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FEDERAL NATIONAL MORTGAGE ASSOCIATION FANNIE MAE

Form NT 10-Q

November 10, 2005

UNITED STATES SECURITIES AND EXCHANGE COMMISSION

WASHINGTON, DC 20549

FORM 12b-25

NOTIFICATION OF LATE FILING

Commission File Number 000-50231

(Check One): ☐ Form 10-K ☐ Form 20-F ☐ Form 11-K ☒ Form 10-Q ☐ Form N-SAR ☐ Form N-CSR

For Period Ended: September 30, 2005

- ☐ Transition Report on Form 10-K and Form 10-KSB
- ☐ Transition Report on Form 20-F
- ☐ Transition Report on Form 11-K
- ☐ Transition Report on Form 10-Q and Form 10-QSB
- ☐ Transition Report on Form N-SAR

For the Transition Period Ended: _____

Read Attached Instruction Sheet Before Preparing Form. Please Print or Type.

Nothing in this form shall be construed to imply that the Commission has verified any information contained herein. If the notification relates to a portion of the filing checked above, identify the Item (s) to which the notification relates:
Not Applicable

**PART I
REGISTRANT INFORMATION**

Full name of registrant: Federal National Mortgage Association

Former name if applicable: Not Applicable

Address of principal executive office 3900 Wisconsin Avenue, NW
(Street and number):

City, state and zip code: Washington, D.C. 20016

PART II
RULE 12b-25 (b) AND (c)

If the subject report could not be filed without unreasonable effort or expense and the registrant seeks relief pursuant to Rule 12b-25(b), the following should be completed. (Check box if appropriate.)

- (a) The reasons described in reasonable detail in Part III of this form could not be eliminated without unreasonable effort or expense;
- ☐ (b) The subject annual report, semi-annual report, transition report on Form 10-K, Form 20-F, Form 11-K, Form N-SAR or Form N-CSR, or portion thereof, will be filed on or before the fifteenth calendar day following the prescribed due date; or the subject quarterly report or transition report on Form 10-Q, or portion thereof, will be filed on or before the fifth calendar day following the prescribed due date; and
- (c) The accountant's statement or other exhibit required by Rule 12b-25(c) has been attached if applicable.

PART III
NARRATIVE

Fannie Mae (formally, the Federal National Mortgage Association) has determined that it is unable to file its Form 10-Q for the quarter ended September 30, 2005 by the November 9, 2005 due date or by November 14, 2005 and, accordingly, Fannie Mae is not requesting the five-day extension permitted by the rules of the Securities and Exchange Commission (the "SEC").

This notice and the attached explanation discuss the following matters:

The process and potential timing of Fannie Mae's restatement and re-audit;

Certain New York Stock Exchange ("NYSE") listing standards relating to SEC filings;

Certain accounting matters that may significantly impact the results of operations for third quarter 2005 and the results of operations for third quarter 2004 that Fannie Mae ultimately reports;

Certain key business and market issues that have impacted the company;

The election of a new director and appointment of new officers;

Certain of our risks and risk management practices;

Our estimate of the financial impact of Hurricanes Katrina and Rita on the company;

An update regarding the achievement of our capital restoration plan; and

Legislative developments to strengthen regulatory oversight of the government sponsored housing enterprises.

Fannie Mae's restatement and re-audit

Fannie Mae is not able to file a timely Form 10-Q because Fannie Mae has not completed its financial statements for the third quarter of 2005. As previously announced, Fannie Mae is in the process of restating its historical financial statements and has determined that its previously filed interim and audited financial statements for the periods from January 2001 through the second quarter of 2004 should no longer be relied upon. More information regarding the matters discussed in this Form 12b-25 may be found in Forms 8-K Fannie Mae filed with the SEC on March 18, 2005, May 11, 2005 and August 9, 2005.

On September 20, 2004, the Office of Federal Housing Enterprise Oversight (OFHEO) delivered to the Board of Directors of Fannie Mae a report on the findings of its special examination to date of Fannie Mae s accounting policies and practices, which raised questions about Fannie Mae s application of Financial Accounting Standard No. 91, *Accounting for Nonrefundable Fees and Costs Associated with Originating or Acquiring Loans and Initial Direct Costs of Leases* (FAS 91) and Financial Accounting Standard No. 133, *Accounting for Derivative Instruments and Hedging Activities* (FAS 133). OFHEO subsequently notified Fannie Mae of additional accounting and internal control issues and questions the agency identified in its ongoing special examination. The issues and questions pertain to the following areas: securities accounting, loan accounting, consolidations, accounting for commitments, practices to smooth certain income and expense amounts, journal entry controls, systems limitations, and database modifications, as well as additional issues relating to FAS 91. On September 27, 2004, Fannie Mae entered into an agreement with OFHEO to take a series of steps with respect to its

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accounting, capital, organization and staffing, compensation, governance and internal controls. On March 7, 2005, Fannie Mae and OFHEO entered into a supplement to the September 27, 2004 agreement. OFHEO's special examination of Fannie Mae's accounting policies and practices is ongoing.

On December 15, 2004, the SEC's Office of the Chief Accountant advised Fannie Mae that it should restate its financial statements filed with the SEC to eliminate the use of hedge accounting, evaluate the accounting under FAS 91 and restate its financial statements filed with the SEC if the amounts required for correction were material, and reevaluate the information prepared under generally accepted accounting principles (GAAP) and non-GAAP information that Fannie Mae previously provided to investors, particularly in view of the decision that hedge accounting is not appropriate.

Fannie Mae's Board of Directors and management are addressing the issues and questions raised by OFHEO. In addition, the Board designated a Special Review Committee to review the findings of OFHEO's September 2004 special examination report and to oversee an investigation by independent counsel, as required by the September 27, 2004 agreement. The investigation, led by former Senator Warren Rudman of the law firm of Paul, Weiss, Rifkind, Wharton & Garrison, is focused on: accounting issues, including accounting policies, procedures and controls; organization, structure and governance, including board oversight and management responsibilities and resources; and executive compensation. Paul, Weiss continues its work as it examines these areas and other issues that may arise in the course of its review and is reporting regularly to the Board. Fannie Mae and Paul, Weiss will report to OFHEO regarding each of these issues and Fannie Mae will continue to work with OFHEO to resolve these matters as part of the company's ongoing internal reviews and its restatement process.

Management is undertaking a comprehensive review of accounting routines and controls, the financial reporting process and the application of generally accepted accounting principles, which includes the issues OFHEO has identified described in this notice, as well as issues identified by management and Deloitte & Touche LLP, the company's independent auditor. Management, working with accounting consultants, will develop a view on these issues, which then will be reviewed with the Audit Committee, Deloitte & Touche and OFHEO. Upon conclusion of the issue review, the financial statements will be restated where necessary and submitted to Deloitte & Touche for completion of its audit. The company is committed to informing OFHEO, Paul, Weiss, and Deloitte & Touche of its progress on these matters, including the company's approach to completing the restatement, realigning financial control and audit functions and overhauling financial reporting systems. The company is providing periodic updates to the SEC and the NYSE of its progress on the restatement. In addition, the SEC and the U.S. Attorney's Office for the District of Columbia are conducting ongoing investigations into these matters.

Restating Fannie Mae's financial statements will require a substantial amount of time and resources because the restatement entails significant complexities, including;

- a comprehensive review of Fannie Mae's accounting practices, which are often complex in nature such as accounting for derivatives or mortgage purchase and sale commitments;

- obtaining or validating market values for a large volume of transactions, including all of our derivatives, commitments and securities at multiple points in time over the restatement period;

- enhancing or developing new systems to track, value, and account for securities, commitments and derivatives; amortize deferred price adjustments; account for Fannie Mae's guarantee obligations; and monitor and assess impairment;

- restating our financial statements for multiple interim and annual periods; and

- deficiencies in Fannie Mae's accounting controls during the restatement period that necessitate principally substantive audit testing procedures by our independent auditor.

Based on our current assessment, Fannie Mae believes that completion of its Annual Report on Form 10-K for the year ended December 31, 2004, which will include Fannie Mae's restated results, is not likely to occur prior to the second half of 2006. Fannie Mae is committed to devoting all resources necessary to complete the restatement as

expeditiously as possible. However, because many of the activities are sequential in nature, acceleration from this timeline is difficult.

NYSE listing standards

Under the listing standards of the NYSE, the NYSE may initiate a delisting proceeding when a listed company fails to file its Annual Report on Form 10-K with the SEC in a timely manner. The current standards allow for the NYSE to continue a listing for up to nine months from the due date of the filing (*i.e.*, until December 16, 2005 in the case of Fannie Mae's 2004 Form 10-K filing), subject to ongoing monitoring by the NYSE. The NYSE, in its sole discretion, may extend the listing for up to an additional three months following this initial nine month period, depending on the company's circumstances. Under the NYSE's current standards, if a company has not filed its periodic annual report by the end of the one year period, the NYSE will begin suspension and delisting procedures.

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The NYSE has filed with the SEC a proposed change to these standards that would allow the NYSE, in its sole discretion, to refrain from commencing suspension and delisting proceedings, notwithstanding a company's failure to file its annual report within one year of the filing due date. Pursuant to the proposed new standards, in determining whether to allow trading in a company's stock to continue, the NYSE will consider, among other things, a company's financial health and compliance with the NYSE's qualitative and quantitative listing standards, as well as whether there is a reasonable expectation that the company will be able to resume timely filings in the future. Under the proposed new standards, the NYSE would advise the SEC of any determination to continue the listing of such a company and publish notice of this determination on the NYSE's website. In addition, the proposed new standards require the NYSE to reevaluate its determination to continue the listing of such a company once every three months and, if the NYSE reaffirms its decision to allow trading to continue, to advise the SEC of such reaffirmation, as well as publish the reaffirmation on the NYSE's website. We expect the SEC will publish the proposed NYSE rule change for public comment in the *Federal Register*.

Fannie Mae is engaged in regular discussions with the NYSE staff regarding the status of the restatement and continued listing through completion of the restatement. Until Fannie Mae is current with its SEC periodic reporting requirements, the NYSE will identify Fannie Mae as a late filer on its website and will disseminate on the consolidated tape an indicator of the company's late-filer status.

Forward-Looking Statements

The information provided in this notice and the attached explanation includes forward-looking statements, including statements regarding the restatement of Fannie Mae's financial statements for prior periods and the timing and impact thereof, the anticipated impact of certain accounting matters on the company's results of operations, the anticipated future performance of our Portfolio Investment and Credit Guaranty businesses, maintenance of our required 30 percent capital surplus, our estimated losses resulting from Hurricanes Katrina and Rita, our future approach to managing credit risk and our portfolio and future administrative expenses. Statements that are not historical facts, including statements about Fannie Mae's beliefs and expectations, are forward-looking statements. These statements are based on beliefs and assumptions by the company's management, and on information currently available to management. Forward-looking statements speak only as of the date they are made, and the company undertakes no obligation to update publicly any of them in light of new information or future events. A number of important factors could cause actual results to differ materially from those contained in any forward-looking statement. Examples of such factors include, but are not limited to, the timing and nature of the final resolution of the accounting issues discussed in this notice and those raised by OFHEO in the course of its special examination discussed in this notice, the outcome of the review being conducted by independent counsel on behalf of the company's Board of Directors and of OFHEO's ongoing special examination, the outcome of the investigations being conducted by the SEC and the U.S. Attorney's Office for the District of Columbia, the outcome of pending litigation, the factors discussed in this notice and the attached explanation, and the reactions of the marketplace to the foregoing.

**PART IV
OTHER INFORMATION**

(1) Name and telephone number of person to contact in regard to this notification

Scott Lesmes

(202)

752-7000

(Name)

(Area Code)

(Telephone Number)

(2) Have all other periodic reports required under Section 13 or 15(d) of the Securities Exchange Act of 1934 or Section 30 of the Investment Company Act of 1940 during the preceding 12 months or for such shorter period that the registrant was required to file such report(s) been filed? If the answer is no, identify report(s).

☐ Yes

☐ No

Fannie Mae has not filed the following periodic reports: a Quarterly Report on Form 10-Q for the period ended September 30, 2004; an Annual Report on Form 10-K for the period ended December 31, 2004; and Quarterly Reports on Form 10-Q for the periods ended March 31, 2005 and June 30, 2005.

(3) Is it anticipated that any significant change in results of operations from the corresponding period for the last fiscal year will be reflected by the earnings statements to be included in the subject report or portion thereof?

☐ Yes

☐ No

If so: attach an explanation of the anticipated change, both narratively and quantitatively, and, if appropriate, state the reasons why a reasonable estimate of the results cannot be made.

Please see attached explanation.

Federal National Mortgage Association

(Name of Registrant as Specified in Charter)

Has caused this notification to be signed on its behalf by the undersigned thereunto duly authorized.

Date: November 10, 2005

By: /s/ Robert Levin

Name: Robert Levin

Title: Executive Vice President, Chief Business
Officer and Interim Chief Financial Officer

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Explanation Referred to in Part IV, Item (3) of Form 12b-25

Fannie Mae is required by Part IV, Item (3) of Form 12b-25 to provide as part of this filing an explanation regarding whether the results of operations it expects to report for the third quarter of 2005 will reflect significant changes from results of operations for the third quarter of 2004. Because of the restatement and re-audit process described above, Fannie Mae is unable to provide a reasonable estimate of either its third quarter 2005 results of operations or its third quarter 2004 results of operations. Accordingly, Fannie Mae cannot at this time estimate what significant changes will be reflected in its third quarter 2005 results of operations from its third quarter 2004 results of operations. Presented below is a discussion of certain accounting matters that may significantly impact the results of operations for third quarter 2005 and the results of operations for third quarter 2004 that Fannie Mae ultimately reports, followed by a discussion of certain key business and market issues that have impacted the company, disclosures regarding certain risks and risk management practices and updates on certain personnel and regulatory matters.

Accounting Review

As noted above, Fannie Mae is conducting a comprehensive review of its accounting policies and practices. Set forth below are certain accounting errors identified in the course of that review, which have been discussed with Deloitte & Touche and the Audit Committee of the Board of Directors. These issues also were reviewed with OFHEO in the course of discussions preceding our minimum capital submission as of September 30, 2005. We are continuing to review other policies and practices, some of which may further impact the accounting for these matters. We are working to quantify the financial statement impacts of these errors. Further, any conclusions reached during the accounting policy review are subject to further analysis in the course of the restatement and Deloitte & Touche's re-audit.

Derivative Accounting

Hedge Accounting. Fannie Mae misapplied hedge accounting under Financial Accounting Standard No. 133, *Accounting for Derivative Instruments and Hedging Activities*, for certain of its derivatives, and as a result of this error expects to record an estimated net cumulative after-tax loss of approximately \$8.4 billion as of December 31, 2004, excluding the impact of mortgage commitments (which are discussed below). This estimated loss is subject to change as a result of other accounting issues under review.

Accounting for Mortgage Commitments. Fannie Mae has concluded that, after adoption of Financial Accounting Standard No. 149, *Amendments of Statement 133 on Derivative Instruments and Hedging Activities*, it misapplied cash flow hedge accounting criteria for its mortgage commitments. Fannie Mae estimates that the net cumulative amount of after-tax losses relating to mortgage commitments deferred in accumulated other comprehensive income, referred to as AOCI, was approximately \$2.4 billion as of December 31, 2004. This estimated loss is subject to change as a result of other accounting issues under review.

We expect that the impact of the misapplication of derivative accounting rules will be material to Fannie Mae's previously reported results for many, if not all, periods and will vary substantially from period to period based on the amount and types of derivatives held and fluctuations in interest rates and volatility. Fannie Mae's restatements to eliminate hedge accounting will result in the recognition of derivative gains and losses in the period of occurrence that were previously deferred under hedge accounting and would have been recognized in future period earnings.

Reclassification of Securities

Fannie Mae has determined that it misapplied generally accepted accounting principles (GAAP) relating to the classification of its investments in debt and equity securities under Financial Accounting Standard No. 115, *Accounting for Certain Investments in Debt and Equity Securities*. As a result, Fannie Mae must reclassify securities previously classified as held-to-maturity and discontinue use of the held-to-maturity category until two years after the last misclassified transaction. Fannie Mae expects to reclassify the majority of its held-to-maturity securities to the available-for-sale category. To the extent that securities are classified as available-for-sale, all unrealized gains and losses for those securities, net of taxes, for each reporting period will be recorded in equity as a component of AOCI. AOCI will vary substantially from period to period as a result of this reclassification, primarily due to changes in interest rates which affect the fair value of debt securities, but will not impact our regulatory capital position because

AOCI is excluded from this calculation. Gains and losses on these securities will impact the carrying value of these assets, which will impact the amount of capital we are required to hold, but we do not expect the impact to be material.

As part of its ongoing accounting review, Fannie Mae is also evaluating whether a portion of the securities in its portfolio should be reclassified as trading. To the extent that securities are classified as trading, unrealized gains and losses on those securities for each period will be recorded as a component of earnings.

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Amortization of Premiums and Discounts

Fannie Mae has determined that errors were made in its application of Financial Accounting Standard No. 91, *Accounting for Nonrefundable Fees and Costs Associated with Originating or Acquiring Loans and Initial Direct Costs of Leases*. The errors primarily relate to the assumptions we used in estimating the amortization rates of various premiums and discounts on securities and loans. To the extent that using the correct assumptions results in a change in amortization rates from previous estimates, it will affect the timing of the company's recognition of premiums and discounts on securities and loans.

Guaranty Accounting

Fannie Mae anticipates recording asset impairments with respect to certain of the periods being restated relating to the company's accounting for certain guaranty assets that result from the buy-up of guaranty fees in connection with certain Fannie Mae mortgage-backed security (Fannie Mae MBS) issuances. To facilitate the pooling of mortgages into a Fannie Mae MBS, in certain transactions the monthly Fannie Mae MBS guaranty fee rate is adjusted for an upfront cash payment by Fannie Mae to the lender (a buy-up) or an upfront cash receipt from the lender to Fannie Mae (a buy-down) when the Fannie Mae MBS is formed. These amounts adjust Fannie Mae's monthly guaranty fee so that the coupon rates on the Fannie Mae MBS are generally in increments of whole or half a point, which tend to be more easily traded. When Fannie Mae engages in buy-up transactions, it increases its guaranty assets by the amount of the buy-up and recognizes income over the expected life of the Fannie Mae MBS. Fannie Mae previously did not periodically assess these buy-ups for impairment, which is required by GAAP. During the course of the restatement, Fannie Mae will assess these guaranty assets for impairment and expects to record impairment relating to such assets in certain periods.

LIHTC and Synthetic Fuel Investments

Fannie Mae has determined that it has made errors in the accounting for its Low Income Housing Tax Credit (LIHTC) investments. Fannie Mae incorrectly accounted for certain of its LIHTC investments using the effective yield method instead of the equity method of accounting. Restating the accounting for these investments using the equity method will affect the timing of recognition of losses during the restatement period and will result in more variability from period to period.

Fannie Mae also recorded certain of its LIHTC investments on an as funded basis, rather than at the committed amount, as required by GAAP. Restating these investments at the committed amount will result in our recording an equal asset and liability for each of these investments.

In addition, Fannie Mae incorrectly expensed interest on certain borrowings used to fund the construction of qualified real estate investments as the expense was incurred, rather than capitalizing the interest on such borrowings as required by GAAP. As a result, amounts previously recorded as interest expense will be added to the carrying value of the investment. The carrying value will then be subject to reduction through partnership losses and, potentially, impairments.

Fannie Mae also has determined that it made certain errors in the calculation of impairment on these LIHTC investments. Previously reported impairment amounts also will need to be restated as a result of the impact of the errors described above on the carrying value of the company's investment.

Fannie Mae has concluded that it made certain similar errors in its accounting for investments in three synthetic fuel (referred to as synfuel) partnerships established in the 1990s. Given that Fannie Mae has limited investments in only three of

such partnerships, we expect that our restatement relating to synfuel investments will not have a significant impact on our results of operations or financial condition.

Mortgage Insurance Accounting

Fannie Mae is reviewing its historical accounting for insurance. Given the number of inquiries we have received on this topic, we are providing an interim discussion of this review.

Fannie Mae previously recognized approximately \$210 million, \$240 million and \$185 million of insurance premium expense for 2004, 2003 and 2002, respectively. The vast majority of these premiums related to policies covering mortgage credit losses. Other policies are general forms of corporate insurance, including directors' and officers' liability insurance, property and casualty insurance and workers' compensation. We conducted an initial assessment to identify policies with terms or features that required further review to determine whether insurance accounting is appropriate and are in the process of reviewing those policies so identified. We will undertake additional review procedures relating to our accounting for insurance policies upon completion of this initial review.

To date, we have determined that one mortgage insurance policy did not transfer sufficient underlying risk of economic loss to the insurer, and therefore does not qualify for accounting as insurance. Fannie Mae will restate its previously issued financial statements as a result of this error, the effect of which will be to generally record the premium paid as a deposit, with recoveries from the policy reflected as a reduction thereto, and to recognize credit losses with no reduction for any recoveries resulting from the insurance policy. At the time this insurance policy was originated, Fannie Mae paid a premium of approximately \$35 million to insure the company's losses in an amount equal to 20 percent of the unpaid principal balance of each loan contained within a portfolio of lower credit quality mortgage loans, up to an aggregate of approximately \$39 million for all loans in the portfolio. This 20 percent coverage was supplemental to standard borrower- or lender-paid mortgage insurance that was in place for every loan that had an acquisition loan-to-value ratio in excess of 80 percent. Mortgage payments on this portfolio of loans were current at the time the policy was originated, but there was a high probability that we would incur at least \$39 million in losses on this portfolio. The premium was amortized at approximately \$13.5 million in each of 2002 and 2003 and approximately \$8 million in 2004, while approximately \$39 million of payments under the policy were largely received over a three-year period, principally in 2003 and 2004. We expect that the restatement relating to accounting for this policy will have no cumulative impact on our results of operations or financial condition as of September 30, 2005, but will impact reported earnings for certain restatement periods.

We are continuing with the review of our accounting for insurance to determine whether additional policies were not accounted for properly. The Board has asked Paul, Weiss to review the circumstances surrounding this policy and to review other insurance arrangements. Fannie Mae is providing documents and information to OFHEO and the SEC regarding these matters in connection with their ongoing investigations.

Key Business and Market Issues

Fannie Mae is a shareholder-owned corporation chartered by the U.S. Congress to increase the availability and affordability of homeownership in America. In accordance with our charter, we seek to achieve this mission objective by providing and maintaining liquidity in the secondary mortgage market. Our two primary businesses—our Portfolio Investment business and our Credit Guaranty business—each contribute to this liquidity function, and together serve to increase the total amount of funds available to finance mortgages for low-, moderate- and middle-income Americans.

Our businesses are significantly affected by the dynamics of our underlying market—the secondary market for residential mortgage debt outstanding. These dynamics include the total amount of mortgage debt outstanding, the volume and composition of mortgage originations and the level of competition for mortgage assets among investors. Generally, the level of competition in our market has intensified in recent years, and our market remained extremely competitive in the third quarter of 2005.

The following discussion highlights recent developments in our primary businesses.

Credit Guaranty Business

Single-family

Our single-family business recorded a notable increase in market share of new mortgage-related securities issuance in the third quarter of 2005, with Fannie Mae's market share rising approximately 3.4 percentage points to 27.1 percent compared with 23.7 percent in the second quarter of 2005. Our market share of new mortgage-related securities

issuance also increased relative to both government-sponsored enterprise (GSE) and private-label competitors during the past year, a period marked by significant organizational transition. Our general success in retaining and expanding relationships with existing lending partners was a key driver of these gains, enabling substantial increases in our guarantee of lender-originated product. Additionally, our increased market share in the third quarter reflects our somewhat more positive assessment of the credit

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dynamics underlying certain products available for guarantee.

Fannie Mae has been the largest agency issuer of mortgage-related securities in every year since 1990. This has contributed to our leadership position in the overall market for outstanding mortgage-related securities. Total gross Fannie Mae MBS outstanding (which includes Fannie Mae MBS held in Fannie Mae's portfolio) was \$1.900 trillion at June 30, 2005, representing 38.5 percent of outstanding mortgage-related securities. Total gross Fannie Mae MBS outstanding grew to \$1.925 trillion at September 30, 2005 (comparable data for outstanding mortgage-related securities is not yet available for this period). The higher volume of tradable Fannie Mae MBS in the secondary market has generally enhanced the liquidity of our mortgage-backed securities compared to those issued by other market participants.

The composition of mortgage originations continued to have a significant effect on our single-family business in the third quarter of 2005. Adjustable-rate mortgage (ARM) originations declined in the third quarter as a percentage of total originations, as the difference between rates for ARM loans and long-term fixed-rate loans narrowed considerably, reaching the tightest spreads recorded since 2001. Additionally, there was a notable decline in the proportion of ARM applications in the third quarter of 2005 compared with the prior quarter. Notwithstanding the third quarter decline in ARM originations, the proportion of ARM originations continued to exceed what we believe is indicated by the difference between short- and long-term mortgage rates. We believe that this dynamic reflects consumers' use of ARM products to gain even marginally lower initial mortgage payments and other affordability features in the face of rapid home price appreciation in many markets. However, given the declines in both ARM originations and ARM applications in the third quarter, we believe that the start of a shift in consumer preference away from ARMs and towards conventional fixed-rate product may be occurring, though it is difficult to anticipate the pace or duration of this shift.

Though long-term fixed-rate mortgages represent the substantial majority of assets underlying our Fannie Mae MBS, Fannie Mae has also traditionally played an active role in the secondary market for ARMs. We continue to believe that ARMs can be used as effective tools to manage personal finances by certain borrowers.

The proportion of adjustable-rate assets acquired or guaranteed by Fannie Mae has increased substantially over the past several years. For the nine months ended September 30, 2005, ARMs represented an estimated 24 percent of our conventional single-family mortgage acquisitions; however, we estimate that ARMs represented approximately 14 percent of our conventional single-family mortgage credit book of business at September 30, 2005. Negative-amortizing and interest-only ARMs have represented an increased proportion of new business year-to-date. We estimate these products represent approximately 5 percent of our conventional single-family mortgage credit book of business. These estimates are based on conventional single-family mortgage loans (in our portfolio, underlying Fannie Mae MBS held in our portfolio and underlying Fannie Mae MBS held by others) for which we have loan-level data. We do not have loan-level data for all of the single-family credit risk exposure attributable to purchases by our Portfolio Investment business, such as Freddie Mac securities, Ginnie Mae securities, private-label securities and housing revenue bonds. These products for which we do not have loan-level data represent an estimated 8 percent of our total single-family mortgage credit book of business as of September 30, 2005, and an estimated 10 percent of our single-family mortgage acquisitions during the nine months ended September 30, 2005. We expect the inclusion of these products in our estimates would impact the percentages set forth in this paragraph.

Originations of lower credit quality loans, loans with reduced documentation, and loans to fund investor properties (where the owner is not the primary resident) in 2005 remained substantially higher than historical norms. Private-label issuers' companies other than Fannie Mae, Freddie Mac and Ginnie Mae continued to be a significant source of financing for these mortgages. Many private-label issues continued to be characterized by significant levels of layered risk mortgages (for example, an interest-only or negatively-amortizing ARM with reduced documentation and a high combined loan-to-value ratio where there is both a first-lien and second-lien mortgage at closing). While private-label market share of total mortgage-backed securities issuance declined in the third quarter, with Fannie Mae gaining a significant portion of lost private-label share, the dollar volume of private-label issuance reached an all-time high of \$311.9 billion, representing over 50 percent of total new mortgage-backed securities issuance.

Our single-family business has remained focused on the achievement of our regulatory and corporate mission objectives. Meeting certain of the goals defined by the Department of Housing and Urban Development (HUD), our

mission regulator, has become more challenging largely due to the same shift in originations composition that has driven increases in private-label market share. As home price appreciation has grown considerably faster than per capita income gains in each of the past three years, many borrowers who fall into categories that would count toward our housing goals have opted for loan products other than conventional fixed-rate products to maintain affordability.

We have maintained a disciplined approach to the management of credit risk in the current environment. Credit quality in our single-family business has remained strong. The weighted average original loan-to-value ratio for our conventional single-family mortgage credit book of business was 70 percent and the weighted average credit score was 720 at September 30, 2005.

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The weighted average estimated mark-to-market loan-to-value ratio for our conventional single-family mortgage credit book of business was 54 percent at September 30, 2005. As noted above, we do not have loan-level data for an estimated 8 percent of our total single-family mortgage credit book of business as of September 30, 2005. We expect the inclusion of these products in our estimates would impact the averages set forth in this paragraph.

Additionally, our single-family delinquency measures remained low through September 2005. We expect that our single-family delinquency rate will increase beginning in the fourth quarter of 2005 due to the impact of the Gulf Coast hurricanes. We will continue to evaluate the risk and pricing dynamics in this market and run our business in accordance with our risk disciplines.

Multifamily

Fannie Mae is one of the most active participants in the multifamily mortgage market and the largest single holder of multifamily mortgage debt (including mortgage-related securities). Our multifamily business provides financing for affordable and market-rate rental housing on a nationwide basis and through a full range of economic conditions, thereby supporting both accessibility to financing and the liquidity of multifamily mortgage debt.

Real estate fundamentals for the multifamily property sector continued to improve in the third quarter. Vacancies declined to approximately 6.5 percent nationally for institutional-type properties. In addition, asking rents generally increased during the third quarter.

The dynamics of the multifamily originations market were largely unchanged from the second quarter, with historically high investor demand continuing to drive an intensely competitive market for multifamily product. As a result of the intensity of investor demand for multifamily assets, the proportion of loans meeting our credit profile and risk return requirements has declined.

We believe that our adherence to disciplined credit standards is evident in our delinquency statistics, which remain within an historically low range. Fannie Mae's multifamily delinquency rate was 0.09 percent at September 30, 2005. Our multifamily delinquency rate may increase beginning in the fourth quarter of 2005 due to the impact of the Gulf Coast hurricanes. We remain disciplined in our approach to underwriting and credit standards, and will continue to maintain our disciplined and proactive risk management approach to capital investment in the multifamily sector over the long-term.

Portfolio Investment Business

Our portfolio investment business supports our primary liquidity function by purchasing and selling mortgage loans and mortgage-related securities through a full range of economic and competitive environments. Additionally, by issuing debt to both domestic and international investors to fund our mortgage purchases, our portfolio investment business helps to maintain a diversified funding base and to expand the total amount of capital available to finance housing in the United States.

Prior to our September 27, 2004 agreement with OFHEO, Fannie Mae's mortgage portfolio business pursued a disciplined growth strategy, buying mortgage loans and mortgage-backed securities when anticipated returns met or exceeded our hurdle rates, and generally holding these assets to maturity.

Since our September 27, 2004 agreement with OFHEO, our portfolio activities have been conducted in the context of our capital plan, which defined the management of total balance sheet size by reducing the portfolio principally through normal mortgage liquidations as one of the key elements that would contribute to the achievement of our capital goal. Our assessment of the economic attractiveness of purchase and sale opportunities has been aligned with our need to lower portfolio balances to achieve our capital plan objectives. As in the first and second quarters, competition for mortgage assets in the third quarter significantly curtailed economically attractive purchase opportunities, while increasing the number of economically attractive opportunities to sell certain mortgage assets from our portfolio. Consequently, we have sold a considerably higher amount of mortgage assets from our portfolio in 2005 compared with historical norms. The heightened level of sales in our portfolio in 2005 has been facilitated by the previously announced reclassification of securities from held-to-maturity to available-for-sale, which will also provide greater flexibility in the future to sell assets from our portfolio. The \$52.9 billion of assets sold from our portfolio in the third quarter were primarily traditional 15-year and 30-year mortgage-related securities, in addition to Real Estate Mortgage Investment Conduits (REMICs) that were structured from 15-year and 30-year Fannie Mae MBS held in our portfolio.

Market dynamics have also affected the composition of assets in our portfolio. The proportion of floating rate assets in our portfolio remained high by historical standards in the third quarter, reflecting the composition of mortgage originations, the generally diminished availability of fixed-rate product that met our criteria for economic returns, and sales of fixed-rate Fannie Mae MBS from our portfolio. Floating rate assets generally have much lower prepayment variability than 30-year fixed rate

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mortgages. As a result of lower prepayment variability, a higher proportion of floating rate assets serves to lessen the overall levels of interest rate risk in our portfolio.

The total notional value of outstanding derivative instruments used to hedge interest rate risk in our portfolio declined to \$627.9 billion at September 30, 2005 compared with \$989.3 billion at September 30, 2004. The key driver of this decline was the termination of off-setting positions in pay-fixed and receive-fixed swaps. The notional amount of swaptions at September 30, 2005 declined only slightly from year-ago levels despite a decrease in the amount of fixed-rate mortgages held in the portfolio.

We have maintained our disciplined approach to managing interest rate risk in our portfolio. We believe the general effectiveness of our risk management strategies is reflected in our portfolio's duration gap, a principal measure of interest rate risk, which has not exceeded plus or minus one month for twelve months, despite interest rate volatility that has resulted in 10-year Treasury yields ranging from a high of 4.64 to a low of 3.89 during that period.

OFHEO announced on November 1, 2005 that Fannie Mae had achieved a 30 percent surplus over minimum capital at September 30, 2005. However, our requirement to maintain a 30 percent capital surplus will remain in effect at OFHEO's discretion, and will not be automatically rescinded as a result of our achieving our capital plan requirements.

When our capital surplus requirement is no longer in effect, our portfolio investment business will continue to focus on effectively supporting our chartered liquidity function while seeking to maximize total return for our investors. Management will not consider portfolio growth as a primary measure of performance for our Portfolio Investment business. Instead, management will measure the success of the Portfolio Investment business by our ability to maintain liquidity in the secondary mortgage market, and the total return we generate for our shareholders subject to our risk constraints. Consequently, our portfolio may grow or decline based upon the specific market dynamics during a given period. We will continue to generate revenue in the portfolio business principally through the difference between our cost of funding and the yield we earn on retained assets. We expect that revenue will be enhanced by our ability to capture economic value through purchase or sale transactions when market demand makes such transactions economically attractive. Additionally, management believes that our liquidity function will be enhanced by our consideration of both purchase and sale opportunities in the context of a given spread environment.

Administrative Expenses

Administrative expenses totaled an estimated \$562 million and \$1,514 million for the third quarter and first nine months of 2005, respectively, compared to an estimated \$382 million, \$1,150 million, and \$1,511 million for the third quarter, first nine months, and full year of 2004, respectively. Costs associated with the restatement process and related regulatory examinations, investigations and related litigation significantly increased administrative expenses through the third quarter of 2005. These costs totaled \$168 million and \$315 million for the third quarter and first nine months of 2005, respectively. Based on our current projections, we estimate restatement-related costs, including costs associated with technology investments, our litigation defense and our investigations and agreement with OFHEO, will total over \$560 million for full year 2005. We anticipate that these restatement-related costs will have a substantial impact on administrative expenses until the restatement is completed.

The Election of a New Director and Appointment of New Officers

Fannie Mae is announcing today the following officer appointments:

§ Robert T. Blakely, III as Chief Financial Officer;

§ Robert J. Levin as Chief Business Officer;

§ Michael J. Williams as Chief Operating Officer;

§ Carolyn Groobey as Senior Vice President, Strategy; and

§ David S. Worley, III as Senior Vice President, Housing and Community Development Credit Risk.

The company is also announcing today that Bridget A. Macaskill has been elected to join Fannie Mae's Board of Directors as of December 1, 2005 and that Frederic V. Malek will retire from the Board of Directors at the end of the

year.

In a press release dated November 3, 2005, Fannie Mae announced the appointment of Mark Winer as Deputy and Acting Head of the company's Chief Risk Officer organization.

For more information, please see the announcements we are issuing today and issued on November 3, 2005, which we are posting on

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our website, www.fanniemae.com, and including as exhibits to a Form 8-K we will file with the SEC today that will also contain the narrative portions of this Form 12b-25.

Disclosures Regarding Certain Risks and Risk Management Practices

Pursuant to a September 1, 2005 agreement with OFHEO, Fannie Mae is providing the following periodic disclosures regarding risks and risk management practices.

Subordinated Debt

Fannie Mae has committed to issue subordinated debt in a quantity such that the sum of total capital (core capital plus general allowance for losses) plus the outstanding balance of qualifying subordinated debt will equal or exceed the sum of outstanding Fannie Mae MBS times 0.45 percent and total on-balance sheet assets times 4 percent. Subordinated debt will be discounted for the purposes of this calculation during the last five years before maturity in the following manner: one-fifth of the outstanding amount is excluded each year during the instrument's last five years before maturity. When remaining maturity is less than one year, the instrument is entirely excluded. We have determined that, as of September 30, 2005, our outstanding subordinated debt plus total capital exceeded the sum of 0.45 percent of outstanding Fannie Mae MBS plus 4 percent of total on-balance sheet assets. Our determination that we are in compliance with our subordinated debt commitment reflects our current assessment of accounting issues we are reviewing and their estimated financial impact.

Liquidity Management

Fannie Mae has made a commitment to maintain a functional contingency plan providing for at least three months of liquidity without relying upon the issuance of unsecured debt, and to periodically test the contingency plan in consultation with its OFHEO Examiner-in-Charge. As of September 30, 2005, we were in compliance with our commitment to maintain and test our contingency plan.

Interest Rate Risk

In its September 1, 2005 agreement with OFHEO, Fannie Mae agreed to provide periodic public disclosures regarding the monthly averages of our duration gap. We disclose the duration gap on a monthly basis in our Monthly Summary Report, which is available on our website and filed with the SEC in a current report on Form 8-K. (See, *e.g.*, the Form 8-K Fannie Mae filed with the SEC on October 28, 2005.) The duration gap on Fannie Mae's portfolio averaged one month in September 2005.

Fannie Mae also agreed to provide public disclosure regarding the impact on its financial condition of both a 50-basis point shift in rates and a 25-basis point change in the slope of the yield curve. We will begin providing this disclosure once we have current financial statements.

Credit Risk

Pursuant to its September 1, 2005 agreement with OFHEO, Fannie Mae agreed to provide quarterly assessments of the impact on its expected credit losses from an immediate 5 percent decline in single-family home prices for the entire United States.

The estimated sensitivity of our expected future credit losses to an immediate five percent decline in home values for all single-family mortgages held in Fannie Mae's retained portfolio and underlying guaranteed Fannie Mae MBS at June 30, 2005 (the most recent date for which data are available), prior to the receipt of private mortgage insurance claims or any other credit enhancements, was \$1,838 million, or 0.09 percent of our conventional single-family mortgage credit book of business, compared with 0.13 percent at June 30, 2004.

After receipt of expected mortgage insurance and other credit enhancements, the estimated sensitivity of our expected future credit losses to an immediate five percent decline in home values for all single-family mortgages held in Fannie Mae's retained portfolio and underlying guaranteed Fannie Mae MBS at June 30, 2005, was \$802 million, or 0.04 percent of our conventional single-family mortgage credit book of business, compared with 0.06 percent at June 30, 2004.

Credit Ratings

Fannie Mae agreed to seek to obtain a rating that will be continuously monitored by at least one nationally recognized statistical rating organization and that it would provide periodic public disclosure of the rating or ratings. The rating will assess, among other things, the independent financial strength or risk to the government rating of Fannie Mae operating under its authorizing legislation but without assuming a cash infusion or extraordinary support

of the government in the event of a financial crisis.

Standard & Poor's current risk to the government rating for Fannie Mae is AA- and on CreditWatch Negative. Standard & Poor's continually monitors this rating. The rating has remained on CreditWatch Negative since September 23, 2004.

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Moody's Investors Service's current Bank Financial Strength Rating for Fannie Mae is B+ with a stable outlook. Moody's Investors Service continually monitors this rating.

Impact of Hurricanes Katrina and Rita

Fannie Mae has previously reported that it estimates that its after-tax losses as of September 30, 2005 as a result of Hurricanes Katrina and Rita will be in a range of \$250 million to \$550 million. As a result, Fannie Mae has recorded a \$257 million after-tax charge for the quarter ended September 30, 2005 relating to these hurricanes. The company will continue to assess the impact of Hurricanes Katrina and Rita as more information becomes available.

Fannie Mae's exposure to losses as a result of Hurricanes Katrina and Rita arises primarily from its guaranty of principal and interest payments due to holders of Fannie Mae MBS secured by property in the affected areas, its portfolio holdings of mortgages and mortgage-related securities secured by property in the affected areas, and real estate that it owns in the affected areas. Fannie Mae's preliminary estimates of the financial impact of Hurricanes Katrina and Rita involve the exercise of considerable judgment and assumptions about uncertain matters. For example, these estimates could be impacted negatively or positively if insurance recoveries, including flood insurance, the number of properties damaged, the extent of the damage, or property values are less or more than the company has assumed. These preliminary estimates are inherently imprecise due to a variety of factors, including the company's inability to access portions of the affected areas and the limited availability of reliable data regarding the condition of properties in the affected areas. Further, the estimated range does not reflect potential issues with the pace of economic recovery in the regions affected by Hurricanes Katrina and Rita. Accordingly, the range Fannie Mae has estimated is based on current information, and may change as new information becomes available.

In response to Hurricanes Katrina and Rita, Fannie Mae has instituted mortgage relief provisions designed to meet the individual needs of borrowers facing hardship as a result of the hurricanes. Fannie Mae's disaster relief provisions allow lenders to help borrowers in several ways, including suspending or reducing mortgage payments for up to 18 months or more and permitting repayment of the amounts deferred over time. In addition, Fannie Mae has established new single-family underwriting flexibilities for disaster relief that will help borrowers affected by the hurricanes to acquire new homes. Fannie Mae has also identified 1,500 single-family properties from its inventory of real estate owned for rent-free leasing to individuals and families displaced by Hurricanes Katrina and Rita for up to 18 months.

Achievement of Capital Restoration Plan

On November 1, 2004, OFHEO announced that Fannie Mae achieved the 30 percent capital surplus requirement over the minimum capital requirement as of September 30, 2005, as required by OFHEO. The minimum capital requirement takes into account Fannie Mae's current assessment of accounting issues it is reviewing and their estimated financial impact, as well as Fannie Mae's preliminary estimate of after-tax losses related to Hurricanes Katrina and Rita.

Legislative Developments

The U.S. Congress is considering legislation to strengthen regulatory oversight of the government sponsored housing enterprises. We support these efforts as part of restoring the market's trust and confidence in Fannie Mae, which, in turn, is critical to our ability to fulfill our mission of raising capital to finance affordable housing.

The House Financial Services Committee and the Senate Banking, Housing, and Urban Affairs Committee have advanced GSE regulatory oversight legislation during the current session of Congress. The separate House and Senate bills address key elements of the GSEs' business and regulation including regulatory structure, capital standards, receivership, scope of GSE activities, affordable housing goals, portfolio composition and size, and expanded regulatory oversight over GSE officers and directors. The House bill also provides for a fund to support affordable housing to be funded by a specified percentage of our profits. On October 26, 2005, the House of Representatives passed H.R. 1461, the bill reported by the House Financial Services Committee, by a vote of 331-90.

The enactment into law of the various legislative provisions under consideration, depending on their final terms and on how they were applied by our regulator within the scope of its authority, could have a material adverse effect on future earnings, shareholder returns, ability to fulfill our mission, and ability to recruit and retain qualified officers and directors. It is also possible that in the legislative process provisions that go beyond the elements described above and that further alter Fannie Mae's charter and ability to fulfill its affordable housing mission could be enacted.

We cannot predict the prospects for the enactment, timing or content of any legislation or its impact on our financial prospects.

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xbrli:pure xbrli:shares

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

FORM 10-K

(Mark
One)

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

For the year ended December 31, 2017

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, 94547
Hercules,
California
(Address of
principal
executive
offices) (Zip Code)

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

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

Title of Each	Name of Each Exchange on Which Registered
------------------	--

Class

Class A

Common

Stock

Par New York Stock Exchange

Value

\$0.0001

per share

Class B

Common

Stock

Par New York Stock Exchange

Value

\$0.0001

per share

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 ☒ Yes ☐ No days.

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data

File required to be submitted and posted 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 and post ☒ Yes ☐ No such files).

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☒

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. (Check one):

Large

accelerated

filer

Accelerated filer

☐

Non-accelerated

filer

Smaller reporting

☐

check if a smaller

company

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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 is a shell company (as defined in Rule 12b-2 of the Exchange Act).

.. Yes x No

As of June 30, 2017, 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 \$4,732,091,180 and the aggregate market value of the registrant's Class B Common Stock held by non-affiliates was approximately \$63,200,250.

As of April 10, 2018, there were 24,701,407 shares of Class A Common Stock and 5,103,283 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 2018 Annual Meeting of Stockholders (specified portions)	III

BIO-RAD LABORATORIES, INC.

FORM 10-K DECEMBER 31, 2017

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INFORMATION RELATING TO FORWARD-LOOKING STATEMENTS

Other than statements of historical fact, statements made in this Annual Report include forward-looking statements, such as statements with respect to our future financial performance, operating results, plans and objectives that involve risk and uncertainties. Forward-looking statements generally can be identified by the use of forward-looking terminology, such as “believe,” “expect,” “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 those 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

Founded in 1952 and incorporated in 1957, Bio-Rad Laboratories, Inc. (referred to in this report as “Bio-Rad,” “we,” “us,” and “our”) was initially engaged in the development and production of specialty chemicals used in biochemical, pharmaceutical and other life science research applications. We entered the field of clinical diagnostics with the development of our first test kit based on separation techniques and materials developed for life science research.

Through internal research and development efforts and acquisitions we have expanded into various markets. Today, 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.

As we broadened our product lines, we also expanded our geographical market. 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

Today, 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 36% and 63%, respectively, of our net sales for the year ended December 31, 2017. We generated approximately 37% of our consolidated net sales for the year ended December 31, 2017 from U.S. sales and approximately 63% from sales in our remaining worldwide markets.

For a description of business and financial information on industry and geographic segments, see Note 14 of Item 8 of Part II of this report.

Life Science Segment

Our Life Science segment is at the forefront of discovery, creating advanced tools to answer complex biological questions. We are a leader in the life sciences market and develop, manufacture and market approximately 6,000 reagents, apparatus and laboratory instruments that serve a global customer base. Many of our products are used in established research techniques, biopharmaceutical production processes and food testing regimes. 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 \$9 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 were approximately \$12 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, 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 generally we have not experienced difficulty in securing adequate supplies. However, 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 numerous U.S. and international patents and trademarks. We also pay royalties on the sales of certain products under several patent license agreements. 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 and Backlog

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.

For the most part, we operate in markets characterized by short lead times and the absence of significant backlogs. Management has concluded that backlog information is not material to our business as a whole.

Sales and Marketing

We conduct our worldwide operations through an extensive direct sales force, employing approximately 970 direct sales and sales management personnel around the world. Our sales force typically consists of experienced industry practitioners with scientific training, and we maintain a separate specialist sales force for each of our segments. We believe that this direct sales approach allows us to sell a broader range of our products and have more direct contact 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 that require 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. In 2017, no single customer accounted for more than two percent of our total net sales. 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. A significant reduction of government funding has in the past and could in the future have a detrimental effect on the results of this segment.

Most of our international sales are generated by our wholly-owned subsidiaries and their branch offices. Certain of these subsidiaries also have manufacturing facilities. 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 our products and technology offer customers specific advantages over the competition.

Because of the breadth of its product lines, our Life Science segment does not face the same competitors for all of its products. 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 complete solutions.

Major competitors of our Clinical Diagnostics segment include Roche, Abbott Laboratories, Siemens, Danaher, Thermo Fisher, Becton Dickinson, bioMérieux, Ortho Clinical Diagnostics, Tosoh, Immucor and DiaSorin. We compete in our customer segments by providing high quality products, broad product portfolios and outstanding customer support.

Research and Development

We conduct extensive research and development activities in all areas of our business, employing approximately 820 employees worldwide in these activities, including degreed scientists and technical support staff. 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 universities, hospitals and medical schools, and within our industry. We spent approximately \$250.3 million, \$205.9 million and \$193.0 million on research and development activities in 2017, 2016 and 2015, respectively.

Regulatory Matters

The development, testing, manufacturing, marketing, post-market surveillance, distribution, advertising and labeling of certain of our products (primarily diagnostic products) are subject to regulation in the United States by the Center for Devices and Radiological Health 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 clearance or approval 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. After a product that is subject to FDA regulation is placed on the market, numerous regulatory requirements apply, including, for example, the requirement that we comply with recordkeeping and reporting requirements, such as the FDA's medical device reporting regulations and reporting of corrections and removals. The FDA enforces these requirements by inspection and market surveillance. The FDA has authority to take various administrative and legal actions against us for our, or our products', failure to comply with relevant legal or regulatory requirements, including issuing warning letters, initiating product seizures, requesting or requiring product recalls or withdrawals, and other civil or criminal sanctions, among other things.

We are also subject to additional healthcare 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, any of which could adversely affect our ability to operate our business and our financial results.

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 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 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.

Employees

At December 31, 2017, Bio-Rad had approximately 8,150 employees. Approximately seven percent of our approximately 3,270 U.S. employees are covered by a collective bargaining agreement, which will expire on November 7, 2019. Many of our non-U.S. full-time employees, especially in France, are covered by collective bargaining agreements. We consider our employee relations to be generally good.

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 public may read and copy any materials that we file with the SEC at the SEC's Public Reference Room at 100 F Street, NE, Washington, DC 20549. The public may obtain information on the operation of the Public Reference Room by calling the SEC at 1-800-SEC-0330. Also, 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 Annual 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 or the trading price of our common stock.

Our settlement with government agencies in connection with violations by us of the U.S. Foreign Corrupt Practices Act could have a material adverse effect on our business, results of operations and financial condition.

As previously disclosed, we entered into a non-prosecution agreement (NPA) with the U.S. Department of Justice (DOJ) and the Securities and Exchange Commission (SEC) and consented to the entry of an Order by the SEC (SEC Order), effective November 3, 2014, which actions resolved both the DOJ and the SEC investigations into our violations of the U.S. Foreign Corrupt Practices Act (FCPA). Under the terms of the NPA and the SEC Order, we agreed to pay a financial penalty and certain amounts in disgorgement and interest as well as to compliance, reporting and cooperation obligations to be performed for two years. On October 28, 2016, the DOJ and SEC informed Bio-Rad that they did not intend to extend the NPA after it expired November 2, 2016.

Whether by virtue of disclosure of the NPA and the SEC Order or otherwise, we may be subject to investigations by foreign governments or further claims by third parties arising from conduct subject to the investigation or our other international operations. For additional information regarding further claims by third parties, see Note 13, "Legal Proceedings" in the Notes to Condensed Consolidated Financial Statements of Part II, Item 8 of this Annual Report on Form 10-K. Many of our customers in our significant international operations are government agencies or state-owned

or state-controlled universities, hospitals and laboratories. The disclosure of the NPA and the SEC Order and any further violations of the FCPA could harm our reputation with these customers, which could materially adversely affect our business, results of operations and financial condition. Any further violations of the FCPA also could result in more punitive actions by the SEC and DOJ, which also could materially adversely affect our business, results of operations and financial condition.

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 in 2017 our foreign subsidiaries generated 63% 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 (including with respect to the invalidation of the U.S.-European Union safe harbor by the European Court of Justice in October 2015, compliance with the EU-U.S. Privacy Shield adopted by the European Commission in July 2016, and the requirements for compliance with the EU General Data Protection Regulation, which takes effect May 25, 2018), labor relations laws, tax laws, anti-competition regulations, import and trade restrictions, export requirements, U.S. laws such as the 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.

Given the high level of complexity of these laws, 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 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 factor regarding government regulations 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 merged, and some of our competitors have greater financial resources than we do and are less leveraged than we are, 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. 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.

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, such as the Swiss Franc, Brazilian Real and Russian Ruble, may negatively impact our operations outside of the United States and increase our costs to hedge against currency 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.

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. 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. For example, we experienced system implementation issues in our Clinical Diagnostics segment during our first deployment that impacted invoicing and caused an increase in accounts receivable. In our second deployment, we experienced delays in manufacturing and logistics, which adversely impacted our sales. We launched our third deployment in Western Europe in April 2017. We have experienced system implementation issues impacting the timing of payment of vendor invoices and resulting in delays in product availability and shipments. We also have experienced lower productivity levels related to the April 2017 go-live of the ERP in Western Europe, which adversely impacted our sales during the second and third quarters of 2017. The third deployment was more complex than our prior deployments due to its scope. While we invested significant resources in planning, project management and training, additional and significant implementation issues may arise. 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 and executive management team could negatively impact our business.

We made significant changes to our organizational structure in 2014, 2015 and 2016, and we continued to make significant organizational changes in 2017. In 2014 and 2015, we functionalized our manufacturing and selling organizations globally and separated them from our marketing and research and development organizations. Specifically, we combined our international selling organization with our North American selling divisions into one global selling group and consolidated our manufacturing, procurement and logistics operations into one global supply chain group. We also created new management positions to head each of these groups. In addition, we appointed new executives to head each of our Life Science and Clinical Diagnostics segments, and we appointed a Chief Operating

Officer. We also restructured our Life Science segment based on functional groups rather than product line divisions. In 2016, we began implementing the reorganization of the structure of our European organization. We continued to implement the reorganization of our European organization in 2017. These changes may have unintended consequences, such as distraction of our management and employees, business disruption,

attrition of our workforce, inability to attract or retain key employees, and reduced employee morale or productivity.

Our failure to establish and maintain effective internal control over financial reporting could result in material misstatements in our consolidated 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. During the third quarter of 2017, we identified two items that were recorded in the three-month period ended September 30, 2017 that should have been recorded in the three-month period ended June 30, 2017. In each case, the misrecorded item was due to errors as a result of data migration and system configuration arising from our new European business structure during our ERP system conversion in Europe in April 2017. Our review controls and our user acceptance testing controls were not sufficiently designed to identify these items on a timely basis. Though there was no impact on the financial statements for the nine-month period ended September 30, 2017, we concluded that our disclosure controls and procedures were ineffective as of September 30, 2017 and that this deficiency constituted a material weakness. Our management believes that our enhanced post-conversion management review control activities and augmented user acceptance testing of system changes, which were designed to remediate the material weakness over financial reporting disclosed as of September 30, 2017, were sufficiently implemented as of December 31, 2017.

In connection with our assessment of the effectiveness of internal control over financial reporting as of December 31, 2017, we determined that we did not maintain a sufficient complement of personnel in certain European countries with appropriate training and expertise in accounting and reporting in the new ERP system following the system conversion and European reorganization that the Company undertook in April 2017, including the implementation of reporting lines, appropriate authorities and responsibilities within and between our accounting and reporting function, information technology and the business operations in these European countries. We did not conduct continuous risk assessment over changes in our European business operations, IT systems and personnel to identify and assess necessary changes in internal control over financial reporting. As a result, we did not design effective control activities over the accounting for financial statement amounts, including inventory and revenue, reported by entities impacted by the European reorganization, including management review controls with sufficient precision to identify and investigate potential outliers. These control deficiencies resulted in immaterial misstatements to inventory, revenue and cost of goods sold, certain of which were corrected in the consolidated financial statements as of December 31, 2017, prior to issuance.

Because the deficiencies create a reasonable possibility of material misstatement in the annual or interim consolidated financial statements that will not be prevented or detected on a timely basis, they represent a material weakness in internal control over financial reporting and accordingly, our management concluded that our internal control over financial reporting was not effective as of December 31, 2017. KPMG, LLP, an independent registered public accounting firm, has audited the consolidated financial statements included in this Annual Report on Form 10-K and, as part of the audit, has issued an adverse opinion on the effectiveness of the Company's internal control over financial reporting as of December 31, 2017.

In response to this evaluation and assessment, our management is enhancing its control environment in the entities impacted by the ERP system conversion and European reorganization by (i) increasing resources with sufficient accounting and reporting expertise within our reorganized business and using our new ERP system, (ii) implementing and monitoring reporting lines and appropriate authorities and responsibilities within the accounting and reporting function, information technology and the business operations, and (iii) providing training to our control owners to effectively perform controls in the new environment including training on reconciliation review controls and certain ERP system enhancements. Our management is also enhancing its risk assessment process to continuously assess the

potential impact on internal control over financial reporting of changes to business operations, including changes relating to similar ERP system conversions and reorganizations that may occur in the future. In addition, our management also is in the process of designing additional control activities over financial

statement amounts reported by entities impacted by the European reorganization. However, we cannot assure you that these efforts will be effective in timely remediating the material weakness or that additional deficiencies or material weaknesses in our internal control over financial reporting will not be identified in the future.

Such material weaknesses 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 significant deficiencies or 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. For further information regarding our controls and procedures, see Part II, Item 9A of this Annual Report on Form 10-K.

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

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. 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. Computer hackers may attempt to penetrate our or our vendors' information systems and, if successful, 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. 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 ERP implementation above and our information technology systems below.

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 to an infringed party. Any of the foregoing matters could adversely impact our business, results of operations and financial condition.

Global economic conditions could continue to adversely affect our operations.

In recent years, we have been faced with very challenging global economic conditions. A deterioration in the global economic environment may result in decreased demand for our products, increased competition, downward pressure on the prices for our products and longer sales cycles. A weakening of macroeconomic conditions may also adversely affect our suppliers, which could result in interruptions in supply in the future. We have also experienced delays in collecting receivables in certain countries in Western Europe, and we may experience similar delays in these and other countries or regions experiencing liquidity problems. As of December 31, 2017, we had accounts receivable, net of allowance for doubtful accounts, in Spain, Italy, Greece and Portugal of \$41.0 million. In addition, a slowing of growth in the Chinese economy and in emerging markets, especially those oil-producing countries that have been affected by the decline in oil prices, could adversely affect our business, results of operations or financial condition. We also are monitoring developments following the United Kingdom's decision to leave the European Union to determine if there will be any potential impact on our business.

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. Clinicians may decide not to order 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.

The PPACA has also imposed a 2.3% excise tax on the sales of certain medical devices in the U.S., which we are required to pay on most of our United States Clinical Diagnostic sales. However, the Consolidated Appropriations Act, 2016 (Pub. L. 114-113), signed into law on December 18, 2015, included a two year moratorium on the medical device excise tax. On January 22, 2018, the moratorium on the medical device excise tax was further extended until January 1, 2020.

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, in April 2017 the European Parliament voted to enact final regulations that include broad changes to its regulations

regarding in vitro diagnostic devices and medical devices, including stricter product labeling requirements, 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. Due to these evolving and diverse requirements, we face

uncertain product approval timelines, additional time and effort to comply, reduced sales and potential 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. Such regulations could adversely affect our business, results of operations and financial condition.

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. In order to be successful in these activities, we must, among other things:

- assimilate the operations and personnel of acquired companies;
- retain acquired business customers;
- minimize potential disruption to our ongoing business;
- retain key technical and management personnel;
- integrate acquired companies into our strategic and financial plans;
- accurately assess the value of target companies, products and technologies;
- comply with new regulatory requirements;
- harmonize standards, controls, procedures and policies;
- minimize the impact to our relationships with our employees and customers; and
- assess, document and remediate any deficiencies in disclosure controls and procedures and internal control over financial reporting.

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. 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. 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.

In some cases we rely on temporary personnel or consultants, and we may do so in the future. Such temporary personnel or consultants may lack the knowledge and/or specific skills necessary for our business, require time to train without benefiting us through extended employment and increase our costs. In addition, as noted above, our strategic initiatives, such as our internal restructuring and ERP implementation, may be burdensome and disruptive and lead to employee dissatisfaction and attrition.

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 many 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. 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.

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 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. 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 ERP implementation and data security above and events beyond our control below.

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. 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, 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 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.

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 tax liability is always 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.

The results from various tax examinations, audits and litigation may differ from the liabilities recorded in our financial statements and could materially and adversely affect our financial results and cash flows in the period or periods for which that determination is made.

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"). The Tax Act made a number of substantial changes, including, among other changes, the imposition of a one-time mandatory deemed repatriation tax on previously unrepatriated earnings accumulated offshore since 1986, establishment of a global minimum income tax and base erosion tax provisions related to offshore activities and affiliated party payments, and reduction of the corporate tax rate from 35% to 21% for US taxable income, resulting in a one-time remeasurement of deferred taxes to reflect their value at a lower tax rate of 21%. These changes to U.S. tax laws will significantly impact how U.S. multinational corporations are taxed on foreign earnings.

To determine the transition tax, the Tax Act requires complex computations not previously provided in U.S. tax law, including calculating and supporting with primary evidence U.S. tax attributes such as accumulated foreign earnings and profits, foreign taxes paid, and other tax components involved in foreign tax credit calculations since

1986. The application of accounting guidance for such items is currently uncertain, and compliance with the Tax Act and the accounting for such provisions require collection of information not previously required, regularly produced or within our control. As a result, these provisional tax amounts recorded are based on our reasonable estimate and we will need additional information to complete our assessment. As additional regulatory guidance is issued by the applicable taxing authorities, as accounting treatment is clarified, as we perform additional analysis on the application of the Tax Act, and as we refine estimates in calculating the effect, our final analysis, which will be recorded in the period completed, may be materially different from our current provisional amounts, which could materially affect our tax obligations and effective tax rate.

We are still evaluating the tax provisions related to two new U.S. tax base erosion provisions, the base-erosion and anti-abuse tax (BEAT) provisions and the global intangible low-taxed income (GILTI) provisions. The BEAT provisions in the Tax Reform Act eliminate the deduction of certain base-erosion payments made to related foreign corporations, and impose a minimum tax if greater than regular tax. The GILTI provisions require the Company to include in its U.S. income tax return foreign subsidiary earnings in excess of an allowable return on the foreign subsidiary's tangible assets. We are not yet able to reasonably estimate the effect of the BEAT and GILTI provisions of the Tax Act.

Our global operations subject us to income and other taxes in the U.S. and in numerous foreign jurisdictions, each with different tax schemes and tax rates. In addition to the changes in tax laws, the interpretation of tax laws and tax rates in these jurisdictions, the jurisdictional mix of our earnings in countries with differing statutory tax rates can have a significant impact on our effective tax rate from period to period.

The liability for the transition tax, changes to the provisional tax amounts, and other ongoing effects of the Tax Act, including the effect of our investment in Sartorius, and the jurisdictional mix of our earnings could 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 particular country.

Our reported financial results may be materially affected by changes in accounting principles generally accepted in the United States.

Generally accepted accounting principles in the United States, or U.S. GAAP, are subject to interpretation by the Financial Accounting Standards Board, or FASB, the U.S. Securities and Exchange Commission, or SEC, and various bodies formed to promulgate and interpret appropriate accounting principles. A change in these principles or interpretations could have a significant effect on our reported financial results, and could affect the reporting of transactions completed before the announcement of a change.

For example, in January 2016, the FASB issued Accounting Standards Update (ASU) 2016-01, "Recognition and Measurement of Financial Assets and Financial Liabilities." Amendments under ASU 2016-01, among other items, require that all equity investments in unconsolidated entities (other than those accounted for using the equity method of accounting), such as our investment in the preferred shares of Sartorius AG, will generally be measured at fair value through earnings. Entities may elect to record equity investments without readily determinable fair values at cost, less impairment, and plus or minus subsequent adjustments for observable price changes. Changes in the basis of these equity investments will be reported in current earnings. ASU 2016-01 is effective for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. We expect that the impact of adoption of ASU 2016-01 will materially impact our consolidated statement of income due to our ownership of preferred shares of Sartorius AG. In future periods after adoption, changes in the market value of the preferred shares of Sartorius AG

along with our other equity investments may materially impact our consolidated statement of income.

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 debt may restrict our future operations.

We have substantial debt and have the ability to incur additional debt. As of December 31, 2017, we had approximately \$435.0 million of outstanding indebtedness. In addition, we have a revolving credit facility that provides for up to \$200.0 million, \$0.5 million of which has been utilized for domestic standby letters of credit. Our incurrence of substantial amounts of debt may have important consequences. For instance, it could:

- make it more difficult for us to satisfy our financial obligations, including those relating to our outstanding debt;
- require us to dedicate a substantial portion of our cash flow from operations to the payment of interest and principal due under our debt, which will reduce funds available for other business purposes;
- increase our vulnerability to general adverse economic and industry conditions;
- limit our flexibility in planning for, or reacting to, changes in our business and the industries in which we operate;
- place us at a competitive disadvantage compared with some of our competitors that have less debt; and
- limit our ability to obtain additional financing required to fund working capital and capital expenditures and for other general corporate purposes.

Our existing credit facility and the terms of our other debt instruments, including agreements we may enter in the future, contain or will contain covenants imposing significant 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. These 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. In addition, acceleration of our other

indebtedness may cause us to be unable to make interest payments on our outstanding notes and repay the principal amount of our outstanding notes or may cause the future subsidiary guarantors, if any, to be unable to make payments under the guarantees.

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

We are subject to healthcare fraud and abuse 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.

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 quite volatile 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 or other market considerations.

Regulations related to “conflict minerals” could adversely impact our business.

As part of the Dodd-Frank Wall Street Reform and Consumer Protection Act, the SEC adopted disclosure requirements regarding the use of certain minerals, known as conflict minerals, which are mined from the Democratic Republic of Congo (DRC) and adjoining countries, as well as procedures regarding a manufacturer's efforts to identify the sourcing of such minerals and metals produced from those minerals. In March and April 2017, the European Parliament and the European Council formally approved a conflict minerals regulation, and the requirements will become effective starting in January 2021. We have incurred, and will continue to incur, additional costs in order to comply with the SEC's disclosure requirements. In addition, we might incur further costs due to possible changes to our products, processes, or sources of supply as a consequence of our due diligence activities. As our supply chain is complex, we may not be able to sufficiently verify the origins of the specified minerals used in our products through our due diligence procedures, which may harm our reputation. In addition, we may encounter challenges to satisfy those customers who require that all of the components of our products be certified as “DRC conflict free”, which could place us at a competitive disadvantage if we do not do so. We filed our report for the calendar year 2016 with the SEC on May 10, 2017.

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.

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	Greater San Francisco Bay Area, California	Owned/Leased
	Singapore, Singapore	Leased
	Oxford, England	Leased
Clinical		
Diagnostics	Greater San Francisco Bay Area, California	Owned/Leased
	Irvine, California	Leased
	Greater Seattle Area, Washington	Leased
	Lille, France	Owned
	Greater Paris Area, France	Leased
	Nazareth-Eke, Belgium	Leased
	Cressier, Switzerland	Owned/Leased
	Dreieich, Germany	Owned/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

On January 23, 2015, the City of Riviera Beach General Employees' Retirement System filed a shareholder derivative lawsuit in the Superior Court of California, Contra Costa County, against three of our then current directors and one former director. We were also named as a nominal defendant. In the complaint, the plaintiff alleged that our directors breached their fiduciary duty of loyalty by failing to ensure that we had sufficient internal controls and systems for compliance with the Foreign Corrupt Practices Act ("FCPA"); that we failed to provide adequate training on the FCPA; and that based on these actions, the directors had been unjustly enriched. Purportedly seeking relief on our behalf, the plaintiff sought an award of restitution and unspecified damages, costs and expenses (including attorneys' fees). On April 23, 2015, we and the individual defendants filed a demurrer requesting dismissal of the complaint in this case. The demurrer was heard on August 6, 2015, and the Court granted the demurrer for failure to make a demand on our Board of Directors on August 17, 2015, but provided leave to amend. On September 4, 2015, the plaintiff filed an amended complaint and simultaneously served a litigation demand letter on our Board of Directors ("Board") via its counsel in this action. The letter demanded that we investigate and bring appropriate legal action against certain individuals, including the defendants in the City of Riviera Beach case and six current and former employees. The plaintiff also moved for a temporary stay in the proceedings, purportedly to enable the Board to respond to the demand. The Board formed a Demand Review Committee to respond to the demand. On February 24, 2016, the Demand Review Committee reported to the Board that it had concluded its investigation and unanimously determined that it was not in the best interests of the Company and its stockholders to pursue litigation against any

individuals named in the City of Riviera Beach's

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litigation demand letter. On October 6, 2015, we and the individual defendants filed a second demurrer, seeking to dismiss the case for failure to make a timely pre-suit demand. The case was stayed pending mediation. The caption was City of Riviera Beach General Employees' Retirement System v. Schwartz et al., Case No. C-15-00140. The lawsuit and demand letter are referred to collectively as the "California Action".

On August 13, 2015 and August 18, 2015, respectively, each of International Brotherhood of Electrical Workers Local 38 Pension Fund and Wayne County Employees' Retirement System filed a stockholder derivative complaint in the Delaware Court of Chancery against four of our then current directors and one former director. We were named as a nominal defendant in the complaints. The complaints alleged that the defendants failed to cause us to develop internal controls sufficient to ensure our compliance with the FCPA. The plaintiffs asserted claims for breach of fiduciary duty and unjust enrichment and requested an award of the damages we sustained as a result of the alleged violations, among other relief. The two lawsuits were consolidated on August 27, 2015. The case was stayed pending mediation. The caption of the consolidated case is In re Bio-Rad Laboratories, Inc. Stockholder Litigation, Consol. C.A. No. 11387-VCN (Del. Ch.). The cases filed in the Delaware Court of Chancery, together with the California Action, are referred to collectively as the "Derivative Actions".

The parties filed a Stipulation dated November 4, 2016 with the Superior Court of California for Contra Costa County that set forth the terms of a proposed settlement of the Derivative Actions. The proposed settlement included the dismissal with prejudice of all claims asserted in the Derivative Actions, an agreed-upon set of revised corporate procedures, and no monetary payment other than an award of attorneys' fees and costs to the plaintiffs' counsel. We and the other defendants did not admit any liability or fault in connection with the proposed settlement. On December 22, 2016 the Superior Court of California for Contra Costa County issued an order granting preliminary approval of this proposed settlement. The Court held a hearing for final approval of the settlement on March 2, 2017, and the Court approved the settlement.

On May 27, 2015, our former general counsel, Sanford S. Wadler, filed a lawsuit in the U.S. District Court, Northern District of California, against us and four of our then current directors and one former director. The plaintiff's suit alleged whistleblower retaliation in violation of the Sarbanes-Oxley Act and the Dodd-Frank Act for raising FCPA-related concerns. Mr. Wadler also alleged wrongful termination in violation of public policy, non-payment of wages and waiting time penalties in violation of the California Labor Code. The plaintiff sought back pay, compensatory damages for lost wages, earnings, retirement benefits and other employee benefits, compensation for mental pain and anguish and emotional distress, waiting time penalties, punitive damages, litigation costs (including attorneys' fees) and reinstatement of employment. On July 28, 2015 we filed a motion to dismiss the plaintiff's complaint and specifically requested dismissal of the claims alleged against us under the Dodd-Frank Act and California Labor Code 1102.5 and the claims against the directors under the Sarbanes-Oxley Act and the Dodd-Frank Act. On October 23, 2015, the District Court granted our motion with respect to the alleged violations of the Sarbanes-Oxley Act against all the director defendants except Norman Schwartz with prejudice. The Court denied our motion to dismiss the claims under the Dodd-Frank Act as against both us and the director defendants. The trial commenced on January 17, 2017 and concluded on February 6, 2017. Mr. Wadler was awarded \$10.92 million, plus prejudgment interest of \$141,608, post-judgment interest, and Mr. Wadler's litigation costs, expert witness fees, and reasonable attorneys' fees as approved by the Court. We have provided for the judgment, interest and Mr. Wadler's litigation costs. On June 6, 2017 we filed a notice of appeal with the United States Court of Appeals for the Ninth Circuit.

Bio-Rad received three notices of violations from the Bay Area Air Quality Management District ("District"). The District alleged that we operated three (3) power generation units without appropriate monitoring and recordkeeping and exceeded permissible levels of emissions during those operations. In January 2018, we entered into a settlement agreement with the District pursuant to which we paid the District \$990,000 to settle all claims and/or potential claims arising out of our use of the three power generation units. This settlement amount was accrued for as of December 31,

2017.

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We are also party to various other claims, legal actions and complaints arising in the ordinary course of business. We cannot at this time reasonably estimate a range of exposure, if any, of the potential liability with respect to these matters. While we do not believe, at this time, that any ultimate liability resulting from any of these other 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 other 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 symbols BIO and BIO.B, respectively. The following sets forth, for the periods indicated, the high and low intraday sales prices for our Class A and Class B Common Stock.

	Class A		Class B	
	High	Low	High	Low
2017				
Fourth Quarter	\$273.87	\$214.44	\$273.50	\$218.15
Third Quarter	242.79	208.95	243.50	210.71
Second Quarter	230.40	198.25	232.35	199.05
First Quarter	209.50	181.87	211.55	182.40
2016				
Fourth Quarter	\$184.89	\$154.89	\$194.15	\$154.05
Third Quarter	164.45	140.53	171.12	140.69
Second Quarter	150.00	135.02	150.04	134.86
First Quarter	139.63	122.03	146.41	123.43

On April 10, 2018, we had 260 holders of record of Class A Common Stock and 115 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.

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 400 MidCap Index and a selected peer group, assuming \$100 invested on December 31, 2012, 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.

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. SELECTED FINANCIAL DATA

BIO-RAD LABORATORIES, INC.

Selected Financial Data

(in thousands, except per share data)

	Year Ended December 31,				
	2017	2016	2015	2014	2013
Net sales	\$2,160,153	\$2,068,172	\$2,019,441	\$2,175,044	\$2,132,694
Cost of goods sold	972,754	930,085	897,771	996,527	954,216
Gross profit	1,187,399	1,138,087	1,121,670	1,178,517	1,178,478
Selling, general and administrative expense	808,942	816,724	761,990	808,200	798,070
Research and development expense	250,301	205,864	192,972	220,333	210,952
Impairment losses on goodwill and long-lived assets	11,506	62,305	—	—	—
Interest expense	21,914	21,942	21,692	22,131	61,271
Foreign exchange losses, net	9,128	4,542	10,249	9,305	8,566
Other (income) expense, net	(12,197)	(14,850)	(11,080)	(13,009)	(12,766)
Income before income taxes	97,805	41,560	145,847	131,557	112,385
Benefit from (provision for) income taxes	24,444	(15,560)	(36,608)	(42,712)	(34,574)
Net income attributable to noncontrolling interests	—	—	—	—	(21)
Net income attributable to Bio-Rad	\$122,249	\$26,000	\$109,239	\$88,845	\$77,790
Basic earnings per share	\$4.12	\$0.88	\$3.74	\$3.08	\$2.72
Diluted earnings per share	\$4.07	\$0.88	\$3.71	\$3.05	\$2.69
Cash dividends paid per common share	\$—	\$—	\$—	\$—	\$—
Total assets	\$4,273,012	\$3,850,504	\$3,709,718	\$3,341,278	\$3,388,790
Long-term debt, net of current maturities	\$434,581	\$434,186	\$433,883	\$435,710	\$435,615

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 primary segments, Life Science and Clinical Diagnostics, with the mission to provide scientists with specialized products needed for biological research and clinical diagnostics.

We sell more than 9,000 products and services to a diverse client base comprised of scientific research, healthcare, education and government customers 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. Because our customers require standardization for their experiments and test results, much of our revenues are recurring.

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. Adding to this uncertainty was the referendum in the United Kingdom to withdraw from the European Union, and a change in the U.S. executive branch of government. Approximately 37% of our 2017 consolidated net sales are derived from the United States and approximately 63% 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 own international manufacturing sites as well as non-U.S. suppliers, 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 has on our results.

Upon our implementation of our global single instance enterprise resource planning ("ERP") platform in Europe during the second quarter of 2017, \$10.5 million of assets in France were misclassified as Equipment that should have been reported as Buildings and leasehold improvements in periods prior to 2017. The reclassification on the 2016 balance conforms to the correct balance sheet presentation as of December 31, 2017, and there was no impact on the Consolidated Statements of Income or Cash Flows.

During 2016 and 2015, there were three different misstatements associated with income taxes. The first misstatement was related to our second implementation of our global single instance ERP platform in the U.S. in the third quarter of 2015. Part of the data migrated was not reconciled timely, resulting in the double counting of a deferred tax asset. As a consequence, Deferred income taxes in 2016 were understated by \$2.4 million and the Provision for income taxes was understated by \$2.4 million in 2015.

The second misstatement was related to the misapplication of a tax rule related to foreign dividend income. As a consequence, Retained earnings were overstated by \$1.4 million in 2015, Other tax liabilities - noncurrent, reported in Other long-term liabilities, were understated by \$4.6 million in 2016 and the Provision for income taxes was understated by \$1.9 million and \$1.3 million in 2016 and 2015, respectively.

The third misstatement was related to a design deficiency associated with transfer pricing. As a consequence, our Retained earnings were overstated by \$0.2 million in 2015, Other tax liabilities - noncurrent, reported in Other long-term liabilities, were understated by \$0.6 million in 2016 and the Provision for income taxes was understated by \$0.2 million in both 2016 and 2015.

Management evaluated the materiality of all the errors described above from a qualitative and quantitative perspective. Based on such evaluation, we have concluded that they are not material to any individual prior period, nor did they have an effect on the trend of financial results, taking into account the requirements of the Securities and Exchange Commission (SEC) Staff Accounting Bulletin No. 108, Considering the Effect of Prior Year Misstatements when Quantifying Misstatements in Current Year Financial Statements (SAB 108). Accordingly, we are correcting these errors in every affected period in the 2015 and 2016 consolidated financial statements included in this Form 10-K.

During the fourth quarter of 2017, we identified errors in the unaudited interim condensed consolidated financial statements for the three months ended September 30, 2017. We identified an error in the recording of deferred revenue acquired in our acquisition of RainDance (see Note 2, "Acquisitions"). This resulted in an overstatement of revenue recorded in the third quarter of 2017 of \$0.9 million that was corrected in the fourth quarter of 2017. In addition, we identified an error in an estimated employee benefit expense that resulted in an understatement of expenses reported in Cost of goods sold, Selling, general and administrative expense and Research and development expense, net, in the third quarter of 2017 of \$3.8 million that was corrected in the fourth quarter of 2017. Finally, we identified an error during our reconciliation of various inventory accounts which resulted in an understatement of Cost of goods sold in the third quarter of 2017 of \$3.5 million that was corrected in the fourth quarter of 2017. The impact of these errors

resulted in an overstatement of our Provision for income taxes reported in the third quarter of 2017 of \$2.9 million that was corrected in the fourth quarter of 2017.

Management evaluated the materiality of all the errors described in the previous paragraph from a qualitative and quantitative perspective. Based on such evaluation, we have concluded that they are not material to any individual prior period, nor did they have an effect on the trend of financial results, taking into account the requirements of SAB 108. Accordingly, we are correcting these errors in the financial statements for the quarter ended September 30, 2017 included in this Form 10-K.

In 2017, we impaired goodwill associated with our 1999 acquisition of Pasteur Sanofi Diagnostics S.A. and with our 2013 acquisition of AbD Serotec in the amounts of \$2.8 million and \$8.7 million, respectively. Impairment for the Pasteur Sanofi Diagnostics S.A. was included in our Clinical Diagnostics segment's results of operations, and the impairment for AbD Serotec was included in our Life Science segment's results of operations. See Note 4 to the consolidated financial statements.

In December 2017, we announced the termination of an infectious disease research and development project, which is included in our Clinical Diagnostics segment's results of operations. As a result, we recorded restructuring charges related to severance and employee benefits of \$11.0 million, and asset write-offs and exit costs of \$10.1 million for the year ended December 31, 2017. The amounts recorded were reflected in Cost of goods sold of \$2.3 million, in Selling, general and administrative expense of \$3.3 million, and Research and development expense of \$15.5 million in the Consolidated Statements of Income for the year ended December 31, 2017. The liability of \$14.1 million as of December 31, 2017 consisted of \$11.1 million recorded in Accrued payroll and employee benefits and \$3.0 million recorded in Other current liabilities in the Consolidated Balance Sheets. See Note 15 to the consolidated financial statements.

In 2014, we acquired GnuBIO, Inc. (GnuBIO) as a business acquisition. It is included in our Clinical Diagnostics segment's results of operations as a division, and is primarily based in Massachusetts. In September 2017, we announced that we are closing the GnuBIO research program facilities in Massachusetts. As a result, we recorded restructuring charges in September 2017 related to severance and employee benefits of \$2.9 million and asset write-offs of \$5.5 million. The amounts recorded were reflected in Selling, general and administrative expense of \$0.8 million and in Research and development expense of \$7.6 million in the Consolidated Statements of Income for the year ended December 31, 2017. The liability balance as of December 31, 2017 was \$1.4 million and is recorded in Accrued payroll and employee benefits in the Consolidated Balance Sheets. We expect the remainder to be paid in early 2018. See Note 15 to the consolidated financial statements.

In February 2017, we acquired all the issued and outstanding stock of RainDance Technologies, Inc. (RainDance) for approximately \$72.7 million. Cash payments at closing were \$72.9 million. In addition, we had a cash payment of \$10.0 million for a preexisting condition concurrent with the acquisition that was recorded in Cost of goods sold. The acquisition was included in our Life Science segment's results of operations from the acquisition date and was accounted for as a business combination. RainDance's foundational intellectual property portfolio and product lines encompass a wide range of biological reactions in droplets, with potential applications in life science research and clinical research. These genomic tools provide ultra-sensitive detection of genetic variations in cancer as well as inherited and infectious diseases, enabling research in areas such as non-invasive liquid biopsy. We believe that RainDance's droplet-based solutions will extend our reach into next-generation sequencing applications and strengthen our position in the area of Droplet Digital™ PCR, offering customers solutions for a wide range of nucleic acid detection applications.

The final allocation for the payments of \$72.9 million was \$37.6 million to definite-lived intangibles, \$0.2 million to acquired net assets, \$26.2 million to goodwill, a deferred tax liability of \$13.6 million primarily related to the purchased intangibles and a deferred tax asset of \$22.5 million primarily related to the acquired net operating losses. The final allocation of the payments reflect the effects of correcting an error that were recorded in the fourth quarter of

2017. These corrections reduced goodwill, deferred revenue and deferred tax assets by \$1.9 million, \$3.3 million and \$1.4 million, respectively, and had no significant impact on our Consolidated Statements of Income. See Note 2 to the consolidated financial statements.

During the fourth quarter of 2016, we fully impaired goodwill and in-process research and development in the amounts of \$13.5 million and \$46.4 million, respectively, associated with our 2014 acquisition of GnuBIO, Inc. During the second quarter of 2016, we impaired an intellectual property license associated with a research and development project for \$2.4 million. See Note 4 to the consolidated financial statements.

In May 2016, we announced that we would take certain actions in our Europe geographic region designed to better align expenses to our revenue and gross margin profile and position us for improved operating performance. These actions, aligned with creation and evolution of our organization structure and coordinated with the implementation of our global single instance enterprise resource planning ("ERP") platform, are expected to be incurred through 2019. As a result, we recorded approximately \$0.5 million and \$12.5 million in restructuring charges related to severance and other employee benefits for the years ended December 31, 2017 and 2016, respectively. The liability of \$6.3 million as of December 31, 2017 consisted of \$6.2 million recorded in Accrued payroll and employee benefits and \$0.1 million recorded in Other long-term liabilities in the Consolidated Balance Sheets. The amounts recorded were reflected in Cost of goods sold of \$(0.2) million and \$2.1 million, and in Selling, general and administrative expense of \$0.7 million and \$10.4 million in the Consolidated Statements of Income for the years ended December 31, 2017 and 2016, respectively. See Note 15 to the consolidated financial statements.

In January 2016, we acquired a high performance analytical flow cytometer platform from Propel Labs (Propel) that will enable advanced and novice users to perform basic and multi-parameter cytometry for a wide range of applications and chemistries. This asset acquisition was accounted for as a business combination and is included in our Life Science segment's results of operations from the acquisition date. The fair values of the net assets acquired from Propel as of the acquisition date were determined to be \$32.7 million of definite-lived intangible assets and \$0.1 million of goodwill.

The fair value of the consideration as of the acquisition date was \$32.8 million, which included \$9.5 million paid in cash at the closing date and \$23.3 million in contingent consideration potentially payable to Propel. The amount of contingent consideration was determined based on a probability-weighted income approach related to the achievement of sales milestones, and was recognized at its estimated fair value of \$16.7 million as of December 31, 2017. See Notes 2 & 3 to the consolidated financial statements.

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. Management is required to make estimates related to our income tax provision in each of the jurisdictions in which we operate. This process involves estimating our current tax exposures, as well as making judgments regarding the recoverability of deferred tax assets in each jurisdiction. 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. Management assesses

the likelihood that the deferred tax assets will be recovered from future taxable income and to the extent management believes that recovery is not likely, a valuation allowance must be established. To the extent

management establishes a valuation allowance or increases this allowance in a period, an increase to expense within the Provision for income taxes in the Consolidated Statements of Income may result.

We have recorded a valuation allowance of \$66.4 million as of December 31, 2017 and 2016 due to uncertainties related to our ability to utilize some of the deferred tax assets, primarily consisting of certain foreign net operating losses carried forward and certain state research and development credits. The valuation allowance is based on management's current estimates of taxable income for the jurisdictions in which we operate and the period over which the deferred tax assets will be recoverable. In the event that actual results differ from these estimates, or these estimates are adjusted in future periods, an additional valuation allowance may need to be established, which would increase the tax provision, lowering income and impacting our financial position. Should realization of these deferred tax assets for which a valuation allowance has been provided occur, the provision for income taxes may decrease, raising income and positively impacting Bio-Rad's financial position.

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 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 income tax expense. Our overall effective tax rate is subject to fluctuations because of changes in the geographic mix of earnings, changes to statutory tax rates and tax laws, and because of the impact of various tax audits and assessments, as well as generation of tax credits.

On December 22, 2017, the U.S. enacted comprehensive tax legislation (the "Tax Act"). The new legislation contains significant tax provisions that affect us, including a one-time mandatory deemed repatriation tax on certain unrepatriated foreign earnings ("Transition Tax"), a reduction of the corporate income tax rate from 35% to 21% effective January 1, 2018, and a change from a worldwide tax system to a modified territorial system.

We are required to recognize the effect of the tax law changes in the period of enactment, such as the computation of the Transition Tax, remeasurement of our U.S. deferred tax assets and liabilities, as well as reassessment of the net realizability of our deferred tax assets and liabilities.

Subsequent to the enactment of the Tax Act, the SEC staff issued Staff Accounting Bulletin No. 118, Income Tax Accounting Implications of the Tax Cuts and Jobs Act ("SAB 118"), which provides guidance on accounting for the tax effects of the Tax Act. SAB 118 provides a measurement period that should not extend beyond one year from the Tax Act enactment date for companies to complete the accounting under Accounting Standards Codification ("ASC") 740, "Income Taxes." In accordance with SAB 118, a company must reflect the income tax effects of those aspects of the Tax Act for which the accounting under ASC 740 is complete. To the extent that a company's accounting for certain income tax effects of the Tax Act is incomplete but a reasonable estimate can be determined, the company must record a provisional estimate in the financial statements. For the year ended December 31, 2017, we recorded those amounts for which the accounting was complete or for which we were able to make reasonable estimates. The provisional estimates of the Transition Tax and remeasurement of our deferred tax assets and liabilities will be adjusted as additional information and guidance become available.

Valuation of Business Acquisitions, Goodwill and Long-lived Assets. Upon the consummation of a business combination, we use multiple analyses to determine the fair market value of the consideration of assets acquired and liabilities assumed. Once the fair market value of the acquired business is determined, any residual value between fair market value and the consideration is defined as goodwill.

Goodwill represents the excess of the cost over the fair value of net tangible and identifiable intangible assets of acquired businesses, which could include contingent consideration. Contingent consideration is an obligation of the acquirer to transfer additional assets or equity interest to the former owners of an acquiree as part of the exchange

for control of the acquiree if specified future events occur or conditions are met. Contingent consideration is reported at fair value each reporting period until the contingency is resolved. Any changes in fair value are recognized in earnings, which could become volatile over time depending on the facts and circumstances.

Goodwill amounts are assigned to reporting units at the time of acquisition and are adjusted for any subsequent significant transfers of business between reporting units. We assess the impairment of goodwill annually in the fourth quarter or whenever events or changes in circumstances indicate that the carrying value may not be recoverable. We perform the impairment tests of goodwill at our reporting unit level, which is one level below our operating segments. On January 1, 2017, we adopted Accounting Standards Update 2017-04, "Simplifying the Test for Goodwill Impairment," in which a goodwill impairment will be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill.

We use a projected discounted cash flow model to determine the fair value of a reporting unit. This discounted cash flow method for determining goodwill may be different from the fair value that would result from an actual transaction between a willing buyer and a willing seller. Projections such as discounted cash flow models are inherently uncertain and accordingly, actual future cash flows may differ materially from projected cash flows. Management judgment is required in developing the assumptions for the discounted cash flow model. These assumptions include revenue growth rates, profit margins, future capital expenditures, working capital needs, expected foreign currency rates, discount rates and terminal values. We estimate future cash flows using current and longer-term financial forecasts. These forecasts take into account the current economic environment. The discount rates used are compiled using independent sources, current trends in similar businesses and other observable market data. Changes to these rates might result in material changes in the valuation and determination of the recoverability of goodwill. For example, an increase in the discount rate used to discount cash flows will decrease the computed fair value.

Impairment tests are highly sensitive to changes in assumptions and minor changes to assumptions that could result in impairment losses. Our forecasts utilized in our 2017 impairment test assumed, among other things, sales growth from executing our sales and marketing programs, new product introductions, successful product development and timely registration of our products when required, while controlling costs. In addition, external factors, such as currency, inflation rates, cost of capital, and forecasted tax rates could affect the determination of fair value of our reporting units. Aside from our Pasteur Sanofi Diagnostics S.A. and AbD Serotec reporting units, which reflected a carrying value that exceeded its fair value, our impairment tests resulted in excessive fair value over book value ranging from 8% to more than 400% for our various reporting units. One reporting unit, which consists mainly of our 2010 acquisition of Biotest AG, and our 2007 through 2009 acquisitions of DiaMed Holding AG, had excess fair value over book value of only 8% at December 31, 2017. Goodwill in the amount of \$263.6 million is allocated to this reporting unit at December 31, 2017. If the initiatives mentioned above do not achieve the desired results, or external factors change detrimentally, future impairment losses may occur.

To validate the reasonableness of the reporting unit fair values, we reconcile the aggregate fair values of the reporting units to the enterprise market capitalization. In performing the reconciliation we may, depending on the volatility of the market value of our stock price, use either the stock price on the valuation date or the average stock price over a range of dates around the valuation date.

For purposes of recognition and measurement of an impairment loss, a long-lived asset or assets are grouped with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. We assess the impairment of long-lived assets (including identifiable intangibles) whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Factors that we consider important that could trigger an impairment review include:

significant reporting unit under-performance relative to expected, historical or projected future operating results;
significant changes in the manner of use of the long-lived assets, intangible assets or the strategy for our overall business;

a current expectation that, more likely than not, a long-lived asset will be sold or otherwise disposed of before the end of its previously estimated useful life; and
 significant negative industry, legal, regulatory or economic trends.

When management determines that the carrying value of long-lived assets may not be recoverable based upon the existence of one or more of the above indicators of impairment, we test for any impairment based on a projected undiscounted cash flow method. Projected future operating results and cash flows of the asset or asset group are used to establish the fair value used in evaluating the carrying value of long-lived and intangible assets. We estimate the future cash flows of the long-lived assets using current and long-term financial forecasts. The carrying amount of a long-lived asset is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset. If this is the case, an impairment loss would be recognized. The impairment loss recognized is the amount by which the carrying amount exceeds the fair value.

In 2017, we impaired goodwill associated with our 1999 acquisition of Pasteur Sanofi Diagnostics S.A. and with our 2013 acquisition of AbD Serotec in the amounts of \$2.8 million and \$8.7 million, respectively. The impairments were based upon a revision of our Level 3 valuation inputs, i.e., expected future cash flows. In 2016, we fully impaired goodwill and in-process research and development in the amounts of \$13.5 million and \$46.4 million, respectively, associated with our 2014 acquisition of GnuBIO, Inc. The impairments were based upon a revision of our Level 3 valuation inputs, i.e., expected future cash flows. Also in 2016, we impaired intellectual property in the amount of \$2.4 million associated with the termination of a research and development project. There were no impairment losses recorded in 2015.

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, efficacy and potency of raw materials. This review is done on a quarterly basis or, if warranted by the circumstances, more frequently. 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.

We adopted ASU 2015-11, "Simplifying the Measurement of Inventory," on January 1, 2017, which requires inventory measurement at the lower of cost and net realizable value. See Note 1 to the consolidated financial statements.

Valuation of Investments. We regularly review our investments for factors that may indicate that a decline in the fair value of an investment below its carrying value is other-than-temporary. Some factors considered in evaluating whether or not a decline in fair value is other-than-temporary include our ability and intent to retain the investment for a period of time sufficient to allow for a recovery in value, the duration and extent to which the fair value has been less than cost and the financial condition and prospects of the issuer. Such reviews are inherently uncertain in that the value of the investment may not fully recover or may decline further in future periods resulting in realized losses.

Allowance for Doubtful Accounts. We maintain an allowance for doubtful accounts for estimated losses resulting from the collectability of our customer accounts. The amount of the allowance is determined by analyzing known uncollectible accounts, the age of our receivables, economic conditions in the customers' country or industry, historical losses and our customers' general credit-worthiness. Amounts later determined and specifically identified to be uncollectible are charged or written off against this allowance. Uncertainty in the current economic

environment, if prolonged, could result in greater amounts becoming uncollectible in the future. Should the estimates of losses be higher than the actual uncollectible accounts, we would report lower profitability when the estimates are made and higher profitability when the receivable is collected.

Results of Operations - Sales, Gross Margins and Expenses

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

	Year Ended December 31,		
	2017	2016	2015
Net sales	100.0%	100.0%	100.0%
Cost of goods sold	45.0	45.0	44.5
Gross profit	55.0	55.0	55.5
Selling, general and administrative expense	37.4	39.5	37.7
Research and development expense	11.6	10.0	9.6
Net income	5.7	1.3	5.4

Net sales

Net sales (sales) in 2017 were \$2.16 billion, an increase of 4.4% compared to \$2.07 billion in 2016. Excluding the impact of foreign currency exchange rate fluctuations, 2017 sales increased by approximately 3.5% compared to 2016. Currency neutral sales growth was reflected in most regions.

The Life Science segment sales in 2017 were \$785.2 million, an increase of 7.5% compared to 2016. On a currency neutral basis, sales increased 6.8% compared to 2016. The currency neutral sales increase was primarily driven by growth in our Droplet Digital™ PCR and gene expression product lines, in addition to sales from our acquisition of RainDance in 2017. The currency neutral sales increase was primarily reflected in all regions except Latin America mostly due to government imposed spend control.

The Clinical Diagnostics segment sales in 2017 were \$1.36 billion, an increase of 2.8% compared to 2016. On a currency neutral basis, sales increased 1.6% compared to 2016. The currency neutral sales increase was primarily attributable to growth across quality control, immunohematology, diabetes and immunology, partially offset by lower sales in infectious disease. On a geographic view, the currency neutral sales increases for 2017 were primarily reflected in Asia Pacific, excluding Japan, and Latin America, partially offset by lower sales in North America and Japan.

Net sales (sales) in 2016 were \$2.07 billion, an increase of 2.4% compared to \$2.02 billion in 2015. Excluding the impact of foreign currency, 2016 sales increased by approximately 4.0% compared to 2015. Currency neutral sales growth was primarily reflected in all regions except Europe.

The Life Science segment sales in 2016 were \$730.7 million, an increase of 5.1% compared to 2015. On a currency neutral basis, sales increased 6.5% compared to 2015. The currency neutral sales increase was primarily in our Droplet Digital™ PCR and process media products. The currency neutral sales increase was in all regions.

The Clinical Diagnostics segment sales in 2016 were \$1.32 billion, an increase of 1.0% compared to 2015. On a currency neutral basis, sales increased 2.6% compared to 2015. The currency neutral sales increase was primarily attributable to growth in quality control, immunology, blood typing and diabetes product lines. On a geographic view,

currency neutral sales in 2016 increased most notably in the Americas and Asia, while sales declined in Europe.

Gross margin

Consolidated gross margins were 55.0% in 2017 compared to 55.0% in 2016. Life Science segment gross margins in 2017 increased from 2016 by approximately 1.2 percentage points primarily due to higher margins in gene expression and digital biology businesses largely due to a decline in royalty expense for license agreements relating to amplification reagents. In addition, gross margins were impacted by legal matters that reduced cost of goods sold by approximately \$10.4 million. These gross margin improvements were partially offset by \$10.0 million for a preexisting condition and higher acquisition intangible amortization, both associated with the RainDance acquisition. Clinical Diagnostics segment gross margins in 2017 decreased by approximately 0.8 percentage points compared to 2016 primarily due to lower margin sales and the termination of an infectious disease research and development project that effected cost of goods sold at a cost of \$2.3 million in 2017, partially offset by lower amortization of intangibles, licenses fees and favorable manufacturing variances as compared to 2016.

Beginning in 2013, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act (PPACA), among other initiatives, provided for a 2.3% annual excise tax on the sales of certain medical devices in the U.S. Bio-Rad had been paying this excise tax on most of our U.S. Clinical Diagnostic sales, which we accounted for as a period cost in Cost of goods sold. However, the Consolidated Appropriations Act, 2016 (Pub. L. 114-113), signed into law on December 18, 2015, included a two year moratorium on the medical device excise tax. On January 22, 2018, the moratorium on the medical device excise tax was further extended until January 1, 2020.

Consolidated gross margins were 55.0% in 2016 compared to 55.5% in 2015. Life Science segment gross margins in 2016 decreased from 2015 by approximately 0.7 percentage points, primarily due to lower margins in protein quantification and cell biology, higher service costs, higher acquisition intangible amortization, and \$0.7 million of restructuring costs, partially offset by higher margins in Droplet Digital™ PCR, process media products and antibody products. Clinical Diagnostics segment gross margins in 2016 decreased from 2015 by approximately 0.5 percentage points. The decrease compared to 2015 was primarily driven by sales mix and pricing pressures, along with higher period expenses, and \$1.4 million of restructuring costs, partially offset by the suspension of the medical device tax.

Selling, general and administrative expense

Consolidated selling, general and administrative expenses (SG&A) decreased to \$808.9 million or 37.4% of sales in 2017 compared to \$816.7 million or 39.5% of sales in 2016. Decreases to SG&A were primarily due to \$21.0 million for various legal matters in 2016 that did not occur in 2017, including the Wadler judgment as discussed further in Note 13 to the consolidated financial statements compared to a few legal matters in 2017 that reduced SG&A by approximately \$0.7 million, \$10.4 million of restructuring costs associated with the European reorganization announced in June 2016 (see Note 15) that did not occur in 2017 compared to the other restructuring costs in 2017 of approximately \$8.5 million that are also in Note 15 in addition to a few other reduction in force activities, lower contingent consideration of \$19.7 million, lower third party commissions of \$2.5 million and other numerous net costs of \$12.1 million. Increases to SG&A primarily included employee-related expenses (excluding restructuring costs) of \$17.0 million, facilities of \$12.2 million, software of \$7.7 million, bad debt expense of \$5.4 million, advertising of \$3.5 million, other taxes of \$3.3 million, travel of \$3.0 million and purchase accounting amortization of \$1.0 million. Some of these increased costs were associated with the transition that took place to a new European operating model supported by the European ERP implementation, the inclusion of RainDance, closure costs for the GnuBIO research program facilities, and the termination of an infectious disease research and development project that all occurred in 2017.

Consolidated SG&A increased to \$816.7 million or 39.5% of sales in 2016 compared to \$762.0 million or 37.7% of sales in 2015. Increases to SG&A primarily included employee-related expenses, our largest cost, which also included \$10.4 million of restructuring costs, \$21.0 million for various legal matters, including the Wadler judgment, professional fees, software, the revaluation of contingent consideration primarily associated with the cell sorting system and to a lesser extent the analytical flow cytometer platform, travel, facilities and recruitment/relocation. Decreases to SG&A in 2016 primarily included bad debt expense and a one-time distributor cost in 2015.

Research and development expense

Research and development expense increased to \$250.3 million or 11.6% of sales in 2017 compared to \$205.9 million or 10.0% of sales in 2016. Life Science segment research and development expense increased in 2017 from 2016 primarily due to higher milestone expenses of \$5.5 million associated with the 2016 Propel platform acquisition, and increased project activities, which included our recent RainDance acquisition. Clinical Diagnostics segment research and development expense increased in 2017 from 2016 primarily driven by a termination of an infectious disease research and development project of \$15.5 million (see Note 15 to the consolidated financial statements), an asset purchase for an early stage diagnostic device for \$7.5 million, and closure costs of \$7.6 million that included severance and the impairment of equipment and leasehold improvements for the GnuBIO research program, which all occurred in 2017, partially offset by lower spending due to the timing of projects.

Research and development expense increased to \$205.9 million or 10.0% of sales in 2016 compared to \$193.0 million or 9.6% of sales in 2015. Life Science segment research and development expense increased in 2016 from 2015 primarily due to increased project activities in Droplet Digital™ PCR, protein quantification and cell biology. Clinical Diagnostics segment research and development expense increased in 2016 from 2015 primarily from increased spending associated with the GnuBIO business.

Impairment losses on goodwill and long-lived assets

In 2017, we impaired goodwill associated with our 1999 acquisition of Pasteur Sanofi Diagnostics S.A. and with our 2013 acquisition of AbD Serotec in the amounts of \$2.8 million and \$8.7 million, respectively. Impairment for the Pasteur Sanofi Diagnostics S.A. was included in our Clinical Diagnostics segment's results of operations, and the impairment for AbD Serotec was included in our Life Science segment's results of operations.

During the fourth quarter of 2016, we fully impaired goodwill and in-process research and development in the amounts of \$13.5 million and \$46.4 million, respectively, associated with our 2014 acquisition of GnuBIO, Inc. During the second quarter of 2016, we impaired an intellectual property license associated with a research and development project for \$2.4 million.

Results of Operations – Non-operating

Interest expense

Interest expense in 2017 was unchanged from \$21.9 million in 2016, and increased slightly in 2016 compared to \$21.7 million in 2015.

Foreign currency exchange gains and losses

Foreign currency exchange gains and losses consist 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. Net foreign currency exchange losses for 2017, 2016 and 2015 were \$9.1 million, \$4.5 million and \$10.2 million, respectively. The 2017, 2016 and 2015 net foreign currency exchange losses were attributable to market volatility, costs to hedge and the result of the estimating process

inherent in the timing of shipments and payments of intercompany debt, the intercompany movement of assets and capital for the new European operating model in 2017, and our decision to reclassify a large percentage of our intercompany receivable from Brazil to long-term in 2015. All years are affected by the economic hedging program we employ to hedge our intercompany receivables and payables.

Other income and expense, net

Other income and expense, net includes investment and dividend income, generally interest income on our cash and cash equivalents, short-term investments and long term marketable securities. Other (income) expense, net in 2017 decreased to \$12.2 million of income compared to \$14.9 million of income in 2016. The decrease was primarily due to \$6.4 million of higher other-than-temporary impairment losses on investments in 2017 than in 2016 in light of continuing declines in the investment market prices and investees' financial conditions at that time, partially offset by \$1.2 million of higher dividend income in 2017 than in 2016 on the ordinary and preferred shares of our investment in Sartorius AG, and higher investment income.

Other (income) expense, net in 2016 increased to \$14.9 million income compared to \$11.1 million income in 2015. The increase was primarily due to higher dividend income in 2016 on the ordinary and preferred shares of our investment in Sartorius AG, and higher investment income.

Effective tax rate

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 that affect our 2017 financial statements, including, among other changes, 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 tax rate was (25)%, 37% and 25% in 2017, 2016 and 2015, respectively. Prior year effective tax rates have been revised (see note 1 to the consolidated financial statements). As a result of the Tax Act, we recognized a provisional estimate for the Transition Tax and the remeasurement of our deferred taxes assets and liabilities, which decreased our provision for income taxes in 2017 by approximately \$70 million. The effective tax rates for 2016 and 2015 included tax benefits from the repatriation of foreign earnings. The effective tax rate for 2016 included additional tax liabilities for unrecognized tax benefits related to the non-deductibility of interest expense in our foreign jurisdictions. Our effective tax rate may be impacted in the future, either favorably or unfavorably, by many factors including, but not limited to, 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 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 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 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, 2017, 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 \$2.3 million. Substantially all such amounts will impact our effective income tax rate.

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 of 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 domestic \$200.0 million unsecured Credit Agreement, and to a lesser extent international lines of credit. Borrowings under the 2014 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 Credit Agreement as of December 31, 2017, however, \$0.5 million was utilized for domestic standby letters of credit that reduced our borrowing availability. The Credit Agreement matures in June 2019. In total under domestic and international lines of credit, standby letters of credit and guarantee arrangements, we had approximately \$208.4 million available for borrowing and usage as of December 31, 2017, which was reduced by approximately \$4.2 million that was utilized for standby letters of credit and guarantee arrangements issued by our banks to support our obligations. 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 an acquisition of reasonable proportion to our existing total available capital.

At December 31, 2017, we had available \$755.0 million in cash, cash equivalents and short-term investments, of which approximately 23% was held in our foreign subsidiaries. We believe that our holdings of cash, cash equivalents and short-term investments in the U.S. and in our foreign subsidiaries are sufficient to meet both the current and long-term needs of our global operations. 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 business-development activities. As part of our ongoing liquidity assessments, we regularly monitor the mix of domestic and foreign cash flows (both inflows and outflows).

Certain foreign subsidiary earnings are subject to U.S. taxation under the Tax Act, which also repeals U.S. taxation on the subsequent repatriation of those earnings. It is generally our intention to repatriate those foreign earnings to the extent that such repatriations are not restricted by local laws or accounting rules, and there are no substantial incremental costs. While we currently estimate that the repatriation of those earnings would not trigger material costs, these estimates are provisional, and we are still evaluating the full impact of these potential repatriations in accordance with SAB 118.

Demand for our products and services could change more dramatically than in previous years based on activity, 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 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. As of December 31, 2017 and December 31, 2016, we had accounts receivable, net of an allowance for doubtful accounts, in Spain, Italy, Greece and Portugal of \$41.0 million and \$32.7 million, respectively. While economic growth is improving in some geographical locations, instability still exists in some of the developed nations, such as a less dependable rate of growth in the Chinese economy and in emerging markets, especially those oil producing countries that have been affected by a decline in oil prices, which may adversely affect our future cash flows.

Cash Flows from Operations

Net cash provided by operations was \$103.9 million, \$216.4 million and \$186.2 million in 2017, 2016, and 2015, respectively. The net decrease between 2017 and 2016 of \$112.5 million primarily resulted from:

more cash paid to suppliers primarily related to increased inventory, higher employee related costs primarily for merit increases, an asset purchase for an early stage diagnostic device for \$7.5 million, \$10.0 million for the RainDance preexisting condition, and higher value added taxes in part due to the European reorganization, higher net payments in 2017 compared to 2016 for forward foreign exchange contracts primarily associated with the timing of product shipments, intercompany debt payments, and the intercompany movement of assets and capital for the new European operating model, and
lower income tax refunds in 2017 compared to 2016, partially offset by
higher cash received from customers in 2017 primarily due to higher sales, partially offset by higher accounts receivable balances due in part to implementation matters associated with the European ERP system, and
higher investment income received.

The net increase between 2016 and 2015 of \$30.2 million primarily resulted from:

higher cash received from customers in 2016 primarily due to lower U.S. collections in the second half of 2015 from delays associated with the second phase of an ERP implementation, and
higher investment income received, partially offset by
more cash paid to suppliers and employees primarily related to higher payments to inventory suppliers as payments were delayed in the latter part of 2015 mostly associated with the second deployment of the ERP system, higher annual performance-based compensation payments in 2016, and higher legal and other professional fees,
higher net income tax payments than in 2015, and
net payments in 2016 compared to net cash received in 2015 for forward foreign exchange contracts.

We regularly review past due receivables to assess the allowance for doubtful accounts and believe net accounts receivable are fully realizable. We also routinely review inventory for the impact of obsolescence and changes in market prices caused by the introduction of new products, technologies and in government reimbursement policies. Cash flows from operations during the first quarter have historically had larger payments for royalties, fourth quarter sales commissions to third parties and annual employee bonuses, and we expect this pattern to recur in the first quarter of 2018.

Cash Flows from Investing Activities

Net cash used in investing activities was \$175.6 million, \$213.9 million and \$166.9 million for 2017, 2016 and 2015, respectively. Proceeds from sales and maturities, net of purchases of marketable securities and investments combined, were \$17.1 million in 2017 compared to net purchases in 2016 of 58.2 million. Purchases, net of sales and maturities of marketable securities and investments combined, had an overall decrease of \$13.2 million in 2016 compared to 2015 primarily due to a decrease in maturities and securities sales, partially offset by a decrease in purchases.

Short-term restricted investments of \$5.6 million, \$4.6 million and \$4.2 million for 2017, 2016 and 2015, respectively, represent a money market fund for collateral that secures worker's compensation and general liability insurance. Investment income accrues to us and is recorded in Investment proceeds and miscellaneous receipts, net in the Consolidated Statements of Cash Flows.

Our investment objective is to maintain liquidity to meet anticipated operational and other corporate requirements in which capital is preserved and increased through investing in low risk, high quality securities with commensurate returns, consistent with our risk tolerance level.

Purchases of intangible assets in 2017 were primarily due to a \$3.8 million payment for an acquired technology and know-how to expand our product offerings, and in 2016 and 2015 were primarily due to purchases of licenses. Payments for acquisitions, net of cash received, and long-term investments in 2017 and 2016 were primarily due to the following:

in February 2017, we acquired all the issued and outstanding stock of RainDance for approximately \$72.7 million including certain assumed net liabilities. Cash payments at closing were \$72.9 million.

in January 2016, we acquired a high performance analytical flow cytometer platform from Propel for total consideration of \$32.8 million, which included \$9.5 million paid in cash at the closing date and \$23.3 million in contingent consideration potentially payable to Propel, after the effects of a calculation revision that were reflected in the fourth quarter of 2016.

We continue to review possible acquisitions to expand both our Life Science and Clinical Diagnostics segments. We routinely meet with the principals or brokers of the subject companies. We are currently in discussion and assessing a few possible acquisitions in which we expect our current reported cash and cash equivalents to be sufficient for any cash consideration for these possible acquisitions. However, it is not certain at this time that any of these discussions involving material or significant acquisitions will advance to completion.

Capital expenditures in 2017 totaled \$111.3 million, compared to \$141.4 million and \$112.0 million in 2016 and 2015, respectively. Capital expenditures represent the addition and replacement of production machinery and research equipment, ongoing manufacturing and facility additions for expansion, regulatory, environmental and compliance. Also included in capital expenditures are investments in business systems and data communication upgrades and enhancements. All periods include equipment placed with Clinical Diagnostics segment customers who then contract to purchase our reagents for use. As we implement the remaining smaller phases of the ERP platform, we expect capital expenditures to decline over the next couple of years. Capital expenditures were lower in 2017 than in 2016 as implementation costs were higher in 2016 for the third phase of the ERP platform, which was implemented in April 2017. Capital expenditures were lower in 2015 compared to 2016 as the second phase of the ERP system was implemented in July 2015 and the third phase ramped up in 2016. The current estimated future project cost for global implementation for the single instance ERP platform is projected to be \$140 million, and is estimated to take approximately the next 3 to 4 years to fully implement.

Cash Flows from Financing Activities

Net cash provided by financing activities was \$0.3 million, \$9.0 million and \$8.6 million in 2017, 2016 and 2015, respectively, and was primarily sourced from proceeds from issuance of our common stock. In 2017, 2016 and 2015, there were payments of \$3.7 million, \$3.5 million and \$3.0 million, respectively, to Propel Labs' shareholders in contingent consideration for sales milestones that were associated with the valuations as of the 2016 and 2012 acquisition dates. In addition, we repurchased our common stock under our repurchase program as described below.

We have outstanding Senior Notes of \$425.0 million, which are not due until 2020. We believe the current cash is sufficient to meet normal operating costs, and funding for research and development of new products, as well as routine outflows of capital expenditures, interest and taxes.

On November 28, 2017, we announced that the Board of Directors authorized a new share repurchase program, granting Bio-Rad authority to repurchase, on a discretionary basis, up to \$250 million of outstanding shares of our

common stock. This new authorization superseded the prior authorization of up to \$18.0 million of Bio-Rad's common stock. During the second and third quarters of 2017, we made open market purchases of 13,200 shares of our Class A common stock. In September 2017, we used 12,740 of the repurchased shares in connection with the vesting of restricted stock units under the 2007 Incentive Award Plan in order to obtain a tax deduction in some of our

foreign entities. The Credit Agreement may limit our ability to repurchase our stock. In accordance with the terms of awards under the 2007 Incentive Award Plan, in June 2012, we withheld 122 shares of our Class A common stock and 917 shares of our Class B common stock to satisfy tax obligations due upon the vesting of restricted stock of certain of our employees, which is considered a repurchase of our stock. We had no other repurchases of our stock during 2017, 2016 or 2015.

Off-Balance Sheet Arrangements

We do not have any off-balance sheet arrangements that have had or are reasonably likely to have a current or future material effect on our financial condition, results of operations or liquidity.

Contractual Obligations

The following summarizes certain of our contractual obligations as of December 31, 2017 and the effect such obligations are expected to have on our cash flows in future periods (in millions):

	Total	Payments Due by Period			
		Less Than One Year	1-3 Years	3-5 Years	More than 5 Years
Contractual Obligations					
Long-term debt, including current portion (1)	\$436.9	\$ 0.4	\$425.6	\$ 0.6	\$ 10.3
Interest payments (1)	60.9	20.7	40.2	—	—
Operating lease obligations (2)	144.9	39.3	60.3	30.0	15.3
Purchase obligations (3)	24.5	3.7	7.5	7.5	5.8
Long-term liabilities (4)	131.3	10.4	24.9	9.5	86.5

(1) These amounts represent expected cash payments, including capital lease obligations, which are included in our December 31, 2017 Consolidated Balance Sheet. Our debt is fixed and primarily consists of the 4.875% Notes. See Note 5 of the Consolidated Financial Statements for additional information about our debt.

(2) Operating lease obligations are described in Note 12 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.

(4) Excluded from this table are tax liabilities for uncertain tax positions and contingencies in the amount of \$53.2 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 Standards Updates

In February 2018, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update No. ("ASU") 2018-03, "Technical Corrections and Improvements to Financial Instruments - Recognition and Measurement of Financial Assets and Financial Liabilities." ASU 2018-03 amends certain items in ASU 2016-01 (see below) such as equity securities without a readily determinable fair value. ASU 2018-03 clarifies that an entity that uses the measurement alternative for equity securities without readily determinable fair values can change its measurement approach to fair value and once made the election is irrevocable. If an entity measures equity securities without readily

determinable fair values at fair value, it must record a cumulative-effect adjustment to retained earnings as of the beginning of the fiscal year in which the guidance is adopted. ASU 2018-03 is effective for fiscal years beginning after December 15, 2017, and interim periods within those years beginning after June 15, 2018, with early adoption permitted. As of December 31, 2017, we accounted for our investment of the ordinary shares of Sartorius AG at cost and the fair value is not readily determinable as the stock is too thinly traded (see Note 3 to the

consolidated financial statements). Under ASU 2016-01 (see below), we will account for the ordinary shares of Sartorius AG at cost, less any impairment, and plus or minus subsequent adjustments for observable price changes as we do not anticipate a material transaction that would provide an observable price change to the ordinary shares of Sartorius AG based on the current ownership interests by the Sartorius family trust, Sartorius family members, and Bio-Rad Laboratories, Inc.

In February 2018, the FASB issued ASU 2018-02, "Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income." ASU 2018-02 gives entities the option to reclassify to retained earnings tax effects related to items in accumulated other comprehensive income ("OCI") that the FASB refers to as having been stranded in accumulated OCI as a result of the Tax Act. We early adopted ASU 2018-02 in the period of adoption of the Tax Act during the fourth quarter of 2017. We elected to reclassify the income tax effects of the Tax Act on the remeasurement of our deferred tax liabilities related to our available-for-sale equity securities, including our preferred shares in Sartorius AG, by increasing OCI and decreasing Retained earnings by \$120.1 million.

In May 2017, the FASB issued ASU 2017-09, "Scope of Modification Accounting." ASU 2017-09 clarifies when changes to the terms or conditions of a share-based payment award must be accounted for as modifications. ASU 2017-09 will allow companies to make certain changes to awards, such as vesting conditions, without accounting for them as modifications. It does not change the accounting for modifications. ASU 2017-09 will be applied prospectively to awards modified on or after the adoption date. We early adopted ASU 2017-09 during the second quarter of 2017, which has not affected our consolidated financial statements.

In March 2017, the FASB issued ASU 2017-07, "Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost." ASU 2017-07 will change how employers that sponsor defined benefit pension and/or other postretirement benefit plans present the net periodic benefit cost, which is comprised of several components, in the income statement. Under ASU 2017-07, employers will present the service cost component of the net periodic benefit cost in the same income statement line item(s) as other employee compensation costs arising from services rendered during the period, and will be the only costs eligible for capitalization. Employers will present the other components separately from the line item(s) that includes the service cost outside of the subtotal of Income from operations. ASU 2017-07 is effective for fiscal years beginning after December 15, 2017, and interim periods within those years. Employers will apply the guidance on the presentation of the components of net periodic benefit cost in the income statement retrospectively. We do not expect ASU 2017-07 to have a material impact to our financial statements.

In January 2017, the FASB issued ASU 2017-04, "Simplifying the Test for Goodwill Impairment." ASU 2017-04 removes Step 2 of the goodwill impairment test, which required a hypothetical purchase price allocation. A goodwill impairment will be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. ASU 2017-04 provides a more stream-lined approach to evaluating goodwill impairment and we early adopted on January 1, 2017 on a prospective basis as a change in accounting principle. See Note 4 to the consolidated financial statements for an update on goodwill impairment.

In January 2017, the FASB issued ASU 2017-01, "Clarifying the Definition of a Business." ASU 2017-01 changes the definition of a business to assist entities with evaluating when a set of transferred assets and activities is a business. If substantially all of the fair value is concentrated in a single asset or a group of similar assets, the acquired set is not a business. If this is not met, the entity then evaluates whether the set meets the requirement that a business include, at a minimum, an input and a substantive process that together significantly contribute to the ability to create outputs. Determining whether a set constitutes a business is critical because the accounting for a business combination differs significantly from that of an asset acquisition. We early adopted ASU 2017-01 on January 1, 2017 on a prospective basis, and it has not had a material impact to our consolidated financial statements.

In November 2016, the FASB issued ASU 2016-18, "Restricted Cash." ASU 2016-18 requires entities to show the changes in the total of cash, cash equivalents, restricted cash and restricted cash equivalents in the statement of cash flows. As a result, entities will no longer present transfers between cash and cash equivalents and restricted cash and restricted cash equivalents in the statement of cash flows. ASU 2016-18 will be applied retrospectively and is effective for fiscal years beginning after December 15, 2017, and interim periods within those years. We do not expect ASU 2016-18 to have a material impact to our financial statements and will only impact our statements of cash flows presentation.

In October 2016, the FASB issued ASU 2016-16, "Intra-Entity Transfers of Assets Other Than Inventory." ASU 2016-16 requires immediate recognition of income tax consequences of intercompany asset transfers, other than inventory transfers. Existing GAAP prohibits recognition of income tax consequences of intercompany asset transfers whereby the seller defers any net tax effect and the buyer is prohibited from recognizing a deferred tax asset on the difference between the newly created tax basis of the asset in its tax jurisdiction and its financial statement carrying amount as reported in the consolidated financial statements. ASU 2016-16 specifically excludes from its scope intercompany inventory transfers whereby the recognition of tax consequences will take place when the inventory is sold to third parties. ASU 2016-16 is effective for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. ASU 2016-16 will be applied on a modified retrospective basis through a cumulative-effect adjustment directly to retained earnings as of the beginning of the period of adoption. We estimate the impact to be a cumulative-effect decrease to Retained earnings and predominately a decrease to Other assets of approximately \$17 million.

In August 2016, FASB issued ASU 2016-15, "Classification of Certain Cash Receipts and Cash Payments." ASU 2016-15 is intended to reduce diversity in practice in how certain transactions are classified in the statement of cash flows. ASU 2016-15 is effective for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. We do not expect ASU 2016-15 to have a material impact to our statements of cash flows.

In June 2016, the FASB issued ASU 2016-13, "Measurement of Credit Losses on Financial Instruments." ASU 2016-13 will replace the current incurred loss approach with an expected loss model for instruments measured at amortized cost and require entities to record allowances for available-for-sale debt securities rather than reduce the carrying amount under the current other-than-temporary impairment model. ASU 2016-13 is effective for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years. Early adoption is permitted for all entities for annual periods beginning after December 15, 2018, and interim periods therein. We are currently evaluating the effect ASU 2016-13 will have on our consolidated financial statements.

In March 2016, the FASB issued ASU 2016-09, "Improvements to Employee Share-Based Payment Accounting." ASU 2016-09 requires all income tax effects of awards to be recognized in the income statement when the awards vest or are settled. It also allows an employer to repurchase more of an employee's shares than permitted today for tax withholding purposes without triggering liability accounting and to make a policy election to account for forfeitures as they occur. We adopted ASU 2016-09 prospectively as a change in accounting principle on January 1, 2017, and prior periods have not been adjusted. In addition we made a policy election to account for forfeitures as they occur. ASU 2016-09 also requires to present excess tax benefits as an operating activity on the statement of cash flows rather than as a financing activity. As a result of adopting ASU 2016-09 as of January 1, 2017, the cumulative effect of the change on Retained earnings decreased by \$0.3 million, and increased Additional paid-in capital and Deferred tax assets by \$0.4 million and \$0.1 million, respectively, in the Consolidated Balance Sheet.

In March 2016, the FASB issued ASU 2016-07, "Simplifying the Transition to the Equity Method of Accounting," which eliminates the requirement to retrospectively apply the equity method in previous periods when an investor initially obtains significant influence over an investee. Under current guidance, an investor that does not consolidate

an investment and initially accounts for it under a method other than the equity method is required to retrospectively apply the equity method in prior periods in which it held the investment when it subsequently obtained significant influence. We adopted ASU 2016-07 on January 1, 2017 on a prospective basis, which currently has not affected our consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02, "Leases," which will require, among other items, lease accounting to recognize most leases as assets and liabilities on the balance sheet. Qualitative and quantitative disclosures will be enhanced to better understand the amount, timing and uncertainty of cash flows arising from leases. ASU 2016-02 is effective for fiscal years beginning after December 15, 2018, and interim periods within those fiscal years, with early adoption permitted. We do not plan to early adopt. ASU 2016-02 will be adopted on a modified retrospective basis, with elective reliefs, which requires application of ASU 2016-02 for all periods presented. We are currently gathering, documenting and analyzing lease agreements related to this ASU and anticipate material additions to the balance sheet for right-of-use assets, offset by the associated liabilities.

In January 2016, the FASB issued ASU 2016-01, "Recognition and Measurement of Financial Assets and Financial Liabilities." Amendments under ASU 2016-01, among other items, require that all equity investments in unconsolidated entities (other than those accounted for using the equity method of accounting) will generally be measured at fair value through earnings. There will no longer be an available-for-sale classification, for which changes in fair value are reported in other comprehensive income, for equity securities with readily determinable fair values. For equity investments without readily determinable fair values, the cost method is also eliminated. However, entities will be able to elect to record equity investments without readily determinable fair values at cost, less impairment, and plus or minus subsequent adjustments for observable price changes. Changes in the basis of these equity investments will be reported in current earnings. ASU 2016-01 is effective for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. For equity securities that would be affected by ASU 2016-01, see the available-for-sale investments table in Note 3 to the consolidated financial statements, which primarily consists of our investment in Sartorius AG preferred shares. We expect that the impact of adoption may be material to our consolidated statement of income. In addition to the affected securities per Note 3, we own ordinary voting stock of Sartorius AG and accounted for this investment under the cost method. Effective January 1, 2018 under 2016-01, we will account for our investment of the ordinary shares of Sartorius AG at cost, less any impairment, and plus or minus subsequent adjustments for observable price changes.

In July 2015, the FASB issued ASU 2015-11, "Simplifying the Measurement of Inventory." Under current guidance, an entity subsequently measures inventory at the lower of cost or market, with market defined as replacement cost, net realizable value (NRV), or NRV less a normal profit margin. An entity uses current replacement cost provided that it is not above NRV (i.e., the ceiling) or below NRV less an "approximately normal profit margin" (i.e., the floor). ASU 2015-11 eliminates this analysis and requires entities to measure most inventory "at the lower of cost and NRV." We prospectively adopted ASU 2015-11 as a change in accounting principle on January 1, 2017, which did not have a material impact on our consolidated financial statements.

In May 2014, the FASB issued ASU 2014-09, "Revenue from Contracts with Customers," which requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to customers. ASU 2014-09 will replace most existing revenue recognition guidance in GAAP when it becomes effective. In December 2016, the FASB issued ASU 2016-20, "Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers" which affect narrow aspects of the guidance issued in ASU 2014-09. In May 2016, the FASB issued ASU 2016-12, "Narrow-Scope Improvements and Practical Expedients," which amends and clarifies certain aspects in ASU 2014-09 that include collectability, presentation of sales and other taxes collected from customers, noncash consideration, contract modifications and completed contracts at transition. In April 2016, the FASB issued ASU 2016-10, "Identifying Performance Obligations and Licensing," which amends the guidance in ASU 2014-09 on accounting for licenses of intellectual property and identifying performance obligations. In March 2016, the FASB issued ASU 2016-08, "Principal versus Agent Considerations (Reporting Revenue Gross versus Net)," which amends the principal versus agent guidance in ASU 2014-09. The standards are to be applied retrospectively and permit the use of either the retrospective or cumulative effect transition method. We will use the cumulative effect transition method when we adopt ASUs 2014-09, 2016-20, 2016-12, 2016-10 and 2016-08 on

January 1, 2018. Upon adoption, we will recognize the cumulative effect of adopting this guidance as an adjustment to our opening balance of retained earnings. Prior periods will not be retrospectively adjusted. We have completed our preliminary assessment of individual contracts to identify performance obligations under these ASU's, as compared with the deliverables and separate units of accounting previously identified under current U.S. GAAP.

Based on our preliminary assessment we have not identified any material changes in the timing of revenue recognition that could result in a significant transition adjustment upon our adoption of the new accounting standard on January 1, 2018 and the accounting for costs incurred to obtain a contract is immaterial. However, we are still in the process of the following: Assessing the impact of the accounting on our reagent agreements to determine if there are any differences in the timing of revenue recognition; finalizing the required changes to our accounting policies, systems and internal control over financial reporting, and assessing the new disclosure requirements that will be implemented upon our adoption of the new standard.

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 Sterling, Singapore Dollar, Brazilian Real and Japanese Yen. 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 decline of 10% on quoted foreign exchange rates would result in an approximate net-present-value loss of \$37 million on our derivative position as of December 31, 2017. 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 we have outstanding, there would not be a material impact to earnings or cash flows if interest rates moved adversely by 10%. Our

long-term debt consists primarily of fixed-rate instruments, and is thus insulated from interest rate changes. As of December 31, 2017, the overall interest rate risk associated with our debt was not significant.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

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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, 2017 and 2016, and 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, 2017, and the related notes and financial statement schedule (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, 2017 and 2016, and the results of its operations and its cash flows for each of the years in the three-year period ended December 31, 2017, 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, 2017, 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 April 13, 2018 expressed an adverse 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.

/s/ KPMG LLP

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

San Francisco, California

April 13, 2018

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, 2017, based on criteria established in *Internal Control-Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. In our opinion, because of the effect of the material weakness, described below, on the achievement of the objectives of the control criteria, the Company has not maintained effective internal control over financial reporting as of December 31, 2017, 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, 2017 and 2016, 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, 2017, and the related notes and financial statement schedule (collectively, the consolidated financial statements) and our report dated April 13, 2018 expressed an unqualified opinion on those consolidated financial statements and financial statement schedule.

A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis. A material weakness related to the control environment, risk assessment and control activities of certain European entities has been identified and included in management's assessment. The material weakness was considered in determining the nature, timing, and extent of audit tests applied in our audit of the 2017 consolidated financial statements, and this report does not affect our report 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.

San Francisco, California
April 13, 2018

BIO-RAD LABORATORIES, INC.

Consolidated Balance Sheets

(In thousands, except share data)

	December 31,	
	2017	2016
ASSETS		
Current assets:		
Cash and cash equivalents	\$383,824	\$456,264
Short-term investments	371,154	383,176
Restricted investments	5,560	4,560
Accounts receivable, less allowance for doubtful accounts of \$25,549 at 2017 and \$23,367 at 2016	464,847	372,348
Inventories:		
Raw materials	113,925	116,540
Work in process	142,589	125,982
Finished goods	338,290	282,439
Total inventories	594,804	524,961
Prepaid expenses	146,135	91,014
Other current assets	10,325	12,201
Total current assets	1,976,649	1,844,524
Property, plant and equipment:		
Land and improvements	18,026	17,895
Buildings and leasehold improvements	315,984	300,834
Equipment	971,140	908,659
Total property, plant and equipment	1,305,150	1,227,388
Less: accumulated depreciation and amortization	(811,654)	(738,774)
Property, plant and equipment, net	493,496	488,614
Goodwill, net	506,069	477,115
Purchased intangibles, net	174,113	161,609
Other investments	1,027,736	830,790
Other assets	94,949	47,852
Total assets	\$4,273,012	\$3,850,504

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,	
	2017	2016
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	\$135,182	\$133,109
Accrued payroll and employee benefits	171,632	163,364
Notes payable and current maturities of long-term debt	420	334
Income and other taxes payable	39,941	28,124
Deferred revenue	28,233	31,003
Other current liabilities	127,288	115,388
Total current liabilities	502,696	471,322
Long-term debt, net of current maturities	434,581	434,186
Deferred income taxes	222,209	225,299
Other long-term liabilities	183,276	140,537
Total liabilities	1,342,762	1,271,344
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 - 24,679,127 and 24,454,048 at 2017 and 2016, respectively; shares outstanding - 24,678,545 and 24,453,926 at 2017 and 2016, respectively		2
Class B common stock, \$0.0001 par value; 20,000,000 shares authorized; shares issued - 5,107,674 and 5,123,883 at 2017 and 2016, respectively; shares outstanding - 5,106,757 and 5,122,966 at 2017 and 2016, respectively		1
Additional paid-in capital	361,231	332,911
Class A treasury stock at cost, 582 shares at 2017 and 122 shares at 2016	(128)	(12)
Class B treasury stock at cost, 917 shares at 2017 and 2016	(89)	(89)
Retained earnings	1,830,439	1,828,581
Accumulated other comprehensive income	738,794	417,766
Total stockholders' equity	2,930,250	2,579,160
Total liabilities and stockholders' equity	\$4,273,012	\$3,850,504

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,		
	2017	2016	2015
Net sales	\$2,160,153	\$2,068,172	\$2,019,441
Cost of goods sold	972,754	930,085	897,771
Gross profit	1,187,399	1,138,087	1,121,670
Selling, general and administrative expense	808,942	816,724	761,990
Research and development expense	250,301	205,864	192,972
Impairment losses on goodwill and long-lived assets	11,506	62,305	—
Income from operations	116,650	53,194	166,708
Interest expense	21,914	21,942	21,692
Foreign exchange losses, net	9,128	4,542	10,249
Other (income) expense, net	(12,197)	(14,850)	(11,080)
Income before income taxes	97,805	41,560	145,847
Benefit from (provision for) income taxes	24,444	(15,560)	(36,608)
Net income	\$122,249	\$26,000	\$109,239
Basic earnings per share:			
Net income per basic share	\$4.12	\$0.88	\$3.74
Weighted average common shares - basic	29,655	29,440	29,186
Diluted earnings per share:			
Net income per diluted share	\$4.07	\$0.88	\$3.71
Weighted average common shares - diluted	30,034	29,646	29,409

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,		
	2017	2016	2015
Net income	\$122,249	\$26,000	\$109,239
Other comprehensive income (loss):			
Foreign currency translation adjustments	76,050	(32,394)	(37,536)
Foreign other post-employment benefits adjustments, net of income taxes	(3,767)	2,086	(4,403)
Net unrealized holding gains on available-for-sale (AFS) investments, net of income taxes and effect of adoption of ASU 2018-02*	248,745	65,936	205,132
Other comprehensive income, net of income taxes	321,028	35,628	163,193
Comprehensive income	\$443,277	\$61,628	\$272,432

*See Note 1, "Significant Accounting Policies" under "Recent Accounting Standards Update"

Reclassification adjustments are calculated using the specific identification method.

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,		
	2017	2016	2015
Cash flows from operating activities:			
Cash received from customers	\$2,093,948	\$2,074,024	\$1,956,084
Cash paid to suppliers and employees	(1,918,971)	(1,810,844)	(1,730,062)
Interest paid, net	(21,124)	(21,318)	(20,793)
Income tax payments, net	(52,136)	(38,442)	(31,715)
Investment proceeds and miscellaneous receipts, net	19,892	15,683	11,953
Excess tax benefits from share-based compensation	—	(1,506)	(3,610)
(Payments for) proceeds from forward foreign exchange contracts, net	(17,724)	(1,164)	4,353
Net cash provided by operating activities	103,885	216,433	186,210
Cash flows from investing activities:			
Capital expenditures	(111,332)	(141,436)	(112,000)
Proceeds from dispositions of property, plant and equipment	86	398	79
Payments for acquisitions and long-term investment	(76,645)	(14,165)	(4,356)
Payments for purchases of intangible assets	(3,795)	(135)	(1,372)
Payments for purchases of restricted investment	(1,000)	(350)	(4,210)
Payments for purchases of marketable securities and investments	(282,656)	(278,071)	(294,497)
Proceeds from sales of marketable securities and investments	97,523	76,859	78,664
Proceeds from maturities of marketable securities and investments	202,247	143,020	170,823
Net cash used in investing activities	(175,572)	(213,880)	(166,869)
Cash flows from financing activities:			
Net (payments) borrowings on line-of-credit arrangements and notes payable	(36)	37	—
Payments on long-term borrowings	(316)	(303)	(282)
Proceeds from issuances of common stock for share-based compensation	7,294	11,280	8,236
Payments for purchases of treasury stock	(2,920)	—	—
Payments of contingent consideration	(3,681)	(3,500)	(2,983)
Excess tax benefits from share-based compensation	—	1,506	3,610
Net cash provided by financing activities	341	9,020	8,581
Effect of foreign exchange rate changes on cash	(1,094)	(12,858)	16,376
Net (decrease) increase in cash and cash equivalents	(72,440)	(1,285)	44,298
Cash and cash equivalents at beginning of year	456,264	457,549	413,251
Cash and cash equivalents at end of year	\$383,824	\$456,264	\$457,549

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, 2014	\$ 3	\$271,346	\$(101)	\$1,693,342	\$ 218,945	\$2,183,535
Net income	—	—	—	109,239	—	109,239
Other comprehensive loss, net of tax	—	—	—	—	163,193	163,193
Issuance of common stock	—	8,236	—	—	—	8,236
Stock compensation expense	—	16,983	—	—	—	16,983
Tax benefit-exercise stock options	—	3,843	—	—	—	3,843
Balance at December 31, 2015	3	300,408	(101)	1,802,581	382,138	2,485,029
Net income	—	—	—	26,000	—	26,000
Other comprehensive income, net of tax	—	—	—	—	35,628	35,628
Issuance of common stock	—	11,280	—	—	—	11,280
Stock compensation expense	—	19,730	—	—	—	19,730
Tax benefit-exercise stock options	—	1,493	—	—	—	1,493
Balance at December 31, 2016	3	332,911	(101)	1,828,581	417,766	2,579,160
Effect of adoption of ASU 2016-09*	—	391	—	(256)	—	135
Net income	—	—	—	122,249	—	122,249
Other comprehensive income, net of tax	—	—	—	—	200,893	200,893
Effect of adoption of ASU 2018-02*	—	—	—	(120,135)	120,135	—
Issuance of common stock	—	4,490	—	—	—	4,490
Stock compensation expense	—	23,439	—	—	—	23,439
Purchase of treasury stock	—	—	(2,920)	—	—	(2,920)
Issuance of treasury stock	—	—	2,804	—	—	2,804
Balance at December 31, 2017	\$ 3	\$361,231	\$(217)	\$1,830,439	\$ 738,794	\$2,930,250

*See Note 1, "Significant Accounting Policies" under "Recent Accounting Standards Update"

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

BIO-RAD LABORATORIES, INC.
Notes to 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.

We evaluate subsequent events and the evidence they provide about conditions existing at the date of the balance sheet as well as conditions that arose after the balance sheet date but through the date the financial statements are issued. The effects of conditions that existed at the balance sheet date are recognized in the financial statements. Events and conditions arising after the balance sheet date but before the financial statements are issued are evaluated to determine if disclosure is required to keep the financial statements from being misleading. To the extent such events and conditions exist, disclosures are made regarding the nature of events and the estimated financial effects for those events and conditions.

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. Cash equivalents are stated at cost, which approximates fair value.

Short-term Restricted Investments

Short-term restricted investments of \$5.6 million and \$4.6 million at December 31, 2017 and 2016, respectively, represent a money market fund that is renewed annually for collateral that secures worker's compensation and general liability insurance. Investment income accrues to Bio-Rad and is recorded in Cash and cash equivalents in the Consolidated Balance Sheets.

Available-for-Sale Investments

Available-for-sale investments consist of corporate obligations, municipal securities, asset backed securities, U.S. government sponsored agencies and marketable equity securities. 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. Unrealized losses are charged against income when a decline in the fair value of an individual security is determined to be other-than-temporary. We review our available-for-sale investments for other-than-temporary losses on a quarterly basis. Realized gains and losses and other-than-temporary impairments on investments are included in Other (income) 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 and trade accounts receivable. Cash and cash equivalents and investments are placed with various highly rated major financial institutions located in different geographic regions. Bio-Rad has not sustained significant losses from instruments held at financial institutions.

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. However, we do not expect to record any losses as a result of counterparty default.

We perform credit evaluation procedures related to our trade receivables and with the exception of certain developing countries, generally do not require collateral. As a result of increased risk in certain developing countries, some Bio-Rad sales are subject to collateral letters of credit from our customers. Credit risk for trade accounts receivable is generally limited due to the large number of customers and their dispersion across many geographic areas. However, a significant amount of trade receivables are with national healthcare systems in countries within the European Union.

Accounts Receivable

We maintain an allowance for doubtful accounts for estimated losses resulting from the inability of our customers to make required payments. The amount of the allowance is determined by analyzing known uncollectible accounts, aged receivables, economic conditions in the customers' country or industry, historical losses and our customers' credit-worthiness. Amounts later determined and specifically identified to be uncollectible are charged or written off against this allowance.

Inventory

Inventories are valued at the lower of actual cost or market (net realizable value) and include material, labor and overhead costs. The first-in, first-out method is used to relieve inventory for products sold.

Property, Plant and Equipment

Property, plant and equipment are carried at cost, less accumulated depreciation and amortization. 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. Property, plant and equipment are assessed for impairment quarterly or whenever events or changes in circumstances indicate that the carrying amount may not be recoverable.

Depreciation is computed on a straight-line basis over the estimated useful lives of the assets. Buildings and leasehold improvements are amortized over 15-30 years or the term of the leases or life of the improvements, whichever is shorter. With the exception of reagent rental equipment, which is amortized over a 1-5 year period, equipment and capitalized software is depreciated over 3-12 years.

Goodwill

Goodwill represents the excess of the cost over the fair value of net tangible and identifiable intangible assets of acquired businesses. Goodwill is assessed for impairment by applying fair value based tests annually in the fourth quarter or whenever events or changes in circumstances indicate that the carrying amount may not be recoverable. We perform impairment tests of goodwill at our reporting unit level, which is one level below our operating

segments. Our reporting units are identified as components for which discrete financial information is available and is regularly reviewed by management. Goodwill amounts are assigned to reporting units at the time of acquisition.

Effective January 1, 2017 in accordance with Accounting Standards Update No. 2017-04, "Simplifying the Test for Goodwill Impairment," the goodwill impairment amount will be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. We use a projected discounted cash flow model to determine the fair value of a reporting unit.

Prior to January 1, 2017, the goodwill impairment test consisted of a two-step process. The first step of the goodwill impairment test, used to identify potential impairment, compared the fair value of a reporting unit to its carrying value, including goodwill. We used a projected discounted cash flow model to determine the fair value of a reporting unit. If the fair value of the reporting unit exceeded its carrying amount, goodwill of the reporting unit was considered not impaired, and the second step of the impairment test was not required. The second step, if required, compared the implied fair value of the reporting unit goodwill with the carrying amount of that goodwill. The fair value of a reporting unit was allocated to all of the assets and liabilities of that unit (including any unrecognized intangible assets) as if the reporting unit had been acquired in a business combination and the fair value of the reporting unit was the price paid to acquire the reporting unit. If the carrying amount of the reporting unit's goodwill exceeded its implied fair value, an impairment charge is recognized in an amount equal to that excess.

Long-Lived Assets

For purposes of recognition and measurement of an impairment loss, a long-lived asset or assets are grouped with other assets and liabilities at the lowest level for which identifiable cash flows are largely independent of the cash flows of other assets and liabilities. We assess the impairment of long-lived assets (including identifiable intangible assets) quarterly or whenever events or changes in circumstances indicate that the carrying value may not be recoverable. Factors that we consider important that could trigger an impairment review include:

- significant under-performance relative to expected, historical or projected future operating results;
- significant changes in the manner of use of the long-lived assets, intangible assets or the strategy for our overall business;
- a current expectation that, more likely than not, a long-lived asset will be sold or otherwise disposed of at a loss before the end of its previously estimated useful life; and
- significant negative industry, legal, regulatory or economic trends.

When management determines that the carrying value of long-lived assets may not be recoverable based upon the existence of one or more of the above indicators of impairment, we test for any impairment based on a projected undiscounted cash flow method. Projected future operating results and cash flows of the asset or asset group are used to establish the fair value used in evaluating the carrying value of long-lived and intangible assets. We estimate the future cash flows of the long-lived assets using current and long-term financial forecasts. The carrying amount of a long-lived asset is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset. If this is the case, an impairment loss would be recognized. The impairment loss recognized is the amount by which the carrying amount exceeds the fair value.

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 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. They are determined using enacted tax rates in effect for the year in which the 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. To the extent we determine that we are able to realize our deferred income tax assets in the future in excess of their net recorded amount, we make an adjustment to the valuation allowance which may reduce the provision for income taxes. 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.

On December 22, 2017, the U.S. enacted comprehensive tax legislation (the "Tax Act"). The new legislation contains significant tax provisions that affect us, including a one-time mandatory deemed repatriation tax on certain unrepatriated foreign earnings ("Transition Tax"), a reduction of the corporate income tax rate from 35% to 21% effective January 1, 2018, and a change from a worldwide tax system to a modified territorial system.

We are required to recognize the effect of the tax law changes in the period of enactment, such as the computation of the Transition Tax, remeasurement of our U.S. deferred tax assets and liabilities, as well as reassessment of the net realizability of our deferred tax assets and liabilities.

Subsequent to the enactment of the Tax Act, the SEC staff issued Staff Accounting Bulletin No. 118, Income Tax Accounting Implications of the Tax Cuts and Jobs Act ("SAB 118"), which provides guidance on accounting for the tax effects of the Tax Act. SAB 118 provides a measurement period that should not extend beyond one year from the Tax Act enactment date for companies to complete the accounting under Accounting Standards Codification ("ASC") 740, "Income Taxes." In accordance with SAB 118, a company must reflect the income tax effects of those aspects of the Tax Act for which the accounting under ASC 740 is complete. To the extent that a company's accounting for certain income tax effects of the Tax Act is incomplete but a reasonable estimate can be determined, the company must record a provisional estimate in the financial statements. For the year ended December 31, 2017, we recorded those amounts for which the accounting was complete or for which we were able to make reasonable estimates. The provisional estimates of the Transition Tax and remeasurement of our deferred tax assets and liabilities will be adjusted as additional information and guidance become available. We expect to complete the relevant analysis no later than December 31, 2018.

Revenue Recognition

Revenue is recognized when pervasive evidence of an arrangement exists, the price to the buyer is fixed or determinable, collectability is reasonably assured and title has passed to the customer or product has been delivered absent specific contractual specifications. Revenue associated with equipment that requires factory installation is not recorded until installation is complete and customer acceptance, if required contractually, has occurred. At the time revenue is recognized, a provision is recognized for estimated product returns. Service revenues on extended warranty contracts are recognized ratably over the life of the service agreement, or as services are performed if not under contract. Net sales are the actual selling price of products to customers. Any taxes billed to the customer (sales tax,

value added tax, etc.) shall be credited to the tax liability accounts and excluded from net sales.

Reagent agreements are a diagnostic industry sales method that provides use of an instrument and consumables (reagents) to a customer on a per test basis. We evaluate our reagent agreements and account for these contracts under the guidance pertaining to accounting for revenue arrangements with multiple deliverables. Our reagent

agreements represent one unit of accounting as the instrument and consumables are interdependent in producing a diagnostic result that neither has a stand-alone value with respect to these agreements. All revenues that we earn under our reagent agreements are recognized pursuant to the terms of each agreement and are based and entirely contingent upon either (i) when the consumables to conduct a fixed number of tests are delivered or (ii) cost per test conducted and reported. Revenue on a cost per reported basis is estimated in the current period, and billed at actual in the month reported by our customer.

Shipping and Handling

We classify all freight costs billed to customers as Net sales. Related freight costs are included in Cost of goods sold.

Warranty

We warrant certain equipment against defects in design, materials and workmanship, mostly for a period of one year. Upon delivery of that equipment, we establish, as part of Cost of goods sold, a provision for the expected costs of such warranty based on historical experience, specific warranty terms and customer feedback. A review is performed on a quarterly basis to assess the adequacy of our warranty accrual.

Changes in the warranty accrual, included in Other current liabilities and Other long-term liabilities, were as follows (in millions):

	2017	2016
January 1	\$17.6	\$17.4
Provision for warranty	29.9	33.4
Actual warranty costs	(28.8)	(33.2)
December 31	\$18.7	\$17.6

Research and Development

Internal research and development costs are expensed as incurred. Third-party research and development costs are expensed when the contracted work has been performed.

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.

Share-Based Compensation Plans

Stock-based compensation expense for all share-based payment awards granted is determined based on the grant-date fair value. We recognize these compensation costs net of forfeitures over the requisite service period of the award, which is generally the vesting term of the share-based payment awards. Starting in 2017, we recognize forfeitures as they occur due to a change in accounting principle, and in prior periods we estimated the forfeiture rate based on our historical experience. 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 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 are as follows (in thousands):

	Year Ended December 31,		
	2017	2016	2015
Basic weighted average shares outstanding	29,655	29,440	29,186
Effect of potentially dilutive stock options and restricted stock awards	379	206	223
Diluted weighted average common shares	30,034	29,646	29,409
Anti-dilutive stock options and restricted stock awards excluded from the computation of diluted EPS	13	113	109

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).

RECLASSIFICATION OF CERTAIN AMOUNTS, AND CORRECTION OF IMMATERIAL ERRORS**2016 Reclassification of Buildings and leasehold improvements, and Equipment**

Upon our implementation of our global single instance enterprise resource planning ("ERP") platform in Europe during the second quarter of 2017, \$10.5 million of assets in France were misclassified as Equipment that should have been reported as Buildings and leasehold improvements in periods prior to 2017. The reclassification on the 2016 balance conforms to the correct balance sheet presentation as of December 31, 2017, and there was no impact on the Consolidated Statements of Income or Cash Flows. Please see the table below for the corrected amounts for Buildings and leasehold improvements, and Equipment.

2016 and 2015 Misstatement of Income Taxes

During 2016 and 2015, there were three different misstatements associated with income taxes. The first misstatement was related to our second implementation of our global single instance ERP platform in the U.S. in the third quarter of 2015. Part of the data migrated was not reconciled timely, resulting in the double counting of a deferred tax asset. As a consequence, Deferred income taxes in 2016 were understated by \$2.4 million and the Provision for income taxes was understated by \$2.4 million in 2015.

The second misstatement was related to the misapplication of a tax rule related to foreign dividend income. As a consequence, Retained earnings were overstated by \$1.4 million in 2015, Other tax liabilities - noncurrent, reported in Other long-term liabilities, were understated by \$4.6 million in 2016 and the Provision for income taxes was understated by \$1.9 million and \$1.3 million in 2016 and 2015, respectively.

The third misstatement was related to a design deficiency associated with transfer pricing. As a consequence, our Retained earnings were overstated by \$0.2 million in 2015, Other tax liabilities - noncurrent, reported in Other long-term liabilities, were understated by \$0.6 million in 2016 and the Provision for income taxes was understated by \$0.2 million in both 2016 and 2015.

The impact of the reclassification, and the immaterial error corrections, both described above on our Consolidated Balance Sheet and Consolidated Statements of Income for the periods presented is as follows (in thousands, except per share data):

	December 31, 2016		
	As reported	Adjustment	As revised
Buildings and leasehold improvements	\$290,367	\$ 10,467	\$300,834
Equipment	919,126	(10,467)	908,659
Deferred income taxes	222,919	2,380	225,299
Other long-term liabilities	135,318	5,219	140,537
Total liabilities	1,263,745	7,599	1,271,344
Retained earnings	1,836,180	(7,599)	1,828,581
Total stockholders' equity	\$2,586,759	\$ (7,599)	\$2,579,160

	Year ended December 31,			2015		
	2016			2015		
	As reported	Adjustment	As revised	As reported	Adjustment	As revised
Provision for income taxes	\$(13,435)	\$(2,125)	\$(15,560)	\$(32,754)	\$(3,854)	\$(36,608)
Net income	\$28,125	\$ (2,125)	\$26,000	\$113,093	\$(3,854)	\$109,239
Net income per basic share	\$0.96	\$ (0.08)	\$0.88	\$3.87	\$ (0.13)	\$3.74
Net income per diluted share	\$0.95	\$ (0.07)	\$0.88	\$3.85	\$ (0.14)	\$3.71

Management evaluated the materiality of all the errors described above from a qualitative and quantitative perspective. Based on such evaluation, we have concluded that they are not material to any individual prior period, nor did they have an effect on the trend of financial results, taking into account the requirements of the Securities and Exchange Commission (SEC) Staff Accounting Bulletin No. 108, Considering the Effect of Prior Year Misstatements when Quantifying Misstatements in Current Year Financial Statements (SAB 108). Accordingly, we are correcting these errors in every affected period in the 2015 and 2016 consolidated financial statements included in this Form 10-K.

Recent Accounting Standards Updates

In February 2018, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update No. ("ASU") 2018-03, "Technical Corrections and Improvements to Financial Instruments - Recognition and Measurement of Financial Assets and Financial Liabilities." ASU 2018-03 amends certain items in ASU 2016-01 (see below) such as equity securities without a readily determinable fair value. ASU 2018-03 clarifies that an entity that uses the measurement alternative for equity securities without readily determinable fair values can change its measurement approach to fair value and once made the election is irrevocable. If an entity measures equity securities without readily determinable fair values at fair value, it must record a cumulative-effect adjustment to retained earnings as of the beginning of the fiscal year in which the guidance is adopted. ASU 2018-03 is effective for fiscal years beginning after December 15, 2017, and interim periods within those years beginning after June 15, 2018, with early adoption permitted. As of December 31, 2017, we accounted for our investment of the ordinary shares of Sartorius AG at cost and the fair value is not readily determinable as the stock is too thinly traded (see Note 3 to the consolidated financial statements). Under ASU 2016-01 (see below), we will account for the ordinary shares of Sartorius AG at cost, less any impairment, and plus or minus subsequent adjustments for observable price changes as we do not anticipate a material transaction that would provide an observable price change to the ordinary shares of Sartorius AG based on the current ownership interests by the Sartorius family trust, Sartorius family members, and Bio-Rad Laboratories, Inc.

In February 2018, the FASB issued ASU 2018-02, "Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income." ASU 2018-02 gives entities the option to reclassify to retained earnings tax effects related to items in Accumulated other comprehensive income ("OCI") that the FASB refers to as having been stranded in Accumulated OCI as a result of the Tax Act. We early adopted ASU 2018-02 in the period of adoption of the Tax Act during the fourth quarter of 2017. We elected to reclassify the income tax effects of the Tax Act on the remeasurement of our deferred tax liabilities related to our available-for-sale equity securities, including our preferred shares in Sartorius AG, by increasing OCI and decreasing Retained earnings by \$120.1 million.

In May 2017, the FASB issued ASU 2017-09, "Scope of Modification Accounting." ASU 2017-09 clarifies when changes to the terms or conditions of a share-based payment award must be accounted for as modifications. ASU 2017-09 will allow companies to make certain changes to awards, such as vesting conditions, without accounting for them as modifications. It does not change the accounting for modifications. ASU 2017-09 will be applied prospectively to awards modified on or after the adoption date. We early adopted ASU 2017-09 during the second

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quarter of 2017, which has not affected our consolidated financial statements.

In March 2017, the FASB issued ASU 2017-07, "Improving the Presentation of Net Periodic Pension Cost and Net Periodic Postretirement Benefit Cost." ASU 2017-07 will change how employers that sponsor defined benefit pension and/or other postretirement benefit plans present the net periodic benefit cost, which is comprised of several components, in the income statement. Under ASU 2017-07, employers will present the service cost component of the net periodic benefit cost in the same income statement line item(s) as other employee compensation costs arising from services rendered during the period, and will be the only costs eligible for capitalization. Employers will present the other components separately from the line item(s) that includes the service cost outside of the subtotal of Income from operations. ASU 2017-07 is effective for fiscal years beginning after December 15, 2017, and interim periods within those years. Employers will apply the guidance on the presentation of the components of net periodic benefit cost in the income statement retrospectively. We do not expect ASU 2017-07 to have a material impact to our financial statements.

In January 2017, the FASB issued ASU 2017-04, "Simplifying the Test for Goodwill Impairment." ASU 2017-04 removes Step 2 of the goodwill impairment test, which required a hypothetical purchase price allocation. A goodwill impairment will be the amount by which a reporting unit's carrying value exceeds its fair value, not to exceed the carrying amount of goodwill. ASU 2017-04 provides a more stream-lined approach to evaluating goodwill impairment and we early adopted on January 1, 2017 on a prospective basis as a change in accounting principle. See Note 4 to the consolidated financial statements for an update on goodwill impairment.

In January 2017, the FASB issued ASU 2017-01, "Clarifying the Definition of a Business." ASU 2017-01 changes the definition of a business to assist entities with evaluating when a set of transferred assets and activities is a business. If substantially all of the fair value is concentrated in a single asset or a group of similar assets, the acquired set is not a business. If this is not met, the entity then evaluates whether the set meets the requirement that a business include, at a minimum, an input and a substantive process that together significantly contribute to the ability to create outputs. Determining whether a set constitutes a business is critical because the accounting for a business combination differs significantly from that of an asset acquisition. We early adopted ASU 2017-01 on January 1, 2017 on a prospective basis, and it has not had a material impact to our consolidated financial statements.

In November 2016, the FASB issued ASU 2016-18, "Restricted Cash." ASU 2016-18 requires entities to show the changes in the total of cash, cash equivalents, restricted cash and restricted cash equivalents in the statement of cash flows. As a result, entities will no longer present transfers between cash and cash equivalents and restricted cash and restricted cash equivalents in the statement of cash flows. ASU 2016-18 will be applied retrospectively and is effective for fiscal years beginning after December 15, 2017, and interim periods within those years. We do not expect ASU 2016-18 to have a material impact to our financial statements and will only impact our statements of cash flows presentation.

In October 2016, the FASB issued ASU 2016-16, "Intra-Entity Transfers of Assets Other Than Inventory." ASU 2016-16 requires immediate recognition of income tax consequences of intercompany asset transfers, other than inventory transfers. Existing GAAP prohibits recognition of income tax consequences of intercompany asset transfers whereby the seller defers any net tax effect and the buyer is prohibited from recognizing a deferred tax asset on the difference between the newly created tax basis of the asset in its tax jurisdiction and its financial statement carrying amount as reported in the consolidated financial statements. ASU 2016-16 specifically excludes from its scope intercompany inventory transfers whereby the recognition of tax consequences will take place when the inventory is sold to third parties. ASU 2016-16 is effective for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. ASU 2016-16 will be applied on a modified retrospective basis through a cumulative-effect adjustment directly to retained earnings as of the beginning of the period of adoption. We estimate the impact to be a cumulative-effect decrease to Retained earnings and predominately a decrease to Other assets of approximately \$17 million.

In August 2016, FASB issued ASU 2016-15, "Classification of Certain Cash Receipts and Cash Payments." ASU 2016-15 is intended to reduce diversity in practice in how certain transactions are classified in the statement of cash flows. ASU 2016-15 is effective for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. We do not expect ASU 2016-15 to have a material impact to our statements of cash flows.

In June 2016, the FASB issued ASU 2016-13, "Measurement of Credit Losses on Financial Instruments." ASU 2016-13 will replace the current incurred loss approach with an expected loss model for instruments measured at amortized cost and require entities to record allowances for available-for-sale debt securities rather than reduce the carrying amount under the current other-than-temporary impairment model. ASU 2016-13 is effective for fiscal years beginning after December 15, 2019, and interim periods within those fiscal years. Early adoption is permitted for all entities for annual periods beginning after December 15, 2018, and interim periods therein. We are currently evaluating the effect ASU 2016-13 will have on our consolidated financial statements.

In March 2016, the FASB issued ASU 2016-09, "Improvements to Employee Share-Based Payment Accounting." ASU 2016-09 requires all income tax effects of awards to be recognized in the income statement when the awards vest or are settled. It also allows an employer to repurchase more of an employee's shares than permitted today for tax withholding purposes without triggering liability accounting and to make a policy election to account for forfeitures as they occur. We adopted ASU 2016-09 prospectively as a change in accounting principle on January 1, 2017, and prior periods have not been adjusted. In addition, we made a policy election to account for forfeitures as they occur. ASU 2016-09 also requires to present excess tax benefits as an operating activity on the statement of cash flows rather than as a financing activity. As a result of adopting ASU 2016-09 as of January 1, 2017, the cumulative effect of the change on Retained earnings decreased by \$0.3 million, and increased Additional paid-in capital and Deferred tax assets by \$0.4 million and \$0.1 million, respectively, in the Consolidated Balance Sheet.

In March 2016, the FASB issued ASU 2016-07, "Simplifying the Transition to the Equity Method of Accounting," which eliminates the requirement to retrospectively apply the equity method in previous periods when an investor initially obtains significant influence over an investee. Under current guidance, an investor that does not consolidate an investment and initially accounts for it under a method other than the equity method is required to retrospectively apply the equity method in prior periods in which it held the investment when it subsequently obtained significant influence. We adopted ASU 2016-07 on January 1, 2017 on a prospective basis, which currently has not affected our consolidated financial statements.

In February 2016, the FASB issued ASU 2016-02, "Leases," which will require, among other items, lease accounting to recognize most leases as assets and liabilities on the balance sheet. Qualitative and quantitative disclosures will be enhanced to better understand the amount, timing and uncertainty of cash flows arising from leases. ASU 2016-02 is effective for fiscal years beginning after December 15, 2018, and interim periods within those fiscal years, with early adoption permitted. We do not plan to early adopt. ASU 2016-02 will be adopted on a modified retrospective basis, with elective reliefs, which requires application of ASU 2016-02 for all periods presented. We are currently gathering, documenting and analyzing lease agreements related to this ASU and anticipate material additions to the balance sheet for right-of-use assets, offset by the associated liabilities.

In January 2016, the FASB issued ASU 2016-01, "Recognition and Measurement of Financial Assets and Financial Liabilities." Amendments under ASU 2016-01, among other items, require that all equity investments in unconsolidated entities (other than those accounted for using the equity method of accounting) will generally be measured at fair value through earnings. There will no longer be an available-for-sale classification, for which changes in fair value are reported in other comprehensive income, for equity securities with readily determinable fair values. For equity investments without readily determinable fair values, the cost method is also eliminated. However, entities will be able to elect to record equity investments without readily determinable fair values at cost, less impairment, and plus or minus subsequent adjustments for observable price changes. Changes in the basis of these equity investments will be reported in current earnings. ASU 2016-01 is effective for fiscal years beginning after December 15, 2017, and interim periods within those fiscal years. For equity securities that would be affected by ASU 2016-01, see the available-for-sale investments table in Note 3 to the consolidated financial statements, which primarily consists of our investment in Sartorius AG preferred shares. We expect that the impact of adoption may be material to our

consolidated statement of income. In addition to the affected securities per Note 3, we own ordinary voting stock of Sartorius AG and accounted for this investment under the cost method. Effective January 1, 2018 under 2016-01, we will account for our investment of the ordinary shares of Sartorius AG at cost, less any impairment, and plus or minus subsequent adjustments for observable price changes.

In July 2015, the FASB issued ASU 2015-11, "Simplifying the Measurement of Inventory." Under current guidance, an entity subsequently measures inventory at the lower of cost or market, with market defined as replacement cost, net realizable value (NRV), or NRV less a normal profit margin. An entity uses current replacement cost provided that it is not above NRV (i.e., the ceiling) or below NRV less an "approximately normal profit margin" (i.e., the floor). ASU 2015-11 eliminates this analysis and requires entities to measure most inventory "at the lower of cost and NRV." We prospectively adopted ASU 2015-11 as a change in accounting principle on January 1, 2017, which did not have a material impact on our consolidated financial statements.

In May 2014, the FASB issued ASU 2014-09, "Revenue from Contracts with Customers," which requires an entity to recognize the amount of revenue to which it expects to be entitled for the transfer of promised goods or services to customers. ASU 2014-09 will replace most existing revenue recognition guidance in GAAP when it becomes effective. In December 2016, the FASB issued ASU 2016-20, "Technical Corrections and Improvements to Topic 606, Revenue from Contracts with Customers" which affect narrow aspects of the guidance issued in ASU 2014-09. In May 2016, the FASB issued ASU 2016-12, "Narrow-Scope Improvements and Practical Expedients," which amends and clarifies certain aspects in ASU 2014-09 that include collectability, presentation of sales and other taxes collected from customers, noncash consideration, contract modifications and completed contracts at transition. In April 2016, the FASB issued ASU 2016-10, "Identifying Performance Obligations and Licensing," which amends the guidance in ASU 2014-09 on accounting for licenses of intellectual property and identifying performance obligations. In March 2016, the FASB issued ASU 2016-08, "Principal versus Agent Considerations (Reporting Revenue Gross versus Net)," which amends the principal versus agent guidance in ASU 2014-09. The standards are to be applied retrospectively and permit the use of either the retrospective or cumulative effect transition method. We will use the cumulative effect transition method when we adopt ASUs 2014-09, 2016-20, 2016-12, 2016-10 and 2016-08 on January 1, 2018. Upon adoption, we will recognize the cumulative effect of adopting this guidance as an adjustment to our opening balance of retained earnings. Prior periods will not be retrospectively adjusted. We have completed our preliminary assessment of individual contracts to identify performance obligations under these ASU's, as compared with the deliverables and separate units of accounting previously identified under current U.S. GAAP. Based on our preliminary assessment we have not identified any material changes in the timing of revenue recognition that could result in a significant transition adjustment upon our adoption of the new accounting standard on January 1, 2018 and the accounting for costs incurred to obtain a contract is immaterial. However, we are still in the process of the following: Assessing the impact of the accounting on our reagent agreements to determine if there are any differences in the timing of revenue recognition; finalizing the required changes to our accounting policies, systems and internal control over financial reporting, and assessing the new disclosure requirements that will be implemented upon our adoption of the new standard.

2. ACQUISITIONS

RainDance Technologies, Inc.

In February 2017, we acquired all the issued and outstanding stock of RainDance Technologies, Inc. (RainDance) for approximately \$72.7 million. Cash payments at closing were \$72.9 million. In addition, we had a cash payment of \$10.0 million for a preexisting condition concurrent with the acquisition that was recorded in Cost of goods sold. The acquisition was included in our Life Science segment's results of operations from the acquisition date and was accounted for as a business combination. The amount of acquisition-related costs was minimal as Bio-Rad primarily represented itself during the acquisition process. The goodwill related to this acquisition is not deductible for income tax purposes. Pro forma financial statements are not provided as the acquisition is immaterial to Bio-Rad taken as a whole for the periods presented.

The final allocation for the payments of \$72.9 million was \$37.6 million to definite-lived intangibles, \$0.2 million to acquired net assets, \$26.2 million to goodwill, a deferred tax liability of \$13.6 million primarily related to the

purchased intangibles and a deferred tax asset of \$22.5 million primarily related to the acquired net operating losses. The final allocation of the payments reflect the effects of correcting an error that were recorded in the fourth

quarter of 2017. These corrections reduced goodwill, deferred revenue and deferred tax assets by \$1.9 million, \$3.3 million and \$1.4 million, respectively, and had no significant impact on our Consolidated Statements of Income. RainDance's foundational intellectual property portfolio and product lines encompass a wide range of biological reactions in droplets, with potential applications in life science research and clinical research. These genomic tools provide ultra-sensitive detection of genetic variations in cancer as well as inherited and infectious diseases, enabling research in areas such as non-invasive liquid biopsy. We believe that RainDance's droplet-based solutions will extend our reach into next-generation sequencing applications and strengthen our position in the area of Droplet Digital™ PCR, offering customers solutions for a wide range of nucleic acid detection applications.

Propel Labs, Inc.

In January 2016, we acquired a high performance analytical flow cytometer platform from Propel Labs (Propel) that will enable advanced and novice users to perform basic and multi-parameter cytometry for a wide range of applications and chemistries. This asset acquisition was accounted for as a business combination, as the new analytical flow cytometer platform represented an integrated set of activities and assets that is capable of being conducted and managed for the purpose of providing a return and therefore constitutes a business in accordance with GAAP. The amount of the acquisition-related cost was minimal as Bio-Rad primarily represented itself during the acquisition process. This business acquisition is included in our Life Science segment's results of operations from the acquisition date.

The fair value of the consideration as of the acquisition date was \$32.8 million, which included \$9.5 million paid in cash at the closing date and \$23.3 million in contingent consideration potentially payable to Propel. The amount of contingent consideration was determined based on a probability-weighted income approach related to the achievement of sales milestones, and was recognized at its estimated fair value of \$16.7 million as of December 31, 2017 (see Note 3, "Fair Value Measurements").

The fair values of the net assets acquired from Propel as of the acquisition date were determined to be \$32.7 million of definite-lived intangible assets and \$0.1 million of goodwill. The goodwill related to this acquisition is deductible for income tax purposes. The acquired analytical flow cytometer platform fits well into Bio-Rad's existing Life Science segment product offerings and may offer researchers greater access to this technology.

In addition, Bio-Rad contracted with Propel to provide development services concurrent with and included in the purchase agreement. Bio-Rad is receiving manufacturing, engineering and marketing support from Propel on which payments are made upon the successful completion of all contracted services. As a result, these services were not included in the total purchase consideration and have been and will be expensed.

3. FAIR VALUE MEASUREMENTS

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, 2017 are classified in the hierarchy as follows (in millions):

	Level 1	Level 2	Level 3	Total
Financial Assets Carried at Fair Value:				
Cash equivalents (a):				
Commercial paper	\$—	\$36.0	\$—	\$36.0
Time deposits	43.7	10.0	—	53.7
U.S. government sponsored agencies	—	11.2	—	11.2
Money market funds	3.4	—	—	3.4
Total cash equivalents	47.1	57.2	—	104.3
Restricted investment:	5.6	—	—	5.6
Available-for-sale investments (b):				
Corporate debt securities	—	185.7	—	185.7
U.S. government sponsored agencies	—	67.6	—	67.6
Foreign government obligations	—	3.4	—	3.4
Brokered certificates of deposit	—	0.7	—	0.7
Municipal obligations	—	15.0	—	15.0
Marketable equity securities	973.4	—	—	973.4
Asset-backed securities	—	55.6	—	55.6
Total available-for-sale investments	973.4	328.0	—	1,301.4
Forward foreign exchange contracts (c)	—	0.5	—	0.5
Total financial assets carried at fair value	\$1,026.1	\$385.7	\$—	\$1,411.8
Financial Liabilities Carried at Fair Value:				
Forward foreign exchange contracts (d)	\$—	\$1.6	\$—	\$1.6
Contingent consideration (e)	—	—	16.7	16.7
Total financial liabilities carried at fair value	\$—	\$1.6	\$16.7	\$18.3

Financial assets and liabilities carried at fair value and measured on a recurring basis as of December 31, 2016 are classified in the hierarchy as follows (in millions):

	Level 1	Level 2	Level 3	Total
Financial Assets Carried at Fair Value:				
Cash equivalents (a):				
Commercial paper	\$—	\$14.1	—	\$14.1
Foreign time deposits	11.8	—	—	11.8
Domestic time deposits	—	\$20.0	—	20.0
U.S. government sponsored agencies	—	1.1	—	1.1
Money market funds	5.9	—	—	5.9
Total cash equivalents	17.7	35.2	—	52.9
Restricted investment:	4.6	—	—	4.6
Available-for-sale investments (b):				
Corporate debt securities	—	179.4	—	179.4
U.S. government sponsored agencies	—	82.5	—	82.5
Foreign government obligations	—	4.4	—	4.4
Brokered certificates of deposit	—	3.6	—	3.6
Municipal obligations	—	15.4	—	15.4
Marketable equity securities	767.8	—	—	767.8
Asset-backed securities	—	62.5	—	62.5
Total available-for-sale investments	767.8	347.8	—	1,115.6
Forward foreign exchange contracts (c)	—	0.6	—	0.6
Total financial assets carried at fair value	\$790.1	\$383.6	—	\$1,173.7

Financial Liabilities Carried at Fair Value:

Forward foreign exchange contracts (d)	\$—	\$1.3	—	\$1.3
Contingent consideration (e)	—	—	38.5	38.5
Total financial liabilities carried at fair value	\$—	\$1.3	\$38.5	\$39.8

(a) Cash equivalents are included in Cash and cash equivalents in the Consolidated Balance Sheets.

(b) Available-for-sale investments are included in the following accounts in the Consolidated Balance Sheets (in millions):

	December 31, 2017	December 31, 2016
Short-term investments	\$ 371.2	\$ 383.2
Other investments	930.2	732.4
Total	\$ 1,301.4	\$ 1,115.6

(c) Forward foreign exchange contracts in an asset position are included in Other current assets in the Consolidated Balance Sheets.

(d) Forward foreign exchange contracts in a liability position are included in Other current liabilities in the Consolidated Balance Sheets.

(e) Contingent consideration liabilities are included in the following accounts in the Consolidated Balance Sheets (in millions):

	December 31, 2017	December 31, 2016
Other current liabilities	\$ 2.7	\$ 14.5
Other long-term liabilities	14.0	24.0
Total	\$ 16.7	\$ 38.5

In 2012, we recognized a contingent consideration liability for certain milestones of \$44.6 million upon our acquisition of a new cell sorting system from Propel. Since 2012, we have paid \$32.0 million upon reaching the milestones and have reduced the valuation of the milestones by \$12.6 million. The remaining liability of \$3.1 million was paid in February 2017.

During the first quarter of 2016, we recognized a contingent consideration liability upon our acquisition of a high performance analytical flow cytometer platform from Propel. At the acquisition date, the amount of contingent consideration was determined based on a probability-weighted income approach related to the achievement of sales milestones, ranging from 39% to 20% for the calendar years 2017 through 2020. The sales milestones could potentially range from \$0 to an unlimited amount. The current contingent consideration is built on a sales forecast of \$78 million through December 31, 2020. In the third quarter of 2017, we paid \$0.6 million upon reaching the first milestone and since 2016 we have decreased the valuation of the sales milestones by \$6.0 million. The contingent consideration was accrued at its estimated fair value of \$16.7 million as of December 31, 2017.

The following table provides a reconciliation of the Level 3 cell sorting system and analytical flow cytometer platform contingent consideration liabilities measured at estimated fair value based on original valuations and updated quarterly for the year ended December 31, 2017 (in millions):

	2017
January 1	\$28.5
Cell sorting system:	
Payment of sales milestone	(3.1)
Analytical flow cytometer platform:	
Decrease in estimated fair value of contingent consideration included in Selling, general and administrative expense	(8.1)
Payment of sales milestone	\$(0.6)
December 31	\$16.7

Significant increases or decreases in these inputs in isolation could result in a significantly lower or higher fair value measurement.

Valuation Technique	Unobservable Input	Percentage
Analytical flow cytometer platform	Probability-weighted income approach	<u>Sales</u> <u>milestones:</u>
	Discount rate	10.8 %
	Cost of debt	4.2 %

In 2014, we recognized a contingent consideration liability upon our acquisition of GnuBIO, Inc. The contingent consideration for the milestones was valued at \$10.7 million at the acquisition date based on assumptions regarding the probability of achieving the milestones, with such amounts discounted to present value. This amount had been accounted for as a contingent liability as of December 31, 2016 in the amount of \$10.0 million and was reversed to selling, general and administrative expense during the first quarter of 2017 due to reaching a favorable resolution of the contingency with the previous owners of GnuBIO, Inc.

To estimate the fair value of Level 2 debt securities as of December 31, 2017 and 2016, our primary pricing provider uses Securities Evaluations as the primary pricing source. Our pricing process allows us to select a hierarchy of pricing sources for securities held. The chosen pricing hierarchy for our Level 2 securities, other than certificates of deposit and commercial paper, is Securities Evaluations as the primary pricing source and then our custodian as the secondary pricing source. If Securities Evaluations does not price a Level 2 security that we hold, then the pricing provider will utilize our custodian supplied pricing.

For commercial paper as of December 31, 2017 and 2016, pricing is determined by a straight-line calculation, starting with the purchase price on the date of purchase and increasing to par at maturity. Interest bearing certificates of deposit and commercial paper are priced at par. In the event that an additional lot of the same commercial paper issue has been purchased within the same account, then the price of all holdings of that issue in that account will be the price of the most recent lot purchased.

Our primary pricing provider performs daily reasonableness testing of the Securities Evaluations prices. Price changes of 5% or greater are investigated and resolved. In addition, we perform a quarterly testing of the Securities Evaluations prices to custodian reported prices. Prices outside a tolerable variance of approximately 1% are investigated and resolved.

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

December 31, 2017				
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value
Short-term investments:				
Corporate debt securities	\$185.9	\$ 0.3	\$ (0.5)	\$185.7
Brokered certificates of deposit	0.7	—	—	0.7
Municipal obligations	15.1	—	(0.1)	15.0
Asset-backed securities	55.6	—	(0.2)	55.4
U.S. government sponsored agencies	68.3	—	(0.7)	67.6
Foreign government obligations	3.4	—	—	3.4
Marketable equity securities	34.4	9.0	—	43.4
	363.4	9.3	(1.5)	371.2
Long-term investments:				
Marketable equity securities	54.5	875.5	—	930.0
Asset-backed securities	0.2	—	—	0.2
	54.7	875.5	—	930.2
Total	\$418.1	\$ 884.8	\$ (1.5)	\$ 1,301.4

December 31, 2016				
	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value
Short-term investments:				
Corporate debt securities	\$179.7	\$ 0.2	\$ (0.5)	\$179.4
Brokered certificates of deposit	3.6	—	—	\$ 3.6
Municipal obligations	15.5	—	(0.1)	15.4
Asset-backed securities	62.2	0.1	(0.1)	62.2
U.S. government sponsored agencies	83.1	0.1	(0.7)	82.5
Foreign government obligations	4.4	—	—	4.4
Marketable equity securities	32.4	3.7	(0.4)	35.7
	380.9	4.1	(1.8)	383.2
Long-term investments:				
Marketable equity securities	54.5	677.6	—	732.1
Asset-backed securities	0.3	—	—	0.3
	54.8	677.6	—	732.4
Total	\$435.7	\$ 681.7	\$ (1.8)	\$ 1,115.6

The unrealized gains of our long-term marketable equity securities are primarily due to our investment in Sartorius AG preferred shares.

The following is a summary of investments with gross unrealized losses and the associated fair value (in millions):

	December 31, 2017	December 31, 2016
Fair value of investments in a loss position 12 months or more	\$ 43.9	\$ 11.8
Fair value of investments in a loss position less than 12 months	\$ 168.7	\$ 160.5
Gross unrealized losses for investments in a loss position 12 months or more	\$ 0.7	\$ 0.3
Gross unrealized losses for investments in a loss position less than 12 months	\$ 0.8	\$ 1.5

The unrealized losses on these securities are due to a number of factors, including changes in interest rates, changes in economic conditions and changes in market outlook for various industries, among others. Because Bio-Rad has the ability and intent to hold these investments with unrealized losses until a recovery of fair value, or for a reasonable period of time sufficient for a forecasted recovery of fair value, which may be maturity, we do not consider these investments to be other-than-temporarily impaired at December 31, 2017 or at December 31, 2016.

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, 2017 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 Reuters 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, 2017
Contracts maturing in January through March 2018 to sell foreign currency:	
Notional value	\$ 52.0
Unrealized loss	\$ 0.1
Contracts maturing in January through March 2018 to purchase foreign currency:	
Notional value	\$ 413.2
Unrealized loss	\$ 1.0

The following is a summary of the amortized cost and estimated fair value of our debt securities at December 31, 2017 by contractual maturity date (in millions):

Amortized Cost	Estimated Fair
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	Value	
Mature in less than one year	\$ 126.3	\$ 126.1
Mature in one to five years	157.9	157.2
Mature in more than five years	45.0	44.7
Total	\$ 329.2	\$ 328.0

The estimated fair value of financial instruments that are not recognized at fair value in the Consolidated Balance Sheets and are included in Other investments, are presented in the table below. Fair value has been determined using significant observable inputs, including quoted prices in active markets for similar instruments. 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. Other investments include financial instruments, the majority of which has fair value based on similar, actively traded stock adjusted for various discounts, including a discount for marketability. Long-term debt, excluding leases and current maturities, has an estimated fair value based on quoted market prices for the same or similar issues.

The estimated fair value of the financial instruments discussed above and the level of the fair value hierarchy within which the fair value measurement is categorized are as follows (in millions):

	December 31, 2017			December 31, 2016		
	Carrying Amount	Estimated Fair Value	Fair Value Hierarchy Level	Carrying Amount	Estimated Fair Value	Fair Value Hierarchy Level
Other investments	\$91.8	\$ 1,249.4	2	\$92.8	\$ 984.2	2
Total long-term debt, excluding leases and current maturities	\$423.1	\$ 449.8	2	\$422.5	\$ 454.2	2

We own shares of ordinary voting stock of Sartorius AG (Sartorius), of Goettingen, Germany, a process technology supplier to the biotechnology, pharmaceutical, chemical and food and beverage industries. We own over 35% of the outstanding voting shares (excluding treasury shares) of Sartorius as of December 31, 2017. The Sartorius family trust and Sartorius family members hold a controlling interest of the outstanding voting shares. We do not have any representative or designee on Sartorius' board of directors, nor do we have the ability to exercise significant influence over the operating and financial policies of Sartorius. We account for this investment using the cost method. The carrying value of this investment is included in Other investments in our Consolidated Balance Sheets. As the stock is too thinly traded and the fair value is not readily determinable in conjunction with the valuation method discussed above, we have classified the estimated fair value as Level 2. The Level 2 classification is appropriate given the valuation method employed, which incorporates an observable input of the fair value of the Sartorius' actively traded preferred stock.

4. GOODWILL AND OTHER PURCHASED INTANGIBLE ASSETS

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

	2017			2016		
	Life Science	Clinical Diagnostics	Total	Life Science	Clinical Diagnostics	Total
Balances as of January 1:						
Goodwill	\$207.1	\$ 311.7	\$518.8	\$207.2	\$ 316.9	\$524.1
Accumulated impairment losses and write-offs	(27.2)	(14.5)	(41.7)	(27.2)	(1.0)	(28.2)
Goodwill, net	179.9	297.2	477.1	180.0	315.9	495.9
Acquisitions	26.2	—	26.2	0.1	—	0.1
Impairment	(8.7)	(2.8)	(11.5)	—	(13.5)	(13.5)
Currency fluctuations	1.4	12.9	14.3	(0.2)	(5.2)	(5.4)
Balances as of December 31:						
Goodwill	234.7	324.6	559.3	207.1	311.7	518.8
Accumulated impairment losses and write-offs	(35.9)	(17.3)	(53.2)	(27.2)	(14.5)	(41.7)
Goodwill, net	\$198.8	\$ 307.3	\$506.1	\$179.9	\$ 297.2	\$477.1

In conjunction with the purchase of all the issued and outstanding stock of RainDance Technologies, Inc. in February 2017 (see Note 2, "Acquisitions"), we recorded \$26.2 million of goodwill and \$37.6 million of definite-lived intangible assets: \$36.4 million of licenses, \$1.0 million of developed product technology and \$0.2 million of tradenames.

In conjunction with the purchase of certain assets from Propel in January 2016 (see Note 2, "Acquisitions"), we recorded \$0.1 million of goodwill and \$32.7 million of definite-lived intangible assets: \$29.7 million of developed product technology and \$3.0 million of covenants not to compete.

In 2017, we impaired goodwill associated with our 1999 acquisition of Pasteur Sanofi Diagnostics S.A. and with our 2013 acquisition of AbD Serotec in the amounts of \$2.8 million and \$8.7 million, respectively. Impairment for the Pasteur Sanofi Diagnostics S.A. was included in our Clinical Diagnostics segment's results of operations, and the impairment for AbD Serotec was included in our Life Science segment's results of operations. In 2016, we fully impaired goodwill and in-process research and development in the amounts of \$13.5 million and \$46.4 million, respectively, associated with our 2014 acquisition of GnuBIO, Inc., which is included in our Clinical Diagnostics segment's results of operations. The impairments were based upon a revision of our Level 3 valuation inputs, i.e., expected future cash flows.

Other than goodwill, we have no intangible assets with indefinite lives. Information regarding our identifiable purchased intangible assets with definite lives is as follows (in millions):

	December 31, 2017			
	Average Remaining Life (years)	Purchase Price	Accumulated Amortization	Net Carrying Amount
Customer relationships/lists	1-7	\$ 92.3	\$ (64.4)	\$ 27.9
Know how	1-8	194.9	(157.9)	37.0
Developed product technology	1-12	133.3	(70.3)	63.0
Licenses	1-12	76.7	(36.0)	40.7
Tradenames	1-6	3.9	(3.0)	0.9

Covenants not to compete	1-8	7.9	(3.3	) 4.6
Total definite-lived intangible assets		\$ 509.0	\$ (334.9	) \$ 174.1

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	December 31, 2016			
	Average Remaining Life (years)	Purchase Price	Accumulated Amortization	Net Carrying Amount
Customer relationships/lists	1-8	\$ 84.4	\$ (52.8	) \$ 31.6
Know how	1-9	182.6	(136.9	) 45.7
Developed product technology	3-12	125.9	(56.3	) 69.6
Licenses	1-9	39.0	(30.6	) 8.4
Tradenames	4-8	3.5	(2.5	) 1.0
Covenants not to compete	2-9	7.8	(2.5	) 5.3
Total definite-lived intangible assets		\$ 443.2	\$ (281.6	) \$ 161.6

Amortization expense related to purchased intangible assets for the years ended December 31, 2017, 2016 and 2015 was \$30.8 million, \$35.2 million and \$36.5 million, respectively. Estimated future amortization expense (based on existing purchased intangible assets) for the years ending December 31, 2018, 2019, 2020, 2021, 2022 and thereafter is \$28.4 million, \$25.0 million, \$22.9 million, \$22.1 million, \$18.0 million, and \$57.7 million, respectively.

5. NOTES PAYABLE AND LONG-TERM DEBT

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, 2017, which was reduced by \$4.2 million that was utilized for standby letters of credit and guarantee arrangements issued by our banks to support our obligations.

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

	December 31, 2017	December 31, 2016
4.875% Senior Notes due 2020, net of discount	\$ 425.0	\$ 425.0
Less unamortized discount and debt issuance costs	(1.9	) (2.5
Long-term debt less unamortized discount and debt issuance costs	423.1	422.5
Capital leases and other debt	11.9	12.0
	435.0	434.5
Less current maturities	(0.4	) (0.3
Long-term debt	\$ 434.6	\$ 434.2

Senior Notes due 2020

In December 2010, Bio-Rad sold \$425.0 million principal amount of Senior Notes due 2020 (4.875% Notes). The sale yielded net cash proceeds of \$422.6 million at an effective rate of 4.946%. The 4.875% Notes pay a fixed rate of interest of 4.875% per year. We have the option to redeem any or all of the 4.875% Notes at any time at a redemption price of 100% of the principal amount (plus a specified make-whole premium as defined in the indenture governing the 4.875% Notes) and accrued and unpaid interest thereon to the redemption date. Our obligations under the 4.875% Notes are not secured and rank equal in right of payment with all of our existing and future unsubordinated

indebtedness. Certain covenants apply at each year end to the 4.875% Notes including

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limitations on the following: liens, sale and leaseback transactions, mergers, consolidations or sales of assets and other covenants. We were in compliance with these covenants as of December 31, 2017. There are no restrictive covenants relating to total indebtedness, interest coverage, stock repurchases, recapitalizations, dividends and distributions to shareholders or current ratios.

Credit Agreement

In June 2014, Bio-Rad entered into a \$200.0 million unsecured 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. We had no outstanding borrowings under the Credit Agreement as of December 31, 2017 or 2016, however, \$0.5 million and \$0.8 million were utilized for domestic standby letters of credit that reduced our borrowing availability as of December 31, 2017 and 2016, respectively. The Credit Agreement matures in June 2019. If we had borrowed against our Credit Agreement, the borrowing rate would have been 2.94% at December 31, 2017.

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 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, 2017.

Maturities of long-term debt at December 31, 2017 are as follows: 2018 - \$0.4 million; 2019 - \$0.3 million; 2020 - \$425.3 million; 2021 - \$0.3 million; 2022 - \$0.3 million; thereafter - \$10.3 million.

6. INCOME TAXES

On December 22, 2017, comprehensive tax legislation (the "Tax Act") was enacted into law. The Tax Act made broad and complex changes to the U.S. tax code that affect our 2017 financial statements, including, but not limited to, (1) a one-time mandatory deemed repatriation tax on certain unrepatriated foreign earnings ("Transition Tax") that is payable over eight years; (2) bonus depreciation that allows for full expensing of qualified property; and (3) a reduction in the U.S. federal corporate tax rate from 35% to 21% effective in 2018, which requires us to remeasure our deferred tax assets and liabilities as of December 31, 2017. The Tax Act also includes provisions that may affect our 2018 financial statements, including, but not limited to, (1) the elimination of the corporate alternative minimum tax; (2) the creation of the base erosion anti-abuse tax, a new minimum tax; (3) a change from a worldwide tax system to a modified territorial system; (4) a new provision designed to tax global intangible low-taxed income, which allows for the possibility of using foreign tax credits and a deduction of up to 50 percent to offset the income tax liability (subject to some limitations); (5) a new limitation on deductible interest expense; (6) the repeal of the domestic production activity deduction; (7) limitations on the deductibility of certain executive compensation; (8) limitations on the use of foreign tax credits to reduce the U.S. income tax liability; and (9) limitations on net operating losses generated after December 31, 2017 to 80 percent of taxable income. We are currently reviewing and evaluating the Tax Act and its impacts to our financial statements.

Subsequent to the enactment of the Tax Act, the SEC staff issued Staff Accounting Bulletin No. 118, Income Tax Accounting Implications of the Tax Cuts and Jobs Act ("SAB 118"), which provides guidance on accounting for the tax effects of the Tax Act. SAB 118 provides a measurement period that should not extend beyond one year from the Tax Act enactment date for companies to complete the accounting under Accounting Standards Codification ("ASC") 740, "Income Taxes." In accordance with SAB 118, a company must reflect the income tax effects of those aspects of the Tax Act for which the accounting under ASC 740 is complete. To the extent that a company's accounting for certain income tax effects of the Tax Act is incomplete but a reasonable estimate can be determined, the company must record

a provisional estimate in the financial statements. For the year ended December 31, 2017, we recorded those amounts for which the accounting was complete or for which we were able to make reasonable

estimates. The provisional estimates of the Transition Tax and remeasurement of our deferred tax assets and liabilities will be adjusted as additional information and guidance become available.

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

	Year Ended December 31,		
	2017	2016	2015
U.S.	\$72.8	\$(38.5)	\$48.4
International	25.0	80.1	97.4
Income before taxes	\$97.8	\$41.6	\$145.8

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

	Year Ended December 31,		
	2017	2016	2015
Current tax expense:			
U.S. Federal	\$6.7	\$16.1	\$8.7
State	3.4	3.1	1.7
International	32.0	30.4	34.1
Current tax expense	42.1	49.6	44.5
Deferred tax (benefit) expense:			
U.S. Federal	(69.8)	(42.4)	2.0
State	4.3	(2.8)	1.4
International	(19.3)	(6.0)	(7.1)
Deferred tax benefit	(84.8)	(51.2)	(3.7)
Non-current tax expense (benefit)	18.3	17.2	(4.2)
(Benefit from) provision for income taxes	\$(24.4)	\$15.6	\$36.6

Prior year amounts have been revised (see Note 1 to the consolidated financial statements).

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

	Year Ended December 31,		
	2017	2016	2015
U. S. statutory tax rate	35 %	35 %	35 %
Impact of foreign operations	7	(15)	(4)
Foreign dividends, net	—	(40)	(4)
Research tax credits	(4)	(9)	(2)
Nontaxable subsidies	(2)	(4)	(1)
Tax settlements and changes to unrecognized tax benefits	—	47	(3)
Goodwill impairment	—	11	—
Domestic manufacturing deduction	—	(4)	(2)
Stock-based compensation	(5)	3	1
Nondeductible executive compensation	2	3	1
Fines and penalties	—	2	—
Prior period adjustments	—	4	3
U.S. taxation of foreign income	3	2	—
Acquisition-related	10	—	—
U.S. tax reform	(71)	—	—
State taxes	3	1	1
Other	(3)	1	—
(Benefit from) provision for income taxes	(25)%	37 %	25 %

Prior year amounts have been revised (see Note 1 to the consolidated financial statements).

Our effective income tax rate was (25)%, 37% and 25% in 2017, 2016 and 2015, respectively. The lower effective tax rate in 2017 is primarily due to an estimated provisional tax benefit from the Tax Act of approximately \$70 million. The effective tax rates for 2016 and 2015 included tax benefits from the repatriation of foreign earnings. The effective tax rate for 2016 included additional tax liabilities for unrecognized tax benefits related to the non-deductibility of interest expense in our foreign jurisdictions.

In accordance with SAB 118, our accounting for the following elements of the Tax Act is incomplete. However, we were able to make reasonable estimates of certain effects and, therefore, recorded provisional estimates as follows:

Our deferred tax assets and liabilities are measured at the enacted tax rate that will apply when these temporary differences are expected to be realized or settled. In connection with the Tax Act, we have provisionally recorded a deferred income tax benefit of \$125 million for the statutory corporate tax rate reduction as our U.S. federal deferred tax liabilities exceed our deferred tax assets. This deferred tax benefit is primarily related to the remeasurement of the deferred tax liability for our investment in the preferred shares of Sartorius AG.

The Tax Act imposes a Transition Tax payable over eight years. The Transition Tax is assessed on the U.S. shareholders' share of certain foreign corporations' accumulated untaxed foreign earnings. Earnings in the form of cash and cash equivalents are taxed at a rate of 15.5% and all other earnings are taxed at a rate of 8.0%. We recorded a provisional income tax expense of \$55 million for Transition Tax. As additional information and guidance become available, the determination of the Transition Tax will be completed within the measurement period in accordance with SAB 118.

Our accounting for certain other elements of the Tax Act is incomplete, and we are not yet able to make reasonable estimates of those effects. For example, we have not made a determination as to our accounting policy with respect to

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the new Global Intangible Low Tax Income ("GILTI"). Therefore, no provisional adjustments were recorded.

Many jurisdictions in which we operate have statutory tax rates that are significantly lower than the U.S. statutory tax rate of 35%. 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,	
	2017	2016
Deferred tax assets:		
Bad debt, inventory and warranty accruals	\$28.6	\$25.8
Other post-employment benefits, vacation and other reserves	24.0	26.3
Tax credit and net operating loss carryforwards	73.3	96.4
Other	19.7	35.7
Total gross deferred tax assets	145.6	184.2
Valuation allowance	(66.4)	(66.4)
Total deferred tax assets	79.2	117.8
Deferred tax liabilities:		
Property and equipment	33.5	22.2
Investments and intangible assets	219.1	287.8
Total deferred tax liabilities	252.6	310.0
Net deferred tax liabilities	\$(173.4)	\$(192.2)

Prior year amounts have been revised (see Note 1 to the consolidated financial statements).

At December 31, 2017, Bio-Rad's international subsidiaries had combined net operating loss carryforwards of \$207.2 million. Of these loss carryforwards, \$150.6 million have no expiration date. We believe that it is more likely than not that the benefit from approximately half of these net operating loss carryforwards will not be realized. We have provided a valuation allowance of \$27.8 million relating to these net operating loss carryforwards.

At December 31, 2017, Bio-Rad had approximately \$53 million of California net operating loss carryforwards related to the acquisition of QuantaLife. We believe that it is more likely than not that the benefit from these net operating loss carryforwards will not be realized and have recorded a full valuation allowance against these losses. At December 31, 2017, Bio-Rad had a deferred tax asset of \$29.6 million relating to California research tax credit carryforwards, including \$2.0 million from the acquisition of QuantaLife, which may be carried forward indefinitely. Based on our judgment and consistent with prior years, we have recorded a full valuation allowance against the deferred tax asset.

Although we believe that it is more likely than not that certain of these deferred tax assets described above will not be realized in the foreseeable future, if or when recognized, the tax benefits relating to any reversal of the valuation allowance will be recognized as a reduction of income tax expense.

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 2014 and forward for the U.S. and the years 2012 and forward for 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 an

d 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):

	2017	2016	2015
Unrecognized tax benefits – January 1	\$21.1	\$11.9	\$15.8
Additions to tax positions related to prior years	1.3	10.4	0.7
Reductions to tax positions related to prior years	(1.0)	—	(0.2)
Additions to tax positions related to the current year	34.8	3.4	2.9
Settlements	(0.2)	(2.4)	(0.5)
Lapse of statute of limitations	(3.4)	(2.3)	(6.3)
Currency translation	2.3	0.1	(0.5)
Unrecognized tax benefits – December 31	\$54.9	\$21.1	\$11.9

Prior year amounts have been revised (see Note 1 to the consolidated financial statements).

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, 2017, 2016 and 2015, respectively was \$10.9 million, \$11.8 million and \$3.1 million. Bio-Rad accrued interest and penalties of \$(0.9) million, \$8.7 million, and \$(0.7) million in 2017, 2016, and 2015, respectively. The total unrecognized tax benefits and interest and penalties of \$65.8 million in 2017 was partially offset by deferred tax assets of \$2.8 million and prepaid taxes of \$14.5 million, for a net amount of \$48.5 million.

As of December 31, 2017, 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 \$2.3 million. Substantially all such amounts will impact our effective income tax rate if recognized.

Certain foreign subsidiary earnings are subject to U.S. taxation under the Tax Act, which also repeals U.S. taxation on the subsequent repatriation of those earnings. It is generally our intention to repatriate those foreign earnings to the extent that such repatriations are not restricted by local laws or accounting rules, and there are no substantial incremental costs. While we currently estimate that the repatriation of those earnings would not trigger material costs, these estimates are provisional, and we are still evaluating the full impact of these potential repatriations in accordance with SAB 118.

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 Board of Directors and Class B stockholders are entitled to elect 75% of the 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):

	<u>Class</u> <u>A</u> <u>Shares</u>	<u>Class</u> <u>B</u> <u>Shares</u>
Balance at January 1, 2015	23,972	5,099
B to A conversions	18	(18)
Issuance of common stock	240	50
Balance at December 31, 2015	24,230	5,131
B to A conversions	13	(13)
Issuance of common stock	211	6
Balance at December 31, 2016	24,454	5,124
B to A conversions	34	(34)
Issuance of common stock	191	18
Balance at December 31, 2017	24,679	5,108

Treasury Shares

On November 28, 2017, we announced that 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. This new authorization superseded the prior authorization of up to \$18.0 million of Bio-Rad's common stock. During the second and third quarters of 2017, we made open market purchases of 13,200 shares of our Class A common stock. In September 2017, we used 12,740 of the repurchased shares in connection with the vesting of restricted stock units under the 2007 Incentive Award Plan in order to obtain a tax deduction in some of our foreign entities. The Credit Agreement may limit our ability to repurchase our stock. In accordance with the terms of awards under the 2007 Incentive Award Plan, in June 2012, we withheld 122 shares of our Class A common stock and 917 shares of our Class B common stock to satisfy tax obligations due upon the vesting of restricted stock of certain of our employees, which is considered a repurchase of our stock. We had no other repurchases of our stock during 2017 or 2016.

8. ACCUMULATED OTHER COMPREHENSIVE INCOME

Accumulated other comprehensive income 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 on available-for-sale investments	Total Accumulated other comprehensive income
Balances as of January 1, 2016	\$ 33.7	\$ (20.7	) \$ 369.1	\$ 382.1
Other comprehensive (loss) income, before reclassifications	(32.4	) 0.5	105.1	73.2
Amounts reclassified from Accumulated other comprehensive income	—	2.5	(0.8	) 1.7
Income tax effects	—	(0.9	) (38.4	) (39.3
Other comprehensive (loss) income, net of income taxes	(32.4	) 2.1	65.9	35.6
Balances as of December 31, 2016	\$ 1.3	\$ (18.6	) \$ 435.0	\$ 417.7
Other comprehensive income (loss), before reclassifications	76.1	(6.5	) 203.6	273.2
Amounts reclassified from Accumulated other comprehensive income	—	2.1	(0.1	) 2.0
Income tax effects	—	0.7	(74.9	) (74.2
Effect of adoption of ASU 2018-02**	—	—	120.1	120.1
Other comprehensive income (loss), net of income taxes	76.1	(3.7	) 248.7	321.1
Balances as of December 31, 2017	\$ 77.4	\$ (22.3	) \$ 683.7	\$ 738.8

**See Note 1, "Significant Accounting Policies" under "Recent Accounting Standards Update"

The increases in 2017 and 2016 for net unrealized holding gains on available-for-sale investments were primarily from our ownership in the preferred shares of Sartorius.

The amounts reclassified out of Accumulated other comprehensive income into the Consolidated Statements of Income, with presentation location, were as follows:

Income before taxes impact (in millions):

	December 31,		Location
Components of Comprehensive income	2017	2016	Selling, general and administrative expense Other (income) expense, net
Amortization of foreign other post-employment benefit items	\$(2.1)	\$(2.5)	
Net holding gains on available for sale investments	\$0.1	\$0.8	

Reclassification adjustments are calculated using the specific identification method.

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

Description of Share-Based Compensation Plans

We believe our share-based compensation plans align the interests of our employees with those of our shareholders.

Equity Award Plans

We have three equity award plans for officers and certain other employees: the 2003 Stock Option Plan (2003 Plan), the 2007 Incentive Award Plan (2007 Plan) and the 2017 Incentive Award Plan (2017 Plan). The 2003 Plan authorized the grant of incentive stock options and non-qualified stock options to employees. The 2007 Plan authorized the grant of stock options, restricted stock, restricted stock units, stock appreciation rights and other types of equity awards to employees. We no longer grant equity under the 2003 Plan or 2007 Plan. From 2007 through 2016, all share-based compensation grants were from the 2007 Plan.

In April 2017, our stockholders approved the 2017 Plan. The 2017 Plan authorizes the grant to employees of stock options, stock appreciation rights, restricted stock, restricted stock units, and other types of equity awards. A total of 1,999,714 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, 2017, there were 1,771,794 shares available to be granted.

Under the above plans, Class A and Class B options are granted at prices not less than fair market value of the underlying common stock on the date of grant. Generally, options granted have a term of 10 years and vest in increments of 20% per year over a five-year period on the yearly anniversary date of the grant. Stock awards issued under the 2007 Plan and 2017 Plan generally vest in increments of 20% per year over a five-year period on the yearly anniversary date of the grant.

Employee Stock Purchase Plans

Our 2011 Employee Stock Purchase Plan (2011 ESPP) provides that eligible employees may contribute up to 10% of their compensation up to \$25,000 annually toward 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.

The 2011 ESPP includes two components: a Code Section 423 Component that we intend to qualify as an "employee stock purchase plan" under Section 423 of the U.S. Internal Revenue Code of 1986, as amended (the "Code") and a Non-423 Component, which authorizes the grant of purchase rights that does not qualify as an "employee stock purchase plan" under Section 423 of the Code. 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 to Cost of goods sold, Research and development expense, and Selling, general and administrative expense in the Consolidated Statements of Income.

For 2017, 2016 and 2015, we recognized share-based compensation expense of \$23.4 million, \$19.7 million and \$17.0 million, respectively. The income tax benefit related to share-based compensation expense was \$5.8 million, \$5.1 million and \$4.3 million for 2017, 2016 and 2015, respectively. We did not capitalize any share-based compensation

expense in inventory.

The tax benefit from share-based compensation vested or exercised during 2017, 2016 and 2015 was \$6.3 million, \$1.5 million, and \$3.6 million, respectively. The actual tax benefit realized for the tax deductions from share-based

compensation vested or exercised, including excess tax benefits that were recognized in stockholders' equity, totaled \$6.0 million and \$9.3 million in 2016 and 2015, respectively.

For options and awards, we amortize the fair value on a straight-line basis. All stock compensation awards are amortized over the requisite service periods of the awards, which are generally the vesting periods.

Stock Options

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, 2016	449,570	\$ 106.52		
Granted	44,000	\$ 215.98		
Exercised	(78,890)	\$ 89.41		
Forfeited/expired	(7,200)	\$ 177.99		
Outstanding, December 31, 2017	407,480	\$ 120.39	5.09	\$ 48.2
Unvested, December 31, 2017	125,720	\$ 164.84	8.29	\$ 9.3
Exercisable, December 31, 2017	281,760	\$ 100.56	3.66	\$ 38.9

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 2017, 2016 and 2015 was approximately \$10 million, \$1 million and \$13 million, respectively. The total fair value of options vested during 2017, 2016 and 2015 was \$4.2 million, \$2.1 million and \$1.6 million, respectively.

Cash received from stock options exercised during 2017, 2016 and 2015 was \$1.6 million, \$1.2 million and \$2.9 million, respectively.

As of December 31, 2017, there was \$5.5 million of total unrecognized compensation cost from stock options. This amount is expected to be recognized in the future over a weighted-average period of approximately 3 years.

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,					
	2017	2016	2015			
Expected volatility	20	% 21	% 23	%		
Risk-free interest rate	1.87	% 1.35	% 1.90	%		
Expected life (in years)	7.2	7.4	7.7			
Expected dividend	—	—	—			
Weighted-average fair value of options granted	\$58.65	\$42.40	\$42.74			

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.

Restricted Stock Units

Restricted stock units, which are rights to receive shares of company stock, were granted from 2009 through 2016 under the 2007 Plan and in 2017 under the 2017 Plan. 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, 2016	448,822	\$ 141.09		
Granted	192,860	\$ 215.98		
Vested	(127,189)	\$ 133.54		
Forfeited	(41,263)	\$ 151.36		
Outstanding, December 31, 2017	473,230	\$ 172.75	2.14	\$ 112.9

The total fair value of restricted stock units vested in 2017, 2016 and 2015 was \$27.7 million, \$18.7 million and \$15.8 million, respectively. As of December 31, 2017, there was approximately \$74.7 million of total unrecognized compensation cost related to restricted stock units. This amount is expected to be recognized over a remaining weighted-average period of approximately 4 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,					
	2017	2016	2015			
Expected volatility	19 %	20 %	18 %			
Risk-free interest rate	0.83 %	0.26 %	0.02 %			
Expected life (in years)	0.24	0.25	0.25			
Expected dividend	—	—	—			
Weighted-average fair value of purchase rights	\$38.86	\$27.36	\$25.08			

The major 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 74,409 shares for \$13.0 million, 93,605 shares for \$11.5 million and 96,634 shares for \$10.8 million under the 2011 ESPP to employees in 2017, 2016 and 2015, respectively. At December 31, 2017, 721,712 shares remain authorized and available for issuance under the 2011 ESPP.

We currently issue new shares or treasury shares, if available, to satisfy stock option exercises, restricted stock issuances and ESPP stock purchases.

10. OTHER INCOME AND EXPENSE, NET

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

	Year Ended December 31,		
	2017	2016	2015
Interest and investment income	\$(19.1)	\$(14.7)	\$(10.1)
Net realized gains on investments	(0.1)	(0.8)	(1.6)
Other-than-temporary impairment losses on investments	7.0	0.6	0.6
Other (income) expense, net	\$(12.2)	\$(14.9)	\$(11.1)

Other-than-temporary impairment losses on investments were recorded in 2017, 2016 and 2015 in light of continuing declines in the investment market prices and investees' financial conditions at that time.

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,		
	2017	2016	2015
Net income	\$122.2	\$26.0	\$109.2
Adjustments to reconcile net income to net cash provided by operating activities			
Depreciation and amortization	148.7	142.9	131.8
Share-based compensation	23.4	19.7	17.0
Gains on dispositions of securities	(0.1)	(0.8)	(1.6)
Other-than-temporary impairment losses on investments	7.0	0.6	0.6
Losses on dispositions of fixed assets	8.1	0.6	0.3
Excess tax benefits from share-based compensation	—	(1.5)	(3.6)
Changes in fair value of contingent consideration	(18.1)	(0.4)	(5.6)
(Increase) decrease in accounts receivable, net	(64.1)	12.5	(39.0)
Increase in inventories, net	(47.7)	(57.1)	(54.2)
(Increase) decrease in other current assets	(36.1)	(6.6)	0.1
Increase in accounts payable and other current liabilities	7.8	30.1	28.6
(Decrease) increase in income taxes payable	(22.4)	10.7	12.7
Decrease in deferred income taxes	(82.0)	(51.4)	(4.0)
Decrease in other long term assets	2.4	12.7	0.3
Increase (decrease) in other long term liabilities	38.1	10.4	(10.7)
Impairment losses on goodwill and long-lived assets	11.5	62.3	—
Other	5.2	5.7	4.3
Net cash provided by operating activities	\$103.9	\$216.4	\$186.2
Non-cash investing activities:			
Purchased property, plant and equipment	—	7.2	—
Purchased marketable securities and investments	\$2.8	\$0.6	\$2.2

12. COMMITMENTS AND CONTINGENT LIABILITIES

Rents and Leases

Rental expense under operating leases was \$43.6 million, \$44.4 million and \$45.0 million in 2017, 2016 and 2015, respectively. Leases are principally for facilities and automobiles. We had no sublease income.

Annual future minimum lease payments at December 31, 2017 under operating leases are as follows: 2018 - \$39.3 million; 2019 - \$33.2 million; 2020 - \$27.1 million; 2021 - \$17.8 million; and 2022 and beyond - \$27.5 million.

Deferred Profit Sharing Retirement Plan

We have a profit sharing plan covering substantially all U.S. employees. Contributions are made at the discretion of the Board of Directors. Bio-Rad has no liability other than for the current year's contribution. Contribution expense was \$16.0 million, \$15.1 million and \$14.7 million in 2017, 2016 and 2015, respectively.

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 at December 31, 2017 and 2016 of \$74.9 million and \$63.9 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:	2017	2016
Benefit obligation at beginning of year	\$122.7	\$120.8
Service cost	6.5	6.1
Interest cost	1.1	1.4
Plan participants' contributions	2.8	2.6
Actuarial (gain) loss	3.3	—
Gross benefits paid	(3.2)	(3.3)
Plan amendments	1.1	—
Special termination benefits	(2.0)	—
Settlements	(5.1)	(2.5)
Change attributable to foreign exchange	9.4	(2.4)

Benefit obligation at end of year	136.6	122.7
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Change in plan assets:

Fair value of plan assets at beginning year	58.8	56.7
Actual return on plan assets	0.5	1.3
Employer contributions	4.0	4.7
Plan participants' contributions	2.8	2.6
Gross benefits paid	(2.3)	(2.9)
Settlements	(5.1)	(2.5)
Change attributable to foreign exchange	3.0	(1.1)

Fair value of plan assets at end of year	61.7	58.8
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Under funded status of plans	\$(74.9)	\$(63.9)
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Amounts recognized in the consolidated balance sheets:

Current liabilities (Accrued payroll and employee benefits)	\$(1.1)	\$(0.5)
Noncurrent liabilities (Other long-term liabilities)	(73.8)	(63.4)

Net liability, end of fiscal year	\$(74.9)	\$(63.9)
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Components of Net Periodic Benefit Cost

	2017	2016	2015
Service costs	\$6.5	\$6.1	\$5.3
Interest costs	1.1	1.4	1.4
Expected returns on plan assets	(1.1)	(1.0)	(1.2)
Amortization of actuarial losses	1.4	1.7	0.8
Amortization of prior service costs	—	—	0.4
Settlements	1.2	0.4	—
Net periodic benefit costs	\$9.1	\$8.6	\$6.7

Assumptions

	2017	2016
Discount rate	0.8%	0.9%
Compensation rate increase	1.8%	1.6%

	2017	2016	2015
Discount rate	0.9%	1.1%	1.3%
Expected long-term rate of return on plan assets	1.9%	1.6%	2.3%

Under these plans, the liability at December 31, 2017 and 2016 was \$3.7 million and \$3.5 million, respectively, and has been included in Accrued payroll and employee benefits and Other long-term liabilities in the Consolidated Balance Sheets.

Purchase Obligations

As of December 31, 2017, we had obligations that have been recognized on our balance sheet of \$131.2 million, which include purchases of goods and services that are enforceable and legally binding to Bio-Rad and that specify all significant terms and exclude agreements that are cancelable without penalty. These obligations also include other post-employment benefits in some of our foreign locations as indicated above.

The annual future fixed and determinable portion of our purchase obligations that have been recognized on our balance sheet as of December 31, 2017 are as follows: 2018 - \$10.3 million, 2019 - \$14.3 million, 2020 - \$10.6 million, 2021 - \$6.9 million, 2022 - \$2.6 million and after 2022 - \$86.5 million.

As of December 31, 2017, we had purchase obligations that have not been recognized on our balance sheet of \$24.5 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.

The annual future fixed and determinable portion of our purchase obligations that have not been recognized on our balance sheet as of December 31, 2017 are as follows: 2018 - \$3.7 million, 2019 - \$3.8 million, 2020 - \$3.7 million, 2021 - \$3.8 million, 2022 - \$3.7 million and after 2022 - \$5.8 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 \$4.2 million of standby letters of credit/guarantees with financial institutions as of December 31, 2017.

Contingent Consideration

During the first quarter of 2016, we recognized a contingent consideration liability upon our acquisition of a high performance analytical flow cytometer platform from Propel. At the acquisition date, the amount of contingent consideration was determined based on a probability-weighted income approach related to the achievement of sales milestones, ranging from 39% to 20% for the calendar years 2017 through 2020. The sales milestones could potentially range from \$0 to an unlimited amount. The current contingent consideration is built on a sales forecast of \$78 million through December 31, 2020. In the third quarter of 2017, we paid \$0.6 million upon reaching the first milestone and since 2016 we have decreased the valuation of the sales milestones by \$6.0 million. The contingent consideration was accrued at its estimated fair value of \$16.7 million as of December 31, 2017.

In 2014, we recognized a contingent consideration liability upon our acquisition of GnuBIO, Inc. The contingent consideration for the milestones was valued at \$10.7 million at the acquisition date based on assumptions regarding the probability of achieving the milestones, with such amounts discounted to present value. This amount had been accounted for as a contingent liability as of December 31, 2016 in the amount of \$10.0 million and was reversed to selling, general and administrative expense during the first quarter of 2017 due to reaching a favorable resolution of the contingency with the previous owners of GnuBIO, Inc.

In 2012, we recognized a contingent consideration liability for certain milestones of \$44.6 million upon our acquisition of a new cell sorting system from Propel. Since 2012, we have paid \$32.0 million upon reaching the milestones and have reduced the valuation of the milestones by \$12.6 million. The remaining liability of \$3.1 million was paid in February 2017.

Concentrations of Labor Subject to Collective Bargaining Agreements

At December 31, 2017, approximately seven percent of Bio-Rad's approximately 3,270 U.S. employees were covered by a collective bargaining agreement, which will expire on November 7, 2019. Many of Bio-Rad's non-U.S. full-time employees, especially in France, are covered by collective bargaining agreements.

13. LEGAL PROCEEDINGS

On January 23, 2015, the City of Riviera Beach General Employees' Retirement System filed a shareholder derivative lawsuit in the Superior Court of California, Contra Costa County, against three of our then current directors and one former director. We were also named as a nominal defendant. In the complaint, the plaintiff alleged that our directors breached their fiduciary duty of loyalty by failing to ensure that we had sufficient internal controls and systems for compliance with the Foreign Corrupt Practices Act ("FCPA"); that we failed to provide adequate training on the FCPA; and that based on these actions, the directors had been unjustly enriched. Purportedly seeking relief on our behalf, the plaintiff sought an award of restitution and unspecified damages, costs and expenses (including attorneys' fees). On April 23, 2015, we and the individual defendants filed a demurrer requesting dismissal of the complaint in this case. The demurrer was heard on August 6, 2015, and the Court granted the demurrer for failure to make a demand on our Board of Directors on August 17, 2015, but provided leave to amend. On September 4, 2015, the plaintiff filed an amended complaint and simultaneously served a litigation demand letter on our Board of Directors ("Board") via its counsel in this action. The letter demanded that we investigate and bring appropriate legal action against certain individuals, including the defendants in the City of Riviera Beach case and six current and former employees. The plaintiff also moved for a temporary stay in the proceedings, purportedly to enable the Board to respond to the demand. The Board formed a Demand Review Committee to respond to the demand. On February 24, 2016, the Demand Review Committee reported to the Board that it had concluded its investigation and unanimously

determined that it was not in the best interests of the Company and its stockholders to pursue litigation against any individuals named in the City of Riviera Beach's litigation demand letter. On October 6, 2015, we and the individual defendants filed a second demurrer, seeking to dismiss the case for failure to make a timely pre-suit demand. The case was stayed pending mediation. The caption

was City of Riviera Beach General Employees' Retirement System v. Schwartz et al., Case No. C-15-00140. The lawsuit and demand letter are referred to collectively as the "California Action".

On August 13, 2015 and August 18, 2015, respectively, each of International Brotherhood of Electrical Workers Local 38 Pension Fund and Wayne County Employees' Retirement System filed a stockholder derivative complaint in the Delaware Court of Chancery against four of our then current directors and one former director. We were named as a nominal defendant in the complaints. The complaints alleged that the defendants failed to cause us to develop internal controls sufficient to ensure our compliance with the FCPA. The plaintiffs asserted claims for breach of fiduciary duty and unjust enrichment and requested an award of the damages we sustained as a result of the alleged violations, among other relief. The two lawsuits were consolidated on August 27, 2015. The case was stayed pending mediation. The caption of the consolidated case is In re Bio-Rad Laboratories, Inc. Stockholder Litigation, Consol. C.A. No. 11387-VCN (Del. Ch.). The cases filed in the Delaware Court of Chancery, together with the California Action, are referred to collectively as the "Derivative Actions".

The parties filed a Stipulation dated November 4, 2016 with the Superior Court of California for Contra Costa County that set forth the terms of a proposed settlement of the Derivative Actions. The proposed settlement included the dismissal with prejudice of all claims asserted in the Derivative Actions, an agreed-upon set of revised corporate procedures, and no monetary payment other than an award of attorneys' fees and costs to the plaintiffs' counsel. We and the other defendants did not admit any liability or fault in connection with the proposed settlement. On December 22, 2016 the Superior Court of California for Contra Costa County issued an order granting preliminary approval of this proposed settlement. The Court held a hearing for final approval of the settlement on March 2, 2017, and the Court approved the settlement.

On May 27, 2015, our former general counsel, Sanford S. Wadler, filed a lawsuit in the U.S. District Court, Northern District of California, against us and four of our then current directors and one former director. The plaintiff's suit alleged whistleblower retaliation in violation of the Sarbanes-Oxley Act and the Dodd-Frank Act for raising FCPA-related concerns. Mr. Wadler also alleged wrongful termination in violation of public policy, non-payment of wages and waiting time penalties in violation of the California Labor Code. The plaintiff sought back pay, compensatory damages for lost wages, earnings, retirement benefits and other employee benefits, compensation for mental pain and anguish and emotional distress, waiting time penalties, punitive damages, litigation costs (including attorneys' fees) and reinstatement of employment. On July 28, 2015 we filed a motion to dismiss the plaintiff's complaint and specifically requested dismissal of the claims alleged against us under the Dodd-Frank Act and California Labor Code 1102.5 and the claims against the directors under the Sarbanes-Oxley Act and the Dodd-Frank Act. On October 23, 2015, the District Court granted our motion with respect to the alleged violations of the Sarbanes-Oxley Act against all the director defendants except Norman Schwartz with prejudice. The Court denied our motion to dismiss the claims under the Dodd-Frank Act as against both us and the director defendants. The trial commenced on January 17, 2017 and concluded on February 6, 2017. Mr. Wadler was awarded \$10.92 million, plus prejudgment interest of \$141,608, post-judgment interest, and Mr. Wadler's litigation costs, expert witness fees, and reasonable attorneys' fees as approved by the Court. We have provided for the judgment, interest and Mr. Wadler's litigation costs. On June 6, 2017 we filed a notice of appeal with the United States Court of Appeals for the Ninth Circuit.

Bio-Rad received three notices of violations from the Bay Area Air Quality Management District ("District"). The District alleged that we operated three (3) power generation units without appropriate monitoring and recordkeeping and exceeded permissible levels of emissions during those operations. In January 2018, we entered into a settlement agreement with the District pursuant to which we paid the District \$990,000 to settle all claims and/or potential claims arising out of our use of the three power generation units. This settlement amount was accrued for as of December 31, 2017.

We are also party to various other claims, legal actions and complaints arising in the ordinary course of business. We cannot at this time reasonably estimate a range of exposure, if any, of the potential liability with respect to these matters. While we do not believe, at this time, that any ultimate liability resulting from any of these other 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 other 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 9,000 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, transfusion laboratories and insurance and forensic testing laboratories.

Other Operations include the remainder of our Analytical Instruments segment.

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). Segment profit or loss includes an allocation of corporate expense based upon sales and an allocation of interest expense based upon accounts receivable and inventories. The difference between total segment allocated interest expense, depreciation and amortization, and capital expenditures and the corresponding consolidated amounts is attributable to our corporate headquarters. 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, 2017, 2016, and 2015 and for the years then ended is as follows (in millions):

		Life Science	Clinical Diagnostics	Other Operations
Segment net sales	2017	\$785.2	\$ 1,360.8	\$ 14.2
	2016	730.7	1,323.3	14.2
	2015	695.0	1,310.4	14.0
Allocated interest expense	2017	\$7.0	\$ 14.9	\$ —
	2016	6.4	15.5	—
	2015	6.1	15.4	0.1
Depreciation and amortization	2017	\$36.2	\$ 80.2	\$ —
	2016	31.7	80.5	—
	2015	30.7	77.8	0.1
Segment (loss) profit	2017	\$(10.1)	\$ 112.5	\$ 1.4
	2016	(19.2)	57.0	0.9
	2015	(0.7)	152.4	0.7
Segment assets	2017	\$453.0	\$ 1,038.4	\$ 4.8
	2016	380.8	909.1	4.9
Capital expenditures	2017	\$12.6	\$ 59.0	\$ —
	2016	14.3	67.1	—

Prior year amounts have been revised (see Note 1 to the consolidated financial statements).

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,		
	2017	2016	2015
Total segment profit	\$103.8	\$38.7	\$152.4
Foreign exchange losses	(9.1)	(4.5)	(10.2)
Net corporate operating, interest and other expense, net not allocated to segments	(9.1)	(7.5)	(7.5)
Other income (expense), net	12.2	14.9	11.1
Consolidated income before taxes	\$97.8	\$41.6	\$145.8

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

	December 31,	
	2017	2016
Total segment assets	\$1,496.2	\$1,294.8
Cash and other current assets	965.8	980.3
Property, plant and equipment, net, excluding segment specific gross machinery and equipment	57.0	91.1
Goodwill, net	506.1	477.1
Other long-term assets	1,247.9	1,007.2
Total assets	\$4,273.0	\$3,850.5

Prior year amounts have been revised (see Note 1 to the consolidated financial statements).

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,		
	2017	2016	2015
Europe	\$758.5	\$742.2	\$763.7
Pacific Rim	461.3	427.1	392.2
United States	800.2	770.6	735.0
Other (primarily Canada and Latin America)	140.2	128.3	128.5
Total net sales	\$2,160.2	\$2,068.2	\$2,019.4

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

	December 31,	
	2017	2016
Europe	\$230.6	\$221.1
Pacific Rim	18.4	16.1
United States	1,305.2	1,084.7
Other (primarily Canada and Latin America)	13.1	12.3
Total Property, plant and equipment, net, Other investments and other assets, excluding deferred income taxes	\$1,567.3	\$1,334.2

15. RESTRUCTURING COSTS***Restructuring Costs for European Reorganization***

In May 2016, we announced that we would take certain actions in our Europe geographic region designed to better align expenses to our revenue and gross margin profile and position us for improved operating performance. These actions, aligned with creation and evolution of our organization structure and coordinated with the implementation of our global single instance ERP platform, are expected to be incurred through 2019. As a result, we recorded approximately \$0.5 million and \$12.5 million in restructuring charges related to severance and other employee benefits for the years ended December 31, 2017 and 2016, respectively. The liability of \$6.3 million as of December 31, 2017 consisted of \$6.2 million recorded in Accrued payroll and employee benefits and \$0.1 million recorded in Other long-term liabilities in the Consolidated Balance Sheets. The amounts recorded were reflected in Cost of goods sold of \$(0.2) million and \$2.1 million, and in Selling, general and administrative expense of \$0.7 million and \$10.4 million in the Consolidated Statements of Income for the years ended December 31, 2017 and 2016, respectively. The amounts adjusted were primarily for additional positions identified for elimination, partially offset by employees finding other positions within Bio-Rad or leaving prematurely.

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

	2017			2016		
	Life Science	Clinical Diagnostics	Total	Life Science	Clinical Diagnostics	Total
Balance as of January 1	\$3.2	\$ 5.8	\$9.0	\$—	\$ —	\$—
Charged to expense	—	—	—	4.1	7.6	11.7
Adjustment to expense	0.2	0.3	0.5	0.3	0.5	0.8
Cash payments	(1.5)	(2.7)	(4.2)	(1.0)	(2.0)	(3.0)
Foreign currency translation losses (gains)	0.3	0.7	1.0	(0.2)	(0.3)	(0.5)
Balance as of December 31	\$2.2	\$ 4.1	\$6.3	\$3.2	\$ 5.8	\$9.0

Restructuring Costs for GnuBIO, Inc.

In 2014, we acquired GnuBIO, Inc. (GnuBIO) as a business acquisition. It is included in our Clinical Diagnostics segment's results of operations as a division, and is primarily based in Massachusetts. In September 2017, we announced that we are closing the GnuBIO research program facilities in Massachusetts. As a result, we recorded restructuring charges in September 2017 related to severance and employee benefits of \$2.9 million and asset write-offs of \$5.5 million. The amounts recorded were reflected in Selling, general and administrative expense of \$0.8 million and in Research and development expense of \$7.6 million in the Consolidated Statements of Income for the year ended December 31, 2017. The liability balance as of December 31, 2017 was \$1.4 million and is recorded in Accrued payroll and employee benefits in the Consolidated Balance Sheets. We expect the remainder to be paid in early 2018.

Restructuring Costs for Termination of an Infectious Disease Research and Development Project

In December 2017, we announced the termination of an infectious disease research and development project, which is included in our Clinical Diagnostics segment's results of operations. As a result, we recorded restructuring charges

related to severance and employee benefits of \$11.0 million, and asset write-offs and exit costs of \$10.1 million for the year ended December 31, 2017. The amounts recorded were reflected in Cost of goods sold of \$2.3 million, in Selling, general and administrative expense of \$3.3 million, and in Research and development expense

of \$15.5 million in the Consolidated Statements of Income for the year ended December 31, 2017. The liability of \$14.1 million as of December 31, 2017 consisted of \$11.1 million recorded in Accrued payroll and employee benefits and \$3.0 million recorded in Other current liabilities in the Consolidated Balance Sheets.

The following table summarizes the activity for the termination of the infectious disease research and development project restructuring reserves for severance and exit costs (in millions):

	2017
Balance as of January 1	\$—
Charged to expense	14.0
Cash payments	—
Foreign currency translation losses	0.1
Balance as of December 31	\$14.1

16. QUARTERLY FINANCIAL DATA (UNAUDITED)

During 2016 and 2015, there were three different misstatements associated with income taxes. The first misstatement was related to our second implementation of our global single instance ERP platform in the U.S. in the third quarter of 2015. Part of the data migrated was not reconciled timely, resulting in the double counting of a deferred tax asset. The second misstatement was related to the misapplication of a tax rule related to foreign dividend income. The third misstatement was related to a design deficiency associated with transfer pricing.

Management evaluated the materiality of all the errors described above from a qualitative and quantitative perspective. Based on such evaluation, we have concluded that they are not material to any individual prior period, nor did they have an effect on the trend of financial results, taking into account the requirements of the Securities and Exchange Commission (SEC) Staff Accounting Bulletin No. 108, Considering the Effect of Prior Year Misstatements when Quantifying Misstatements in Current Year Financial Statements (SAB 108). Accordingly, we are correcting these errors in every affected period in the 2015 and 2016 consolidated financial statements included in this Form 10-K.

During the fourth quarter of 2017, we identified errors in the unaudited interim condensed consolidated financial statements for the three months ended September 30, 2017. We identified an error in the recording of deferred revenue acquired in our acquisition of RainDance (see Note 2, "Acquisitions"). This resulted in an overstatement of revenue recorded in the third quarter of 2017 of \$0.9 million that was corrected in the fourth quarter of 2017. In addition, we identified an error in an estimated employee benefit expense that resulted in an understatement of expenses reported in Cost of goods sold, Selling, general and administrative expense and Research and development expense, net, in the third quarter of 2017 of \$3.8 million that was corrected in the fourth quarter of 2017. Finally, we identified an error during our reconciliation of various inventory accounts which resulted in an understatement of Cost of goods sold in the third quarter of 2017 of \$3.5 million that was corrected in the fourth quarter of 2017. The impact of these errors resulted in an overstatement of our Provision for income taxes reported in the third quarter of 2017 of \$2.9 million that was corrected in the fourth quarter of 2017.

Management evaluated the materiality of all the errors described in the previous paragraph from a qualitative and quantitative perspective. Based on such evaluation, we have concluded that they are not material to any individual prior period, nor did they have an effect on the trend of financial results, taking into account the requirements of SAB 108. Accordingly, we are correcting these errors in the financial statements for the quarter ended September 30, 2017 included in this Form 10-K.

The impact of the immaterial error corrections described above are presented on a as reported, adjustment and as revised basis in the following summarized quarterly financial data for 2017 and 2016 (in millions, except per share data):

As reported:	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
<u>2017</u>				
Net sales	\$500.1	\$504.7	\$535.0	\$620.4
Cost of goods sold	230.1	231.4	230.5	280.8
Gross profit	270.0	273.3	304.5	339.6
Selling, general and administrative expense	194.9	213.0	196.8	204.2
Research and development expense	49.5	62.6	61.4	76.8
Income before income taxes	20.1	1.1	38.9	37.7
(Provision for) benefit from income taxes	(7.7)	3.9	(11.5)	32.2
Net income	12.4	5.0	27.4	69.9
Basic earnings per share	\$0.42	\$0.17	\$0.92	\$2.35
Diluted earnings per share	\$0.41	\$0.17	\$0.91	\$2.32
<u>2016</u>				
Net sales	\$471.2	\$516.8	\$508.7	\$571.5
Cost of goods sold	207.2	236.6	229.2	257.1
Gross profit	264.0	280.2	279.5	314.4
Selling, general and administrative expense	189.7	205.5	201.5	220.0
Research and development expense	48.6	49.8	49.9	57.6
Income (loss) before income taxes	20.2	26.9	22.7	(28.2)
(Provision for) benefit from income taxes	(7.9)	(8.9)	(4.3)	7.6
Net income (loss)	12.3	18.0	18.4	(20.6)
Basic earnings (loss) per share	\$0.42	\$0.61	\$0.63	\$(0.70)
Diluted earnings (loss) per share	\$0.42	\$0.61	\$0.62	\$(0.70)

Adjustments:	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
<u>2017</u>				
Net sales	\$—	\$—	\$(0.9)	\$0.9
Cost of goods sold	—	—	4.7	(4.7)
Gross profit	—	—	(5.6)	5.6
Selling, general and administrative expense	—	—	1.9	(1.9)
Research and development expense	—	—	0.7	(0.7)
Income before income taxes	—	—	(8.2)	8.2
(Provision for) benefit from income taxes	—	—	2.9	4.6
Net income	—	—	(5.3)	12.8
Basic earnings per share	\$—	\$—	\$(0.18)	\$0.43
Diluted earnings per share	\$—	\$—	\$(0.18)	\$0.43
<u>2016</u>				
Net sales	\$—	\$—	\$—	\$—
Cost of goods sold	—	—	—	—
Gross profit	—	—	—	—
Selling, general and administrative expense	—	—	—	—
Research and development expense	—	—	—	—
Income (loss) before income taxes	—	—	—	—
(Provision for) benefit from income taxes	(1.3)	(1.4)	(1.3)	1.9
Net income (loss)	(1.3)	(1.4)	(1.3)	1.9
Basic earnings (loss) per share	\$(0.04)	\$(0.05)	\$(0.05)	\$0.07
Diluted earnings (loss) per share	\$(0.05)	\$(0.05)	\$(0.04)	\$0.07

As revised:	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
<u>2017</u>				
Net sales	\$500.1	\$504.7	\$534.1	\$621.3
Cost of goods sold	230.1	231.4	235.2	276.1
Gross profit	270.0	273.3	298.9	345.2
Selling, general and administrative expense	194.9	213.0	198.7	202.3
Research and development expense	49.5	62.6	62.1	76.1
Income before income taxes	20.1	1.1	30.7	45.9
(Provision for) benefit from income taxes	(7.7)	3.9	(8.6)	36.8
Net income	12.4	5.0	22.1	82.7
Basic earnings per share	\$0.42	\$0.17	\$0.74	\$2.78
Diluted earnings per share	\$0.41	\$0.17	\$0.73	\$2.75
<u>2016</u>				
Net sales	\$471.2	\$516.8	\$508.7	\$571.5
Cost of goods sold	207.2	236.6	229.2	257.1
Gross profit	264.0	280.2	279.5	314.4
Selling, general and administrative expense	189.7	205.5	201.5	220.0
Research and development expense	48.6	49.8	49.9	57.6
Income (loss) before income taxes	20.2	26.9	22.7	(28.2)
(Provision for) benefit from income taxes	(9.2)	(10.3)	(5.6)	9.5
Net income (loss)	11.0	16.6	17.1	(18.7)
Basic earnings (loss) per share	\$0.38	\$0.56	\$0.58	\$(0.63)
Diluted earnings (loss) per share	\$0.37	\$0.56	\$0.58	\$(0.63)

Note: As a result of the net loss for the three months ended December 31, 2016, all potentially issuable common shares have been excluded from the diluted shares used in the computation of earnings per share as their effect was anti-dilutive.

17. SUBSEQUENT EVENT

Subsequent to December 31, 2017, the Company obtained an extension of time to provide its annual audited financial statements for its 2017 fiscal year and related compliance certificate and other deliveries as currently required by the Credit Agreement discussed in Note 5. This extension provides that the Company may provide its annual audited financial statements for its 2017 fiscal year within 120 days after the end of its 2017 fiscal year and its compliance certificate in respect of its 2017 fiscal year within 130 days after the end of its 2017 fiscal year. No amounts were outstanding under this Credit Agreement at December 31, 2017 and no amounts have been borrowed since.

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 not effective as a result of the material weakness in our internal control over financial reporting at December 31, 2017, which we view as an integral part of our disclosure controls and procedures, discussed in further detail below.

(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 15d-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.

A material weakness is a deficiency, or combination of deficiencies, in internal control over financial reporting such that there is a reasonable possibility that a material misstatement of the Company’s annual or interim consolidated financial statements will not be prevented or detected on a timely basis.

Our management assessed the effectiveness of the Company’s internal control over financial reporting as of December 31, 2017 using the criteria established in *Internal Control - Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (“COSO”). Based on our evaluation, our

management identified the internal control deficiencies described below.

We did not maintain a sufficient complement of personnel in certain European countries with appropriate training and expertise in accounting and reporting in the new ERP system following the system conversion and European reorganization including the implementation of reporting lines, appropriate authorities and

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responsibilities within and between our accounting and reporting function, information technology and the business operations in these European countries.

We did not conduct continuous risk assessment over changes in our European business operations, IT systems and personnel to identify and assess necessary changes in internal control over financial reporting.

As a result, we did not design effective control activities over the accounting for financial statement amounts, including inventory and revenue, reported by entities impacted by the European reorganization, including management review controls with sufficient precision to identify and investigate potential outliers.

These control deficiencies resulted in immaterial misstatements to inventory, revenue, and cost of goods sold, certain of which were corrected in the consolidated financial statements as of December 31, 2017, prior to issuance.

Because the deficiencies create a reasonable possibility of material misstatement in the annual or interim consolidated financial statements that will not be prevented or detected on a timely basis, they represent a material weakness in internal control over financial reporting and accordingly, management concluded that our internal control over financial reporting was not effective as of December 31, 2017.

KPMG, LLP, an independent registered public accounting firm, has audited the consolidated financial statements included in this Annual Report on Form 10-K and, as part of the audit, has issued an adverse opinion on the effectiveness of the Company's internal control over financial reporting as of December 31, 2017, which is included in Part II, Item 8 of this Form 10-K.

(c) Changes in Internal Control Over Financial Reporting

Our management believes that our enhanced post-conversion management review control activities and augmented user acceptance testing of system changes, which were designed to remediate the material weakness over financial reporting disclosed as of September 30, 2017, were sufficiently implemented as of December 31, 2017. Other than the changes in internal control described above and the material weakness described in Management's Report on Internal Control Over Financial Reporting, 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) that occurred during fiscal 2017 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.

(e) Planned Remediation Actions to Address the Material Weakness

Our management has discussed the results of the evaluation and assessment with our Audit Committee.

Management is enhancing its control environment in the entities impacted by the ERP system conversion and European reorganization by (i) increasing resources with sufficient accounting and reporting expertise within our reorganized business and using our new ERP system, (ii) implementing and monitoring reporting lines and appropriate authorities and responsibilities within the accounting and reporting function, information technology and the business operations and (iii) providing training to our control owners to effectively perform controls in the new

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environment including training on reconciliation review controls and certain ERP system enhancements.

Management is also enhancing its risk assessment process to continuously assess the potential impact on internal control over financial reporting of changes to business operations, including changes relating to similar ERP systems conversions and reorganizations that may occur in the future.

Management is also in the process of designing additional control activities over financial statement amounts reported by entities impacted by the European reorganization.

These remediation efforts began in the three-month period ended December 31, 2017 and are expected to be completed during the year ended December 31, 2018.

However, we cannot assure you that these efforts will be effective in timely remediating the material weakness or that additional deficiencies or material weaknesses in our internal control over financial reporting will not be identified in the future. 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 significant deficiencies or material weaknesses, result in material misstatements in our consolidated financial statements and cause us to fail to meet our reporting obligations, which in turn could cause the trading price of our common stock to decline.

ITEM 9B. OTHER INFORMATION

None.

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 2018 annual meeting of stockholders (the "2018 Proxy Statement") under "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 and all other employees and 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).

ITEM 11. EXECUTIVE COMPENSATION

The information required to be furnished pursuant to this item is incorporated by reference from portions of the 2018 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 2018 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 2018 Proxy Statement under “Principal and Management Stockholders.”

Equity Compensation Plan Information as of December 31, 2017

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⁾	880,710	\$ 120.39	2,493,506 ⁽²⁾
Equity compensation plans not approved by security holders	—	—	—
Total	880,710	\$ 120.39	2,493,506

(1) Consists of the Bio-Rad Laboratories, Inc. 2007 Incentive Award Plan, the Bio-Rad Laboratories, Inc. 2017 Incentive Award Plan, and the Bio-Rad Laboratories, Inc. 2011 Employee Stock Purchase Plan.

(2) Consists of 1,771,794 shares available under the Bio-Rad Laboratories, Inc. 2017 Incentive Award Plan and 721,712 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 2018 Proxy Statement under “Transactions with Related Persons” and “Committees of the Board of Directors.”

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required to be furnished by this item is incorporated by reference from a portion of the 2018 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 44 for a list of financial statements.

2 Schedule II Valuation and Qualifying Accounts

All other 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.

BIO-RAD LABORATORIES, INC.**SCHEDULE II - VALUATION AND QUALIFYING ACCOUNTS**

Years Ended December 31, 2017, 2016, and 2015

(in thousands)

Allowance for doubtful accounts receivable

		Additions		
	Balance at Beginning of Year	Charged to Costs and Expenses	Deductions	Balance at End of Year
2017	\$ 23,367	\$ 11,174	\$ (8,992)	\$ 25,549
2016	\$ 24,418	\$ 3,785	\$ (4,836)	\$ 23,367
2015	\$ 27,973	\$ 8,783	\$ (12,338)	\$ 24,418

Valuation allowance for long-term deferred tax assets

		Additions		
	Balance at Beginning of Year	Charged (Credited) to Income Tax Expense	Deductions	Balance at End of Year
2017	\$ 66,403	\$ (47)	\$	—\$66,356
2016	\$ 58,277	\$ 8,126	\$	—\$66,403
2015	\$ 58,615	\$ (338)	\$	—\$58,277

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.

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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 Indenture dated as of December 9, 2010 for 4.875% Senior Notes due 2020 among Bio-Rad Laboratories, Inc., as Issuer, and Wilmington Trust FSB, as Trustee. (3)
- 10.1 Credit Agreement, dated as of June 20, 2014, by and among Bio-Rad Laboratories, Inc., the lenders referred to therein, JPMorgan Chase Bank, N.A., as administrative agent, Union Bank of California, N.A. and Wells Fargo Bank, N.A. as co-syndication agents, and Bank of America, N.A. and HSBC Bank USA, National Association, as co-documentation agents. (4)
- 10.2 Bio-Rad Laboratories, Inc. 2011 Employee Stock Purchase Plan. (5)
- 10.2.1 First Amendment to the Bio-Rad Laboratories, Inc. 2011 Employee Stock Purchase Plan (6)
- 10.3 Employees’ Deferred Profit Sharing Retirement Plan (Amended and Restated effective January 1, 1997). (7)
- 10.4 2003 Stock Option Plan. (8)
- 10.4.1 Amendment to the 2003 Stock Option Plan of Bio-Rad Laboratories, Inc. (9)
- 10.4.2 Second Amendment to the 2003 Stock Option Plan of Bio-Rad Laboratories, Inc., dated March 1, 2012. (10)
- 10.5 2007 Incentive Award Plan. (11)
- 10.5.1 Restricted Stock Unit Award Grant Notice and Restricted Stock Unit Award Agreement under the 2007 Incentive Award Plan. (12)
- 10.5.2 Amendment to the Bio-Rad Laboratories, Inc. 2007 Incentive Award Plan. (13)
- 10.6 Bio-Rad Laboratories, Inc. 2017 Incentive Award Plan (14)
- 10.6.1 Global Restricted Stock Unit Award Grant Notice and Global Restricted Stock Unit Award Agreement under 2017 Incentive Award Plan (15)

10.6.2 Stock Option Grant Notice and Non-Qualified Stock Option Agreement under 2017 Incentive Award Plan (16)

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- 10.7 Form of Indemnification Agreement. (17)
- 10.8 Settlement Agreement and General Release. (18)
- 10.9 Non-Prosecution Agreement effective November 3, 2014 between the U.S. Department of Justice and Bio-Rad Laboratories, Inc. (19)
- 10.10 Securities and Exchange Commission Order effective November 3, 2014. (19)

Exhibit
No.

- 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.SXBRL Taxonomy Extension Schema Document
- 101.CXBRL Taxonomy Extension Calculation Linkbase Document
- 101.DXBRL Taxonomy Extension Definition Linkbase Document
- 101.LXBRL Taxonomy Extension Labels Linkbase Document
- 101.PRXBRL Taxonomy Extension Presentation Linkbase Document

- (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 8-K filing, dated December 9, 2010.
- (4) Incorporated by reference to the Exhibits to Bio-Rad's 8-K filing, dated June 26, 2014.
- (5) Incorporated by reference to Exhibit 10.9 to Bio-Rad's June 30, 2011 Form 10-Q filing, dated August 4, 2011.
- (6) Incorporated by reference to Exhibit 10.2 to Bio-Rad's Form 10-Q filing, dated May 9, 2017

- (7)Incorporated by reference to Exhibit 10.6 to Bio-Rad's September 30, 1997 Form 10-Q filing, dated November 13, 1997.
- (8)Incorporated by reference to Exhibit 10.7 to Bio-Rad's March 31, 2003 Form 10-Q filing, dated May 13, 2003.
- (9)Incorporated by reference to Exhibit 10.7.1 to Bio-Rad's March 31, 2007 Form 10-Q filing, dated May 4, 2007.
- (10)Incorporated by reference to Exhibit 10.1 to Bio-Rad's June 30, 2012 Form 10-Q filing, dated August 9, 2012.
- (11)Incorporated by reference to Exhibit 4.1 to Bio-Rad's Form S-8 filing, dated July 30, 2007.
- (12)Incorporated by reference to Exhibit 10.8.1 to Bio-Rad's September 30, 2009 Form 10-Q filing, dated November 4, 2009.
- (13)Incorporated by reference to Exhibit 10.1 to Bio-Rad's March 31, 2014 Form 10-Q filing, dated May 8, 2014.
- (14)Incorporated by reference to Exhibit 10.1 to Bio-Rad's Form 10-Q filing, dated May 9, 2017
- (15)Incorporated by reference to Exhibit 10.1 to Bio-Rad's Form 10-Q filing, dated November 9, 2017
- (16)Incorporated by reference to Exhibit 10.2 to Bio-Rad's Form 10-Q filing, dated November 9, 2017
- (17)Incorporated by reference to Exhibit 10.1 to Bio-Rad's Form 10-Q filing, dated August 7, 2017.
- (18)Incorporated by reference to Exhibit 10.1 to Bio-Rad's Form 10-Q filing, dated November 7, 2014.
- (19)Incorporated by reference to the Exhibits to Bio-Rad's Form 10-K filing for the fiscal year ended December 31, 2014.

Item 16. FORM 10-K SUMMARY

Not applicable.

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/ Christine A. Tsingos
Christine A. Tsingos
Executive Vice President, Chief Financial Officer

Date: April 13, 2018

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:	Chairman of the Board, President	
/s/ Norman Schwartz	and Chief Executive Officer	April 13, 2018
(Norman Schwartz)		

Principal Financial Officer:		
/s/ Christine A. Tsingos	Executive Vice President,	
(Christine A. Tsingos)	Chief Financial Officer	April 13, 2018

Principal Accounting Officer:		
/s/ James R. Stark	Vice President, Corporate Controller	April 13, 2018
(James R. Stark)		

Other Directors:		
/s/ Jeffrey L. Edwards	Director	April 13, 2018
(Jeffrey L. Edwards)		

/s/ Gregory K. Hinckley	Director	April 13, 2018
(Gregory K. Hinckley)		

/s/ Melinda Litherland	Director	April 13, 2018
(Melinda Litherland)		

/s/ Arnold A. Pinkston	Director	April 13, 2018
(Arnold A. Pinkston)		

/s/ Alice N. Schwartz	Director	April 13, 2018
(Alice N. Schwartz)		