16, 2019.

(5) Incorporated by reference to the Exhibit 10.1 to Bio-Rad's 8-K filing, dated November 18, 2021.

(6) Incorporated by reference to Exhibit 10.9 to Bio-Rad's June 30, 2011 Form 10-Q filing, dated August 4, 2011.

(7) Incorporated by reference to Exhibit 10.2 to Bio-Rad's Form 10-Q filing, dated May 9, 2017.

(8) Incorporated by reference to Exhibit 10.6 to Bio-Rad's September 30, 1997 Form 10-Q filing, dated November 13, 1997.

(9) Incorporated by reference to Exhibit 4.1 to Bio-Rad's Form S-8 filing, dated July 30, 2007.

(10) Incorporated by reference to Exhibit 10.8.1 to Bio-Rad's September 30, 2009 Form 10-Q filing, dated November 4, 2009.

(11) Incorporated by reference to Exhibit 10.1 to Bio-Rad's March 31, 2014 Form 10-Q filing, dated May 8, 2014.

(12) Incorporated by reference to Exhibit 10.1 to Bio-Rad's Form 10-Q filing, dated May 9, 2017.

(13) Incorporated by reference to Exhibit 10.1 to Bio-Rad's Form 10-Q filing, dated November 9, 2017.

(14) Incorporated by reference to Exhibit 10.2 to Bio-Rad's Form 10-Q filing, dated November 9, 2017.

(15) Incorporated by reference to Exhibit 10.1 to Bio-Rad's Form 10-Q filing, dated October 30, 2020.

(16) Incorporated by reference to Exhibit 10.2 to Bio-Rad's Form 10-Q filing, dated October 30, 2020.

(17) Incorporated by reference to Exhibit 10.1 to Bio-Rad's 8-K filing, dated April 2, 2019.

(18) Incorporated by reference to Exhibit 10.1 to Bio-Rad's 8-K filing, dated April 22, 2019.

(19) Incorporated by reference to Exhibit 10.1 to Bio-Rad's Form 10-Q filing, dated August 7, 2017.

* Indicates a management contract or compensatory plan or arrangement.

Item 16. FORM 10-K SUMMARY

None.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

BIO-RAD LABORATORIES, INC.

By: /s/ Ilan Daskal
(Ilan Daskal)
Executive Vice President, Chief Financial Officer

Date: February 11, 2022

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

Principal Executive Officer: /s/ Norman Schwartz (Norman Schwartz)	Chairman of the Board, President and Chief Executive Officer	February 11, 2022
Principal Financial Officer: /s/ Ilan Daskal (Ilan Daskal)	Executive Vice President, Chief Financial Officer	February 11, 2022
Principal Accounting Officer: /s/ Ajit Ramalingam (Ajit Ramalingam)	Senior Vice President, Chief Accounting Officer	February 11, 2022
Other Directors: /s/ Jeffrey L. Edwards (Jeffrey L. Edwards)	Director	February 11, 2022
/s/ Gregory K. Hinckley (Gregory K. Hinckley)	Director	February 11, 2022
/s/ Melinda Litherland (Melinda Litherland)	Director	February 11, 2022
/s/ Arnold A. Pinkston (Arnold A. Pinkston)	Director	February 11, 2022
/s/ Alice N. Schwartz (Alice N. Schwartz)	Director	February 11, 2022

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DIRECTORS

Norman Schwartz
Chairman of the Board

Jeffrey L. Edwards
Director

Gregory K. Hinckley
Director

Melinda Litherland
Director

Arnold A. Pinkston
Director

Alice N. Schwartz
Director

OFFICERS

Norman Schwartz
President and
Chief Executive Officer

Andrew Last
Executive Vice President,
Chief Operating Officer

Ilan Daskal
Executive Vice President,
Chief Financial Officer

Michael Crowley
Executive Vice President,
Global Commercial Operations

Timothy S. Ernst
Executive Vice President,
General Counsel & Secretary

Simon May
Executive Vice President,
President, Life Science Group

Dara Wright
Executive Vice President,
President,
Clinical Diagnostics Group

Ajit Ramalingam
Senior Vice President,
Chief Accounting Officer

OTHER SENIOR EXECUTIVES

Jim Barry
Senior Vice President,
Global Manufacturing

Lee Boyd
Senior Vice President,
Global Commercial Operations,
Asia Pacific

Colleen Corey
Executive Vice President,
Global Human Resources

Diane Dahowski
Executive Vice President,
Global Supply Chain

Kurt DeLanghe
Senior Vice President,
Global Commercial Operations,
Europe, Middle East, Africa

Carla Evans
Senior Vice President,
Global Real Estate & Facilities

Erik Molitor
Senior Vice President,
Global Technology & Systems

Geoffrey Schwartz
Senior Vice President,
Global Commercial Operations,
Americas

Jonathan Seaton
Senior Vice President,
Corporate Business Development

Mario Wijker
Senior Vice President,
Regulatory Affairs and
Quality Assurance

ANNUAL MEETING

The Annual Meeting of Stockholders will be virtual-only and held on Tuesday, April 26 at 4 PM, Pacific Time. Please refer to our proxy statement for details on how to connect to the meeting.

Bio-Rad will provide without charge to each stockholder, upon written request to the Secretary, a copy of its 2021 Annual Report filed with the Securities and Exchange Commission on Form 10-K.

TRANSFER AGENT

Computershare
c/o Shareholder Services
462 South 4th Street, Suite 1600
Louisville, KY 40202
www.computershare.com

AUDITORS

KPMG LLP

COMMON STOCK

Traded on the
New York Stock Exchange

Class A Common Stock
Symbol **BIO**

Class B Common Stock
Symbol **BIOb**

BIO
LISTED
NYSE

CORPORATE OFFICES
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