



IDEXX LABORATORIES, INC.

2019 Annual Report

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

Form 10-K

(Mark One)

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

For the fiscal year ended **December 31, 2019**

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: 0-19271



IDEXX LABORATORIES, INC.

(Exact name of registrant as specified in its charter)

Delaware

(State or other jurisdiction of incorporation
or organization)

01-0393723

(IRS Employer Identification No.)

One IDEXX Drive

(Address of principal executive offices)

Westbrook

Maine

04092

(ZIP Code)

207-556-0300

(Registrant's telephone number, including area code)

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

<u>Title of each class</u>	<u>Trading Symbol(s)</u>	<u>Name of each exchange on which registered</u>
Common Stock, \$0.10 par value per share	IDXX	NASDAQ Global Select Market

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

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes No

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes No

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

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes No

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

Large accelerated filer

Non-accelerated filer

Accelerated filer

Smaller reporting company

Emerging growth company

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

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

Based on the closing sale price on June 30, 2019 of the registrant's Common Stock, the last business day of the registrant's most recently completed second fiscal quarter, as reported by the NASDAQ Global Select Market, the aggregate market value of the voting stock held by non-affiliates of the registrant was \$23,368,790,688. For these purposes, the registrant considers its directors and executive officers to be its only affiliates.

The number of shares outstanding of the registrant's Common Stock was 85,329,642 on February 10, 2020.

DOCUMENTS INCORPORATED BY REFERENCE

Part III—Specifically identified portions of the Company's definitive Proxy Statement to be filed in connection with the Company's 2020 annual meeting of stockholders (the "2020 Annual Meeting"), to be held on May 6, 2020, are incorporated herein by reference.

GLOSSARY OF TERMS AND SELECTED ABBREVIATIONS

Term/Abbreviation	Definition
AOCI	Accumulated other comprehensive income or loss
ASC	Accounting Standards Codification
ASU 2014-09	Accounting Standards Update (“ASU”) 2014-09, Revenue from Contracts with Customers (Topic 606), also referred to as the “New Revenue Standard”
ASU 2016-02	ASU 2016-02, <i>Leases (Topic 842)</i> ; also referred to as the "New Leasing Standard"
ASU 2016-16	ASU 2016-16, Income Taxes (Topic 740): Intra-Entity Transfers of Assets Other Than Inventory,
CAG	Companion Animal Group, a reporting segment that provides veterinarians diagnostic products and services and information management solutions that enhance the health and well-being of pets
CDOR	Canadian Dollar Offered Rate, a rate at which banks commit to lending to companies
cGMP	The FDA’s current Good Manufacturing Practice regulations
Credit Facility	Our \$850 million five-year unsecured revolving credit facility under an amended and restated credit agreement that was executed in December 2015, also referred to as line of credit
EMA	Extended maintenance agreements
EPA	U.S. Environmental Protection Agency
EPS	Earnings per share, if not specifically stated, EPS refers to earnings per share on a diluted basis
EU	European Union
FASB	U.S. Financial Accounting Standards Board
FDA	U.S. Food and Drug Administration
FeLV	Feline leukemia virus
FIV	Feline immunodeficiency virus, similar to the virus that leads to AIDS in humans
Instrument rebate programs	Our customer instrument rebate programs, previously referred to as IDEXX Instrument Marketing Programs, which require an instrument purchase and provide customers the opportunity to earn future rebates based on the volume of products and services they purchase over the term of the program
IVLS	IDEXX VetLab Station, connects and integrates the diagnostic information from all the IDEXX VetLab analyzers and thus provides reference laboratory information management system capability
Kits and consumables	Rapid assay kits and IDEXX VetLab consumables
LIBOR	London Interbank Offered Rate, current benchmark interest rate used between banks and used to set interest rates on loans
LPD	Livestock, Poultry and Dairy, a reporting segment that provides diagnostic products and services for livestock and poultry health and ensures the quality and safety of milk and improve producer efficiency
OCI	Other comprehensive income or loss
OPTI Medical	OPTI Medical Systems, Inc., a wholly-owned subsidiary of IDEXX Laboratories Inc., located in Roswell, Georgia. This business manufactures and supplies blood gas analyzers and consumables worldwide for the human point-of-care medical diagnostics market. The Roswell facility also manufactures electrolytes slides (instrument consumables) to run Catalyst One®, Catalyst Dx®, and blood gas analyzers and consumables for the veterinary market, and is also referred to as OPTI.
Organic revenue growth	A non-GAAP financial measure that represents the percentage change in revenue, as compared to the same period for the prior year, net of the effect of changes in foreign currency exchange rates, certain business acquisitions and divestitures. Organic revenue growth should be considered in addition to, and not as a replacement for or as a superior measure to, revenues reported in accordance with U.S. GAAP, and may not be comparable to similarly titled measures reported by other companies.
Ortho	Ortho Clinical Diagnostics, Inc., a supplier of dry slide consumables used in our Catalyst One and Catalyst Dx Chemistry Analyzers and VetTest Chemistry Analyzer
Up-Front customer loyalty programs	Our up-front loyalty programs provides customers with incentives in the form of cash payments or IDEXX Points upon entering into multi-year agreements to purchase annual minimum amounts of future products or services
PACS	Picture archiving and communication software, our software solution for accessing, storing, and sharing diagnostic images
R&D	Research and Development

Reagent rentals	Instruments being placed at customer sites at little or no cost in exchange for a long-term customer commitment to purchase instrument consumables
Reported revenue growth	The percentage change in revenue reported in accordance with U.S. GAAP, as compared to the same period in the prior year
S&P	Standard & Poor's
S&P 500 Health Care Index	The index for the S&P 500 Health Care (U.S. companies) measures the performance of companies that are classified as members in the Global Industry Classification Standard of health care services sub-industry
S&P 500 Index	The S&P 500 Index is a U.S. stock market index based on the market capitalization of 500 large companies having common stock listed on the New York Stock Exchange or NASDAQ, including IDEXX
SaaS	Software-as-a-service
SDMA	Symmetrical dimethyl arginine, a biomarker that detects kidney disease
SEC	U.S. Securities and Exchange Commission
Senior Note Agreements	Note purchase agreements for the private placement of senior notes having an aggregate principal amount of approximately \$700 million, referred to as senior notes or long-term debt
T4	Thyroxine, a hormone produced by the thyroid gland, tested to indicate thyroid health
2017 Tax Act	The Tax Cuts and Jobs Act enacted on December 22, 2017, which includes significant changes to the U.S. corporate tax system
U.S. GAAP	Accounting principles generally accepted in the United States of America
USDA	United States Department of Agriculture
Volume commitment programs	Programs that provide customers with a free or discounted instrument or system upon entering into multi-year agreements to purchase annual minimum amounts of products and services, such as our IDEXX 360 program.
Water	Water, a reporting segment that provides water microbiology testing products

IDEXX LABORATORIES, INC.
Annual Report on Form 10-K
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The terms “IDEXX,” “Company,” “registrant,” “we,” “us,” and “our” included in this Annual Report on Form 10-K mean IDEXX Laboratories, Inc. and all subsidiaries that are consolidated under U.S. GAAP.

We have included certain terms and abbreviations used throughout this Annual Report on Form 10-K in the “Glossary of Terms and Selected Abbreviations.”

Our name, logo and the following terms used in this Annual Report on Form 10-K are either registered trademarks or trademarks of IDEXX Laboratories, Inc. in the United States and/or other countries: 4Dx[®], Animana[®] Veterinary Software, Catalyst Dx[®], Catalyst One[®], Coag Dx[™], Colilert[®], Colisure[®], Cornerstone[®], DVMAX[®], Enterolert[®], Feline Triple[®], Filta-Max[®], Filta-Max^{xpress}[®], IDEXX I-Vision CR[®], IDEXX I-Vision DR[®], IDEXX I-Vision Mobile[™], IDEXX ImageBank[™], IDEXX Neo[®], IDEXX-PACS[™], IDEXX SDMA[®], IDEXX VetLab[®], IDEXX VPM[™], LaserCyte[®], LaserCyte[®] Dx, OPTI[®], PetChek[®], PetDetect[®], Pet Health Network[®], Petly[®] Plans, Practice Profile[™], ProCyte Dx[®], Pseudalert[®], Quanti-Tray[®], rVetLink[®], SediVue Dx[®], IDEXX SmartService[™], Smart Flow[™], SNAP[®], SNAPduo[®], SNAP Pro[®], SNAP[®] cPL[™], SNAP[®] fPL[™], SNAPshot Dx[®], IDEXX VetAutoread[™], VetConnect[®], IDEXX VetLab[®] UA[™], VetLINK[®], VetLyte[®], VetStat[®], and VetTest[®]. VetAutoread is a trademark of QBC Diagnostics.

CAUTIONARY STATEMENT REGARDING FORWARD-LOOKING INFORMATION

This Annual Report on Form 10-K for the year ended December 31, 2019, contains statements which, to the extent they are not statements of historical fact, constitute “forward-looking statements.” Such forward-looking statements about our business and expectations within the meaning of the Private Securities Litigation Reform Act of 1995, Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), include statements relating to future revenue growth rates, future tax benefits; business trends, earnings and other measures of financial performance; the effect of economic downturns on our business performance; projected impact of foreign currency exchange rates; demand for our products; realizability of assets; future cash flow and uses of cash; future repurchases of common stock; future levels of indebtedness and capital spending; interest expense; warranty expense; share-based compensation expense; the adoption and projected impact of new accounting standards; future commercial efforts; future product launches; projected cost and completion of capital investments; and competition. Forward-looking statements can be identified by the use of words such as “expects,” “may,” “anticipates,” “intends,” “would,” “will,” “plans,” “believes,” “estimates,” “should,” “project,” and similar words and expressions. These forward-looking statements are intended to provide our current expectations or forecasts of future events, are based on current estimates, projections, beliefs, and assumptions, and are not guarantees of future performance. Actual events or results may differ materially from those described in the forward-looking statements. These forward-looking statements involve a number of risks and uncertainties, including, among other things, the matters described under the headings “Business,” “Risk Factors,” “Legal Proceedings,” “Management’s Discussion and Analysis of Financial Condition and Results of Operations,” and “Quantitative and Qualitative Disclosures About Market Risk” in this Annual Report on Form 10-K. Any forward-looking statements represent our estimates only as of the day this Annual Report on Form 10-K was first filed with the Securities and Exchange Commission (“SEC”) and should not be relied upon as representing our estimates as of any subsequent date. From time to time, oral or written forward-looking statements may also be included in other materials released to the public and they are subject to the risks and uncertainties described or cross-referenced in this section. While we may elect to update forward-looking statements at some point in the future, we specifically disclaim any obligation to do so, even if our estimates or expectations change.

PART I

ITEM 1. BUSINESS

COMPANY OVERVIEW

IDEXX was incorporated in Delaware in 1983. We develop, manufacture, and distribute products and provide services primarily for the companion animal veterinary, livestock and poultry, dairy and water testing markets. We also sell a line of portable electrolytes and blood gas analyzers for the human point-of-care medical diagnostics market. Our primary products and services are:

- Point-of-care veterinary diagnostic products, comprised of instruments, consumables, and rapid assay test kits;
- Veterinary reference laboratory diagnostic and consulting services;
- Practice management and diagnostic imaging systems and services used by veterinarians;
- Health monitoring, biological materials testing, laboratory diagnostic instruments, and services used by the biomedical research community;
- Diagnostic, health-monitoring products for livestock, poultry, and dairy;
- Products that test water for certain microbiological contaminants; and
- Point-of-care electrolytes and blood gas analyzers used in the human point-of-care medical diagnostics market.

Our purpose guides our strategy: to be a great company that creates exceptional long-term value for our customers, employees, and stockholders by enhancing the health and well-being of pets, people, and livestock.

DESCRIPTION OF BUSINESS BY SEGMENT

We operate primarily through three business segments:



Companion Animal Group (“CAG”) - Diagnostic and information management-based products and services for the veterinary market.



Water quality products (“Water”) - Design, development, manufacture, and distribution of products used in the detection of various microbiological parameters in water.



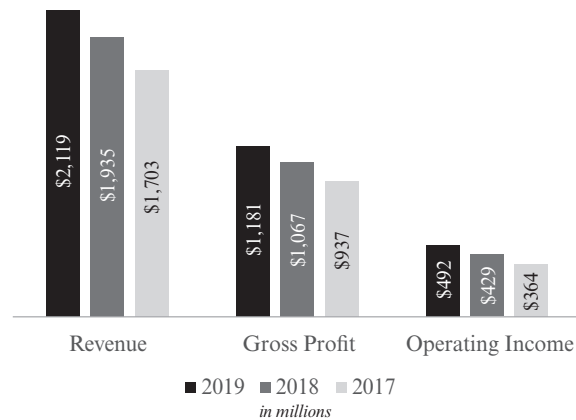
Livestock, Poultry and Dairy (“LPD”) - Diagnostic products and services for livestock and poultry health and to ensure the quality and safety of milk and food, and improve producer efficiency.

Our Other operating segment combines and presents products for the human point-of-care medical diagnostics market (“OPTI Medical”) with our out-licensing arrangements because they do not meet the quantitative or qualitative thresholds for reportable segments.

The performance of our business is particularly subject to various risks that are associated with doing business internationally. For the year ended December 31, 2019, sales of products and services to customers outside the U.S. accounted for approximately 38% of our overall revenue. See “Part I, Item 1A. Risk Factors”, “Part II, Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operations” and “Part II, Item 8. Financial Statements and Supplementary Data, Note 16. Segment Reporting” to the consolidated financial statements for the year ended December 31, 2019, included in this Annual Report on Form 10-K for more information about our segments and revenue from customers outside of the U.S.



Mission: To provide veterinarians with the diagnostic capabilities and information management solutions that enhance the health and well-being of pets



We believe that the breadth of our full diagnostic solution, including novel products and services developed and made available only by IDEXX, as well as the seamless software integration of our offering provide a unique competitive advantage by giving veterinarians the tools and services to offer advanced veterinary medical care. We believe that with the use of our products and services, veterinary practices significantly improve the quality of veterinary care provided to their patients, increase staff efficiencies, and effectively communicate the value of this medical care to the pet owner. We believe that these capabilities, enabled by the use of IDEXX products and services, improve the financial health of the veterinary practice.

CAG Diagnostics

We provide diagnostic capabilities that meet veterinarians' diverse needs through a variety of modalities, including in-clinic diagnostic solutions and outside reference laboratory services. Regardless of modality utilized, veterinarians are provided with clinically relevant data which is integrated within our information management technologies. The result is a comprehensive view of patient diagnostic information that is easily accessible by both the veterinarian and pet owner.

Integrated Diagnostic Information Management

VetConnect PLUS is a cloud-based technology that enables veterinarians to access and analyze patients' data from all of IDEXX's diagnostic modalities. These integrated diagnostic results provide the veterinarian with a visualization of patient-specific testing results, allowing the veterinarian to easily see and trend diagnostic results, enabling greater medical insight and enhanced decision-making. In addition, VetConnect PLUS provides instant mobile or browser-based access to results, which can be printed or emailed to pet owners and other veterinarians. In this way, VetConnect PLUS can aid veterinarians and practice staff in engaging the pet owner in the patient's care, which can support greater compliance with medical recommendations or preventive care protocols. Customers have activated VetConnect PLUS in over 100 countries.

In-Clinic Diagnostic Solutions

Our in-clinic diagnostic solutions are comprised of our IDEXX VetLab suite of in-clinic chemistry, hematology, immunoassay, urinalysis, and coagulation analyzers, as well as associated proprietary consumable products that provide real-time reference lab quality diagnostic results. Our in-clinic diagnostic solutions also include a broad range of single-use, handheld IDEXX SNAP rapid assay test kits that provide quick, accurate, and convenient point-of-care diagnostic test results for a variety of companion animal diseases and health conditions.

The IDEXX VetLab suite includes several instrument systems, as well as associated proprietary consumable products, all of which are described below. Additionally, we offer extended maintenance agreements in connection with the sale of our instruments.

Blood and Urine Chemistry. We have three blood and urine chemistry analyzers that are used by veterinarians to measure levels of certain enzymes and other substances in blood or urine for monitoring health status and assisting in diagnosing physiologic conditions. We currently sell two of these chemistry analyzers, the Catalyst One Chemistry analyzer and the VetTest Chemistry analyzer. We continue to support our Catalyst Dx Chemistry analyzer, previously sold as part of the Catalyst platform. These three instruments use consumables manufactured for IDEXX by Ortho-Clinical Diagnostics, Inc. (“Ortho”) based on Ortho’s dry slide technology. In addition, the Catalyst analyzers also use dry slide electrolyte consumables manufactured by IDEXX at our Roswell, Georgia facility, as well as certain slides that are manufactured at our Westbrook, Maine facility. Blood tests commonly run on these analyzers include glucose, alkaline phosphatase, ALT (alanine aminotransferase), albumin, calcium, creatinine, blood urea nitrogen, total protein, and many others. Tests are sold individually and in prepackaged panels, called clips. All three analyzers also run a urine test called urine protein:creatinine ratio, which assists in the detection of renal disease.

The Catalyst analyzers provide significantly improved throughput, ease of use and test menu relative to the VetTest analyzer (our original chemistry analyzer), including the ability to run electrolytes, phenobarbital, fructosamine, total thyroxine (“T4”), C-reactive protein, and SDMA, as part of one run. Key ease-of-use features include the ability to run a whole blood sample using an on-board centrifuge, the ability to run pre-packaged, multi-slide clips in addition to single chemistry slides and an automated metering system. These analyzers also enable automated dilutions, which is an ease-of-use feature both for certain blood chemistries and the test for urine protein:creatinine ratio. The Catalyst Dx analyzer allows a veterinarian to run multiple patient samples simultaneously and both the Catalyst Dx and Catalyst One analyzers run different sample types including whole blood, plasma, serum, and urine. The Catalyst SDMA test allows our customers to use the Catalyst One and Catalyst Dx analyzers to screen for SDMA, an innovative proprietary test that detects the onset of canine and feline kidney disease months or years earlier than traditional methods. The Catalyst SDMA Test is also available in a combo kit with T4.

The Catalyst One analyzer is engineered to deliver the same laboratory-quality results and real-time work flow as the Catalyst Dx analyzer. The Catalyst One analyzer currently offers all the same tests as the Catalyst Dx, including an expanded menu of 33 tests.

We also have two other chemistry analyzers, the VetLyte Electrolyte analyzer and the VetStat Electrolyte and Blood Gas analyzer. The VetStat analyzer runs single-use disposable cassettes that are manufactured by IDEXX at our Roswell, Georgia facility.

Sales of consumables to customers who use our chemistry analyzers provide the majority of our instrument consumables revenues from our installed base of IDEXX VetLab instruments.

Hematology. We sell four hematology analyzers that assess the cellular components of blood, including red blood cells, white blood cells, and platelets (also called a complete blood count). These analyzers include the ProCyte Dx hematology analyzer, the first and only in-clinic analyzer to combine laser-flow cytometry, optical fluorescence, and laminar-flow impedance in its analysis; the LaserCyte Dx hematology analyzer, which uses laser-flow cytometry technology in their analysis; and the IDEXX VetAutoread hematology analyzer, our original hematology analyzer. In addition, the ProCyte Dx hematology analyzer, the LaserCyte Dx hematology analyzer, and the LaserCyte hematology analyzer each have the ability to analyze the components of certain body fluids. We also sell the Coag Dx analyzer, which permits the detection and diagnosis of blood clotting disorders.

The ProCyte Dx analyzer, our premier hematology analyzer, provides significantly improved throughput and accuracy and more complete medical information relative to the LaserCyte, LaserCyte Dx and VetAutoread hematology analyzers. The ProCyte Dx analyzer provides up to 27 different blood parameters, including the ability to detect band neutrophils, nucleated red blood cells, and reticulocyte hemoglobin for a more complete picture of a patient’s health. The ProCyte Dx is validated for

many animal species (canine, feline, equine, bovine, ferret, rabbit, gerbil, pig, guinea pig, mini pig, llama, alpaca, camel, sheep, goat, dolphin, and hamster). The LaserCyte and LaserCyte Dx analyzers are the only other point of care hematology analyzers in the veterinary market able to report absolute reticulocyte counts.

Immunoassay Testing Instruments. Our SNAP Pro Analyzer, which automatically activates a SNAP test, properly times the run, and captures an image of the result. This device improves medical care by allowing veterinarians to share the test results with the pet owner on the SNAP Pro Analyzer screen, or via VetConnect PLUS. In addition, the SNAP Pro Analyzer improves staff efficiency and ensures that all SNAP test runs are captured and entered into the patient record for customer billing. ProRead is a software upgrade that enables the SNAP Pro Analyzer to interpret the test results.

With multiple-patient testing functionality, the SNAPshot Dx analyzer provides quantitative measurements of total T4, cortisol and bile acids to assist in the evaluation of thyroid, adrenal and liver function, respectively. The SNAPshot Dx analyzer also reads, interprets, and records the results of many IDEXX rapid assay SNAP tests, including our canine SNAP 4Dx Plus test, feline SNAP FIV/FeLV Combo test, canine SNAP cPL test, feline SNAP fPL test, and canine SNAP Heartworm RT test.

Urinalysis. The SediVue Dx analyzer is designed to provide automated real-time results in a fraction of the time of manual microscope analysis. The SediVue Dx analyzer brings automation, speed and consistency to urinalysis, a traditionally laborious and variable process. Its leading-edge technology allows veterinary staff to perform a urine sediment analysis in approximately 3 minutes. The SediVue Dx analyzer uses proprietary image processing algorithms similar to facial recognition technology to identify clinically relevant particles found in urine and to capture high-contrast digital images that become part of the permanent patient record. The SediVue Dx analyzer leverages its algorithmic software and machine-learning, a type of artificial intelligence, to better identify abnormalities with each result generated, which we refer to as Neural Network 4.0. The IDEXX VetLab UA analyzer provides rapid, automated capture of semi-quantitative chemical urinalysis from IDEXX UA strips and is validated specifically for veterinary use.

IDEXX VetLab Station. The IDEXX VetLab Station (“IVLS”) connects and integrates the diagnostic information from all the IDEXX VetLab analyzers, and thus, provides reference laboratory information management system capability. IVLS securely connects to the Internet, and in this way, enables IDEXX to perform, through its SmartService Solutions wireless services, remote instrument service and software updates to IVLS and certain connected instruments. IVLS also sends all results created on connected instruments instantly to VetConnect PLUS. We sell IVLS as an integral component of the Catalyst One, Catalyst Dx, LaserCyte, LaserCyte Dx and ProCyte Dx analyzers, SNAP Pro Analyzer, SNAPshot Dx analyzer and also as a standalone hardware platform. The IVLS includes a touch screen user interface to simplify laboratory work flow, connect with a practice management system and send information to run the individual analyzers. IVLS also generates one integrated patient report incorporating all of the lab work generated by the IDEXX VetLab suite, stores, retrieves and analyzes historical patient diagnostics data, including SNAP test results, and sends and receives information from practice management systems, including the Cornerstone system, as well as a wide variety of third-party systems.

The SNAP rapid assays are single-use, handheld test kits that can work without the use of instrumentation, although many kits may also be read and recorded automatically by the SNAPshot Dx analyzer or activated and captured automatically by the SNAP Pro Analyzer and interpreted using ProRead, as discussed above. The principal SNAP rapid assay tests are as follows:

Single-Use Canine Tests:

- SNAP 4Dx Plus, which tests for the six vector-borne diseases; Lyme disease, *Ehrlichia canis*, *Ehrlichia ewingii*, *Anaplasma phagocytophilum* and *Anaplasma platys*, and canine heartworm;
- SNAP Heartworm RT, which tests for heartworm;
- SNAP Parvo, which tests for parvovirus, a virus causing life-threatening damage to the immune system and intestinal tract;
- SNAP cPL, which tests for canine pancreatitis;
- SNAP *Giardia*, which is a fecal test for soluble *Giardia* antigens, a common cause of waterborne infection; and
- SNAP Lepto, which tests for leptospirosis, a life-threatening bacterial infection spread through contact with water or soil that has been contaminated by the urine of infected animals.

Sales of canine vector-borne disease tests, including SNAP 4Dx Plus and SNAP Heartworm RT, are greater in the first half of our fiscal year due to seasonality of disease testing in the veterinary practices in the Northern Hemisphere.

Single-Use Feline Tests:

- SNAP Feline Triple, which tests for feline immunodeficiency virus (“FIV”) (which is similar to the virus that leads to AIDS in humans), feline leukemia virus (“FeLV”) and feline heartworm;
- SNAP FIV/FeLV Combo Test, which tests for FIV and FeLV;
- SNAP fPL, which tests for feline pancreatitis;
- SNAP *Giardia*, which is a fecal test for soluble *Giardia* antigens; and
- SNAP Feline proBNP, which uses a cardiac biomarker (NT proBNP) to test for stretch and stress on the heart.

Outside Reference Laboratory Diagnostic and Consulting Services

We offer commercial reference laboratory diagnostic and consulting services to veterinarians in many developed markets worldwide, including customers in the U.S., Europe, Canada, Australia, Japan, New Zealand, South Africa, South Korea, and Brazil, through a network of over 80 laboratories. We have reference laboratories in Memphis, Tennessee; Louisville, Kentucky and Leipzig, Germany that are strategically located near large logistics hubs of major air cargo carriers. Customers use our services by submitting samples by courier or overnight delivery to one of our facilities. Most test results have same-day or next-day turnaround times.

Our reference laboratories offer a large selection of tests and diagnostic panels to detect a number of disease states and other conditions in animals, including all tests that can be run in-clinic at the veterinary practice with our instruments or rapid assays. This menu of tests also includes a number of specialized and proprietary tests that we have developed that allow practitioners to diagnose increasingly relevant diseases and conditions in dogs and cats, including parasites, heart disease, allergies, pancreatitis, diabetes, and infectious diseases. Canine vector-borne disease testing volumes are greater in the first half of our fiscal year due to seasonality of disease testing in the veterinary practices in the Northern Hemisphere.

Our broad range of innovative tests include our IDEXX SDMA test, which is an innovative proprietary kidney test that detects the onset of canine and feline kidney disease months or years earlier than traditional methods, as well as our hookworm, roundworm, and whipworm antigen tests on all fecal panels that detect the presence of intestinal worms often undiagnosed by current methods, including finding them earlier in the infection cycle and therefore enabling earlier disease diagnosis and treatment intervention.

Additionally, we provide specialized veterinary consultation, telemedicine, and advisory services, including radiology, cardiology, internal medicine, and ultrasound consulting. These services enable veterinarians to obtain readings and interpretations of test results transmitted by telephone and over the Internet.

Our diagnostic laboratory business also provides health monitoring and diagnostic testing services to biomedical research customers in North America, Europe, and Asia.

Veterinary Software, Services and Diagnostic Imaging Systems

Veterinary Software and Services. We develop, market, and sell a portfolio of software and services for independent veterinary clinics and corporate groups. This portfolio includes:

- *Practice management systems.* Software, hardware, and integrated services that run key functions of veterinary clinics, including managing patient electronic health records (EHR), scheduling, client communication, billing, and inventory management. Our principal practice management systems are Cornerstone (on-premise), IDEXX Neo (cloud-based), DVMAX (on-premise), and IDEXX Animana (cloud-based, available in Europe). We also support several other practice management systems including Better Choice, VPM, VetLINK, and BeeFree. To support the software system needs of practices, IDEXX provides integrated services including: Hardware, Payment Solutions, Data Backup & Recovery, and Practice Supplies including PetDetect boarding collars.
- *Software applications that extend workflow capabilities for practices and groups.* With our Smart Flow cloud offering, which we acquired in the third quarter of 2018, we are able to improve overall patient management and workflow optimization through coordination and tracking of every step of a patient during a hospital stay. Smart Flow works in conjunction with major veterinary practice management systems, including IDEXX Cornerstone, DVMAX, IDEXX Animana, IDEXX Neo, and certain third-party practice management systems.

- *Client marketing and wellness plan management.* In addition, we offer cloud-based client communication (Pet Health Network Pro and Pet Health Network 3D) and preventive care plan management software (Petly Plans) designed to strengthen the relationship between the veterinarian and the pet owner. To support the communication needs between general practices and specialty referral practices, IDEXX offers rVetLink software, which we acquired in the second quarter of 2017. Lastly, IDEXX Enterprise provides centralized management and reporting capabilities for groups of veterinary practices.

Diagnostic Imaging Systems. Our diagnostic imaging systems capture radiographic images in digital form, replacing traditional x-ray film and the film development process, which generally requires the use of hazardous chemicals and darkrooms. We market and sell three diagnostic imaging systems primarily used in small animal veterinary applications: the IDEXX ImageVue DR50, the IDEXX ImageVue DR40, and the IDEXX ImageVue CR20.

Our newest radiography system, the IDEXX ImageVue DR50, enables low-dose radiation image capture without sacrificing clear, high-quality images, a component in reducing the risk posed by excess radiation exposure for veterinary professionals. The IDEXX ImageVue DR50 system also offers wireless capabilities for flexibility in patient positioning.

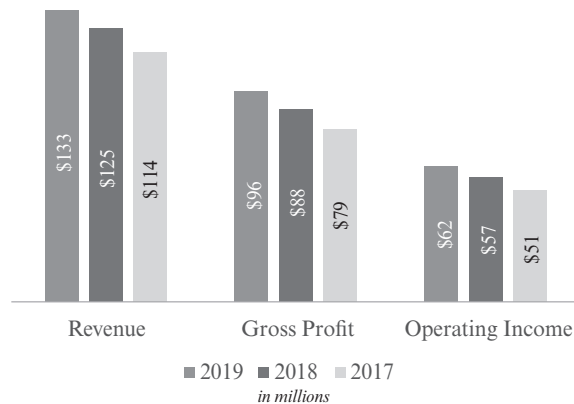
Our diagnostic imaging systems employ picture archiving and communication system (“PACS”) software called IDEXX-PACS, which facilitates radiographic image capture and review. IDEXX Web PACS is our cloud-based software-as-a-service (“SaaS”) offering for viewing, accessing, storing, and sharing multi-modality diagnostic images. IDEXX Web PACS is integrated with Cornerstone, IDEXX Neo and IDEXX VetConnect PLUS to provide centralized access to diagnostic imaging results alongside patient diagnostic results from any internet connected device. IDEXX Web PACS updates automatically and offers secure storage for an unlimited number of diagnostic images. The software features advanced radiology measurement tools as well as an interactive collaboration feature that allows veterinarians to collaborate and consult remotely with other practitioners.

IDEXX I-Vision Mobile is a software application that allows veterinarians with IDEXX digital radiography systems the ability to request, view and send images using an iPad® or an Android™ mobile tablet. This application integrates with our IDEXX-PACS software.

Water



Mission: To provide innovative testing solutions for easy, rapid and accurate detection and quantification of various microbiological parameters in water, helping to ensure safety for billions of people around the world



Our principal products are the Colilert, Colilert-18, and Colisure tests, which detect the presence of total coliforms and *E. coli* in water. These organisms are broadly used as microbial indicators for potential fecal contamination in water. Our products utilize nutrient-indicators that produce a change in color or fluorescence when metabolized by target microbes in the sample. Our water tests are used by government laboratories, water utilities and private certified laboratories to test drinking water in compliance with regulatory standards, including U.S. Environmental Protection Agency (“EPA”) standards. The tests also are used in evaluating water used in production processes (for example, in beverage and pharmaceutical applications) and in evaluating bottled water, recreational water, wastewater, and water from private wells.

Our Enterolert products detect the presence of *enterococci* in drinking, waste, and recreational waters. Enterococci, bacteria normally found in human and animal waste, are organisms broadly used as microbial indicators for potential fecal contamination in water. Our Pseudalert products detect the presence of *Pseudomonas aeruginosa* in pool, spa, and bottled water. *Pseudomonas aeruginosa* is a pathogen that can cause “hot-tub rash,” “swimmer’s ear”, and potentially fatal infections in individuals with weakened immune systems. Our Filta-Max and Filta-Max *xpress* products are used in the detection of *Cryptosporidium* and *Giardia* in water. *Cryptosporidium* and *Giardia* are parasites that can cause potentially fatal gastrointestinal illness if ingested. We also distribute certain water testing kits manufactured by Thermo Fisher Scientific, Inc. that complement our *Cryptosporidium* and *Giardia* testing products.

In 2016, we launched Legiolert, a simple culture method test for the detection of *Legionella pneumophila*, the most common *Legionella* species in water, and the primary cause of Legionnaires’ disease. The Legiolert test is designed to be used on potable or non-potable water sources with results in seven days.

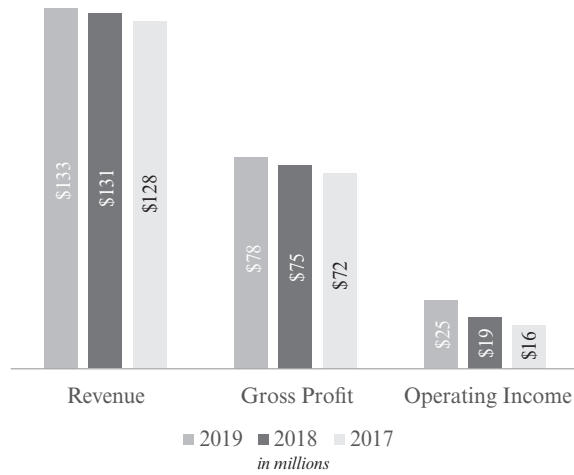
Our Quanti-Tray products, when used in conjunction with our Colilert, Colilert-18, Colisure, Enterolert, Pseudalert, Heterotrophic Plate Count (HPC) or Legiolert products, provide users quantitative measurements of microbial contamination rather than a presence/absence indication. In 2015, we launched the Quanti-Tray Sealer PLUS, a next generation instrument of the previously available Quanti-Tray Sealer 2X. These instruments are used with the Quanti-Tray products for the determination of bacterial density in water samples. Our SimPlate for HPC product detects the total number of the most common bacteria in a water sample.

We also sell consumables, parts, and accessories to be used with many of our water testing products.

LPD



Mission: To provide diagnostic tests, services and related instrumentation that are used to manage the health status of livestock and poultry, to improve dairy efficiency, and to ensure the quality and safety of milk and food



We sell diagnostic tests, services and related instrumentation that are used to manage the health status of livestock and poultry, to improve producer efficiency, and to ensure the quality and safety of milk and food. Our livestock and poultry diagnostic products are purchased by government and private laboratories that provide testing services to livestock veterinarians, producers, and processors. Our herd health screening services are offered to livestock veterinarians and producers. Our principal livestock and poultry diagnostic products include tests for Bovine Viral Diarrhea Virus (“BVDV”) and Porcine Reproductive and Respiratory Syndrome (“PRRS”). BVDV is a common and contagious viral infection that suppresses the immune system, making the animal susceptible to a host of other infections, impacting beef and dairy production yields as a result. PRRS is a contagious virus causing reproductive problems and respiratory diseases in swine, leading to increased piglet mortality, reduced growth, and vulnerability to secondary infections.

Our principal dairy products use our SNAP test platform and are used by dairy producers and processors worldwide to detect antibiotic drug residue in milk. Our primary product lines are SNAP Beta-Lactam ST and SNAPduo Beta-Tetra ST, which detect certain beta lactam and tetracycline antibiotic residues. We also sell SNAP tests for the detection of certain other contaminants in milk, such as Aflatoxin M1.

In 2016, we launched the RealPCR ASFV Test, which is a real-time polymerase chain reaction (PCR) assay for African Swine Fever (ASFV) in domestic and wild swine species. This test provides early and accurate detection of ASFV supporting prevention, control, and eradication programs by veterinarians and producers.

OTHER

OPTI Medical

Through OPTIMedical, we sell point-of-care analyzers and related consumables for use in human medical hospitals and clinics to measure electrolytes, blood gases, acid-base balance, glucose, lactate, blood urea nitrogen and ionized calcium, and to calculate other parameters such as base excess and anion gap. These OPTI analyzers are used primarily in emergency rooms, operating rooms, cardiac monitoring areas and other locations where time-critical diagnostic testing is performed within the hospital setting. Our latest generation OPTI CCA-TS2 Blood Gas and Electrolyte analyzer, which launched in 2013, contains many new features relative to previous generation blood gas analyzers including customized work flows, faster time to result, improved communication, and a multi-level electronic control. Similar to our earlier generation OPTI CCA and OPTI Touch Electrolyte analyzers, the OPTI CCA-TS2 runs whole blood, plasma, and serum samples on single-use disposable cassettes that contain various configurations of analytes.

Other Activities

We own certain drug delivery technology intellectual property, that we continue to seek to commercialize through agreements with third parties, such as pharmaceutical companies, that are included in the Other segment.

MARKETING AND DISTRIBUTION

We market, sell, and service our products worldwide through our marketing, customer service, sales, and technical service groups, as well as through independent distributors and other resellers. We maintain sales offices outside the U.S. in all major regions including Africa, Asia Pacific, Canada, Europe, Middle East, and Latin America.

Generally, we select the appropriate distribution channel for our products based on the type of product, technical service requirements, number and concentration of customers, regulatory requirements, and other factors. We market our companion animal diagnostic products to veterinarians directly in the U.S. Outside the U.S., we sell our companion animal diagnostic products through our direct sales force and, in certain countries, through distributors and other resellers. We sell our veterinary reference laboratory diagnostic and consulting services worldwide, generally through our direct sales force. We market our diagnostic imaging products primarily through our direct sales force in the U.S. and Canada. We market our software products primarily through our direct sales force in the U.S., Canada, Europe, and Australia. We market our Water and LPD products primarily through our direct sales force in the U.S. and Canada. Outside the U.S. and Canada, we market these products through our direct sales force and, in certain countries, through selected independent distributors. We sell our OPTI electrolyte and blood gas analyzers both directly and through independent human medical product distributors in the U.S. and we sell most of the related consumables through the distribution channel. Outside the U.S., we sell our OPTI products primarily through distributors and other resellers.

RESEARCH AND DEVELOPMENT

Our business includes the development and introduction of new products and services and may involve entry into new business areas. We maintain active research and development programs in each of our business segments. Our research and development expenses, which consist of salaries, employee benefits, materials and external consulting and development costs, were \$133.2 million for the year ended December 31, 2019, or 5.5% of our consolidated revenue, \$117.9 million for the year ended December 31, 2018, or 5.3% of our consolidated revenue and \$109.2 million for the year ended December 31, 2017, or 5.5% of our consolidated revenue.

PATENTS AND LICENSES

We actively seek to obtain patent protection in the U.S. and other countries for inventions covering our products and technologies. We also license patents and technologies from third parties. Patents and licenses of patents and technologies from third parties are considered important to the Company based on a variety of factors, including providing protection for the Company's inventions and other proprietary intellectual property, affording protection from competitors in certain markets, enabling the use of more effective and efficient technologies in the development and production of our products and offerings, strengthening our reputation and standing among customers, employees and key suppliers, and acting as a deterrent against counterfeiters, imitators and other copiers of technologies.

Important patents and licenses include:

- An exclusive license from Tulane University to patents that started to expire in 2019 and are continuing into 2020 relating to reagents for the detection of Lyme disease utilized in certain of our SNAP products and a reference laboratory diagnostic test;
- An exclusive license from Cornell University to patents covering methods for detecting BVDV that started to expire in 2017 and will continue into 2022;
- Patents relating to reagents and methods for the detection of *Anaplasma phagocytophilum* utilized in certain of our SNAP products that started to expire in 2017 and will continue into 2022;
- Patents relating to reagents and methods for the detection of *Ehrlichia canis* utilized in certain of our SNAP products that expire beginning in 2019 and continuing into 2022;
- A patent concerning LaserCyte consumables that expires in 2020;
- Patents concerning Catalyst consumables that expire beginning in 2020 and will continue into 2035;
- Patents concerning Catalyst instruments that expire beginning in 2026 and will continue into 2032;
- Patents relating to reagents and methods for the detection of canine pancreatic lipase that expire in 2026; and
- Patents relating to reagents and methods for the detection of SDMA that expire in 2029.

In addition, we have pending U.S. patent applications concerning reagents and methods for detecting SDMA. If such applications are granted, we expect the associated patents would have expirations ranging from 2036 to 2038.

While we consider these proprietary technology rights to be important to us, a range of factors help to mitigate the future effects of patent and license expiration on our results of operations and financial position. These factors include publications, including peer-reviewed third-party studies, that demonstrate the accuracy of our products; our brand strength and reputation in the marketplace; the breadth, quality and integration of our product offerings; our existing customer relationships and our customer support; our sales force; our online ordering platform that enables direct ordering of (including establishing automatic reorder schedules for) our consumables, tests and other products by our customers; the applicable regulatory approval status for certain products; our continued investments in innovative product improvements that often result in new technologies and/or additional patents; our investment in diagnostic innovations that results in new product offerings that often are patentable and that expand the test menu for our in-clinic instruments and/or reference laboratory business; and our significant know-how, scale and investments related to manufacturing processes of associated product offerings and certain supply arrangements for consumables that are compatible with our instruments. Although we have several patents and licenses of patents and technologies from third parties that expired during 2019, and are expected to expire in 2020 and beyond, the expiration of these patents, individually or in the aggregate, is not expected to have a material effect on the Company's financial position or future operations. In addition, we already face notable competition in certain areas as other companies have been successful in bringing competitive products to market, despite the protections afforded by these proprietary technology rights.

To the extent some of our products may now, or in the future, embody technologies protected by patents, copyrights, or trade secrets of others, we may be required to obtain licenses to such technologies in order to continue to sell our products. These licenses may not be available on commercially reasonable terms or at all. Our failure to obtain any such licenses may delay or prevent the sale of certain new or existing products. See "Part I, Item 1A. Risk Factors."

PRODUCTION AND SUPPLY

Many of the instruments that we sell are manufactured by third parties. We rely on third parties in our supply chain to supply us, and our direct suppliers, with certain important components, raw materials and consumables used in or with our products. In some cases, these third parties are sole or single source suppliers. From time to time, we seek to qualify alternative suppliers.

Instruments and consumables. Significant products supplied by sole and single source providers include certain Catalyst Dx and Catalyst One consumables (other than electrolyte consumables and the fructosamine, T4, CRP, and SDMA slides), progesterone, VetLyte consumables, LaserCyte and LaserCyte Dx consumables, VetTest, VetAutoread and ProCyte Dx analyzers and consumables, SediVue Dx urinalysis instrument and consumables, and components of our SNAP Pro Mobile Device.

VetTest and certain Catalyst chemistry slides are supplied by Ortho under supply agreements that are currently set to expire in December of 2028. We are required to purchase all of our requirements for our current menu of VetTest and Catalyst chemistry slides from Ortho to the extent Ortho is able to supply those requirements. The agreements provide for pricing based on purchase volumes and a fixed annual inflationary adjustment. The agreements also prohibit Ortho from promoting and selling these chemistry slides in the veterinary market, excluding the EU, other than to IDEXX.

We purchase other analyzers and consumables under supply agreements with terms extending through 2034, which in some cases may be extended at our option. We have minimum purchase obligations under some of these agreements, and our failure to satisfy these obligations may result in loss of some or all of our rights under these agreements. See “Part I, Item 1A. Risk Factors.”

Other components. We purchase certain other products, raw materials, and components from sole and single source suppliers. These products include certain diagnostic imaging systems and certain components used in our SNAP rapid assay and dairy devices, livestock, and poultry testing kits and water testing products.

We have been successful in ensuring an uninterrupted supply of products purchased from sole and single source suppliers. However, there can be no assurance that uninterrupted supply can be maintained if these agreements terminate for any reason or our suppliers otherwise are unable to satisfy our requirements for products. See “Part I, Item 1A. Risk Factors.”

BACKLOG

We do not generally maintain a significant backlog of orders and believe that our backlog at any particular date historically has not been indicative of future sales.

COMPETITION

We compete with many companies ranging from large human and animal health pharmaceutical and medical diagnostics companies to small businesses focused on animal health. Our companion animal veterinary diagnostic products and services compete with both reference laboratory service and in-clinic product providers. Our competitors vary in our different markets. In some markets, academic institutions, governmental agencies, and other public and private research organizations conduct research activities and may commercialize products or services which could compete with our products, on their own or through joint ventures. Several of our direct and potential competitors have substantially greater financial and managerial resources than us, as well as greater experience in manufacturing, marketing, research and development, and obtaining regulatory approvals than we do. For more information on risks related to our competition, see “Part I, Item 1A. Risk Factors.”

Competitive factors in our different business areas are detailed below:

- Companion animal diagnostic offerings. We compete primarily on the basis of ease of use and speed of our products, diagnostic accuracy, product quality, breadth of our product line and services, unique product innovations, fully integrated technology, information management capability, availability of medical consultation, effectiveness of our sales and distribution channels, quality of our technical and customer service, and our pricing relative to the value of our products and services in comparison with competitive products and services. Our major competitors in most geographic locations in North America are Antech Diagnostics, a unit of VCA Inc., a division of Mars, Incorporated; Zoetis Inc. (including its wholly-owned subsidiary Abaxis, Inc.); Heska Corporation; Samsung Electronics Co., Ltd., and FUJIFILM North America Corporation. We also compete in certain international markets with Zoetis, Fujifilm Holdings Corporation, Samsung Electronics, Arkray, Inc., and BioNote, Inc.

- Water, livestock, poultry, and dairy testing products. We compete primarily on the basis of the ease of use, speed, accuracy, product quality and other performance characteristics of our products and services (including unique tests), the breadth of our product line and services, the effectiveness of our sales and distribution channels, the quality of our technical and customer service, our ability to receive regulatory approvals from governing agencies and our pricing relative to the value of our products in comparison with competitive products and services. Our competitors include highly focused smaller companies and multibillion-dollar companies with small livestock and poultry diagnostics and water testing solution franchises.
- Veterinary Software, Services and Diagnostic Imaging Systems. We compete primarily on the basis of functionality, connectivity to equipment and other systems, performance characteristics, effectiveness of our implementation, training process and customer service, information handling capabilities, advances in technologies and our pricing relative to the value of our products and services. We sell these products primarily in North America and Europe. Our largest competitor in North America and the U.K. is Covetrus, Inc., which offers several systems and leverages its animal health distribution business in sales and service. We also compete with numerous focused smaller companies throughout the markets in which we offer veterinary software, including those offering cloud-based solutions.
- Electrolyte and blood gas analyzers for the human point-of-care medical diagnostics market. We compete primarily on the basis of the ease of use, menu, convenience, international distribution and service, instrument reliability, and our pricing relative to the value of our products. We compete primarily with large human medical diagnostics companies such as Radiometer A/S, Siemens Medical Solutions Diagnostics, Instrumentation Laboratory Company, Abbott Diagnostics, a division of Abbott Laboratories and Roche Diagnostics Corporation.

GOVERNMENT REGULATION

Many of our products are subject to comprehensive regulation by U.S. and foreign regulatory agencies that relate to, among other things, product approvals, product registrations, manufacturing, import, export, distribution, marketing and promotion, labeling, recordkeeping, testing, quality, storage, product disposal, environmental compliance, and workplace safety. The following is a description of the principal regulations affecting our businesses.

Veterinary diagnostic products. These products include our diagnostic test kits for companion and food animal infectious diseases, including most of our livestock and poultry products and our rapid assay products. These products are licensed and regulated in the U.S. by the Center for Veterinary Biologics within the United States Department of Agriculture (“USDA”) Animal and Plant Health Inspection Service (“APHIS”). These products must be approved by APHIS before they may be sold in and from the U.S. The APHIS regulatory approval process involves the submission of product validation data, including manufacturing process and facility documentation. Following regulatory licensure to market a product, APHIS requires that each lot of product be submitted for test review before release to customers. In addition, APHIS requires special approval to market products where test results are used in part for government-mandated disease management programs. A number of foreign governments accept APHIS approval, to support product registration for sale, distribution, and use within their countries. However, compliance with extensive country-specific regulatory processes is required in connection with importing and marketing diagnostic products in Japan, Germany, Canada, Brazil, the Netherlands, China, and many other countries. We are also required to have a facility license from APHIS to manufacture USDA-licensed products. We have a facility license for our manufacturing facility in Westbrook, Maine which also covers our distribution center in Memphis, Tennessee. Our LPD manufacturing facility in Montpellier, France has been approved by APHIS and we have a permit to import products manufactured in Montpellier, France to the U.S. for distribution.

Our veterinary diagnostic slide and instrument systems, including T4, fructosamine, progesterone, CRP, and SDMA, are veterinary medical devices regulated by the FDA under the Food, Drug and Cosmetics Act (the “FDC Act”). Other FDA regulated products include our non-licensed Rapid Assay products such as SNAP Pancreatic Lipase, Cortisol, Bile Acid, Foal IgG, and ProBNP. While the sale of these products does not require premarket approval by the FDA and does not subject us to the FDA’s current Good Manufacturing Practices regulations (“cGMP”), the FDC Act specifies that these products must not be adulterated, mislabeled, or misbranded.

Water testing products. Our water tests are not subject to formal premarket regulatory approval. However, before a test can be used as part of a water quality monitoring program in the U.S. that is regulated by the EPA, the test must first be approved by the EPA. The EPA approval process involves submission of extensive product performance data in accordance with an EPA-approved protocol, evaluation of the data by the EPA and publication for public comment of any proposed approval in the Federal Register before final approval. Our Colilert, Colilert-18, Colisure, Quanti-Tray, Filta-Max *xpress*, Enterolert and SimPlate for heterotrophic plate counts products have been approved by the EPA for use under various

regulatory programs. Water testing products are subject to similarly extensive regulatory processes in other countries around the world.

Dairy testing products. Dairy products used in National Conference on Interstate Milk Shipments (“NCIMS”) milk-monitoring programs in the U.S. are regulated by the FDA as veterinary medical devices. However, before products requiring FDA approval can be sold in the U.S., performance data must be submitted in accordance with an FDA-approved protocol administered by an independent body, such as the Association of Analytical Communities Research Institute (“AOAC RI”). Following approval of a product by the FDA, the product must also be approved by NCIMS, an oversight body that includes state, federal and industry representatives. Our SNAP Beta-Lactam antibiotic residue test product has been approved by the FDA, NCIMS and AOAC RI for sale in the U.S. While some foreign countries accept AOAC RI approval as part of their regulatory approval process, many countries have separate regulatory processes.

Human point-of-care electrolyte and blood gas analyzers. Our OPTI instrument systems are classified as Class I and/or Class II medical devices, and their design, manufacture and marketing are regulated by the FDA. Accordingly, we must comply with cGMP in the manufacture of our OPTI products. The FDA’s Quality System regulations further set forth standards for product design and manufacturing processes, require the maintenance of certain records and provide for inspections of our facilities by the FDA. New OPTI products fall into FDA classifications that require notification of and review by the FDA before marketing, and which are submitted as a 510(k) application. OPTI Medical products are also subject to the European Medical Device Directives and regulations governing the manufacture and marketing of medical devices in other countries in which they are sold.

Other Environmental Regulations. All IDEXX products must comply with applicable global product regulations, including those governing consumer product safety and materials requirements such as the European Union’s Electromagnetic Compatibility (“EMC”) Directive, the European Regulation for Registration, Evaluation, Authorization and Restriction of Chemical Substances (“REACH”), the Restriction of Hazardous Substances (“RoHS”) Directive, and the Waste Electrical and Electronic Equipment (“WEEE”) Directive. These complex regulatory requirements create risk to IDEXX’s ability to market and sell our products, our business and our financial performance. For more information about the risks associated with various U.S. and foreign government regulation, see *“Various U.S. and foreign government regulations could limit or delay our ability to market and sell our products or otherwise negatively impact our business”* under “Part I, Item 1A. Risk Factors.”

In the European Union, our analyzers and certain associated equipment are subject to the requirements of the RoHS Directive, which regulates and restricts certain hazardous substances in electrical and electronic equipment. Other countries, including China, Russia, the United Arab Emirates, and Turkey have implemented or anticipate implementing regulatory regimes similar to the RoHS Directive. Our veterinary diagnostic instrument systems are not subject to regulation under the European Medical Device Directive or the In Vitro Diagnostic Directive, which are both strictly applicable to human use products. However, these systems are required to meet CE certification, which required compliance with the RoHS Directive, the EMC Directive, and other safety requirements. Similar requirements are specified by most countries in which we sell our products and are subject to increasing harmonization globally.

The European Union was among the first to regulate and restrict the use of certain substances that we currently use in our products. These requirements include the Biocidal Products Regulation, which requires the use of approved biocides in our products prior to being exported to the European Union, and REACH, which regulates and restricts the use of certain chemicals in the European Union. Compliance with these regulations (and similar regulations that have been or may be adopted elsewhere, such as Turkey, Korea, and other countries) may require registration of the applicable substances or the redesign or reformulation of our products. Some of our products, including some of our Companion Animal products, may be subject to pending restriction of microplastics pursuant to REACH.

In the US, the EPA regulates chemical use similarly to the EU. In addition, certain states have their own chemical regulations, such as California's Proposition 65, which requires businesses to provide warnings to California residents about significant risk of exposures to chemicals in products that are known to cause cancer, birth defects or other reproductive harm.

In addition to the foregoing, our business is generally subject to various U.S. and foreign regulatory authorities, including the U.S. Federal Trade Commission (the “FTC”) and other anti-competition authorities, and we are also subject to anti-bribery and anti-corruption laws, such as the Foreign Corrupt Practices Act, import and export laws and regulations, including U.S. import and export control and sanctions laws, and laws and regulations governing the collection, use, retention, sharing and security of data. Development or acquisition of new products and technologies may subject us to additional areas of government regulation. These may involve medical device, water-quality and other regulations of the FDA, the EPA, the USDA, the FTC, and other federal agencies, as well as state, local and foreign governments.

EMPLOYEES

As of February 7, 2020, we had approximately 9,200 employees.

AVAILABLE INFORMATION

Our principal executive offices are located at One IDEXX Drive, Westbrook, Maine 04092, our telephone number is 207-556-0300, and our internet address is www.idexx.com. References to our website in this Annual Report on Form 10-K are inactive textual references only and the content of our website should not be deemed incorporated by reference for any purpose.

We make available free of charge at www.idexx.com our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after we file such information with, or furnish it to, the SEC. In addition, copies of our reports filed electronically with the SEC may be accessed at www.sec.gov.

Our Corporate Governance Guidelines and our Code of Ethics are also available on our website at www.idexx.com.

ITEM 1A. RISK FACTORS

You should consider carefully the risks and uncertainties described below in addition to the other information included or incorporated by reference in this Annual Report on Form 10-K in evaluating our company and our business. Our future operating results involve a number of risks and uncertainties and actual events or results may differ materially from those discussed in this Annual Report on Form 10-K. Factors that could cause or contribute to such differences include, but are not limited to, the factors discussed below, as well as those factors discussed elsewhere herein. Any of these factors, in whole or in part, could materially and adversely affect our business, financial condition, operating results and stock price.

RISKS RELATED TO OUR BUSINESS

Because our business lines are highly attractive, they are also highly competitive. Our failure to successfully execute certain strategies within this competitive environment could have a material negative impact on our future growth and profitability

The companion animal healthcare industry is highly competitive, and we anticipate increasing levels of competition from both existing competitors and new market entrants given our performance and the market's strong growth and returns. Our ability to maintain or enhance our growth rates and our profitability depends on our successful execution of many elements of our strategy, including:

- Developing, manufacturing, and marketing innovative new or improved and cost competitive in-clinic laboratory analyzers that drive sales of IDEXX VetLab instruments, grow our installed base of instruments and increase demand for related recurring sales of consumable products, services, and accessories;
- Developing and introducing new proprietary diagnostic tests and services for both our reference laboratories and in-clinic applications that provide valuable medical information to our customers and effectively differentiate our products and services from those of our competitors;
- Increasing the value to our customers of our companion animal products and services by enhancing the integration of the information and transactions of these products and the management of diagnostic information derived from our products;
- Maintaining premium pricing, including by effectively implementing price increases, for our differentiated products and services through, among other things, effective communication and promotion of the value of our products and services in an environment where many of our competitors promote, market, and sell lesser offerings at prices lower than ours;
- Providing our veterinary customers with the medical and business tools, information, and resources that enable them to grow their practices and the utilization of our diagnostic products and services, through increased pet visits, use of preventive care protocols and enhanced practice of real-time care;
- Achieving cost improvements in our worldwide network of reference laboratories by implementing global best practices, including lean processing techniques, incorporating technological enhancements, including laboratory automation and a global laboratory information management system, employing purchasing strategies to maximize leverage of our global scale, increasing the leverage of existing infrastructure and consolidating testing in high volume laboratory hubs;
- Achieving cost improvements in the manufacture and service of our in-clinic laboratory analyzers by employing the benefits of economies of scale in both negotiating supply contracts and leveraging manufacturing overhead, and by improving reliability of our instruments;
- Continuing to expand, develop, and advance the productivity of our companion animal diagnostic sales, marketing, customer support and logistics organizations in the U.S. and international markets in support of, among other things, our all-direct sales strategies;
- Attracting, developing, and retaining key leadership and talent necessary to support all elements of our strategy, which is challenging due to the increasingly competitive and tight labor markets in which we operate;
- Expanding our served market and growing our market share by strengthening our sales and marketing activities both within the U.S. and in geographies outside of the U.S.;
- Identifying, completing, and integrating acquisitions that enhance our existing businesses or create new business or geographic areas for us;
- Developing and implementing new technology and licensing strategies; and
- Continuing to effectively manage our growth and expansion on a global scale through, among other things, designing and implementing cost-effective improvements to our processes, procedures, and infrastructure.

If we are unsuccessful in implementing and executing on some or all of these strategies, our rate of growth or profitability may be negatively impacted.

We depend on key leadership and talent to succeed and compete effectively

Our continued success is substantially dependent on our ability to attract, develop, and retain highly capable and skilled senior leadership and other key personnel. As we continue to grow our business, expand our geographic scope, and develop and offer innovative, new products and services, we require the organizational talent necessary to ensure effective succession for our senior leadership and other key personnel. Competition for experienced leaders and employees, particularly for persons with specialized skills, can be intense. Our ability to recruit and retain such talent will depend on a number of factors, including compensation and benefits, work location, work environment and development opportunities. The loss of the services of, or our failure to recruit or develop and implement effective succession plans for, our senior leadership or other key personnel may significantly delay or prevent the achievement of our strategic objectives, disrupt our operations, and adversely affect our business and our future success. In addition, even if we effectively develop and implement succession plans and make key leadership transitions, we cannot provide assurances as to whether we may experience management or other challenges in connection with any of those leadership transitions that could adversely affect our future success.

Our dependence on suppliers could limit our ability to sell certain products or negatively affect our operating results

We rely on third-party suppliers to provide components for our products, manufacture products that we do not manufacture ourselves, and perform services that we do not provide ourselves, including package-delivery services. Because these suppliers are independent third parties with their own financial objectives, actions taken by them could have a materially negative effect on our results of operations. The risks of relying on suppliers include our inability to enter into contracts with such suppliers on reasonable terms, breach, or termination by suppliers of their contractual obligations, inconsistent or inadequate quality control, relocation of supplier facilities, disruption to suppliers' business, including work stoppages, suppliers' failure to comply with complex and changing regulations, and third-party financial failure. Any problems with our suppliers and associated disruptions to our supply chain could materially negatively impact our ability to supply the market, substantially decrease sales, lead to higher costs, or damage our reputation with our customers, and any longer-term disruptions could potentially result in the permanent loss of our customers, which could reduce our recurring revenues and long-term profitability. Disruption to our supply chain could occur as a result of any number of events, including, but not limited to, increases in wages that drive up prices; the imposition of regulations, trade protection measures, tariffs, duties, import/export restrictions, quotas or embargoes on key components; labor stoppages; transportation failures affecting the supply and shipment of materials and finished goods; the unavailability of raw materials; severe weather conditions; natural disasters; public health issues (such as outbreaks, epidemics, or the prospect of a pandemic); climate change-related events; civil unrest, war, terrorism or other geopolitical developments, including the United Kingdom's exit from the European Union; computer viruses, physical or electronic breaches, or other information system disruptions or security breaches; and disruptions in utility and other services. For more information regarding the risks presented by natural and other disasters and system disruptions and security breaches from cyberattacks, see "We are increasingly dependent on the continuous and reliable operation of our information technology systems, and a disruption of these systems or significant security breaches could adversely affect our business" and "Natural and other disasters could adversely affect our business" below.

In addition, we currently purchase many products and materials from sole or single sources. Some of the products that we purchase from these sources are proprietary and, therefore, cannot be readily or easily replaced by alternative sources. These products include the majority of our Catalyst Dx and Catalyst One consumables; VetLyte electrolyte consumables; ProCyte Dx hematology, IDEXX VetAutoread hematology, and VetTest Chemistry analyzers and related consumables and accessories; SediVue Dx urine sediment analyzer and consumables; image capture plates used in our diagnostic imaging systems; and certain components and raw materials used in our SNAP rapid assay kits and SNAP Pro Mobile Device, Catalyst One, LaserCyte and LaserCyte Dx hematology analyzers, livestock and poultry diagnostic tests, dairy testing products, and water testing products. Even where products and materials are available from alternative suppliers, if any become unavailable to us for any reason, we likely would incur additional costs and delays in identifying or qualifying replacement materials and there can be no assurance that replacements would be available to us on acceptable terms, or at all. In certain cases, we may be required to obtain regulatory approval to use alternative suppliers, and this process of approval could delay production of our products or development of product candidates indefinitely.

We seek to mitigate risks associated with sole and single source suppliers on a risk-prioritized basis and in a variety of ways, including, when possible, by identifying and qualifying alternative suppliers, developing applicable in-house manufacturing capabilities and expertise, and entering into escrow arrangements for manufacturing information for certain

single or sole-sourced products. We also seek to enter into long-term contracts with our sole and single source suppliers that provide for an uninterrupted supply of products at predictable or fixed prices. However, there can be no assurance that we will successfully implement any of these mitigating activities or that, if implemented, any of them will be effective in preventing any delay or other disruption in our ability to supply the market. In addition, suppliers may decline to enter into long-term contracts for any number of reasons, which would require us to purchase products via short-term contracts or on a purchase order basis. There can be no assurance that suppliers with which we do not have long-term contracts will continue to supply our requirements for products, that suppliers with which we do have long-term contracts will always fulfill their obligations under those contracts, or that any of our suppliers will not experience disruptions in their ability to supply our requirements for products. In cases where we purchase sole and single source products or components under purchase orders, we are more susceptible to unanticipated cost increases or changes in other terms of supply. In addition, under some contracts with suppliers we have minimum purchase obligations, and our failure to satisfy those obligations may result in loss of some or all of our rights under these contracts or require us to compensate the supplier. If we are unable to obtain adequate quantities of products in the future from sole and single source suppliers, or if such sole and single source suppliers are unable to obtain the components or other materials required to manufacture the products, we may be unable to supply the market, which could have a material adverse effect on our results of operations, and any longer-term disruptions could potentially result in the permanent loss of customers, which could reduce our recurring revenues and long-term profitability.

Our biologic products are complex and difficult to manufacture, which could negatively affect our ability to supply the market

Many of our rapid assay, livestock and poultry diagnostic, water and dairy products are biologic products, which are products that include materials from living organisms, such as antibodies, cells, and sera. Manufacturing biologic products is highly complex due to the inherent variability of biological input materials and the difficulty of controlling the interactions of these materials with other components of the products, samples, and the environment. There can be no assurance that we will be able to maintain adequate sources of biological materials or that we will be able to consistently manufacture biologic products that satisfy applicable product release criteria and regulatory requirements. Further, products that meet release criteria at the time of manufacture may fall out of specification while in customer inventory, which could require us to incur expenses associated with recalling products and providing customers with new products, either of which could damage customer relations. Our inability to produce or obtain necessary biological materials or to successfully manufacture biologic products that incorporate such materials could result in our inability to supply the market with these products, which would have an adverse effect on our results of operations.

We are increasingly dependent on the continuous and reliable operation of our information technology systems, and a disruption of these systems or significant security breaches could adversely affect our business.

We rely on several information systems throughout our company, as well as our third-party business partners' and suppliers' information systems, to provide access to our web-based products and services, keep financial records, analyze results of operations, process customer orders, manage inventory, process shipments to customers, store confidential or proprietary information and operate other critical functions. Although we maintain information security policies and employ system backup measures and engage in information system redundancy planning and processes, such policies, measures, planning and processes, as well as our current disaster recovery plans, may be ineffective or inadequate to address all eventualities. Further, our information systems and our business partners' and suppliers' information systems may be vulnerable to attacks by hackers and other security breaches, including, among other things, computer viruses and malware, denial of service actions, misappropriation of data and similar events through the internet (including via devices and applications connected to the internet), and through email attachments and persons with access to these information systems, such as our employees or third parties with whom we do business. As information systems and the use of software and related applications by us, our business partners, suppliers, and customers become more cloud-based and connected to the "Internet of Things," which is inherently susceptible to cyberattacks, there has been an increase in global cybersecurity vulnerabilities and threats, including more sophisticated and targeted cyber-related attacks that pose a risk to the security of our information systems and networks and the confidentiality, availability and integrity of data and information. We process credit card payments electronically over secure networks and also offer products and services that connect to and are part of the "Internet of Things," such as our connected devices (e.g., IDEXX VetLab instruments). Any such attack or breach could compromise our networks and the information stored thereon could be accessed, publicly disclosed, lost, or stolen. While we have implemented network security and internal control measures, especially for the purpose of protecting our connected products and services from cyberattacks, and invested in our data and information technology infrastructure, there can be no assurance that these efforts will prevent a system disruption, attack, or security breach and, as such, the risk of system disruptions and security breaches from a cyberattack remains.

We, and some of our third party vendors, have experienced cybersecurity attacks in the past and may experience further attacks in the future, potentially with more frequency. To our knowledge, most of these attacks have been unsuccessful, and none have resulted in any material adverse impact to our business or operations. We have adopted measures to mitigate potential risks associated with information technology disruptions and cybersecurity threats; however, given the unpredictability of the timing, nature and scope of such disruptions and the evolving nature of cybersecurity threats, which vary in technique and sources, if we or our business partners or suppliers were to experience a system disruption, attack or security breach that impacts any of our critical functions, or our customers were to experience a system disruption, attack or security breach via any of our connected products and services, we could potentially be subject to production downtimes, operational delays, other detrimental impacts on our operations or ability to provide products and services to our customers, the compromising of confidential or otherwise protected information, destruction or corruption of data, security breaches, other manipulation or improper use of our systems or networks, financial losses and additional costs from remedial actions, repairs to infrastructure, physical systems or data processing systems, increased cybersecurity and information technology protection costs, loss of business or potential liability, and/or damage to our reputation, any of which could have a material adverse effect on our competitive position, results of operations, cash flows or financial condition. Our customers could also face negative consequences such as the compromises of sensitive or critical information or systems. Furthermore, any access to, public disclosure of, or other loss of data or information (including any of our confidential or proprietary information or personal data or information) as a result of an attack or security breach could result in governmental actions or private claims or proceedings, which could damage our reputation, cause a loss of confidence in our products and services, damage our ability to develop (and protect our rights to) our proprietary technologies and have a material adverse effect on our business, financial condition, results of operations or prospects. For more information regarding data and information privacy and protection risks, see “Our operations and reputation may be impaired if we, our products, or our services do not comply with our global privacy policy or evolving laws and regulations regarding data privacy and protection” below.

Risks associated with doing business internationally could negatively affect our operating results

For the year ended December 31, 2019, approximately 38% of our revenue was attributable to sales of products and services to customers outside the U.S. Although we intend to continue to expand our international operations and business, we may not be able to successfully promote, market, import, export, sell or distribute our products and services outside the U.S. Various risks associated with foreign operations may impact our international sales, including, but not limited to, disruptions in transportation of our products or our supply chain; fluctuations in oil prices; increased border protection and restriction on travel; the differing product and service needs of foreign customers; difficulties in building, staffing and managing foreign operations (including a geographically dispersed workforce); differing protection of intellectual property; trade protection measures, quotas, embargoes, import/export restrictions, tariffs, duties, and regulatory and licensing requirements; natural and other disasters; public health issues (such as outbreaks, epidemics, or the prospect of a pandemic); ongoing instability or changes in a country’s or region’s regulatory, economic or political conditions, including as a result of the United Kingdom’s exit from the European Union; other unfavorable geopolitical conditions; security concerns; and local business and cultural factors that differ from our normal standards and practices, including business practices prohibited by the Foreign Corrupt Practices Act and other anti-corruption laws and regulations.

In addition, to market and sell many of our products outside the U.S., we are subject to product approval and registration requirements that often require us to provide confidential, proprietary information about those products to foreign regulatory agencies. There can be no assurance that the confidential, proprietary information provided to foreign regulatory agencies to comply with product approval and registration requirements may not be accessed by unauthorized persons or otherwise stolen, which could negatively affect our ability to protect our proprietary rights in our innovative products and our future success. We also may forgo marketing and selling some of our products in certain foreign jurisdictions due to the risk of intellectual property theft, which could negatively affect our ability to expand our international operations and business. For more information about the risks related to the protection of our proprietary rights in our products and services, see "Our success is heavily dependent on our continued proprietary product and service innovation" below.

Further, prices that we charge to foreign customers may be different than the prices we charge for the same products in the U.S. due to competitive, market or other factors, or changes in foreign currency exchange rates. Our results of operations are also susceptible to changes in foreign currency exchange rates. As a result, the mix of domestic and international sales in a particular period could have an adverse impact on our results of operations for that period.

Various U.S. and foreign government regulations could limit or delay our ability to market and sell our products or otherwise negatively impact our business

As a global business, we sell products and services in more than 175 countries and operate in an increasingly complex legal and regulatory environment. In the U.S., the manufacture and sale of certain of our products are regulated by agencies such as the USDA, the FDA, and the EPA. Our diagnostic tests for animal health applications that involve the detection of infectious diseases, including most rapid assay canine and feline SNAP tests and livestock and poultry diagnostic tests, must be approved by the USDA prior to sale in the U.S. Our dairy testing products as well as the manufacture and sale of our OPTI line of human point-of-care electrolytes and blood gas analyzers require approval by the FDA before they may be sold commercially in the U.S. Our water testing products must be approved by the EPA, as a part of a water quality monitoring program required by the EPA, before they can be used by customers in the U.S. Delays in obtaining regulatory approvals for new products or product upgrades could have a negative impact on our growth and profitability.

The manufacture, import, and sale of our products, as well as our research and development processes, are subject to similar and sometimes more stringent laws in many foreign countries. For example, the European Union regulates the use of certain substances that we currently use in our products or processes. These regulations include the Biocidal Products Regulation, which requires approval for the use of certain biocides in our products prior to being manufactured, used, or sold in the European Union; the European Regulation for Registration, Evaluation, Authorization and Restriction of Chemical Substances, or REACH, which regulates and restricts the use of certain chemicals in the European Union; and the Restriction of Hazardous Substances ("RoHS") Directive, which regulates and restricts certain hazardous substances in electrical and electronic equipment. Compliance with these regulations (and similar regulations that may be adopted elsewhere, including China and Brazil) may require registration of the applicable substances or the redesign or reformulation of our products and may reduce or eliminate the availability of certain parts and components used in our products and services in the event our suppliers are unable to comply with the applicable regulations in a timely and cost-effective manner. Any redesign or reformulation or restricted supply of parts and components may negatively affect the availability or performance of our products and services, add testing lead-times for products and reformulated products, reduce our margins, result in additional costs, or have other similar effects. In addition, the costs to comply with these regulations may be significant. Any of these could adversely affect our business, financial condition, or results of operations. These legal and regulatory requirements are complex and subject to change, and we continue to evaluate their impact.

In addition, some foreign governments require us to register our products before they can be distributed or sold, and these product registration requirements, which vary among the applicable jurisdictions and change from time to time, are often complex and require us to engage in lengthy and costly processes and provide confidential, proprietary information about those products to foreign regulatory agencies. There can be no assurance that we will be able to obtain or maintain any product registration required by one or more foreign governments. Any inability to obtain or maintain a required product registration in a jurisdiction could adversely affect our ability to market and sell the applicable product in that jurisdiction, which could have a negative effect on our business, financial condition and results of operations. There can also be no assurance that confidential, proprietary information provided to foreign regulatory agencies may not be accessed by unauthorized persons or otherwise stolen, which could negatively impact our ability to protect our proprietary rights in our innovative products and our future success. For more information about the risks related to the protection of our proprietary rights in our products and services, see "Our success is heavily dependent on our continued proprietary product and service innovation" below.

We are also subject to a variety of federal, state, local, and international laws and regulations governing, as well as legal and political environments that vary broadly regarding, among other things, the importation and exportation of products; our global business practices, such as anti-corruption, anti-money laundering, and anti-competition laws; and immigration and travel restrictions. These legal, regulatory, and political requirements and environments differ among jurisdictions around the world and are rapidly changing and increasingly complex. The costs associated with compliance with these legal and regulatory requirements and adjusting to changing legal and political environments are significant and likely to increase in the future.

Any failure by us to comply with applicable legal and regulatory requirements, or to adjust to changing legal and political environments, could result in fines, penalties, and sanctions; product recalls; suspensions or discontinuations of, or limitations or restrictions on, our ability to design, manufacture, market, import, export or sell our products; and damage to our reputation. Any of these could negatively impact our business.

Our success is heavily dependent on our continued proprietary product and service innovation

We believe our future success significantly depends on our ability to continue, on a cost-effective and timely basis, to enhance our existing proprietary product and service offerings and to develop and introduce new and innovative proprietary products and services. As a result, we invest substantial funds and efforts into R&D, investigating new products and technologies being developed by third parties and obtaining certain such new products and technologies through licenses or acquisitions. There can be no assurance that our R&D, licensing, or acquisition efforts will achieve expected results, when or whether any of our products or services now under development will be launched, or whether we may be able to develop, license or otherwise acquire new products or technologies. We also cannot predict whether any product or service offering, once launched, will achieve market acceptance or achieve sales and revenue consistent with our expectations.

We rely on a combination of patent, trade secret, trademark, and copyright laws to protect our proprietary rights. We also license patents and technologies from third parties to enable the use of third-party technologies in the development and production of our products and offerings. If we do not have adequate protection of our proprietary rights or are unable to license third-party patents and technologies on reasonable terms, our business may be affected by competitors who utilize substantially equivalent technologies that compete with us.

We cannot ensure that we will obtain issued patents, that any patents issued or licensed to us will remain valid, or that any patents owned or licensed by us will provide protection against competitors with similar technologies. Even if our patents cover products sold by our competitors, the time and expense of litigating to enforce our patent rights could be substantial and could have an adverse effect on our results of operations. In addition, expiration of patent rights could result in substantial new competition in the markets for products previously covered by those patent rights.

In the past, we have received notices claiming that our products infringe third-party patents and we may receive such notices in the future. Patent litigation is complex and expensive, and the outcome of patent litigation can be difficult to predict. We cannot ensure that we will win a patent litigation case or negotiate an acceptable resolution of such a case. If we lose, we may be prohibited from selling certain products and/or we may be required to pay damages and/or ongoing royalties as a result of the lawsuit. Any such result could have an adverse effect on our results of operations.

Increased competition from and technological advances by our competitors could negatively affect our operating results

We face intense competition within the markets in which we sell our products and services, and we expect that future competition will become even more intense as new products, services and technologies become available and new competitors enter the market. Our competitors in the veterinary diagnostic market in the United States and abroad include companies that develop, manufacture, and sell veterinary diagnostic tests and commercial veterinary reference laboratories, certain large and well-funded animal health pharmaceutical companies, as well as corporate hospital chains that operate reference laboratories that serve both their hospitals and unaffiliated hospitals, such as VCA Inc. (formerly named VCA Antech, Inc.), which is wholly owned by Mars, Incorporated, another operator of corporate hospital chains. Consolidation among our competitors and our customers may intensify the competition we face. While we believe that our offerings are competitively differentiated due to our proprietary products and services (such as the IDEXX SDMA test and VetConnect Plus) that offer an integrated, comprehensive diagnostic solution and the quality of our technical and customer service, there can be no assurance that increased consolidation among our competitors or customers (as well as any resulting reference laboratory vertical integration among our customers) would not have a negative impact on our ability to compete successfully. For more information regarding the risks presented by consolidation and reference laboratory vertical integration among our customers, see “Consolidation in our customer base, including through increased corporate hospital ownership, and prevalence of buying consortiums could negatively affect our business” below.

Competition could negatively affect our sales and profitability in a number of ways. New competitors may enter our markets through the development of innovative new technology, the acquisition of rights to use existing technologies or the use of existing technologies when patents protecting such existing technologies expire. New or existing competitors may introduce new, innovative, and competitive products and services, which could be superior, or be perceived by our customers to be superior, to our products and services or lead to the obsolescence of one or more of our products or services. Business combinations and mergers among our competitors may result in competitors that are better positioned to create, market, and sell more compelling product and service offerings. While an important aspect of our strategy is to continue, on a cost-effective and timely basis, to enhance our existing products and services and to develop and introduce new and innovative products and services, there can be no assurance that we will be able to successfully develop such products and services or that those products or services will be superior to our competitors’ products or services or otherwise achieve market acceptance. Some of

our competitors and potential competitors may choose to differentiate themselves by offering products and services perceived in the eyes of customers as similar, at substantially lower sales prices, which could have an adverse effect on our results of operations through loss of market share or a decision to lower our own sales prices to remain competitive. In addition, our ability to attract and retain customers depends on the effectiveness of our customer marketing and incentive programs and multiple competitors could bundle product and service offerings through co-marketing or other arrangements, which could enhance their ability to compete with our broad product and service offering. Certain of our competitors and potential competitors, including large diagnostic and pharmaceutical companies, also have substantially greater financial and managerial resources than us, as well as greater experience in manufacturing, marketing, research and development, and obtaining regulatory approvals than we do.

Consolidation in our customer base, including through increased corporate hospital ownership, and prevalence of buying consortiums could negatively affect our business

Veterinarians are our primary customers for our CAG products and services, and the veterinary services industry in the U.S. and abroad has been consolidating over time at an accelerating rate in recent years. In the United States, the number of owners of veterinary hospitals has been declining, and an increasing percentage of veterinary hospitals are owned by corporations that are in the business of acquiring veterinary hospitals and/or opening new veterinary hospitals nationally or regionally. Major corporate hospital owners in the U.S. include Mars, Incorporated (owner of Banfield Pet Hospitals, Blue Pearl Veterinary Partners, Pet Partners and VCA Inc.), and National Veterinary Associates, and are joined by dozens of smaller consolidators. A similar trend exists in other regions such as Canada, Europe, Australia, New Zealand, Brazil, and China. Furthermore, an increasing percentage of individually-owned veterinary hospitals in the U.S. are participating in buying consortiums. Corporate owners of veterinary hospitals and buying consortiums often seek to improve profitability by leveraging the buying power they derive from their scale to obtain favorable pricing from suppliers, which could have a negative impact on our profitability and results of operations. While we have strong supplier relationships with several corporate hospital groups and buying consortiums, decisions by larger corporate owners and buying consortiums to shift their purchasing of products and services away from us and to a competitor would have a negative impact on our results of operations. In addition, certain corporate owners also operate reference laboratories that serve both their hospitals and unaffiliated hospitals. Any hospitals acquired by these companies generally attempt to shift all or a large portion of their testing to the reference laboratories operated by these companies, and there can be no assurance that hospitals that otherwise become affiliated with these companies would not shift all or a portion of their testing to such reference laboratories. Furthermore, because these companies compete with us in the reference laboratory services marketplace, hospitals acquired by these companies or those that establish other affiliations with these companies may cease to be customers or potential customers of our other companion animal products and services, which would cause our sales of these products and services to decline.

Changes in testing patterns could negatively affect our operating results

The market for our companion animal, livestock and poultry diagnostic tests and our dairy and water testing products could be negatively impacted by a number of factors impacting testing practices. The introduction or broad market acceptance of vaccines or preventatives for the diseases and conditions for which we sell diagnostic tests and services could result in a decline in testing. Changes in accepted medical protocols regarding the diagnosis of certain diseases and conditions could have a similar effect. Eradication or substantial declines in the prevalence of certain diseases also could lead to a decline in diagnostic testing for such diseases. Our livestock and poultry products business in particular is subject to fluctuations resulting from changes in disease prevalence. The outbreak of certain diseases (such as African swine fever) among livestock or poultry, or the adverse impact of climate change-related events (such as hurricanes, earthquakes, fires, and floods), could lead to the widespread death or precautionary destruction of such animals in the affected regions, reducing herd or flock sizes, which could reduce the demand for our testing products for such animals. Changes in government regulations or in the availability of government funds available for monitoring programs could negatively affect sales of our products that are driven by compliance testing, such as our livestock and poultry, dairy and water products. In addition, changes and trends in local dairy, poultry, or other food markets around the world could negatively affect the related production markets resulting in a decline in demand for our testing products. Declines in testing for any reason, including the reasons described above, along with lost opportunities associated with a reduction in veterinary visits, could have an adverse effect on our results of operations.

Natural and other disasters could adversely affect our business.

Our business and results of operations could be negatively affected by certain factors beyond our control, such as natural disasters and/or climate change-related events (such as hurricanes, earthquakes, fires, and floods); public health issues (such as outbreaks, epidemics, or the prospect of a pandemic); civil unrest; negative geopolitical conditions and developments; and war, terrorism, or other man-made disasters. Any of these events could result in, among other things, damage to or the

temporary closure of one or more of our manufacturing or distribution facilities or reference laboratories (damage to one of our facilities or the manufacturing equipment we use could be costly and may require substantial lead-time to repair or replace); damage to or closure of one or more facilities of our third-party business partners or suppliers on which we rely; a temporary lack of an adequate work force in one or more markets; an interruption in power supply; a temporary or long-term disruption in our supply chain (including a disruption to our ability to obtain critical components for the manufacture of our products); a temporary disruption in our ability to deliver (or delays in the delivery of) our products or services; and short- or long-term damage to our customers' businesses (which would adversely impact customer demand for our products and services). For more information regarding the risks presented by disruption to our suppliers' operations and supply chain, see "Our dependence on suppliers could limit our ability to sell certain products or negatively affect our operating results" above.

We manufacture many of our significant companion animal products, including our rapid assay devices and certain instruments, many of our water testing products and certain of our livestock, poultry, and dairy testing products, at a single facility in Westbrook, Maine. Certain of our companion animal products, as well as our human point-of-care products, are manufactured in Roswell, Georgia. We also manufacture certain of our livestock and poultry testing products in Bern, Switzerland and Montpellier, France. In addition, we maintain major distribution facilities in North America and in the Netherlands and major reference laboratories in Memphis, Tennessee; Ludwigsburg, Germany; Sacramento, California; Elmhurst, Illinois; North Grafton, Massachusetts; East Brisbane, Australia; Markham, Ontario; Wetherby, U.K.; Tokyo, Japan; and Leipzig, Germany. Interruption of operations at any of these facilities due to the occurrence of one or more of the events described above could have an adverse effect on our results of operations.

While we maintain plans to continue business under such circumstances, there can be no assurance that such plans will be successful in fully or partially mitigating the effects of such events. We also maintain property and business interruption insurance to insure against the financial impact of certain events of this nature. However, this insurance may be insufficient to compensate us for the full amount of any losses that we may incur. In addition, such insurance will not compensate us for potential long-term competitive effects of being out of the market for the period of any interruption in operations.

Our operations and reputation may be impaired if we, our products, or our services do not comply with our global privacy policy or evolving laws and regulations regarding data privacy and protection

The nature of our business involves the receipt and storage of information about our customers, pet owners, suppliers, and employees. We collect and use personal data in a variety of ways. We offer products and services that collect and use personal data provided by customer practices, individuals, and third-parties at customers' direction, including practice management systems for veterinary practices, online customer communication tools and services, VetConnect PLUS, two-way integration technology, and use by third-parties authorized by our customers to provide programs and services to such customers. Some of these products and services rely on third-party providers for cloud storage. We also engage in e-commerce through various websites and collect contact and other personal data from our customers and visitors to our websites. The privacy, security, retention, sharing and use of the personal data described above are subject to expanding and increasingly complex laws and regulations in the U.S. (such as the California Consumer Privacy Act ("CCPA"), which became effective on January 1, 2020) and abroad (such as the Brazilian General Data Protection Law ("LGPD"), which will become effective on August 15, 2020), some of which impose significant compliance obligations. Some of these laws and regulations apply broadly to the collection, use, storage, disclosure, sharing and security of personal data that identifies or may be used to identify an individual, such as names, contact information, and sensitive personal data. These laws and regulations are subject to frequent revisions and differing interpretations and have generally become more stringent over time. In many cases, the federal, state, and international laws described above apply not only to third-party transactions, but also to transfers of information between us and our subsidiaries, and among us, our subsidiaries, and other parties with which we have commercial relations. For example, we are subject to the European Union's General Data Protection Regulation, or GDPR, which became effective in May 2018. The GDPR imposes stringent operational requirements for controllers and processors of personal data, including expanded disclosures about how personal information is to be used, limitations on retention of information and mandatory data breach notification requirements, and could subject us to increased liability for violations. In addition, the laws and regulations related to data privacy and protection continue to develop, are subject to differing interpretations and may be applied inconsistently from jurisdiction to jurisdiction and may be inconsistent with our current global privacy policy and data protection practices. The costs associated with compliance with these evolving legal and regulatory requirements are significant and likely to increase in the future and as a result may cause us to incur substantial costs, require us to change our business practices in a manner adverse to our business or limit our ability to use and share personal data. Additionally, public perception and standards related to the privacy of personal data can shift rapidly, in ways that may affect our reputation or influence regulators in the U.S. and abroad to expand or adopt more stringent regulations and laws.

While we have policies and procedures in place to comply with all applicable privacy-related laws and regulations (including the GDPR and CCPA), as well as our contractual obligations, any failure or perceived failure by us, the third parties with whom we work or our products and services to so comply could result in damage to our reputation or legal proceedings or actions against us by governmental entities or others, any of which could have an adverse effect on our business. In addition, concerns about our practices with regard to the collection, use, retention, disclosure, or security of personal data or other privacy-related matters, even if unfounded and even if we are in compliance with applicable laws and regulations, could damage our reputation and harm our business.

Strengthening of the rate of exchange for the U.S. dollar has a negative effect on our business

We are a global business, with 38% of our revenue during the year ended December 31, 2019, attributable to sales of products and services to customers outside of the U.S. Any strengthening of the rate of exchange for the U.S. dollar against foreign currencies, and in particular the euro, British pound, Canadian dollar, Chinese renminbi, Japanese yen, Australian dollar and Brazilian real, adversely affects our results, as it reduces the dollar value of sales and profits that are made in those currencies. The strengthening of the U.S. dollar has a greater adverse effect on the profits from products manufactured or sourced in U.S. dollars that are exported to international markets and a lesser effect on profits from foreign sourced products and services due to a natural hedge from international expenses denominated in the corresponding foreign currencies.

For the year ended December 31, 2019, approximately 22% of our consolidated revenue was derived from products manufactured or sourced in U.S. dollars and sold internationally in local currencies, as compared to 22% and 21% for the years ended December 31, 2018 and 2017, respectively. A strengthening U.S. dollar could also negatively impact the ability of customers outside the U.S. to pay for purchases denominated in U.S. dollars as well as affect our overall competitiveness in international markets. The accumulated impacts from any continued, longer-term growth in the value of the U.S. dollar against foreign currencies may have a material adverse effect on our operating results. See “Part II, Item 7A. Quantitative and Qualitative Disclosures About Market Risk” included in this Annual Report on Form 10-K for additional information regarding currency impact. In addition, there has been, and may continue to be, volatility in currency exchange rates as a result of the United Kingdom’s withdrawal from the European Union, especially between the U.S. dollar and the British pound.

Our foreign currency hedging activities (see "Part II, Item 8. Financial Statements and Supplementary Data, Note 18. Hedging Instruments" in the accompanying Notes to consolidated financial statements), which are designed to minimize and delay, but not to eliminate, the effects of foreign currency fluctuations, may not sufficiently offset the adverse financial effect of unfavorable movements in foreign exchange rates on our financial results over the limited time the hedges are in place. In addition, our hedging activities involve costs and risks, such as transactions costs and the risk that our hedging counterparties will default on their obligations.

We primarily hedge intercompany product purchases and sales denominated in the euro, British pound, Canadian dollar, Japanese yen, and Australian dollar. Other foreign currency exposures related to foreign sourced services and emerging markets may not be practical to hedge. In certain cases, these exposures are not offset by foreign currency denominated costs. As we primarily use foreign currency exchange contracts with durations of less than 24 months and enter into contracts to hedge incremental portions of anticipated foreign currency transactions on a quarterly basis for the current and following year, the effectiveness of our foreign currency hedging activities to offset longer-term appreciation in the value of the U.S. dollar against non-U.S. currencies may be limited. Factors that could affect the effectiveness of our hedging activities include accuracy of sales and other forecasts, volatility of currency markets, and the cost and availability of hedging instruments. Since our hedging activities are designed to minimize volatility, they not only temporarily reduce the negative impact of a stronger U.S. dollar, but they also temporarily reduce the positive impact of a weaker U.S. dollar. Our future financial results could be significantly affected by a strengthening value of the U.S. dollar in relation to the foreign currencies in which we conduct business. The degree to which our financial results are affected for any given time period will depend in part upon our hedging activities.

A weak worldwide economy could result in reduced demand for our products and services or increased customer credit risk

A substantial percentage of our sales are made worldwide to the companion animal veterinary market. Demand for our companion animal diagnostic products and services is driven in part by the number of patient visits to veterinary hospitals and the practices of veterinarians with respect to the recommendations for diagnostic testing, as well as pet owner compliance with these recommendations. Pet owners generally pay cash out of pocket for health care services for their pets from veterinary practices. Economic weakness in our significant markets could cause pet owners to forgo or defer visits to veterinary hospitals

or affect their willingness to approve certain diagnostic tests, comply with a treatment plan or, even more fundamentally, continue to own a pet. In addition, concerns about the financial resources of pet owners could cause veterinarians to be less likely to recommend certain diagnostic tests, and concerns about the economy may cause veterinarians to defer purchasing capital items such as our instruments and systems. These conditions, if they continue, could result in a decrease in sales or decrease in sales growth, of diagnostic products and services, which could have an adverse effect on our results of operations.

Demand for our water products is driven in part by the availability of funds at government laboratories, water utilities and private certified laboratories that utilize our products. Availability of funds also affects demand by government laboratories and cattle, swine and poultry producers that utilize our livestock and poultry diagnostic products, and by users of our human point-of-care diagnostic instruments. Economic weakness in our markets has caused and could continue to cause our customers to reduce their investment in such testing, which could have an adverse effect on our results of operations.

In all of our markets, a weak economy may also cause deterioration in the financial condition of our distributors and customers, which could inhibit their ability to pay us amounts owed for products delivered or services provided in a timely fashion or at all.

We sell many products through distributors, which presents risks that could negatively affect our operating results

Some of our product sales in international markets occur through third-party distributors. As a result, we are dependent on these distributors to promote and create demand for our products. Our distributors often offer products from several different companies, and certain of our distributors may carry our competitors' products and promote our competitors' products over our own products. We have limited ability, if any, to cause our distributors to devote adequate resources to promoting, marketing, selling, and supporting our products or to maintain certain inventory levels, and changes in our distributors' inventory levels, as compared to comparable prior periods, could negatively impact our revenue growth rates. We cannot assure you that we will be successful in maintaining and strengthening our relationships with our distributors or establishing relationships with new distributors who have the ability to market, sell and support our products effectively. We may rely on one or more key distributors for a product or a region, and the loss of these distributors could reduce our revenue. Distributors may face financial difficulties, including bankruptcy, which could harm our collection of accounts receivable and financial results. While we maintain a rigorous distribution compliance program, violations of anti-corruption or similar laws by our distributors could have a material impact on our business and reputation, and any termination of a distributor relationship may result in increased competition in the applicable jurisdiction. Failure to manage the risks associated with our use of distributors outside of the U.S. may reduce sales, increase expenses, and weaken our competitive position, any of which could have a negative effect on our operating results.

Future operating results could be negatively affected by changes in tax rates, the adoption of new U.S. or international tax legislation or exposure to additional tax liabilities

The nature of our international operations subjects us to local, state, regional and federal tax laws in jurisdictions around the world. Our future tax expense could be affected by changes in the mix of earnings in countries with differing statutory tax rates, changes in the valuation of deferred tax assets and liabilities or changes in tax laws or their interpretation. Additionally, tax rules governing cross-border activities are continually subject to modification as a result of both coordinated actions by governments and unilateral measures designed by individual countries, both intended to tackle concerns over base erosion and profit shifting (BEPS) and perceived international tax avoidance techniques.

The Tax Cuts and Jobs Act (the "2017 Tax Act") was enacted in the U.S. on December 22, 2017 and includes significant changes to the U.S. federal corporate tax system. Effective January 1, 2018, the 2017 Tax Act reduced the U.S. federal corporate tax rate from 35% to 21% and transitioned from a worldwide tax system to a modified territorial tax system. The 2017 Tax Act introduced new provisions including the Global Intangible Low-Taxed Income ("GILTI"), Foreign Derived Intangible Income ("FDII"), Base Erosion Anti-Abuse Tax ("BEAT"), expanded bonus depreciation and changed deductions for executive compensation and interest expense. The U.S. Department of Treasury continues to issue regulations related to the 2017 Tax Act which may increase or decrease our tax liability in future periods. See "Part II, Item 8. Financial Statements and Supplementary Data, Note 13. Income Taxes" in the accompanying Notes to consolidated financial statements for more information regarding the impact of the 2017 Tax Act.

We have received a tax ruling from the Netherlands that documents our mutual understanding of how existing tax laws apply to our circumstances. This ruling expires as of December 31, 2022, and we have been informed that it will not be renewed due to changes to the advance ruling policy in the Netherlands. While the absence of an advance agreement does not

preclude our ability to continue to apply existing tax laws in the same manner as allowed by the existing ruling, the lack of such agreement could create uncertainty as to our future tax rate.

Additionally, the European Commission has opened formal investigations into specific tax rulings granted by several countries to specific taxpayers. While we believe that our rulings are different than those being discussed, the ultimate resolution of such activities cannot be predicted and could also have an adverse impact on future operating results.

Our income tax filings are regularly under audit by various tax authorities, and the final determination of tax audits could be materially different from that which is reflected in historical income tax provisions and accruals. Significant judgment is required in determining our worldwide provision for income taxes. We regularly assess our exposures related to our worldwide provision for income taxes to determine the adequacy of our provision for taxes. Any reduction in these contingent liabilities or additional assessments would increase or decrease income, respectively, in the period such determination is made.

Our limited experience and small scale in the human point-of-care market could inhibit our success in this market

We have limited experience in the human point-of-care medical diagnostics market and we operate at a small scale in this market. This market differs in many respects from the veterinary diagnostic market. Significant differences include the impact of third-party reimbursement on diagnostic testing, more extensive regulation, greater product liability risks, larger competitors, a more segmented customer base and more rapid technological innovation. Our limited experience and small scale in the human point-of-care medical diagnostics market could negatively affect our ability to successfully manage the risks and features of this market that differ from the veterinary diagnostic market. There can be no assurance that we will be successful in achieving growth and profitability in the human point-of-care medical diagnostics market comparable to the results we have achieved in the veterinary diagnostic market.

Restrictions in our debt agreements or our inability to obtain financing on favorable terms may increase our cost of borrowing and limit our activities

Our ability to make scheduled payments and satisfy our other obligations under our Credit Facility and senior notes depends on our future operating performance and on economic, financial, competitive, and other factors beyond our control. Our business may not generate sufficient cash flows to meet these obligations or generate sufficient levels of earnings to satisfy the applicable affirmative, negative, and financial covenants. Our failure to comply with these covenants and the other terms of the Credit Facility and senior notes could result in an event of default and acceleration of our obligations under these agreements, which may require us to seek additional financing or restructure existing debt on unfavorable terms. In addition, adverse changes in credit markets could increase our cost of borrowing and make it more difficult for us to obtain financing.

Our senior notes include provisions which stipulate a prepayment penalty for which we will be obligated in the event that we elect to repay the notes prior to their stated maturity dates. Should we elect to repay some or all of the outstanding principal balance on our senior notes, the prepayment penalty we incur could adversely affect our results of operations and cash flows.

We fund our operations, capital purchase requirements and strategic growth needs through cash on hand, funds generated from operations, amounts available under our Credit Facility and senior note financings. If we are unable to obtain financing on favorable terms, we could face restrictions that would limit our ability to execute certain strategies, which could have an adverse effect on our revenue growth and profitability.

Borrowings under our Credit Facility bear interest at variable rates, including rates based on the London Interbank Offered Rate (LIBOR), exposing us to interest rate risk. If interest rates were to increase, our debt service obligations under our variable-rate Credit Facility would increase even if the principal amount borrowed remained the same. While we may enter into interest rate swaps in the future to reduce the impact of interest rate fluctuations associated with our variable-rate indebtedness, we may not maintain interest rate swaps with respect to all of our variable rate indebtedness, and any swaps we enter into may not fully mitigate our interest rate risk.

In addition, the United Kingdom's Financial Conduct Authority, which regulates LIBOR, announced in July 2017 that it will no longer persuade or require banks to submit rates for LIBOR after 2021 and it is unclear whether new methods of calculating LIBOR will be established. If LIBOR ceases to exist, one or more interest rates under our Credit Facility would, in the absence of an amendment, instead apply (depending on currency of the borrowing and other factors, including the cost of funds of applicable lenders, as determined by them), and similarly we may need to amend certain of our other agreements that

use LIBOR as a benchmark and we cannot predict what alternative index or other amendments may be negotiated with our counterparties. As a result, our interest expense could increase and our available cash flow for general corporate requirements may be adversely affected. Additionally, uncertainty as to the nature of a potential discontinuance or modification of LIBOR, alternative reference rates, or other reforms may materially adversely affect the trading market for securities linked to such benchmarks.

RISKS RELATED TO AN INVESTMENT IN OUR SECURITIES

Fluctuations in our quarterly or annual results may cause our stock price to decline

Our prior operating results have fluctuated due to a number of factors, including seasonality of certain product lines; changes in our accounting estimates; the impact of acquisitions; timing of distributor purchases product launches, operating expenditures, customer marketing and incentive programs; changes in foreign currency exchange rates; timing of regulatory approvals and licenses; litigation and claim-related expenditures; increase in the number and type of competitors; changes in competitors' product offerings; changes in our sales and distribution model; changes in the economy affecting consumer spending; and other matters. Similarly, our future operating results may vary significantly from quarter to quarter or year to year due to these and other factors, many of which are beyond our control. If our operating results or projections of future operating results do not meet the expectations of securities analysts or investors in future periods, our stock price may fall.

The market price of our common stock may be highly volatile, and you may not be able to resell your shares at or above the price you paid

The trading price of our common stock may be volatile. Securities markets worldwide experience significant price and volume fluctuations. This market volatility, as well as other general economic, market or political conditions, could reduce the market price of our common stock in spite of our operating performance. The following factors, in addition to other factors described in this "Risk Factors" section and elsewhere in this Form 10-K, may have a significant impact on the market price of our common stock:

- Changes in customer needs, expectations or trends and our ability to maintain relationships with key customers;
- Our ability to implement our business strategy;
- Our stock repurchase program;
- Changes in our capital structure, including the issuance of additional debt;
- Public announcements (including the timing of these announcements) regarding our business, financial performance and prospects or new products or services, product enhancements or technological advances by our competitors or us;
- Trading activity in our stock, including portfolio transactions in our stock by us, our executive officers and directors, and significant stockholders or trading activity that results from the ordinary course rebalancing of stock indices in which we may be included, such as the S&P 500 Index;
- Short-interest in our common stock, which could be significant from time to time;
- Our inclusion in, or removal from, any stock indices;
- Investor perception of us and the industry and markets in which we operate;
- Changes in earnings estimates or buy/sell recommendations by securities analysts;
- Whether or not we meet earnings estimates of securities analysts who follow us; and
- General financial, domestic, international, economic, and market conditions, including overall fluctuations in the U.S. equity markets.

In addition, broad market and industry factors may negatively affect the market price of our common stock, regardless of our actual operating performance, and factors beyond our control may cause our stock price to decline rapidly and unexpectedly. Furthermore, the stock market has experienced extreme volatility that, in some cases, has been unrelated or disproportionate to the operating performance of particular companies.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 2. PROPERTIES

Our worldwide headquarters is located in Westbrook, Maine where we engage in manufacturing, research and development, marketing, sales, and general and administrative support functions. Our Hoofddorp, Netherlands location includes distribution, warehousing, and office space. We are also in the process of relocating and expanding our laboratory facility in Ludwigsburg, Germany to Kornwestheim, Germany which is expected to be completed in 2020.

Primary Facility Locations

Location	Functions	Own/Lease
Westbrook, Maine	United States Headquarters	Own
Hoofddorp, Netherlands	European Headquarters	Lease
Memphis, Tennessee	Distribution Center and Reference Lab	Lease
Ludwigsburg, Germany	Reference Lab	Lease
Wetherby, United Kingdom	Reference Lab	Lease
Newmarket, United Kingdom	Water manufacturing	Lease
Bern, Switzerland	LPD manufacturing	Lease
Montpelier, France	LPD manufacturing	Lease
Roswell, Georgia	OPTI Medical manufacturing	Lease

Including the locations above, we have over 50 reference laboratories throughout the United States and over 25 reference laboratories internationally, including locations in Europe, Canada, Australia, New Zealand, Brazil, Asia, and South Africa. The majority of our reference laboratories are leased, with the remainder being owned. We also lease space in various locations worldwide for administrative support, manufacturing, sales, distribution, and storage. We believe that our leased and owned properties are generally in good condition, are well-maintained, and are generally suitable and adequate to carry on our business.

ITEM 3. LEGAL PROCEEDINGS

Due to the nature of our activities, we are at times subject to pending and threatened legal actions that arise out of the ordinary course of business. In the opinion of management, based in part upon advice of legal counsel, the disposition of any such currently pending or threatened matters is not expected to have a material effect on our results of operations, financial condition, or cash flows. However, the results of legal actions cannot be predicted with certainty. Therefore, it is possible that our results of operations, financial condition or cash flows could be materially adversely affected in any particular period by the unfavorable resolution of one or more legal actions.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

PART II

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

Market Information

Our common stock is quoted on the NASDAQ Global Select Market under the symbol IDXX.

Holder of Common Stock

As of February 10, 2020, there were 420 holders of record of our common stock. Because the majority of our common stock is held by brokers and other institutions on behalf of stockholders, we are unable to estimate the total number of stockholders represented by these record holders.

Purchases of Equity Securities by the Issuer

During the three months ended December 31, 2019, we repurchased shares of common stock as described below:

Period	Total Number of Shares Purchased (a)	Average Price Paid per Share (b)	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs ⁽¹⁾ (c)	Maximum Number of Shares that May Yet Be Purchased Under the Plans or Programs ⁽¹⁾ (d)
October 1, 2019 to October 31, 2019	120,339	\$ 273.57	120,339	2,408,629
November 1, 2019 to November 30, 2019	197,421	258.96	197,421	2,211,208
December 1, 2019 to December 31, 2019	215,313	254.51	214,500	1,996,708
Total	<u>533,073</u> ⁽²⁾	\$ 260.46	<u>532,260</u>	1,996,708

⁽¹⁾ As of December 31, 2019, our Board of Directors had approved the repurchase of up to 68 million shares of our common stock in the open market or in negotiated transactions pursuant to the Company's share repurchase program. The program was approved and announced on August 13, 1999, and the maximum number of shares that may be purchased under the program has been increased by the Board of Directors on numerous occasions. On February 12, 2020, our Board of Directors approved an additional 5.0 million shares to be purchased under the Company's share repurchase program. With this increase, the total amount of shares that may be repurchased pursuant to the Company's share repurchase program is 73 million shares. There is no specified expiration date for this repurchase program. There were no other repurchase programs outstanding during the three months ended December 31, 2019, and no repurchase programs expired during the period. Repurchases of approximately 0.5 million shares were made during the three months ended December 31, 2019, in transactions made pursuant to our repurchase program.

⁽²⁾ During the three months ended December 31, 2019, we received less than 1,000 shares of our common stock that were surrendered by employees in payment for the minimum required withholding taxes due on the vesting of restricted stock units and settlement of deferred stock units. In the above table, these shares are included in columns (a) and (b) but excluded from columns (c) and (d). These shares do not reduce the number of shares that may yet be purchased under the repurchase program.

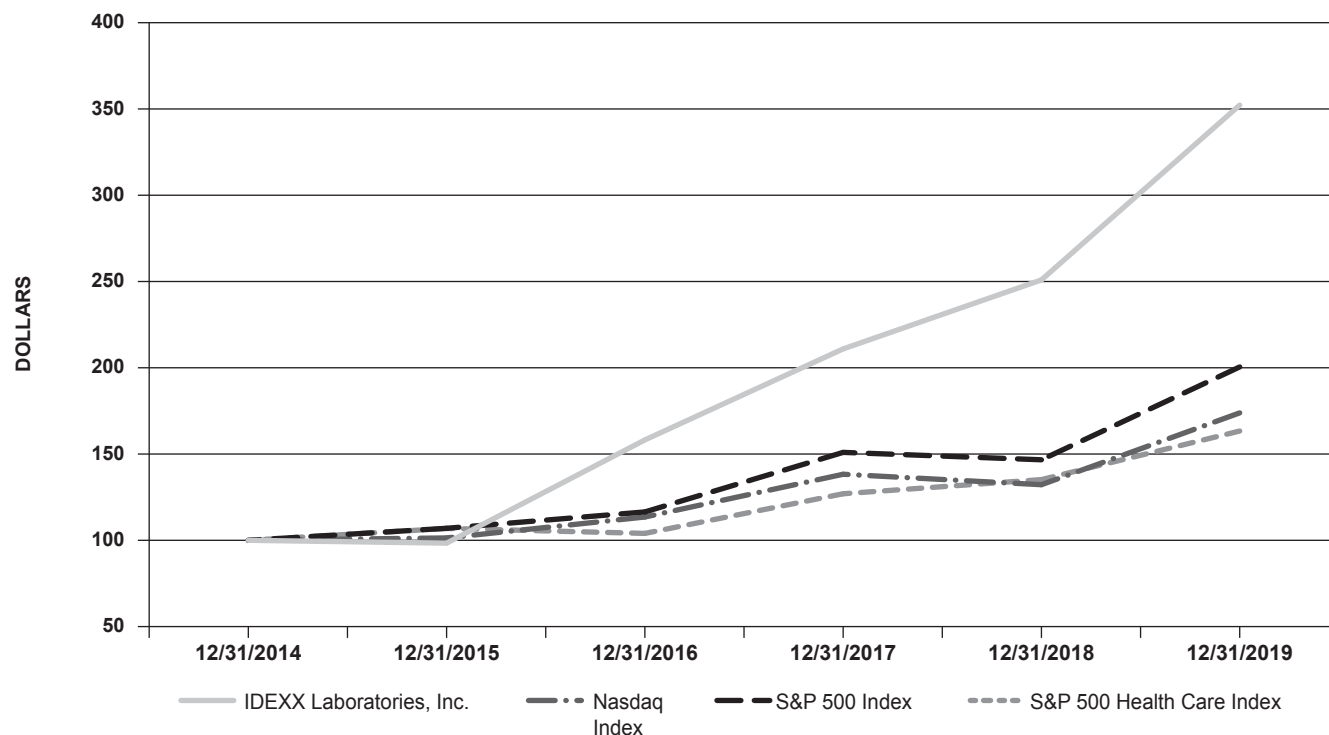
During the year ended December 31, 2019, we repurchased approximately 1.2 million shares of our common stock in transactions made pursuant to our repurchase program and received approximately 0.04 million shares of common stock that were surrendered by employees in payment for the minimum required withholding taxes due on the vesting of restricted stock units and settlement of deferred stock units. See "Part II, Item 8. Financial Statements and Supplementary Data, Note 19. Repurchases of Common Stock" to the consolidated financial statements for the year ended December 31, 2019, included in this Annual Report on Form 10-K for further information.

Dividends

We have never declared or paid any cash dividends on our common stock. From time to time our Board of Directors may consider the declaration of a dividend. However, we have no intention to declare or pay a dividend at this time.

Stock Performance

This graph compares our total stockholder returns, the Total Return for the Standard & Poor’s (“S&P”) 500 Index, the Total Return for the S&P 500 Health Care Index, and the Total Return for the NASDAQ Stock Market Index (U.S. Companies) (the “NASDAQ Index”) prepared by the Center for Research in Security Prices. This graph assumes the investment of \$100 on December 31, 2014, in IDEXX’s common stock, the S&P 500 Index, the S&P 500 Health Care Index, and the NASDAQ Index and assumes dividends, if any, are reinvested. Measurement points are the last trading days of the years ended December 2014 to 2019.



	<u>12/31/2014</u>	<u>12/31/2015</u>	<u>12/31/2016</u>	<u>12/31/2017</u>	<u>12/31/2018</u>	<u>12/31/2019</u>
IDEXX Laboratories, Inc.	\$100.00	\$98.36	\$158.18	\$210.94	\$250.92	\$352.24
NASDAQ Index	\$100.00	\$106.96	\$116.45	\$150.96	\$146.67	\$200.49
S&P 500 Index	\$100.00	\$101.38	\$113.51	\$138.29	\$132.23	\$173.86
S&P 500 Health Care Index	\$100.00	\$106.89	\$104.01	\$126.98	\$135.19	\$163.34

ITEM 6. SELECTED FINANCIAL DATA

The following table sets forth selected consolidated financial data for each of the last five fiscal years. The selected consolidated financial data presented below has been derived from the consolidated financial statements. This financial data should be read in conjunction with the consolidated financial statements, related notes and other financial information appearing elsewhere in this Annual Report on Form 10-K.

	For the Years Ended December 31, <i>(in thousands, except per share data)</i>				
	2019⁽¹⁾	2018⁽²⁾	2017	2016	2015
INCOME STATEMENT DATA:					
Revenue	\$ 2,406,908	\$ 2,213,242	\$ 1,969,058	\$ 1,775,423	\$ 1,601,892
Cost of revenue	1,041,359	971,700	871,676	799,987	711,622
Gross profit	1,365,549	1,241,542	1,097,382	975,436	890,270
Expenses:					
Sales and marketing	418,193	387,406	354,294	317,058	299,955
General and administrative	261,317	244,938	220,878	207,017	182,510
Research and development	133,193	117,863	109,182	101,122	99,681
Impairment charge	—	—	—	—	8,212
Income from operations	552,846	491,335	413,028	350,239	299,912
Interest expense, net	(30,628)	(33,593)	(31,971)	(28,393)	(26,771)
Income before provision for income taxes	522,218	457,742	381,057	321,846	273,141
Provision for income taxes	94,426	80,695	117,788	99,792	81,006
Net income	427,792	377,047	263,269	222,054	192,135
Less: Net income attributable to noncontrolling interest	72	16	125	9	57
Net income attributable to IDEXX Laboratories, Inc. stockholders	\$ 427,720	\$ 377,031	\$ 263,144	\$ 222,045	\$ 192,078
Earnings per share:					
Basic	\$ 4.97	\$ 4.34	\$ 3.00	\$ 2.47	\$ 2.07
Diluted	\$ 4.89	\$ 4.26	\$ 2.94	\$ 2.44	\$ 2.05
Weighted average shares outstanding:					
Basic	86,115	86,864	87,769	89,732	92,601
Diluted	87,542	88,470	89,567	90,884	93,649
BALANCE SHEET DATA:					
Cash and cash equivalents	\$ 90,326	\$ 123,794	\$ 187,675	\$ 154,901	\$ 128,994
Marketable securities	—	—	284,255	236,949	213,591
Cash and cash equivalents and marketable securities	\$ 90,326	\$ 123,794	\$ 471,930	\$ 391,850	\$ 342,585
Working capital	\$ (45,698)	\$ (116,272)	\$ (32,582)	\$ (88,984)	\$ (35,127)
Total assets	\$ 1,832,475	\$ 1,537,349	\$ 1,713,416	\$ 1,530,704	\$ 1,474,993
Total long-term debt	\$ 698,910	\$ 601,348	\$ 606,075	\$ 593,110	\$ 597,085
Total stockholders' equity (deficit)	\$ 177,825	\$ (9,233)	\$ (53,842)	\$ (108,213)	\$ (83,995)

- (1) See "Part II, Item 8. Financial Statements and Supplementary Data, Note 2. Summary of Significant Accounting Policies" and "Part II, Item 8. Financial Statements and Supplementary Data, Note 7. Leases," to the consolidated financial statements included in the Annual Report on Form 10-K for additional information regarding the adoption of the New Leasing Standard.
- (2) See "Part II, Item 8. Financial Statements and Supplementary Data, Note 3. Revenue Recognition" to the consolidated financial statements included in the Annual Report on Form 10-K for additional information regarding the adoption of the New Revenue Standard.

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

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with the consolidated financial statements and related notes appearing elsewhere in this Annual Report on Form 10-K. The discussion of our financial condition and results of operations and liquidity and capital resources for the year ended December 31, 2017, is included in our Annual Report on Form 10-K for the year ended December 31, 2018, within Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations, and is incorporated by reference herein.

We have included certain terms and abbreviations used throughout this Annual Report on Form 10-K in the "Glossary of Terms and Selected Abbreviations."

Description of Business Segments. We operate primarily through three business segments: diagnostic and information management-based products and services for the veterinary market, which we refer to as the Companion Animal Group ("CAG"); water quality products ("Water"); and diagnostic products and services for livestock and poultry health and to ensure the quality and safety of milk and food, which we refer to as Livestock, Poultry and Dairy ("LPD"). Our Other operating segment combines and presents products for the human point-of-care medical diagnostics market ("OPTI Medical") with our out-licensing arrangements because they do not meet the quantitative or qualitative thresholds for reportable segments. See "Part II, Item 8. Financial Statements and Supplementary Data, Note 3. Revenue Recognition and Note 16. Segment Reporting" to the consolidated financial statements for the year ended December 31, 2019, included in this Annual Report on Form 10-K for financial information about our segments, including our product and service categories, and our geographic areas.

Certain costs are not allocated to our operating segments and are instead reported under the caption "Unallocated Amounts". These costs include costs that do not align with one of our existing operating segments or are cost prohibitive to allocate, which primarily consist of our R&D function, regional or country expenses, certain foreign currency revaluation and settlement gains and losses on monetary balances in currencies other than our subsidiaries' functional currency, and unusual items. Corporate support function costs (such as information technology, facilities, human resources, finance and legal), health benefits and incentive compensation are charged to our business segments at pre-determined budgeted amounts or rates. Differences from these pre-determined budgeted amounts or rates are also captured within Unallocated Amounts.

The following is a discussion of the strategic and operating factors that we believe have the most significant effect on the performance of our business.



Companion Animal Group

Our strategy is to provide veterinarians with both the highest quality diagnostic information to support more advanced medical care and information management solutions that help demonstrate the value of diagnostics to pet owners and enable efficient practice management. By doing so, we are able to build a mutually successful relationship with our veterinarian customers based on healthy pets, loyal customers and expanding practice revenues.

CAG Diagnostics. We provide diagnostic capabilities that meet veterinarians' diverse needs through a variety of modalities including in-clinic diagnostic solutions and outside reference laboratory services. Veterinarians that utilize our full line of diagnostic modalities obtain a single view of a patient's diagnostic results, which allows them to track and evaluate trends and achieve greater medical insight.

Our diagnostic capabilities generate both recurring and non-recurring revenues. Revenues related to capital placements of our in-clinic IDEXX VetLab suite of instruments and our SNAP Pro Analyzer are non-recurring in nature in that they are sold to a particular customer only once. Revenues from the associated proprietary IDEXX VetLab consumables, SNAP rapid assay test kits, reference laboratory and consulting services, and extended maintenance agreements and accessories related to our IDEXX VetLab instruments and our SNAP Pro Analyzer are recurring in nature, in that they are regularly purchased by our customers, typically as they perform diagnostic testing as part of ongoing veterinary care services. Our recurring revenues, most prominently IDEXX VetLab consumables and rapid assay test kits, have significantly higher gross margins than those provided by our instrument sales. Therefore, the mix of recurring and non-recurring revenues in a particular period will impact our gross margins.

Diagnostic Capital Revenue. Revenues related to the placement of the IDEXX VetLab suite of instruments are non-recurring in nature, in that the customer will buy an instrument once over its respective product life cycle, but will purchase consumables for that instrument on a recurring basis as they use that instrument for testing purposes. During the early stage of an instrument's life cycle, we derive relatively greater revenues from instrument placements, while consumable sales become relatively more significant in later stages as the installed base of instruments increases and instrument placement revenues begin to decline. In the early stage of an instrument's life cycle, placements are made primarily through sales transactions. As the market for the product matures, an increasing percentage of placements are made in transactions, sometimes referred to as volume commitments, such as our IDEXX 360 program, or reagent rentals, in which instruments are placed at customer sites at little or no cost in exchange for a multi-year customer commitment to purchase recurring products and services.

We place our Catalyst chemistry analyzers through sales, leases, rental, and other programs. In addition, we continue to place VetTest instruments through sales, lease, rental, and other programs, with substantially all of our revenues from that product line currently derived from consumable sales. As of December 31, 2019, our Catalyst and VetTest chemistry analyzers provided for a combined active installed base of approximately 56,200 units globally, as compared to approximately 50,800 units in 2018 and approximately 47,000 units in 2017. As of December 31, 2019, our premium Catalyst chemistry analyzers provided for an active installed base of approximately 43,900 units globally, as compared to approximately 37,000 units in 2018 and approximately 30,000 units in 2017. A majority of our Catalyst chemistry analyzer placements were to customers that are new to IDEXX, including customers who had been using instruments from one of our competitors, sometimes referred to as competitive accounts. Generally, placement of an instrument with a new or competitive account has the highest economic value as the entire consumable stream associated with that placement represents incremental recurring revenue, whereas the consumable stream associated with a Catalyst placement at a VetTest customer substitutes a Catalyst consumable stream for a VetTest consumable stream. We have found that the consumables revenues increase when a customer upgrades from a VetTest analyzer to a Catalyst analyzer due to the superior test menu capability, flexibility, and ease of use of the Catalyst analyzers, which leads to additional testing by the customer.

As we continue to experience growth in placements of Catalyst analyzers and in sales of related consumables, we expect this growth to be partly offset by a decline in placements of VetTest analyzers and in sales of related consumables.

The ProCyte Dx analyzer is our latest generation hematology analyzer. In addition, we sell the LaserCyte Dx and VetAutoread analyzers. As of December 31, 2019, these hematology analyzers provided for a combined active installed base of approximately 38,200 units, as compared to 35,900 units in 2018 and 33,400 units in 2017. As of December 31, 2019, our premium ProCyte Dx and LaserCyte Dx hematology analyzers provided for an active installed base of approximately 31,500 units globally, as compared to approximately 29,000 units in 2018 and approximately 26,000 units in 2017. A majority of our Procyte analyzer placements were made to new or competitive accounts. We also continue to place a substantial number of LaserCyte Dx instruments, both new and recertified, as trade-ups from the VetAutoread analyzer and at new and competitive accounts. As we continue to experience growth in placements of ProCyte Dx analyzers and in sales of related consumables, we expect this growth to be partly offset by a decline in placements of LaserCyte Dx and VetAutoread analyzers and a decrease in the associated recurring revenue stream.

Our SediVue Dx instrument was launched in North America early in 2016 and in the U.K. and Australia in the fourth quarter of 2016. During 2017, we continued to launch SediVue Dx internationally. As of December 31, 2019, our premium SediVue Dx analyzers provided for an active installed base of nearly 8,900 units globally, as compared to approximately 6,600 units in 2018 and approximately 4,000 units in 2017. This instrument and single-use consumable system provides a highly accurate way to automate the process of examining urine under a microscope. We provide customers with SediVue Dx consumables that are charged upon utilization, which we refer to as pay-per-run, as compared to other instruments where we charge upon shipment of consumables. This new pay-per-run consumable revenue stream is contributing to our continuing growth, however is not currently material relative to IDEXX's overall revenue.

We seek to enhance the attractiveness and customer loyalty of our SNAP rapid assay tests, including by providing the SNAP Pro Analyzer, which activates SNAP tests, properly times the run, captures, and saves images of the results and, in conjunction with IVLS, records invoice charges in the patient record. Beginning in January of 2017, with our ProRead software, the SNAP Pro Analyzer interprets results. These features promote practice efficiency by eliminating manual entry of test results in patient records and also helps ensure that the services are recorded and accurately invoiced. In addition, SNAP Pro Analyzer results can be shared with pet owners on the SNAP Pro screen or, in conjunction with IVLS, via VetConnect PLUS. We also sell the SNAPshot Dx, which automatically reads certain SNAP test results and, in conjunction with IVLS, records those results in the electronic medical record. We continue to work on enhancing the functionality of our analyzers to read the results of additional tests from our canine and feline family of rapid assay products.

Our long-term success in the continuing growth of our CAG recurring diagnostic product and services is dependent upon: growing volumes at existing customers by increasing their utilization of existing and new test offerings, acquiring new customers, maintaining high customer loyalty and retention, our ability to realize modest annual price increases based on our differentiated products and the growing value of our diagnostic offering. We continuously seek opportunities to enhance the care that veterinary professionals give to their patients and clients through supporting the implementation of real-time care testing work flows, which is performing tests and sharing test results with the client at the time of the patient visit. Our latest generation of chemistry and hematology instruments demonstrates this commitment by offering enhanced ease of use, faster time to results, broader test menu and connectivity to various information technology platforms that enhance the value of the diagnostic information generated by the instruments. In addition, we provide marketing tools and customer support that help drive efficiencies in veterinary practice processes and allow practices to increase the number of clients they see on a daily basis.

With all of our instrument product lines, we seek to differentiate our products from our competitors' products based on time-to-result, ease-of-use, throughput, breadth of diagnostic menu, flexibility of menu selection, accuracy, reliability, ability to handle compromised samples, analytical capability of diagnostics software, integration with the IVLS and VetConnect PLUS, client communications capabilities, education and training, and superior sales and customer service. Our success depends, in part, on our ability to differentiate our products in a way that justifies a premium price.

Recurring Diagnostic Revenue. Revenues from our proprietary IDEXX VetLab consumable products, our SNAP rapid assay test kits, outside reference laboratory and consulting services, and extended maintenance agreements and accessories related to our CAG Diagnostics instruments are considered recurring in nature. For the year ended December 31, 2019, recurring diagnostic revenue, which is both highly durable and profitable, accounted for approximately 76% of our consolidated revenue.

Our in-clinic diagnostic solutions, consisting of our IDEXX VetLab consumable products and SNAP rapid assay test kits, provide real-time reference lab quality diagnostic results for a variety of companion animal diseases and health conditions. Our outside reference laboratories provide veterinarians with the benefits of a more comprehensive list of diagnostic tests and access to consultations with board-certified veterinary specialists and pathologists, combined with the benefit of same-day or next-day turnaround times.

We derive substantial revenues and margins from the sale of consumables that are used in IDEXX VetLab instruments and the multi-year consumable revenue stream is significantly more valuable than the placement of the instrument. Our strategy is to increase diagnostic testing within veterinary practices by placing IDEXX VetLab instruments and increasing instrument utilization of consumables. Utilization can increase due to a greater number of patient samples being run or to an increase in the number of tests being run per patient sample. Our strategy is to increase both drivers. To increase utilization, we seek to educate veterinarians about best medical practices that emphasize the importance of chemistry, hematology, and urinalysis testing for a variety of diagnostic purposes, as well as by introducing new testing capabilities that were previously not available to veterinarians.

Our in-clinic diagnostic solutions also include SNAP rapid assay tests that address important medical needs for particular diseases prevalent in the companion animal population. We seek to differentiate these tests from those of other in-clinic test providers and reference laboratory diagnostic service providers based on critically important sensitivity and specificity, as demonstrated by peer-reviewed third-party research, as well as overall superior performance and ease of use by providing our customers with combination tests that test a single sample for up to six diseases at once, including the ability to utilize our SNAP Pro Analyzer. We further augment our product development and customer service efforts with sales and marketing programs that enhance medical awareness and understanding regarding certain diseases and the importance of diagnostic testing.

We believe approximately half of all diagnostic testing by U.S. veterinarians is provided by outside reference laboratories such as IDEXX Reference Laboratories. In certain markets outside the U.S., in-clinic testing may be less prevalent, and an even greater percentage of diagnostic testing is done in reference laboratories. We attempt to differentiate our reference laboratory testing services from those of competitive reference laboratories and competitive in-clinic offerings primarily on the basis of a unique and proprietary test menu, technology employed, quality, turnaround time, customer service and tools such as VetConnect PLUS that demonstrate the complementary manner in which our laboratory services work with our in-clinic offerings.

Profitability in our lab business is supported, in part, by our expanding business scale globally. Profit improvements also reflect benefits from price increases and our ability to achieve operational efficiencies. When possible, we utilize core reference laboratories to service samples from other states or countries, expanding our customer reach without an associated

expansion in our reference laboratory footprint. New laboratories that we open typically will operate at a loss until testing volumes achieve sufficient scale. Acquired laboratories frequently operate less profitably than our existing laboratories and acquired laboratories may not achieve the profitability of our existing laboratory network for several years until we complete the implementation of operating improvements and efficiencies. Therefore, in the short term, new and acquired reference laboratories generally will have a negative effect on our operating margin.

Recurring reference lab revenue growth is achieved both through increased testing volumes with existing customers and through the acquisition of new customers, net of customer losses. We believe the increased number of customer visits by our sales professionals as a result of the growth in our field sales organization has led to increased reference laboratory opportunities with customers who already use one of our in-clinic diagnostic modalities. In recent years, recurring reference laboratory diagnostic and consulting revenues have also been increased through reference laboratory acquisitions, customer list acquisitions, the opening of new reference laboratories, including laboratories that are co-located with large practice customers, and as a result of our up-front customer loyalty programs and our volume commitment programs. Our up-front customer loyalty programs are associated with customer acquisitions and retention and provide incentives to customers in the form of cash payments or IDEXX Points upon entering multi-year contractual agreements to purchase annual minimum amounts of products or services, including reference laboratory services. Our volume commitment programs, such as IDEXX 360, provide customers with a free or discounted instrument or system upon entering into multi-year agreements to purchase annual minimum amounts of products and services.

Health Monitoring and Biological Materials Testing. We believe the acquisition of the research and diagnostic laboratory business of the College of Veterinary Medicine from the University of Missouri has allowed us to leverage our expertise in veterinary diagnostics and expand our integrated offering of reference laboratory diagnostic and consulting services and in-clinic testing solutions in the adjacent bioresearch market.

Veterinary Software, Services and Diagnostic Imaging Systems. Our portfolio of practice management offerings is designed to serve the full range of customers within the North American, Australian, and European markets. Cornerstone, DVMAX, IDEXX Animana and IDEXX Neo practice management systems provide superior integrated information solutions, backed by exceptional customer support and education. These practice management systems allow the veterinarian to practice better medicine and achieve the practice's business objectives, including a quality client experience, staff efficiency and practice profitability. We market Cornerstone, DVMAX and IDEXX Neo practice management systems to customers primarily in North America and Australia. We market our IDEXX Animana offering to customers primarily throughout Europe.

IDEXX Animana and IDEXX Neo practice management systems are subscription-based SaaS offerings designed to provide flexible pricing and a durable, recurring revenue stream, while utilizing cloud technology instead of a client server platform. While we continue to develop, sell, and support our licensed-based Cornerstone and DVMAX software, we are growing our installed base of subscription-based practice management offerings for new customers of IDEXX practice management systems. We believe that once established, this subscription-based model will provide higher profitability as compared to the historical license-based placements. Our Cornerstone and DVMAX customer base continues to be an important driver of growth through enhanced diagnostic integrations and high value add-on subscription services, such as Pet Health Network Pro, Petly Plans, and credit card processing, and we continue to make investments to enhance the customer experience of all of our license-based software offerings. We also offer rVetLink, a comprehensive referral management solution for specialty care hospitals that streamlines the referral process between primary care and specialty care veterinarians. rVetLink's cloud technology integrates with major specialty hospital management systems, including Cornerstone Software and DVMAX Software.

We differentiate our practice management systems through enhanced functionality, ease of use, and embedded integration with in-clinic IDEXX VetLab instruments and outside reference laboratory test results. Our client communication services create more meaningful pet owner experiences through personalized communication. With our Smart Flow cloud technology, we are able to improve overall patient management through coordination and tracking of every step in a patient workflow. Pet Health Network Pro online client communication and education service complements the entire IDEXX product offering by educating pet owners and building loyalty through engaging the pet owner before, during and after the visit, thereby building client loyalty and driving more patient visits.

Our diagnostic imaging systems offer a convenient radiographic solution that provides superior image quality and the ability to share images with clients virtually anywhere. IDEXX imaging software enables enhanced diagnostic features and streamlined integration with our other products and services. Our newest digital radiography systems, the ImageVue DR50 Digital Imaging System enables low-dose radiation image capture without sacrificing clear, high-quality diagnostic images, reducing the risk posed by excess radiation exposure for veterinary professionals. Placements of imaging systems are

important to the growth of revenue streams that are recurring in nature, including extended maintenance agreements and IDEXX Web PACS, which is our cloud-based SaaS offering for viewing, accessing, storing, and sharing multi-modality diagnostic images. We derive relatively higher margins from our subscription-based products. IDEXX Web PACS is integrated with Cornerstone, IDEXX Neo and IDEXX VetConnect PLUS to provide centralized access to diagnostic imaging results alongside patient diagnostic results from any internet connected device.



Water

Our strategy in the water testing business is to develop, manufacture, market and sell proprietary products that test primarily for the presence of microbial contamination in water matrices, including drinking water supplies, with superior performance, supported by exceptional customer service. Our customers primarily consist of water utilities, government laboratories and private certified laboratories that highly value strong relationships and customer support. We expect that future growth in this business will be partially dependent on our ability to increase international sales. Growth also will be dependent on our ability to enhance and broaden our product line. Most water microbiological testing is driven by regulation, and, in many countries, a test may not be used for compliance testing unless it has been approved by the applicable regulatory body and integrated into customers' testing protocols. As a result, we maintain an active regulatory program that involves applying for a growing number of regulatory approvals in a number of countries, primarily in Europe. Further, we seek to receive regulatory approvals from governing agencies as a means to differentiate our products from the competition.



Livestock, Poultry and Dairy

We develop, manufacture, market and sell a broad range of tests and perform services for various livestock diseases and conditions, and have active research and development and in-licensing programs in this area. Our strategy is to offer proprietary tests with superior performance characteristics for use in government programs to control or eradicate disease and disease outbreaks and in livestock and poultry producers' disease, reproductive, and herd health and production management programs. Disease outbreaks are episodic and unpredictable, and certain diseases that are prevalent at one time may be substantially contained or eradicated at a later time. In response to outbreaks, testing initiatives may lead to exceptional demand for certain products in certain periods. Conversely, successful eradication programs may result in significantly decreased demand for certain products. In addition, increases in government funding may lead to increased demand for certain products and budgetary constraints may lead to decreased demand for certain products. As result, the performance in certain sectors of this business can fluctuate.

Our strategy in the dairy testing business is to develop, manufacture and sell antibiotic residue and contaminant testing products that satisfy applicable regulatory requirements or dairy processor standards for testing of milk and provide reliable field performance. The manufacture of these testing products leverages the SNAP platform and production assets that also support our rapid assay business, which also leverages the SNAP platform. The dairy SNAP products incorporate customized reagents for antibiotic and contaminant detection. To successfully increase sales of dairy testing products, we believe that we need to increase penetration in dairy processors and develop product line enhancements and extensions. Our Rapid Visual Pregnancy Test for cattle can detect pregnancy 28 days after breeding. This test provides a quick and accurate identifier using whole blood samples.

The performance of the business is particularly subject to the various risks that are associated with doing business internationally. See "Part I, Item 1A. Risk Factors."

Other

OPTI Medical. Our strategy in the OPTI Medical business for the human market is to develop, manufacture, and sell electrolyte and blood gas analyzers and related consumable products for the medical point-of-care diagnostics market worldwide, with a focus on small to mid-sized hospitals. We seek to differentiate our products based on ease of use, convenience, international distribution and service and instrument reliability. Similar to our veterinary instruments and consumables strategy, a substantial portion of the revenues from this product line is derived from the sale of consumables for use on the installed base of electrolyte and blood gas analyzers. During the early stage of an instrument's life cycle, relatively greater revenues are derived from instrument placements, while consumable sales become relatively more significant in later stages as the installed base of instruments increases and instrument placement revenues begin to decline. Our long-term success

in this area of our business is dependent upon new customer acquisition, customer retention and increased customer utilization of existing and new assays introduced on these instruments.

Our facility in Roswell, Georgia develops and manufactures the OPTI product lines using the same or similar technology to support the electrolyte needs of the veterinary market. We leverage this facility's know-how, intellectual property, and manufacturing capability to continue to expand the menu and instrument capability of the VetStat and Catalyst platforms for veterinary applications, while reducing our cost of consumables by leveraging experience and economies of scale.

The performance of the business is particularly subject to the various risks that are associated with doing business internationally. See "Part I, Item 1A. Risk Factors."

CRITICAL ACCOUNTING ESTIMATES AND ASSUMPTIONS

The discussion and analysis of our financial condition and results of operations is based upon the consolidated financial statements, which have been prepared in accordance with U.S. GAAP. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent assets and liabilities. We evaluate our estimates on an ongoing basis. We base our estimates on historical experience and on various assumptions that we believe 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. Actual results may differ from these estimates. See "Part II, Item 8. Financial Statements and Supplementary Data, Note 2. Summary of Significant Accounting Policies" to the consolidated financial statements included in this Annual Report on Form 10-K describes the significant accounting policies used in preparation of these consolidated financial statements.

We believe the following critical accounting estimates and assumptions may have a material impact on reported financial condition and operating performance and involve significant levels of judgment to account for highly uncertain matters or are susceptible to significant change.

Revenue Recognition

See "Part II, Item 8. Financial Statements and Supplementary Data, Note 3. Revenue Recognition" to the consolidated financial statements for the year ended December 31, 2019, included in this Annual Report on Form 10-K for additional information about our revenue recognition policy and criteria for recognizing revenue.

We enter into contracts with multiple performance obligations where customers purchase a combination of IDEXX products and services. Determining whether products and services are considered distinct performance obligations that should be accounted for separately requires judgment. We determine the transaction price for a contract based on the consideration we expect to receive in exchange for the transferred goods or services. To the extent the transaction price includes variable consideration, such as volume rebates or expected price adjustments, we apply judgment in constraining the estimated variable consideration due to factors that may cause reversal of revenue recognized. We evaluate constraints based on our historical and projected experience with similar customer contracts.

We allocate revenue to each performance obligation in proportion to the relative standalone selling prices and recognize revenue when control of the related goods or services is transferred for each obligation. We utilize the observable standalone selling price when available, which represents the price charged for the performance obligation when sold separately. When standalone selling prices for our products or services are not directly observable we determine the standalone selling prices using relevant information available and apply suitable estimation methods including, but not limited to, the cost plus a margin approach.

Our up-front loyalty programs provide customers with incentives in the form of cash payments or IDEXX Points upon entering into multi-year agreements to purchase annual minimum amounts of future products or services. If a customer breaches its agreement, they are required to refund all or a portion of the up-front cash or IDEXX Points, or make other repayments, remedial actions, or both. Up-front incentives to customers in the form of cash or IDEXX Points are not made in exchange for distinct goods or services and are capitalized as customer acquisition costs within other current and long-term assets, which are subsequently recognized as a reduction to revenue over the term of the customer agreement. If these up-front incentives are subsequently utilized to purchase instruments, we allocate total consideration, including future committed purchases less up-front incentives and estimates of expected price adjustments, based on relative standalone selling prices to identified performance obligations and recognize instrument revenue and cost at the time of installation and customer acceptance. We estimate, based on historical experience, and apply judgment to predict the amounts of future customer purchases and expected price adjustments related to these multi-year agreements. Differences between estimated and actual customer purchases may impact the amount and timing of revenue recognition and a 10% change in these estimates would have increased or reduced other assets and cumulative revenue related to these programs by approximately \$1.6 million at December 31, 2019.

Our volume commitment programs, such as our IDEXX 360 program, provide customers with free or discounted instrument or system upon entering into multi-year agreements to purchase annual minimum amounts of products and services. We allocate total consideration, including future committed purchases and expected price adjustments, based on relative standalone selling prices to identified performance obligations and recognize instrument revenue and cost at the time of installation and customer acceptance in advance of billing the customer, which is also when the customer obtains control of the instrument based on legal title transfer. Our right to future consideration related to instrument revenue is recorded as a contract

asset within other current and long-term assets. The contract asset is transferred to accounts receivable when customers are billed for future products and services over the term of the contract. We estimate, based on historical experience, and apply judgment to predict the amounts of future customer purchases and expected price adjustments related to these multi-year agreements. Differences between estimated and actual customer purchases may impact the amount and timing of revenue recognition and a 10% change in these estimates would have increased or reduced contract assets and cumulative revenue related to these programs by approximately \$2.2 million at December 31, 2019.

Our instrument rebate programs, previously referred to as IDEXX Instrument Marketing Programs, require an instrument purchase and provide customers the opportunity to earn future rebates based on the volume of products and services they purchase over the term of the program. We account for the customer's right to earn rebates on future purchases as a separate performance obligation and determine the standalone selling price based on an estimate of rebates the customer will earn over the term of the program. Total consideration allocated to identified performance obligations is limited to goods and services that the customer is presently obligated to purchase and does not include estimates of future purchases that are optional. We allocate total consideration to identified performance obligations, including a customer's right to earn rebates on future purchases, which is deferred and recognized upon the purchase of future products and services, offsetting future rebates as they are earned. We estimate, based on historical experience, and apply judgment to predict the amounts of future customer rebates related to these multi-year agreements. Differences between estimated and actual customer rebates may impact the amount and timing of revenue recognition and a 10% change in these estimates would have increased or reduced deferred revenue and cumulative revenue related to these programs by approximately \$2.4 million at December 31, 2019.

Future market conditions and changes in product offerings may cause us to change marketing strategies to increase or decrease customer incentive offerings, possibly resulting in incremental reductions of revenue in future periods as compared to reductions in the current or prior periods. Additionally, certain customer programs require us to estimate, based on historical experience, and apply judgment to predict the amounts of future customer purchases, customer rebates and other incentive payments, and price adjustments related to multi-year agreements. Differences between estimated and actual customer purchases may impact the amount and timing of revenue recognition as described above.

Valuation of Goodwill and Other Intangible Assets

A significant portion of the purchase price for acquired businesses is generally assigned to intangible assets. Intangible assets other than goodwill are initially valued at fair value. If a quoted price in an active market for the identical asset is not readily available at the measurement date, the fair value of the intangible asset is estimated based on discounted cash flows using market participant assumptions, which are assumptions that are not specific to IDEXX. The selection of appropriate valuation methodologies and the estimation of discounted cash flows require significant assumptions about the timing and amounts of future cash flows, risks, appropriate discount rates, and the useful lives of intangible assets. When material, we utilize independent valuation experts to advise and assist us in determining the fair values of the identified intangible assets acquired in connection with a business acquisition and in determining appropriate amortization methods and periods for those intangible assets. Goodwill is initially valued based on the excess of the purchase price of a business combination over the fair value of acquired net assets recognized and represents the future economic benefits arising from other assets acquired that could not be individually identified and separately recognized.

We assess goodwill for impairment annually, at the reporting unit level, in the fourth quarter and whenever events or circumstances indicate impairment may exist. An impairment charge is recorded for the amount, if any, by which the carrying amount of goodwill exceeds its implied fair value. Our reporting units are the individual product and service categories that comprise our CAG operating segment, our Water and LPD operating segments and goodwill remaining from the restructuring of our pharmaceutical business in the fourth quarter of 2008. A substantial portion of the goodwill remaining from the pharmaceutical business, included in our "Other Segment", is associated with intellectual property that has been, or that we expect to be, licensed to third parties. Realization of this goodwill is dependent upon the success of those third parties in developing and commercializing products, which will result in our receipt of royalties and other payments.

As part of our goodwill testing process, we evaluate factors specific to a reporting unit as well as industry and macroeconomic factors that are reasonably likely to have a material impact on the fair value of a reporting unit. Examples of the factors considered in assessing the fair value of a reporting unit include: the results of the most recent impairment test, the competitive environment, the regulatory environment, anticipated changes in product or labor costs, revenue growth trends, the consistency of operating margins and cash flows and current and long-range financial forecasts. The long-range financial forecasts of the reporting units, which are based upon management's long-term view of our markets, are used by senior management and the Board of Directors to evaluate operating performance.

In the fourth quarters of 2019 and 2018, we elected to bypass the qualitative approach that allows the assessment of qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount and instead proceeded directly to assessing the fair value of all of our reporting units and comparing the fair value of to the carrying value to determine if any impairment is necessary.

We estimate the fair values of applicable reporting units using an income approach based on discounted forecasted cash flows. We make significant assumptions about the extent and timing of future cash flows, growth rates and discount rates. Model assumptions are based on our projections and best estimates, using appropriate and customary market participant assumptions. In addition, we make certain assumptions in allocating shared assets and liabilities to individual reporting units in determining the carrying value of each reporting unit. To validate the reasonableness of our reporting units' estimated fair values, we reconcile the aggregate fair values of our reporting units to our total market capitalization. Valuation assumptions reflect our projections and best estimates, based on significant assumptions about the extent and timing of future cash flows, growth rates and discount rates.

We maintain approximately \$6.5 million of goodwill associated with our remaining pharmaceutical intellectual property, out-licensing arrangements, and certain retained drug delivery technologies (collectively "Pharmaceutical Activities") that we seek to commercialize through arrangements with third parties. Currently, our primary support for the carrying value of this goodwill is royalty revenue associated with the commercialization of certain intellectual property. There is no guarantee that we will be able to maintain or increase revenues from our remaining Pharmaceutical Activities. The results of our goodwill impairment test for these Pharmaceutical Activities indicate an excess of estimated fair value over the carrying amount of this reporting unit by approximately \$4.7 million and 71% of the reporting unit's carrying value. Excluding these Pharmaceutical Activities, the results of our goodwill impairment test indicate an excess of estimated fair value over the carrying amount for each of our reporting units with a minimum of 217% and an average of approximately 1,060%.

While we believe that the assumptions used to determine the estimated fair values of each of our reporting units are reasonable, a change in assumptions underlying these estimates could result in a material negative effect on the estimated fair value of the reporting units. Our fair value estimate assumes the achievement of future financial results contemplated in our forecasted cash flows, and there can be no assurance that we will realize that value. We use forecasts to estimate future cash flows and include an estimate of long-term future growth rates based on our most recent views of the long-term outlooks for our reporting units. Actual results may differ from those assumed in our forecasts. The discount rate is based on a weighted average cost of capital derived from industry peers. Changes in market conditions, interest rates, growth rates, tax rates, costs, pricing, or the discount rate would affect the estimated fair values of our reporting units and could result in a goodwill impairment charge in a future period. No goodwill impairments were identified during the years ended December 31, 2019, 2018 and 2017.

A prolonged economic downturn in the U.S. or internationally resulting in lower long-term growth rates and reduced long-term profitability may reduce the fair value of our reporting units. Industry specific events or circumstances could have a negative impact on our reporting units and may also reduce the fair value of our reporting units. Should such events occur, and it becomes more likely than not that a reporting unit's fair value has fallen below its carrying value, we will perform an interim goodwill impairment test, in addition to the annual impairment test. Future impairment tests may result in an impairment of goodwill, depending on the outcome of future impairment tests. An impairment of goodwill would be reported as a non-cash charge to earnings.

We assess the realizability of intangible assets whenever events or changes in circumstances indicate that the carrying value may not be recoverable. If an impairment review is triggered, we evaluate the carrying value of intangible assets, other than goodwill, based on estimated undiscounted future cash flows over the remaining useful life of the primary asset of the asset group and compare that value to the carrying value of the asset group. The cash flows that are used contain our best estimates, using appropriate and customary assumptions and projections at the time. If the net carrying value of an intangible asset exceeds the related estimated undiscounted future cash flows, an impairment to adjust the intangible asset to its fair value would be reported as a non-cash charge to earnings. If necessary, we would calculate the fair value of an intangible asset using the present value of the estimated future cash flows to be generated by the intangible asset and applying a risk-adjusted discount rate.

We had no impairments of our intangible assets during the years ended December 31, 2019, 2018 and 2017.

Share-Based Compensation

Our share-based compensation programs provide for grants of stock options, restricted stock units and deferred stock units, along with the issuance of employee stock purchase rights. The total fair value of future awards may vary significantly from past awards based on a number of factors, including our share-based award practices. Therefore, share-based compensation expense is likely to fluctuate, possibly significantly, from year to year.

We use the Black-Scholes-Merton option-pricing model to determine the fair value of options granted. Option-pricing models require the input of highly subjective assumptions, particularly for the expected stock price volatility and the expected term of options. The risk-free interest rate is based on the U.S. Treasury yield for a duration similar to the expected term at the date of grant. We have never paid any cash dividends on our common stock and we have no intention to pay a dividend at this time; therefore, we assume that no dividends will be paid over the expected terms of option awards. We determine the assumptions to be used in the valuation of option grants as of the date of grant. As such, we use different assumptions during the year if we grant options at different dates. Substantially all our options granted during the years ended December 31, 2019, 2018 and 2017 were granted in the first quarter of each year. The weighted average of each of the valuation assumptions used to determine the fair value of each option grant during each of the previous three years is as follows:

	For the Years Ended December 31,		
	2019	2018	2017
Expected stock price volatility	26%	24%	26%
Expected term, in years ⁽¹⁾	6.0	5.8	5.8
Risk-free interest rate	2.4%	2.7%	2.0%

(1) Options granted have a contractual term of ten years.

Changes in these subjective assumptions, particularly for the expected stock price volatility and the expected term of options, can materially affect the fair value estimate. Our expected stock price volatility assumption is based on the historical volatility of our stock over a period similar to the expected term and other relevant factors. Higher estimated volatility increases the fair value of a stock option, while lower estimated volatility has the opposite effect. The total fair value of stock options granted during the year ended December 31, 2019, was \$23.1 million. If the weighted average of the stock price volatility assumption was increased or decreased by 5%, the total fair value of stock options awarded during the year ended December 31, 2019, would have increased or decreased by approximately \$3.3 million and the total expense recognized for the year ended December 31, 2019, for options awarded during the same period would have increased or decreased by approximately \$0.6 million.

We derive the expected term assumption for stock options based on historical experience and other relevant factors concerning expected behavior with regard to option exercises. The expected term is determined using a consistent method at each grant date. A longer expected term assumption increases the fair value of stock option awards, while a shorter expected term assumption has the opposite effect. If the weighted average of the expected term was increased or decreased by one year, the total fair value of stock options awarded during the year ended December 31, 2019, would have increased or decreased by approximately \$2.1 million, and the total expense recognized for the year ended December 31, 2019, for options awarded during 2019 would have increased or decreased by approximately \$0.4 million.

For a significant majority of our awards, share-based compensation expense is recognized on a straight-line basis over the requisite service period, which ranges from one to five years, depending on the award. Share-based compensation expense is recognized on a grade-vesting methodology for performance-based restricted stock units. Share-based compensation expense is based on the number of awards expected to vest and is, therefore, reduced for an estimate of the number of awards that are expected to be forfeited. The forfeiture estimates are based on historical data and other factors; share-based compensation expense is adjusted annually for actual results. Total share-based compensation expense for the year ended December 31, 2019, was \$39.3 million, which is net of a reduction of approximately \$3.7 million for actual and estimated forfeitures. Fluctuations in our overall employee turnover rate may result in changes in estimated forfeiture rates and differences between estimated forfeiture rates and actual experience and, therefore could have a significant unanticipated impact on share-based compensation expense.

Modifications of the terms of outstanding awards may result in significant increases or decreases in share-based compensation. During the fourth quarter of 2019, we entered a mutual separation agreement with our former CEO, pursuant to which his outstanding stock options were modified, which resulted in \$10.9 million of share-based compensation expense in the quarter related to the acceleration and revaluation of his stock options. There were no material modifications to the terms of outstanding options, restricted stock units or deferred stock units during 2018 or 2017.

The fair value of stock options, restricted stock units, deferred stock units and employee stock purchase rights issued totaled \$42.7 million for the year ended December 31, 2019, \$34.0 million for the year ended December 31, 2018, and \$31.4 million for the year ended December 31, 2017. The total unrecognized compensation expense, net of estimated forfeitures, for unvested share-based compensation awards outstanding at December 31, 2019, was \$50.1 million, which will be recognized over a weighted average period of approximately 1.7 years.

Income Taxes

The provision for income taxes is determined using the asset and liability approach of accounting for income taxes. Under this approach, deferred taxes represent the estimated future tax effects of temporary differences between book and tax treatment of assets and liabilities and carryforwards to the extent they are realizable.

On a quarterly basis, we assess our current and projected earnings by jurisdiction to determine whether or not our earnings during the periods when the temporary differences become deductible will be sufficient to realize the related future tax benefits. Should we determine that we would not be able to realize all or part of our net deferred tax asset in a particular jurisdiction in the future, an adjustment to the deferred tax asset would be charged to income in the period such determination was made.

For those jurisdictions where tax carryforwards are likely to expire unused or the projected operating results indicate that realization is not more likely than not, a valuation allowance is recorded to offset the deferred tax asset within that jurisdiction. In assessing the need for a valuation allowance, we consider future taxable income and ongoing prudent and feasible tax planning strategies. In the event that we determine that we would be able to realize our deferred tax assets in the future in excess of the net recorded amount, a reduction of the valuation allowance would increase income in the period such determination was made. Likewise, should we determine that we would not be able to realize all or part of our net deferred tax asset in the future, a reduction to the deferred tax asset would be charged to income in the period such determination was made.

Our net taxable temporary differences and tax carryforwards are recorded using the enacted tax rates expected to apply to taxable income in the periods in which the deferred tax liability or asset is expected to be settled or realized. Should the expected applicable tax rates change in the future, an adjustment to our deferred taxes would be credited or charged, as appropriate, to income in the period such determination was made.

We periodically assess our exposures related to our worldwide provision for income taxes and believe that we have appropriately accrued taxes for contingencies. Any reduction of these contingent liabilities or additional assessment would increase or decrease income, respectively, in the period such determination was made.

We record a liability for uncertain tax positions that do not meet the more likely than not standard as prescribed by the authoritative guidance for income tax accounting. We record tax benefits for only those positions that we believe will more likely than not be sustained. For positions that we believe that it is more likely than not that we will prevail, we record a benefit considering the amounts and probabilities that could be realized upon ultimate settlement. If our judgment as to the likely resolution of the uncertainty changes, if the uncertainty is ultimately settled or if the statute of limitation related to the uncertainty expires, the effects of the change would be recognized in the period in which the change, resolution or expiration occurs. Our net liability for uncertain tax positions was \$29.7 million as of December 31, 2019, and \$26.0 million as of December 31, 2018, which includes estimated interest expense and penalties. See "Part II, Item 8. Financial Statements and Supplementary Data, Note 13. Income Taxes" in the accompanying Notes to consolidated financial statements for more information.

RECENT ACCOUNTING PRONOUNCEMENTS

In addition to the impacts from new accounting pronouncements included above, see "Part II, Item 8. Financial Statements and Supplementary Data, Note 2. Summary of Significant Accounting Policies (v) and (w)" to the consolidated financial statements for the year ended December 31, 2019, included in this Annual Report on Form 10-K for a complete discussion of recent accounting pronouncements adopted and not adopted.

ENVIRONMENTAL, SOCIAL AND GOVERNANCE

Our purpose is to be a great company that creates exceptional long-term value for our customers, employees, and stockholders by enhancing the health and well-being of pets, people, and livestock. Corporate Responsibility is core to IDEXX culture and is reflected in our environmental, social and governance ("ESG") performance across the company. We prioritize

community investments and partnerships that are aligned with our purpose, conduct ourselves with the highest ethical standards and demonstrate environmental responsibility in our facilities and operations. Our Corporate Responsibility Report is available on our website and features examples of our ESG activities and performance metrics.

RESULTS OF OPERATIONS AND TRENDS

Effects of Certain Factors on Results of Operations

Distributor Purchasing and Inventories. When selling our products through distributors, changes in distributors' inventory levels can impact our reported sales, and these changes may be affected by many factors, which may not be directly related to underlying demand for our products by veterinary practices, which are the end users. If during the current year, distributors' inventories grew by less than those inventories grew in the comparable period of the prior year, then changes in distributors' inventories would have an unfavorable impact on our reported sales growth in the current period. Conversely, if during the current year, distributors' inventories grew by more than those inventories grew in the comparable period of the prior year, then changes in distributors' inventories would have a favorable impact on our reported sales growth in the current period.

In certain countries, we sell our products through third-party distributors and may be unable to obtain data for sales to end users. We do not believe the impact of changes in these distributors' inventories had or would have a material impact on our growth rates. See "Part I, Item 1. Business, Marketing and Distribution" included in this Annual Report on Form 10-K for additional information regarding distribution channels.

Currency Impact. For the year ended December 31, 2019, approximately 22% of our consolidated revenue was derived from products manufactured or sourced in U.S. dollars and sold internationally in local currencies, as compared to 22% and 21% for the years ended December 31, 2018 and 2017, respectively. Strengthening of the rate of exchange for the U.S. dollar relative to other currencies has a negative impact on our revenues derived in currencies other than the U.S. dollar and on profits of products manufactured or purchased in U.S. dollars and sold internationally, and a weakening of the U.S. dollar has the opposite effect. Similarly, to the extent that the U.S. dollar is stronger in current or future periods relative to the exchange rates in effect in the corresponding prior periods, our growth rate will be negatively affected. The impact of foreign currency denominated operating expenses and foreign currency denominated supply contracts partly offsets this exposure. Additionally, our designated hedges of intercompany inventory purchases and sales help delay the impact of certain exchange rate fluctuations on non-U.S. denominated revenues. See "Part II, Item 7A. Quantitative and Qualitative Disclosures About Market Risk" included in this Annual Report on Form 10-K for additional information regarding currency impact. Our future income tax expense could also be affected by changes in the mix of earnings, including as a result of changes in the rate of exchange for the U.S. dollar relative to currencies in countries with differing statutory tax rates. See "Part I, Item 1A. Risk Factors" included in this Annual Report on Form 10-K for additional information regarding tax impacts.

Effects of Economic Conditions. Pet owners generally pay cash out of pocket for health care services for their pets from veterinary practices. Demand for our products and services is vulnerable to changes in the economic environment, including slow economic growth, high unemployment, and credit availability. Negative or cautious consumer sentiment can lead to reduced or delayed consumer spending, resulting in a decreased number of patient visits to veterinary clinics. Unfavorable economic conditions can impact sales of instruments, diagnostic imaging and practice management systems, which are larger capital purchases for veterinarians. Additionally, economic turmoil can cause our customers to remain sensitive to the pricing of our products and services. In the U.S., we monitor patient visits and clinic revenue data provided by a subset of our CAG customers. Although this data is a limited sample and susceptible to short-term impacts such as weather, which may affect the number of patient visits in a given period, we believe that this data provides a fair and meaningful long-term representation of the trend in patient visit activity in the U.S., providing us insight regarding demand for our products and services.

Economic conditions can also affect the purchasing decisions of our Water and LPD business customers. Water testing volumes may be susceptible to declines in discretionary testing for existing home and commercial sales and in mandated testing as a result of decreases in home and commercial construction. Testing volumes may also be impacted by severe weather conditions such as drought. In addition, fiscal difficulties can also reduce government funding for water and herd health screening services.

We believe that the diversity of our products and services and the geographic diversity of our markets partially mitigate the potential effects of the economic environment and negative consumer sentiment on our revenue growth rates.

Effects of Patent Expiration. Although we have several patents and licenses of patents and technologies from third parties that expired during 2019, and several that are expected to expire in 2020 and beyond, the expiration of these patents or licenses, individually or in the aggregate, is not expected to have a material effect on our financial position or future operations due to a range of factors as described in "Part I, Item 1. Business, Patents and Licenses".

Non-GAAP Financial Measures. The following revenue analysis and discussion focuses on organic revenue growth, and references in this analysis and discussion to "revenue," "revenues" or "revenue growth" are references to "organic revenue growth." Organic revenue growth is a non-GAAP financial measure and represents the percentage change in revenue during the current year, as compared to the same period for the prior year, net of the effect of changes in foreign currency exchange rates, certain business acquisitions, and divestitures. Organic revenue growth should be considered in addition to, and not as a replacement for, or as a superior measure to, revenues reported in accordance with U.S. GAAP, and may not be comparable to similarly titled measures reported by other companies. Management believes that reporting organic revenue growth provides useful information to investors by facilitating easier comparisons of our revenue performance with prior and future periods and to the performance of our peers.

We exclude from organic revenue growth the effect of changes in foreign currency exchange rates because changes in foreign currency exchange rates are not under management's control, are subject to volatility and can obscure underlying business trends. We calculate the impact on revenue resulting from changes in foreign currency exchange rates by applying the difference between the weighted average exchange rates during the current year period and the comparable prior year period to foreign currency denominated revenues for the prior year period.

We also exclude from organic revenue growth the effect of certain business acquisitions and divestitures because the nature, size and number of these transactions can vary dramatically from period to period, and because they either require or generate cash as an inherent consequence of the transaction, and therefore can also obscure underlying business and operating trends. We consider acquisitions to be a business when all three elements of inputs, processes and outputs are present, consistent with ASU 2017-01, "*Business Combinations: (Topic 805) Clarifying the Definition of a Business.*" In a business combination, if substantially all the fair value of the assets acquired is concentrated in a single identifiable asset or group of similar identifiable assets, we do not consider these assets to be a business. A typical acquisition that we do not consider a business is a customer list asset acquisition, which does not have all elements necessary to operate a business, such as employees or infrastructure. We believe the efforts required to convert and retain these acquired customers are similar in nature to our existing customer base and therefore are included in organic revenue growth.

We also use Adjusted EBITDA, gross debt, net debt, gross debt to Adjusted EBITDA ratio and net debt to Adjusted EBITDA ratio, all of which are non-GAAP financial measures that should be considered in addition to, and not as a replacement for, financial measures presented according to U.S. GAAP. Management believes that reporting these non-GAAP financial measures provides supplemental analysis to help investors further evaluate our business performance and available borrowing capacity under our Credit Facility.

Executive Officers and Directors. As reported previously, effective October 23, 2019, our Board of Directors (our "Board") appointed Jonathan (Jay) Mazelsky as our President and Chief Executive Officer and as a director of the Company. Mr. Mazelsky had been serving as our Interim President and Chief Executive Officer since June 28, 2019. Prior to that time, since August 2012, Mr. Mazelsky had been an Executive Vice President of the Company. In addition, effective November 1, 2019, Lawrence D. Kingsley, a Company director since October 2016 and Lead Independent Director since May 2018, was appointed as Independent Non-Executive Chairman of our Board. Also, effective November 1, 2019, Jonathan W. Ayers, our Chairman and former President and Chief Executive Officer, who had been on a medical leave of absence since June 28, 2019, stepped down as Chairman of our Board, ceased to be an employee of the Company and transitioned to the role of external Senior Advisor to the Company. Mr. Ayers continues to serve as a member of our Board. While we cannot provide assurances as to whether we may experience management or other challenges in connection with our leadership transition that could adversely affect our future success, we believe that under the leadership of Mr. Mazelsky as President and Chief Executive Officer and Mr. Kingsley as Independent Non-Executive Chairman, we will continue to successfully execute our strategy and create long-term value for shareholders, customers, and employees.

In connection with the foregoing, Mr. Ayers and IDEXX entered into a mutual separation agreement pursuant to which severance payments will be made to Mr. Ayers, in accordance with the terms of his pre-existing employment agreement, and his outstanding stock options were modified. As a result of his severance payments and the modification of Mr. Ayers's outstanding stock options, we recognized a charge to operating income of approximately \$13.4 million in the fourth quarter of 2019, representing the cost of the severance and an acceleration of the cost of the equity awards, which was offset by a reduction to our provision for income taxes of approximately \$1.2 million, resulting in a total charge to net income of approximately \$12.2

million, net of tax impacts. This total charge to net income is less than our previously communicated expectation of approximately \$15.5 million, as a result of finalizing our income tax provision.

Comparisons to Prior Periods. Our fiscal years end on December 31. Unless otherwise stated, the analysis and discussion of our financial condition, results of operations and liquidity, including references to growth and organic growth and increases and decreases, are being compared to the equivalent prior year period.

Twelve Months Ended December 31, 2019, Compared to Twelve Months Ended December 31, 2018

Total Company

The following table presents revenue by operating segment by U.S. markets and non-U.S., or international markets:

Net Revenue (dollars in thousands)	For the Years Ended December 31,		Dollar Change	Reported Revenue Growth ⁽¹⁾	Percentage Change from Currency	Percentage Change from Acquisitions	Organic Revenue Growth ⁽¹⁾
	2019	2018					
CAG	\$ 2,119,183	\$ 1,935,428	\$ 183,755	9.5%	(1.5%)	0.2%	10.8%
<i>United States</i>	1,410,278	1,277,146	133,132	10.4%	—	0.3%	10.1%
<i>International</i>	708,905	658,282	50,623	7.7%	(4.6%)	—	12.2%
Water	132,850	125,198	7,652	6.1%	(2.6%)	—	8.7%
<i>United States</i>	62,673	58,774	3,899	6.6%	—	—	6.6%
<i>International</i>	70,177	66,424	3,753	5.7%	(4.9%)	—	10.6%
LPD	132,635	130,581	2,054	1.6%	(4.2%)	—	5.8%
<i>United States</i>	14,230	13,932	298	2.1%	—	—	2.1%
<i>International</i>	118,405	116,649	1,756	1.5%	(4.7%)	—	6.2%
Other	22,240	22,035	205	0.9%	—	—	0.9%
Total Company	\$ 2,406,908	\$ 2,213,242	\$ 193,666	8.8%	(1.8%)	0.2%	10.3%
<i>United States</i>	1,495,516	1,357,909	137,607	10.1%	—	0.3%	9.8%
<i>International</i>	911,392	855,333	56,059	6.6%	(4.6%)	—	11.1%

(1) Reported revenue growth and organic revenue growth may not recalculate due to rounding.

Total Company Revenue. The increase in both U.S. and international organic revenues was driven by strong volume gains in CAG Diagnostics recurring revenue, supported by our differentiated diagnostic technologies and expanded commercial organization that are driving increased volumes from new and existing customers in our reference laboratory business. We also had high growth in consumable revenues, supported by the impact of the continued expansion of our CAG Diagnostics instrument installed base globally. Our Water business also contributed to our overall growth, primarily from higher sales volumes of our Colilert test products and related accessories. Our LPD business growth was primarily due to increased demand for African swine fever testing programs and diagnostic testing for alternative food sources, including poultry, which more than offset lower recurring swine testing in China, as well as increased herd health screening. The impact of currency movements decreased revenue by 1.8%.

The following table presents our total Company results of operations:

Total Company - Results of Operations <i>(dollars in thousands)</i>	For the Years Ended December 31,				Change	
	2019	Percent of Revenue	2018	Percent of Revenue	Amount	Percentage
Revenues	\$ 2,406,908		\$ 2,213,242		\$ 193,666	8.8%
Cost of revenue	1,041,359		971,700		69,659	7.2%
Gross profit	1,365,549	56.7%	1,241,542	56.1%	124,007	10.0%
Operating Expenses:						
Sales and marketing	418,193	17.4%	387,406	17.5%	30,787	7.9%
General and administrative	261,317	10.9%	244,938	11.1%	16,379	6.7%
Research and development	133,193	5.5%	117,863	5.3%	15,330	13.0%
Total operating expenses	812,703	33.8%	750,207	33.9%	62,496	8.3%
Income from operations	\$ 552,846	23.0%	\$ 491,335	22.2%	\$ 61,511	12.5%

Gross Profit. The total Company gross profit increase was due to higher sales volumes and a 60 basis point increase in the gross profit margin. The increase in the gross profit margin was driven by mix benefits from high growth in IDEXX VetLab consumable revenues, volume leverage, the favorable impact of lower product costs in our CAG business, as well as the net benefit of price increases in our CAG Diagnostics recurring revenue portfolio and Water business. The impact from foreign currency movements increased the gross profit margin by approximately 20 basis points, including the impact of hedge gains in the current year, as compared to hedge losses in the prior year.

Operating Expenses. Sales and marketing expense increased approximately 10%, excluding the impact of foreign currency, primarily due to increased personnel-related costs as we continue to invest in and grow our global commercial infrastructure. General and administrative expense increased approximately 9%, excluding the impact of foreign currency, primarily from higher personnel-related costs, including costs associated with the separation agreement of our former CEO, partially offset by the benefits of cost control initiatives across our business segments. Research and development expense increased primarily due to higher personnel-related costs, with an immaterial impact from foreign currency. The overall change in currency exchange rates resulted in a decrease in operating expenses of approximately 2%, including lower foreign exchange losses on settlements of foreign currency denominated transactions recorded within Unallocated Amounts.



Companion Animal Group

The following table presents revenue by product and service category for CAG:

Net Revenue (dollars in thousands)	For the Years Ended December 31,		Dollar Change	Reported Revenue Growth ⁽¹⁾	Percentage Change from Currency	Percentage Change from Acquisitions	Organic Revenue Growth ⁽¹⁾
	2019	2018					
CAG Diagnostics recurring revenue:	\$ 1,828,329	\$ 1,654,530	\$ 173,799	10.5%	(1.6%)	0.2%	11.9%
<i>IDEXX VetLab consumables</i>	693,360	617,237	76,123	12.3%	(2.0%)	—	14.3%
<i>Rapid assay products</i>	232,149	217,541	14,608	6.7%	(0.8%)	—	7.6%
<i>Reference laboratory diagnostic and consulting services</i>	822,497	746,794	75,703	10.1%	(1.5%)	0.4%	11.2%
<i>CAG Diagnostics services and accessories</i>	80,323	72,958	7,365	10.1%	(1.9%)	—	12.0%
CAG Diagnostics capital - instruments	132,685	134,264	(1,579)	(1.2%)	(2.0%)	—	0.9%
Veterinary software, services and diagnostic imaging systems	158,169	146,634	11,535	7.9%	(0.3%)	0.9%	7.3%
Net CAG revenue	<u>\$ 2,119,183</u>	<u>\$ 1,935,428</u>	<u>\$ 183,755</u>	9.5%	(1.5%)	0.2%	10.8%

(1) Reported revenue growth and organic revenue growth may not recalculate due to rounding.

CAG Diagnostics Recurring Revenue. The increase in CAG Diagnostics recurring revenue was primarily due to increased volumes in IDEXX VetLab consumables and reference laboratory diagnostic services, and to a lesser extent, higher realized prices.

The increase in IDEXX VetLab consumables revenue was primarily due to higher sales volumes across all regions for our Catalyst consumables, and to a lesser extent, Procyte Dx consumables. These increases were supported by an expansion of our instruments installed base, growth in testing by new and existing customers, our expanded menu of available tests, and to a lesser extent, benefits from higher average unit sales prices.

The increase in rapid assay revenue resulted from higher sales volumes across our SNAP product portfolio, driven by SNAP® 4Dx Plus tests, and to a lesser extent, higher average unit sales prices.

The increase in reference laboratory diagnostic and consulting services revenue was primarily due to the impact of higher testing volumes throughout our worldwide network of laboratories, most prominently in the U.S., resulting from increased testing from new and existing customers, supported by our differentiated diagnostic technologies, such as IDEXX SDMA™ and fecal antigen testing, and to a lesser extent, higher average unit sales prices.

CAG Diagnostic services and accessories revenue growth was primarily a result of the increase in our active installed base of instruments.

CAG Diagnostics Capital – Instruments Revenue. The decrease in CAG Diagnostics capital instrument revenue reflects the impact of foreign currency movements, which reduced revenues 2.0%. Excluding the impact of foreign currency movements, our revenues increased slightly, primarily due to higher Catalyst and Procyte instrument placements, partially offset by product mix, including lower Sedivue Dx placements compared to high prior year levels, as well as the lower allocated revenue per unit on our IDEXX VetLab instruments related to increased international placements under our customer volume commitment programs.

Veterinary Software, Services, and Diagnostic Imaging Systems Revenue. The increase in revenue was primarily due to increased veterinary software and hardware upgrades, subscription-based services, as well as higher realized prices on these

service offerings, and to a lesser extent, higher diagnostic imaging services as a result of the increase in our active installed base. These increases were partially offset by lower allocated revenue per unit on our diagnostic imaging systems related to increased placements under volume commitment programs. Our acquisition of a software company in the second half of 2018 contributed 0.9% to reported revenue growth.

The following table presents the CAG segment results of operations:

Results of Operations <i>(dollars in thousands)</i>	For the Years Ended December 31,				Change	
	2019	Percent of Revenue	2018	Percent of Revenue	Amount	Percentage
Revenues	\$ 2,119,183		\$ 1,935,428		\$ 183,755	9.5%
Cost of revenue	938,423		868,919		69,504	8.0%
Gross profit	1,180,760	55.7%	1,066,509	55.1%	114,251	10.7%
Operating Expenses:						
Sales and marketing	378,302	17.9%	345,737	17.9%	32,565	9.4%
General and administrative	212,794	10.0%	204,425	10.6%	8,369	4.1%
Research and development	98,062	4.6%	86,864	4.5%	11,198	12.9%
Total operating expenses	689,158	32.5%	637,026	32.9%	52,132	8.2%
Income from operations	<u>\$ 491,602</u>	23.2%	<u>\$ 429,483</u>	22.2%	<u>\$ 62,119</u>	14.5%

Gross Profit. Gross profit increased primarily due to higher sales volumes, as well as a 60 basis point increase in the gross profit margin. The increase in gross profit margin was driven by mix benefits from high growth in IDEXX VetLab consumable revenues, volume leverage, lower product costs, as well as the benefit of price increases in our CAG Diagnostics recurring revenue portfolio, partially offset by incremental investments in reference laboratory capacity and software services field resources. The impact from foreign currency movements increased the gross profit margin by approximately 10 basis points, including the impact of hedge gains in the current year, compared to hedge losses in the prior year.

Operating Expenses. Sales and marketing expenses increased approximately 11%, excluding the impact of foreign currency, primarily due to increased personnel-related costs as we continue to invest in our global commercial infrastructure. General and administrative costs increased 5%, excluding the impact of foreign currency, primarily from higher personnel-related costs. The increase in research and development expense was primarily due to increased personnel-related costs, with an immaterial impact from foreign currency. The overall change in currency exchange rates resulted in a decrease in operating expenses of approximately 1%.



The following table presents the Water segment results of operations:

Results of Operations <i>(dollars in thousands)</i>	For the Years Ended December 31,				Change	
	2019	Percent of Revenue	2018	Percent of Revenue	Amount	Percentage
Revenues	\$ 132,850		\$ 125,198		\$ 7,652	6.1 %
Cost of revenue	36,915		37,106		(191)	(0.5%)
Gross profit	95,935	72.2%	88,092	70.4%	7,843	8.9 %
Operating Expenses:						
Sales and marketing	15,980	12.0%	15,900	12.7%	80	0.5 %
General and administrative	13,388	10.1%	13,005	10.4%	383	2.9 %
Research and development	4,132	3.1%	2,580	2.1%	1,552	60.2 %
Total operating expenses	33,500	25.2%	31,485	25.1%	2,015	6.4 %
Income from operations	\$ 62,435	47.0%	\$ 56,607	45.2%	\$ 5,828	10.3 %

Revenue. The increase in revenue was attributable to the benefit of price increases and higher sales volumes of our Colilert test products and related accessories, used in coliform and *E. coli* testing, including strong volume growth across all regions including the U.S. The impact of currency movements decreased revenue by approximately 2.6%.

Gross Profit. Gross profit for Water increased due to higher sales volumes as well as a 180 basis point increase in the gross profit margin. Foreign currency movements increased the gross profit margin by approximately 70 basis points, including the impact of hedge gains in the current year, as compared to hedge losses in the prior year. The remaining increase in the gross profit margin was primarily due to the net benefit of price increases, partially offset by higher distribution costs.

Operating Expenses. While both sales and marketing and research and development expenses had higher personnel-related costs, the limited increase in sales and marketing expense and significant increase in research and development expense were primarily due to the realignment of certain personnel within operating expense categories. General and administrative expense increased primarily due to higher personnel-related costs. The overall change in currency exchange rates resulted in a decrease in operating expenses of approximately 2%.



Livestock, Poultry and Dairy

The following table presents the LPD segment results of operations:

Results of Operations <i>(dollars in thousands)</i>	For the Years Ended December 31,				Change	
	2019	Percent of Revenue	2018	Percent of Revenue	Amount	Percentage
Revenues	\$ 132,635		\$ 130,581		\$ 2,054	1.6%
Cost of revenue	54,145		55,621		(1,476)	(2.7%)
Gross profit	78,490	59.2%	74,960	57.4%	3,530	4.7%
Operating Expenses:						
Sales and marketing	22,808	17.2%	24,594	18.8%	(1,786)	(7.3%)
General and administrative	17,651	13.3%	19,159	14.7%	(1,508)	(7.9%)
Research and development	12,657	9.5%	11,795	9.0%	862	7.3%
Total operating expenses	53,116	40.0%	55,548	42.5%	(2,432)	(4.4%)
Income from operations	\$ 25,374	19.1%	\$ 19,412	14.9%	\$ 5,962	30.7%

Revenue. Overall LPD revenue increased despite the unfavorable impact of foreign currency movements which decreased revenue 4.2%. The prolonged outbreak of African swine fever in Asia, which began in August 2018, continues to negatively impact the swine population in China; however demand for new diagnostic testing programs has increased and diagnostic testing for alternative food sources has also increased, including poultry, which more than offset the lower recurring swine testing volumes in China. Revenue growth for the year also benefited from increased herd health screening, partially offset by lower bovine testing, primarily in Europe.

Gross Profit. The increase in LPD gross profit was due to higher sales volume and a 180 basis point increase in the gross profit margin. The impact from foreign currency movements increased the gross profit margin by approximately 130 basis points, including the impact of hedges. The remaining increase in the gross profit margin was driven by favorable product mix from higher herd health screening.

Operating Expenses. Sales and marketing expense decreased primarily due to lower personnel-related costs, including cost control initiatives. General and administrative expense decreased primarily due to lower third-party services. Research and development expense increased primarily due to increased personnel-related costs. The overall change in currency exchange rates resulted in a decrease in operating expense of approximately 2%.

Other

The following table presents the Other results of operations:

Results of Operations <i>(dollars in thousands)</i>	For the Years Ended December 31,				Change	
	2019	Percent of Revenue	2018	Percent of Revenue	Amount	Percentage
Revenues	\$ 22,240		\$ 22,035		\$ 205	0.9%
Cost of revenue	12,154		11,785		369	3.1%
Gross profit	10,086	45.4%	10,250	46.5%	(164)	(1.6%)
Operating Expenses:						
Sales and marketing	1,366	6.1%	1,806	8.2%	(440)	(24.4%)
General and administrative	1,991	9.0%	3,741	17.0%	(1,750)	(46.8%)
Research and development	1,789	8.0%	974	4.4%	815	83.7%
Total operating expenses	5,146	23.1%	6,521	29.6%	(1,375)	(21.1%)
Income from operations	\$ 4,940	22.2%	\$ 3,729	16.9%	\$ 1,211	32.5%

Revenue. The increase in Other revenues was due to higher royalties associated with intellectual property related to our former pharmaceutical product line, partially offset by lower volumes of our OPTI Medical products and services. The impact of foreign currency movements on revenue was immaterial.

Gross Profit. Gross profit for Other decreased due to a 110 basis point decrease in the gross profit margin primarily due to higher OPTI Medical service costs, partially offset by lower product costs, as well as mix benefits from increased royalties. The overall change in currency exchange rates had an immaterial impact on the gross profit margin.

Operating Expenses. The decrease in sales and marketing was primarily due to lower personnel costs. The decrease in general and administrative cost was primarily due to the recovery of previously established bad debt reserves in Africa and the Middle East. The increase in research and development cost was primarily due to higher personnel-related and project costs.

Unallocated Amounts

We estimate certain personnel-related costs and allocate these budgeted expenses to the operating segments. This allocation differs from actual expense and consequently yields a difference that is reported under the caption “Unallocated Amounts.”

The following table presents the Unallocated Amounts results of operations:

Results of Operations (dollars in thousands)	For the Years Ended December 31,				Change	
	2019	Percent of Revenue	2018	Percent of Revenue	Amount	Percentage
Revenues	\$ —		\$ —		\$ —	N/A
Cost of revenue	(278)		(1,731)		1,453	(83.9%)
Gross profit	278		1,731		(1,453)	(83.9%)
Operating Expenses:						
Sales and marketing	(263)		(631)		368	(58.3%)
General and administrative	15,493		4,608		10,885	236.2%
Research and development	16,553		15,650		903	5.8%
Total operating expenses	31,783		19,627		12,156	61.9%
Income from operations	<u>\$ (31,505)</u>		<u>\$ (17,896)</u>		<u>\$ (13,609)</u>	76.0%

Unallocated Amounts. The change in unallocated amounts was primarily due to our CEO transition costs of \$13.4 million in the fourth quarter of 2019 and higher other unallocated employee incentive costs, partially offset by lower foreign exchange losses on settlements of foreign currency denominated transactions, lower unallocated employee benefit costs, and lower unallocated corporate function and research and development costs.

Non-Operating Items

Interest Income. Interest income was \$0.4 million for the year ended December 31, 2019, as compared to \$1.2 million for the same period in the prior year. The decrease in interest income was primarily due to the liquidation of our portfolio of marketable securities during the first quarter of 2018.

Interest Expense. Interest expense was \$31.1 million for the year ended December 31, 2019, as compared to \$34.7 million for the prior year. The decrease in interest expense was the result of lower average debt levels, offset by higher interest rates. We also realized lower interest expense from the benefit of our cross currency swaps, as well as increased capitalized interest related to the expansion of our Westbrook, Maine headquarters and relocation of our core reference laboratory in Germany.

Provisions for Income Taxes. Our effective income tax rate was 18.1% for the year ended December 31, 2019, and 17.6% for the year ended December 31, 2018. Our effective income tax rate for the year ended December 31, 2019 was higher primarily due to lower tax benefits related to share-based compensation, partially offset by a nonrecurring item recorded in the first quarter of 2018, that resulted from the 2017 Tax Cut and Jobs Act.

During the third quarter of 2019, the Swiss government enacted changes to Swiss federal tax laws and required all Swiss cantons to make conforming changes to their own laws. As the cantons consider how to implement the required changes through early 2020, we will continue assessing the impact, if any, of the canton’s adoption of Swiss federal tax reform. The impact of any such change will be recorded upon the date of canton's enactment.

Our effective tax rate for the year ended December 31, 2019, was reduced by approximately 3.5% from the tax benefits related to share-based payments. We anticipate the tax benefit related to share-based payments to reduce our 2020 effective income tax rate by approximately 1.5%, based on recent settlement trends and stock price levels. These impacts may vary significantly based on the timing of actual settlement activity.

LIQUIDITY AND CAPITAL RESOURCES

We fund the capital needs of our business through cash on hand, funds generated from operations, and amounts available under our Credit Facility. We generate cash primarily through the payments made by customers for our diagnostic products and services, consulting services, and other various systems and services provided to the animal veterinary, livestock, poultry, dairy, and water testing markets. Our cash disbursements are primarily related to compensation and benefits for our employees, inventory and supplies, taxes, research and development, capital expenditures, rents, occupancy-related charges, interest expense, and acquisitions. At December 31, 2019, we had \$90.3 million of cash and cash equivalents, as compared to \$123.8 million on December 31, 2018. Working capital, including our Credit Facility, totaled negative \$45.7 million at December 31, 2019, as compared to negative \$116.3 million at December 31, 2018. Additionally, at December 31, 2019, we had remaining borrowing availability of \$559.8 million under our \$850 million Credit Facility. We believe that, if necessary, we could obtain additional borrowings at similar rates to our existing borrowings to fund our growth objectives. We further believe that current cash and cash equivalents, funds generated from operations, and committed borrowing availability will be sufficient to fund our operations, capital purchase requirements, and anticipated growth needs for the next twelve months. We believe that these resources, coupled with our ability, as needed, to obtain additional financing on favorable terms will also be sufficient to fund our business as currently conducted for the foreseeable future.

We manage our worldwide cash requirements considering available funds among all of our subsidiaries. Our foreign cash and cash equivalents are generally available without restrictions to fund ordinary business operations outside the U.S.

The 2017 Tax Act was enacted on December 22, 2017, and includes significant changes to the U.S. corporate tax system. The 2017 Tax Act reduced the U.S. federal corporate tax rate from 35% to 21%, effective as of January 1, 2018, and transitioned the U.S. federal tax system from a worldwide tax system to a territorial tax system. In converting to the new territorial tax system, a deemed repatriation tax on previously tax-deferred earnings of certain foreign subsidiaries was required to be recognized as of December 31, 2017, and will be payable over eight years. We are no longer asserting indefinite reversal under ASC 740-30-25 for undistributed earnings of non-U.S. subsidiaries and have accrued for related tax liabilities as of December 31, 2019.

The following table presents cash, cash equivalents and marketable securities held domestically, and by our foreign subsidiaries:

Cash and cash equivalents (dollars in millions)	For the Years Ended December 31,	
	2019	2018
U.S.	\$ 1.1	\$ 2.0
Foreign	89.2	121.8
Total	<u>\$ 90.3</u>	<u>\$ 123.8</u>
Total cash, cash equivalents and marketable securities held in U.S. dollars by our foreign subsidiaries	\$ 6.5	\$ 11.1
Percentage of total cash and cash equivalents held in U.S. dollars by our foreign subsidiaries	7.2%	9.0%

Of the \$90.3 million of cash and cash equivalents held as of December 31, 2019, greater than 99% was held as bank deposits. Of the \$123.8 million of cash and cash equivalents held as of December 31, 2018, greater than 99% was held as bank deposits.

Should we require more capital than is generated by our operations, for example to fund significant discretionary activities, we could raise capital through debt or equity issuances. These alternatives could result in increased interest expense and dilution of our earnings. We have borrowed funds domestically and continue to have the ability to borrow funds domestically at reasonable interest rates.

The following table presents additional key information concerning working capital:

	For the Three Months Ended				
	December 31, 2019	September 30, 2019	June 30, 2019	March 31, 2019	December 31, 2018
Days sales outstanding ⁽¹⁾	40.5	41.8	41.7	42.0	42.6
Inventory turns ⁽²⁾	2.2	2.0	2.1	2.0	2.3

- (1) Days sales outstanding represents the average of the accounts receivable balances at the beginning and end of each quarter divided by revenue for that quarter, the result of which is then multiplied by 91.25 days.
- (2) Inventory turns represent inventory-related cost of product revenue for the 12 months preceding each quarter-end divided by the average inventory balances at the beginning and end of each quarter.

Sources and Uses of Cash

The following table presents cash provided (used):

<i>(in thousands)</i>	For the Years Ended December 31,		
	2019	2018	Dollar Change
Net cash provided by operating activities	\$ 459,158	\$ 400,084	\$ 59,074
Net cash (used) provided by investing activities	(205,528)	138,602	(344,130)
Net cash used by financing activities	(286,409)	(597,799)	311,390
Net effect of changes in exchange rates on cash	(689)	(4,768)	4,079
Net change in cash and cash equivalents	<u>\$ (33,468)</u>	<u>\$ (63,881)</u>	<u>\$ 30,413</u>

Operating Activities. The increase in cash provided by operating activities of \$59.1 million during 2019 as compared to 2018, was primarily due to the increase in net income, net of noncash items, offset by changes in operating assets and liabilities.

The following table presents cash flows from changes in operating assets and liabilities:

<i>(in thousands)</i>	For the Years Ended December 31,		
	2019	2018	Dollar Change
Accounts receivable	\$ (22,472)	\$ (18,401)	\$ (4,071)
Inventories	(37,306)	(25,623)	(11,683)
Accounts payable	1,957	(166)	2,123
Deferred revenue	(12,360)	(7,719)	(4,641)
Other assets and liabilities	(34,788)	(39,731)	4,943
Total change in cash due to changes in operating assets and liabilities	<u>\$ (104,969)</u>	<u>\$ (91,640)</u>	<u>\$ (13,329)</u>

Cash used due to changes in operating assets and liabilities during 2019, as compared to the same period in the prior year, increased approximately \$13.3 million. The increase was primarily due to higher inventory levels to support greater demand. Additionally, other assets increased due to higher instrument placements under our customer commitment programs, which are offset by lower deferred revenue from placements under our instrument rebate programs, as well as increases in accrued liabilities and accounts payable due to growth and timing.

We have historically experienced proportionally lower net cash flows from operating activities during the first quarter and proportionally higher cash flows from operating activities for the remainder of the year and for the annual period driven primarily by payments related to annual employee incentive programs in the first quarter following the year for which the bonuses were earned and the seasonality of vector-borne disease testing, which has historically resulted in significant increases in accounts receivable balances during the first quarter of the year.

Investing Activities. Cash used by investing activities was \$205.5 million during 2019 as compared to \$138.6 million provided during 2018. The increase in cash used by investing activities during 2019 as compared to 2018 was primarily due to sale of marketable securities in 2018, as a result of our repatriation of cash and investments held by our foreign subsidiaries, as well as increased capital spending in the current year, as we expand our Westbrook, Maine headquarters and relocate our core

reference laboratory in Germany. During 2018, in connection with the passage of the 2017 Tax Act in the fourth quarter of 2017, we liquidated our marketable securities and used the cash to partially pay down our Credit Facility.

Our total capital expenditure plan for 2020 is estimated to be approximately \$140 million to \$155 million, which includes the completion of the expansion of our headquarters, the relocation and expansion of our German core reference laboratory, other capital investments in manufacturing and reference laboratory buildings and equipment, investments in internal use software and information technology infrastructure, and the renovation and expansion of our facilities and reference laboratories.

Financing Activities. Cash used by financing activities was \$286.4 million during 2019 as compared to \$597.8 million used during 2018. The decrease in cash used by financing activities during 2019 as compared to 2018 was due to a larger repayment on our revolving Credit Facility in 2018 from repatriated foreign cash, an issuance of \$100 million senior notes during the first quarter of 2019, and a decrease in repurchases of our common stock.

Cash used to repurchase shares of our common stock decreased by \$67.7 million during 2019, as compared to 2018. From the inception of our share repurchase program in August 1999 to December 31, 2019, we have repurchased 66.0 million shares for \$4.1 billion. During 2019, we purchased 1.22 million shares for an aggregate cost of \$303.8 million, as compared to purchases of 1.77 million shares for an aggregate cost of \$368.7 million during 2018. We believe that the repurchase of our common stock is a favorable means of returning value to our stockholders and we also repurchase our stock to offset the dilutive effect of our share-based compensation programs. Repurchases of our common stock may vary depending upon the level of other investing activities and the share price. See "Part II, Item 8. Financial Statements and Supplementary Data, Note 19. Repurchases of Common Stock" to the consolidated financial statements included in this Annual Report on Form 10-K for additional information about our share repurchases.

The \$850 million unsecured revolving Credit Facility matures on December 4, 2020 and requires no scheduled prepayments before that date. All amounts borrowed under the terms of the Credit Facility are reflected in the current liabilities section in the accompanying consolidated balance sheets. Applicable interest rates on borrowings under the Credit Facility generally range from 0.875 to 1.375 percentage points above the LIBOR or CDOR, based on our leverage ratio, or the prevailing prime rate plus a maximum spread of up to 0.375%, based on our leverage ratio. For more information regarding risk associated with interest rates based on LIBOR, see "Part I, Item 1A. Risk Factors, *Restrictions in our debt agreements or our inability to obtain financing on favorable terms may increase our cost of borrowing and limit our activities.*"

Under the Credit Facility, the net repayment and borrowing activity resulted in less cash used of \$145.8 million during 2019, as compared to 2018. At December 31, 2019, we had \$288.8 million outstanding under the Credit Facility. At December 31, 2018, we had \$398.9 million outstanding under the Credit Facility. The general availability of funds under the Credit Facility was further reduced by \$1.4 million and \$1.3 million for letters of credit that was issued in connection with claims under our workers' compensation policy at December 31, 2019 and 2018, respectively. The Credit Facility contains affirmative, negative, and financial covenants customary for financings of this type. The negative covenants include restrictions on liens, indebtedness of subsidiaries of the Company, fundamental changes, investments, transactions with affiliates, and certain restrictive agreements and violations of laws and regulations. The financial covenant is a consolidated leverage ratio test that requires our ratio of debt to earnings before interest, taxes, depreciation, amortization, and share-based compensation not to exceed 3.5-to-1. At December 31, 2019, we were in compliance with the covenants of the Credit Facility. The obligations under the Credit Facility may be accelerated upon the occurrence of an event of default under the Credit Facility, which includes customary events of default including payment defaults, defaults in the performance of the affirmative, negative and financial covenants, the inaccuracy of representations or warranties, bankruptcy and insolvency related defaults, defaults relating to judgments, certain events related to employee pension benefit plans under the Employee Retirement Income Security Act of 1974, ("ERISA"), the failure to pay specified indebtedness, cross-acceleration to specified indebtedness and a change of control default.

On March 14, 2019, we amended the Multicurrency Note Purchase and Private Shelf Agreement, dated as of December 19, 2014, among the Company, Metropolitan Life Insurance Company, and the accredited institutional purchasers named therein, and pursuant to such amended agreement, we issued and sold through a private placement an aggregate principal amount of \$100 million of unsecured senior notes at a 4.19% per annum rate, due March 14, 2029 (the "2029 Series C Notes"). The 2029 Series C Notes proceeds were used for general corporate purposes.

Since December 2013, we have issued and sold through private placements unsecured senior notes having an aggregate principal amount of approximately \$700 million, including the \$100 million 2029 Series C Notes, pursuant to certain note purchase agreements (collectively, the "Senior Note Agreements"). The Senior Note Agreements contain affirmative,

negative, and financial covenants customary for agreements of this type. The negative covenants include restrictions on liens, indebtedness of our subsidiaries, priority indebtedness, fundamental changes, investments, transactions with affiliates, certain restrictive agreements and violations of laws and regulations. See "Part II, Item 8. Financial Statements and Supplementary Data, Note 12. Debt" to the consolidated financial statements included in this Annual Report on Form 10-K for additional information regarding our senior notes.

Should we elect to prepay the senior notes, such aggregate prepayment will include the applicable make-whole amount(s), as defined within the applicable Senior Note Agreements. Additionally, in the event of a change in control of the Company, or upon the disposition of certain assets of the Company the proceeds of which are not reinvested (as defined in the Senior Note Agreements), we may be required to prepay all or a portion of the senior notes. The obligations under the senior notes may be accelerated upon the occurrence of an event of default under the applicable Senior Note Agreement, each of which includes customary events of default including payment defaults, defaults in the performance of the affirmative, negative and financial covenants, the inaccuracy of representations or warranties, bankruptcy and insolvency related defaults, defaults relating to judgments, certain events related to employee pension benefit plans under ERISA, the failure to pay specified indebtedness and cross-acceleration to specified indebtedness.

Effect of currency translation on cash. The net effect of changes in foreign currency exchange rates are related to changes in exchange rates between the U.S. dollar and the functional currencies of our foreign subsidiaries. These changes will fluctuate each year as the value of the U.S. dollar relative to the value of the foreign currencies change. A currency's value depends on many factors, including interest rates, the country's debt levels and strength of economy.

Off-Balance Sheet Arrangements. We have no off-balance sheet arrangements or variable interest entities except for letters of credit and third-party guarantees, as reflected in "Part II, Item 8. Financial Statements and Supplementary Data, Note 12 Debt" and "Part II, Item 8. Financial Statements and Supplementary Data. Note 15. Commitments, Contingencies and Guarantees" to the consolidated financial statements for the year ended December 31, 2019, included in this Annual Report on Form 10-K, respectively.

Financial Covenant. The financial covenant is a consolidated leverage ratio test that requires our ratio of debt to earnings before interest, taxes, depreciation, amortization, and share-based compensation, as defined in the Senior Note Agreements and Credit Facility, not to exceed 3.5-to-1. At December 31, 2019, we were in compliance with the covenants of the Senior Note Agreements. The following details our consolidated leverage ratio calculation:

<i>(in thousands)</i>	Twelve months ended December 31, 2019
Trailing 12 Months Adjusted EBITDA:	
Net income attributable to stockholders	\$ 427,720
Interest expense	31,055
Provision for income taxes	94,426
Depreciation and amortization	88,011
Share-based compensation expense	39,278
Extraordinary and other non-recurring non-cash charges	968
Adjusted EBITDA	<u>\$ 681,458</u>

<i>(in thousands)</i>	Twelve months ended December 31, 2019
Debt to Adjusted EBITDA Ratio:	
Line of credit	\$ 288,765
Long-term debt	698,910
Total debt	<u>987,675</u>
Acquisition-related consideration payable	3,000
Financing leases	103
Deferred financing costs	512
Gross debt	<u>\$ 991,290</u>
Gross debt to Adjusted EBITDA ratio	<u>1.45</u>
Cash and cash equivalents	\$ (90,326)
Net debt	<u>\$ 900,964</u>
Net debt to Adjusted EBITDA ratio	<u>1.32</u>

Other Commitments, Contingencies and Guarantees

Under our current employee healthcare insurance policy for U.S. employees, we retain claims liability risk per incident up to \$1 million per year in 2019, 2018, and 2017. We recognized U.S. employee healthcare claim expense of \$59.3 million, \$52.7 million, and \$47.2 million for the years ended December 31, 2019, 2018, and 2017, respectively, which represents actual claims paid and an estimate of our liability for the uninsured portion of employee healthcare obligations that have been incurred but not paid. Should employee health insurance claims exceed our estimated liability, we would have further obligations. Our estimated liability for healthcare claims that have been incurred but not paid as of December 31, 2019 and 2018, was approximately \$5.0 million.

Workers' compensation and automobile claim expenses recognized during the years ended December 31, 2019, 2018 and 2017 and our respective liability for such claims as of December 31, 2019, 2018 and 2017 were not material. For the years ended on or prior to December 31, 2017, based on our retained claim liability per incident and our aggregate claim liability per year, our maximum liability in excess of the amounts deemed probable and previously recognized is not material as of December 31, 2019. As of December 31, 2019, we had outstanding letters of credit totaling \$1.4 million to the insurance companies as security for the claims in connection with these policies.

We are contractually obligated to make the following payments in the years below:

<i>(in thousands)</i>	Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Long-term debt obligations ⁽¹⁾	\$ 837,602	\$ 24,447	\$ 169,512	\$ 186,569	\$ 457,074
Credit facility ⁽²⁾	288,765	288,765	—	—	—
Operating leases	99,025	18,016	31,392	16,015	33,602
Purchase obligations ⁽³⁾	298,370	224,394	48,135	22,412	3,429
Minimum royalty payments	1,320	421	317	157	425
Total contractual cash obligations	<u>\$ 1,525,082</u>	<u>\$ 556,043</u>	<u>\$ 249,356</u>	<u>\$ 225,153</u>	<u>\$ 494,530</u>

(1) Long-term debt amounts include interest payments associated with long-term debt.

(2) Credit facility amounts do not include interest payments.

(3) Purchase obligations include agreements and purchase orders to purchase goods or services that are enforceable and legally binding and that specify all significant terms, including fixed or minimum quantities, pricing, and approximate timing of purchase transactions.

These commitments do not reflect unrecognized tax benefits of \$26.8 million and \$1.7 million of deferred compensation liabilities as of December 31, 2019, as the timing of recognition is uncertain. See "Part II, Item 8. Financial Statements and Supplementary Data, Note 13. Income Taxes" to the consolidated financial statements included in this Annual Report on Form 10-K for additional discussion of unrecognized tax benefits. As of December 31, 2019, our remaining obligation associated with the deemed repatriation tax resulting from the Tax Act is \$27.0 million, which is expected to be paid in installments through 2025.

Not reflected in the contractual obligation table above are agreements with third parties that we have entered into in the ordinary course of business under which we are obligated to indemnify such third parties for and against various risks and losses. The precise terms of such indemnities vary with the nature of the agreement. In many cases, we limit the maximum amount of our indemnification obligations, but in some cases those obligations may be theoretically unlimited. We have not incurred material expenses in discharging any of these indemnification obligations, and based on our analysis of the nature of the risks involved, we believe that the fair value of these agreements is minimal. Accordingly, we did not record any liabilities for these obligations at December 31, 2019 and 2018, and do not anticipate any future payments for these guarantees.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our market risk consists primarily of foreign currency exchange risk and interest rate risk. Our functional currency is the U.S. dollar and our primary manufacturing operations and inventory supply contracts are in the U.S. or in U.S. dollars, but we distribute our products worldwide both through direct export and through our foreign subsidiaries. Our primary foreign currency transaction risk consists of intercompany purchases and sales of products and we attempt to mitigate this risk through our hedging program described below. For the year ended December 31, 2019, approximately 22% of our consolidated revenue was derived from products manufactured or sourced in U.S. dollars and sold internationally in local currencies, as compared to 22% for the year ended December 31, 2018, and 21% for the year ended December 31, 2017. The functional currency of most of our subsidiaries is their local currency. For four of our foreign subsidiaries the functional currency is the U.S. dollar.

Our foreign currency exchange impacts are comprised of three components: 1) local currency revenues and expenses; 2) the impact of hedge contracts; and 3) intercompany and monetary balances for our subsidiaries that are denominated in a currency that is different from the functional currency used by each subsidiary. Based on projected revenues and expenses for 2020, excluding the impact of intercompany and trade balances denominated in currencies other than the functional subsidiary currencies, a 1% strengthening of the U.S. dollar would reduce revenue by approximately \$9 million and operating income by approximately \$5 million. Additionally, we project our foreign currency hedge contracts in place as of December 31, 2019, would provide incremental offsetting gains of approximately \$2 million. The impact of the intercompany and monetary balances referred to in the third component above have been excluded, as they are transacted at multiple times during the year and we are not able to reliably forecast the impact that changes in exchange rates would have.

At our current foreign exchange rate assumptions, we anticipate the effect of a stronger U.S. dollar will have an unfavorable effect on our operating results by decreasing our revenues, operating profit, and diluted earnings per share in the year ending December 31, 2020, by approximately \$11 million, \$10 million, and \$0.09 per share, respectively. This unfavorable impact includes foreign currency hedging activity, which is expected to decrease total company operating profit by approximately \$6 million and diluted earnings per share by \$0.05 in the year ending December 31, 2020. The actual impact of changes in the value of the U.S. dollar against foreign currencies in which we transact may materially differ from our expectations described above. The above estimate assumes that the value of the U.S. dollar relative to other currencies will reflect the euro at \$1.10, the British pound at \$1.29, the Canadian dollar at \$0.76, and the Australian dollar at \$0.68; and the Japanese yen at ¥110, the Chinese renminbi at RMB 7.10, and the Brazilian real at R\$4.14 to the U.S. dollar for the full year of 2020.

The following table presents the foreign currency exchange impacts on our revenues, operating profit, and diluted earnings per share, as compared to the respective prior periods:

<i>(in thousands, except per share amounts)</i>	For the Years Ended December 31,		
	2019	2018	2017
Revenue impact	\$ (38,624)	\$ 13,623	\$ 6,615
Operating profit impact, excluding hedge activity	\$ (16,947)	\$ 2,260	\$ 2,542
Hedge losses (gains) - prior year	976	(27)	(3,620)
Hedge gains (losses) - current year	10,628	(976)	27
Hedging activity impact	11,604	(1,003)	(3,593)
Operating profit impact, including hedge activity	\$ (5,343)	\$ 1,257	\$ (1,051)
Diluted earnings per share impact, including hedge activity	\$ (0.05)	\$ 0.01	\$ (0.01)

The primary purpose of our foreign currency hedging activities is to protect against the volatility associated with foreign currency transactions. We also utilize natural hedges to mitigate our transaction and commitment exposures. Our corporate policy prescribes the range of allowable hedging activity. We enter into foreign currency exchange contracts with large multinational financial institutions and we do not hold or engage in transactions involving derivative instruments for purposes other than risk management. Our accounting policies for these contracts are based on our designation of such instruments as hedging transactions. If a hedging instrument qualifies for hedge accounting, changes in the fair value of the derivative instrument from the effective portion of the hedge are deferred in accumulated other comprehensive income, net of tax, and reclassified into earnings in the same period or periods during which the hedged transaction affects earnings. We

immediately record in earnings the extent to which a hedge instrument is not effective in achieving offsetting changes in fair value. We primarily utilize foreign currency exchange contracts with durations of less than 24 months.

Our subsidiaries enter into foreign currency exchange contracts to manage the exchange risk associated with their forecasted intercompany inventory purchases and sales for the next year. From time to time, we may also enter into other foreign currency exchange contracts or foreign-denominated debt issuances to minimize the impact of foreign currency fluctuations associated with specific balance sheet exposures, including net investments in certain foreign subsidiaries. See "Part II, Item 8. Financial Statements and Supplementary Data, Note 18. Hedging Instruments" to the consolidated financial statements of this Annual Report on Form 10-K for details regarding euro-denominated notes that we designated as a hedge of our euro net investment in certain foreign subsidiaries.

Our foreign currency hedging strategy is consistent with prior periods and there were no material changes in our market risk exposure during the year ended December 31, 2019. We enter into foreign currency exchange contracts designated as cash flow hedges for amounts that are less than the full value of forecasted intercompany purchases and sales and for amounts that are equivalent to, or less than, other significant transactions. As a result, no significant ineffectiveness has resulted or been recorded through the statements of income for the years ended December 31, 2019, 2018 and 2017. Our hedging strategy related to intercompany inventory purchases and sales is to employ the full amount of our hedges for the succeeding year at the conclusion of our budgeting process for that year. Quarterly, we enter into contracts to hedge incremental portions of anticipated foreign currency transactions for the current and following year. Accordingly, our risk with respect to foreign currency exchange rate fluctuations may vary throughout each annual cycle.

We enter into hedge agreements where we believe we have meaningful exposure to foreign currency exchange risk, with the exception of certain emerging markets where it is not practical to hedge our exposure. We hedge approximately 85% of the estimated exposure from intercompany product purchases and sales denominated in the euro, British pound, Canadian dollar, Japanese yen, Australian dollar, and in 2017 and prior, the Swiss Franc. We have additional unhedged foreign currency exposures related to foreign services and emerging markets where it is not practical to hedge. The notional amount of foreign currency exchange contracts to hedge forecasted intercompany purchases and sales totaled \$210.9 million at December 31, 2019, and \$190.9 million at December 31, 2018. At December 31, 2019, we had \$2.7 million of net unrealized gains on foreign currency exchange contracts recorded in accumulated other comprehensive loss, net of related tax.

We have a Credit Facility with a syndicate of multinational banks, which matures on December 4, 2020, and requires no scheduled prepayments before that date. Although the Credit Facility does not mature until December 4, 2020, all individual borrowings under the terms of the Credit Facility have a stated term between 30 and 180 days. Borrowings outstanding under the Credit Facility at December 31, 2019, were \$288.8 million at a weighted-average effective interest rate of 2.78%. Based on amounts outstanding under our Credit Facility as of December 31, 2019, an increase in the LIBOR or the CDOR of 1% would increase interest expense by approximately \$2.9 million on an annualized basis.

For additional information, see "Part I, Item 1A. Risk Factors; *Risks associated with doing business internationally could negatively affect our operating results* and *Strengthening of the rate of exchange for the U.S. dollar has a negative effect on our business,*" and "Part II, Item 8. Financial Statements and Supplementary Data, Note 2. Summary of Significant Accounting Policies."

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

The response to this item is submitted as a separate section of this report commencing on page F-1.

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

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Disclosure Controls and Procedures

Our management is responsible for establishing and maintaining disclosure controls and procedures, as defined by the SEC in its Rules 13a-15(e) and 15d-15(e) under the Exchange Act. The term “disclosure controls and procedures,” as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of an issuer that are designed to ensure that information required to be disclosed by the issuer in the reports that it files or submits under the Exchange Act is recorded, processed, summarized, and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures at December 31, 2019, our chief executive officer and chief financial officer have concluded that, as of such date, the Company's disclosure controls and procedures were effective at the reasonable assurance level.

Report of Management on Internal Control Over Financial Reporting

We are responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. The Company's internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with U.S. GAAP and includes those policies and procedures that:

- Pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the assets of the Company;
- 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
- 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. In addition, projections of any evaluation of effectiveness to future periods are subject to risk that controls may become inadequate because of changes in conditions and that the degree of compliance with the policies and procedures may deteriorate.

We conducted an evaluation of the effectiveness of internal control over financial reporting based on the framework in Internal Control – Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this evaluation, we concluded that, at December 31, 2019, our internal control over financial reporting was effective.

The effectiveness of the Company's internal control over financial reporting at December 31, 2019, has been audited by PricewaterhouseCoopers LLP, an independent registered public accounting firm, as stated in their report which appears herein.

Changes in Internal Control Over Financial Reporting

There were no changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the three months ended December 31, 2019, that materially affected, or are reasonably likely to materially affect, the Company's internal control over financial reporting.

Certifications

The certifications with respect to disclosure controls and procedures and internal control over financial reporting of the Company's chief executive officer and chief financial officer are attached as Exhibits 31.1 and 31.2 to this Annual Report on Form 10-K.

ITEM 9B. OTHER INFORMATION

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

The information required by this Item with respect to Directors, executive officers, compliance with Section 16(a) of the Exchange Act, our code of ethics and corporate governance is omitted from this Annual Report on Form 10-K and, pursuant to Regulation 14A of the Exchange Act, is incorporated herein by reference from the sections entitled “Corporate Governance - Proposal One - Election of Directors,” “Executive Officers,” “Stock Ownership Information - Delinquent Section 16(a) Reports,” “Corporate Governance – Corporate Governance Guidelines and Code of Ethics” and “Corporate Governance –Board Committees” in the Company’s definitive Proxy Statement with respect to its 2020 Annual Meeting, which Proxy Statement will be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

ITEM 11. EXECUTIVE COMPENSATION

The information required by this Item is omitted from this Annual Report on Form 10-K and, pursuant to Regulation 14A of the Exchange Act, is incorporated herein by reference from the sections entitled “Executive Compensation – Compensation Discussion and Analysis,” “Executive Compensation – Executive Compensation Tables,” “Executive Compensation – Potential Payments Upon Termination or Change-in-Control,” “Corporate Governance –Board Committees – Compensation Committee – Compensation Committee Interlocks and Insider Participation” and “Compensation Committee Report” in the Company’s definitive Proxy Statement with respect to its 2020 Annual Meeting, which Proxy Statement will be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

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

The information required by this Item with respect to Item 201(d) of Regulation S-K is omitted from this Annual Report on Form 10-K and, pursuant to Regulation 14A of the Exchange Act, is incorporated herein by reference from the section entitled “Equity Compensation Plan Information” in the Company’s definitive Proxy Statement with respect to its 2020 Annual Meeting, which Proxy Statement will be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K. The information required by this Item with respect to Item 403 of Regulation S-K is omitted from this Annual Report on Form 10-K and, pursuant to Regulation 14A of the Exchange Act, is incorporated herein by reference from the sections entitled “Stock Ownership Information” in the Company’s definitive Proxy Statement with respect to its 2020 Annual Meeting, which Proxy Statement will be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

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

The information required by this Item is omitted from this Annual Report on Form 10-K and, pursuant to Regulation 14A of the Exchange Act, is incorporated herein by reference from the sections entitled “Corporate Governance – Related Person Transactions” and “Corporate Governance – Director Independence” in the Company’s definitive Proxy Statement with respect to its 2020 Annual Meeting, which Proxy Statement will be filed with the SEC within 120 days after the end of the fiscal year covered by this Annual Report on Form 10-K.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by this Item is omitted from this Annual Report on Form 10-K and, pursuant to Regulation 14A of the Exchange Act, is incorporated herein by reference from the section entitled “Audit Committee Matters - Independent Auditors’ Fees” in the Company’s definitive Proxy Statement with respect to its 2020 Annual Meeting, which Proxy Statement will be filed with the SEC within 120 days after the end of the fiscal year covered by this report.

PART IV

ITEM 15. EXHIBITS, FINANCIAL STATEMENT SCHEDULES

The following documents are filed as part of this Form 10-K:

- (a) (1) and (a) (2) The financial statements set forth in the Index to Consolidated Financial Statements and the Consolidated Financial Statement Schedule are filed as a part of this Annual Report on Form 10-K commencing on page F-1.

- (a)(3) and (b) The exhibits listed in the accompanying Exhibit Index are filed as part of this Annual Report on Form 10-K and either filed herewith or incorporated by reference herein, as applicable.

ITEM 16. FORM 10-K SUMMARY

None.

FINANCIAL STATEMENTS AND SUPPLEMENTAL DATA
INDEX TO CONSOLIDATED FINANCIAL STATEMENTS
AND
CONSOLIDATED FINANCIAL STATEMENT SCHEDULE

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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of IDEXX Laboratories, Inc.

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of IDEXX Laboratories, Inc. and its subsidiaries (the “Company”) as of December 31, 2019 and 2018, and the related consolidated statements of income, comprehensive income, stockholders’ equity (deficit) and cash flows for each of the three years in the period ended December 31, 2019, including the related notes and financial statement schedule listed in the accompanying index (collectively referred to as the “consolidated financial statements”). We also have audited the Company's internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO).

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2019 and 2018, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2019 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2019, based on criteria established in *Internal Control - Integrated Framework* (2013) issued by the COSO.

Changes in Accounting Principles

As discussed in Notes 2 and 3 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019 and the manner in which it accounts for revenues from contracts with customers in 2018.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the Report of Management on Internal Control over Financial Reporting appearing under Item 9A. Our responsibility is to express opinions on the Company’s consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (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 audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audits of the consolidated financial statements 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. 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 audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

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 (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) 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 (iii) 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.

Critical Audit Matters

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

Revenue Recognition Relating to Customer Commitment Programs

As described in Note 3 to the consolidated financial statements, the Company recognized revenue associated with instruments totaling \$132.7 million for the year ended December 31, 2019, the majority of which were sales under customer commitment programs. The Company enters into contracts with multiple performance obligations where customers purchase a combination of the Company's products and services. The Company also offers customer incentives through its various customer commitment programs. These customer commitment programs provide customers with a free or discounted instrument or system, or incentives in the form of cash payments or IDEXX Points, upon entering into multi-year agreements to purchase annual minimum amounts of future products or services. Management determines the transaction price for a contract based on the total consideration expected to be received in exchange for the transferred goods or services. To the extent the transaction price includes variable consideration, such as volume rebates or expected price adjustments, management applies judgment in estimating variable consideration based on the Company's historical and projected experience with similar customer contracts. Management allocates total consideration, including future committed purchases and expected price adjustments, based on relative standalone selling prices to identified performance obligations and recognizes instruments revenue and cost at the time of installation and customer acceptance, which is also when the customer obtains control of the instrument based on legal title transfer. Management monitors customer purchases over the term of the agreement and reviews estimates of variable consideration.

The principal considerations for our determination that performing procedures over revenue recognition relating to the customer commitment program is a critical audit matter are there was significant judgment by management in 1) estimating the amount of variable consideration included in the transaction price and 2) allocating the transaction price to the performance obligations based on standalone selling price and future committed purchases. This in turn led to significant auditor judgment, subjectivity and effort in performing procedures to evaluate the amount of variable consideration included in the transaction price and allocation of transaction price to the performance obligations, as well as in evaluating audit evidence relating to future committed purchases.

Addressing the matter involved performing procedures and evaluating audit evidence in connection with forming our overall opinion on the consolidated financial statements. These procedures included testing the effectiveness of controls relating to the revenue recognition process and customer commitment programs, including controls over the estimation of the amount of variable consideration included in the transaction price and allocating the transaction price to the performance obligations. The procedures also included, among others, (i) examining contracts on a test basis and (ii) testing management's process for estimating the amount of variable consideration included in the transaction price and allocation of the transaction price to the performance obligations, including determination of the standalone selling price and future committed purchases. To test standalone selling price, we tested on a sample basis the list price, discounts, and other price adjustments of historical sales data for products and services which are all sold separately. We assessed management's estimate of forecasted product purchases by comparing to historical actual sales data.

/s/ PricewaterhouseCoopers LLP

Boston, Massachusetts
February 14, 2020

We have served as the Company's auditor since 2002.

IDEXX LABORATORIES, INC. AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

(in thousands, except per share amounts)

	December 31, 2019	December 31, 2018
ASSETS		
Current Assets:		
Cash and cash equivalents	\$ 90,326	\$ 123,794
Accounts receivable, net of reserves of \$3,581 in 2019 and \$4,702 in 2018	269,312	248,855
Inventories	195,019	173,303
Other current assets	124,982	108,220
Total current assets	679,639	654,172
Long-Term Assets:		
Property and equipment, net	533,845	437,270
Operating lease right-of-use assets (Notes 2 and 7)	80,607	—
Goodwill	239,724	214,489
Intangible assets, net	58,468	41,825
Other long-term assets	240,192	189,593
Total long-term assets	1,152,836	883,177
TOTAL ASSETS	\$ 1,832,475	\$ 1,537,349
LIABILITIES AND STOCKHOLDERS' EQUITY (DEFICIT)		
Current Liabilities:		
Accounts payable	\$ 72,172	\$ 69,534
Accrued liabilities	322,938	260,683
Line of credit	288,765	398,937
Current portion of deferred revenue	41,462	41,290
Total current liabilities	725,337	770,444
Long-Term Liabilities:		
Deferred income tax liabilities	33,024	29,267
Long-term debt	698,910	601,348
Long-term deferred revenue, net of current portion	48,743	60,697
Long-term operating lease liabilities (Notes 2 and 7)	67,472	—
Other long-term liabilities	81,164	84,826
Total long-term liabilities	929,313	776,138
Total liabilities	1,654,650	1,546,582
Commitments and Contingencies (Note 15)		
Stockholders' Equity (Deficit):		
Common stock, \$0.10 par value: Authorized: 120,000 shares; Issued: 105,711 shares in 2019 and 105,087 shares in 2018; Outstanding: 85,471 shares in 2019 and 86,100 shares in 2018	10,571	10,509
Additional paid-in capital	1,213,517	1,138,216
Deferred stock units: Outstanding: 143 units in 2019 and 162 units in 2018	4,462	4,524
Retained earnings	1,595,648	1,167,928
Accumulated other comprehensive loss	(46,182)	(41,791)
Treasury stock, at cost: 20,240 shares in 2019 and 18,988 shares in 2018	(2,600,543)	(2,288,899)
Total IDEXX Laboratories, Inc. stockholders' equity (deficit)	177,473	(9,513)
Noncontrolling interest	352	280
Total stockholders' equity (deficit)	177,825	(9,233)
TOTAL LIABILITIES AND STOCKHOLDERS' EQUITY (DEFICIT)	\$ 1,832,475	\$ 1,537,349

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

IDEXX LABORATORIES, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF INCOME

(in thousands, except per share amounts)

	For the Years Ended December 31,		
	2019	2018	2017
Revenue:			
Product revenue	\$ 1,423,144	\$ 1,322,683	\$ 1,176,115
Service revenue	983,764	890,559	792,943
Total revenue	<u>2,406,908</u>	<u>2,213,242</u>	<u>1,969,058</u>
Cost of Revenue:			
Cost of product revenue	506,202	494,889	446,449
Cost of service revenue	535,157	476,811	425,227
Total cost of revenue	<u>1,041,359</u>	<u>971,700</u>	<u>871,676</u>
Gross profit	1,365,549	1,241,542	1,097,382
Expenses:			
Sales and marketing	418,193	387,406	354,294
General and administrative	261,317	244,938	220,878
Research and development	133,193	117,863	109,182
Income from operations	<u>552,846</u>	<u>491,335</u>	<u>413,028</u>
Interest expense	(31,055)	(34,744)	(37,225)
Interest income	427	1,151	5,254
Income before provision for income taxes	<u>522,218</u>	<u>457,742</u>	<u>381,057</u>
Provision for income taxes	94,426	80,695	117,788
Net income	<u>427,792</u>	<u>377,047</u>	<u>263,269</u>
Less: Net income attributable to noncontrolling interest	72	16	125
Net income attributable to IDEXX Laboratories, Inc. stockholders	<u>\$ 427,720</u>	<u>\$ 377,031</u>	<u>\$ 263,144</u>
Earnings per Share:			
Basic	<u>\$ 4.97</u>	<u>\$ 4.34</u>	<u>\$ 3.00</u>
Diluted	<u>\$ 4.89</u>	<u>\$ 4.26</u>	<u>\$ 2.94</u>
Weighted Average Shares Outstanding:			
Basic	<u>86,115</u>	<u>86,864</u>	<u>87,769</u>
Diluted	<u>87,542</u>	<u>88,470</u>	<u>89,567</u>

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

IDEXX LABORATORIES, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(in thousands)

	For the Years Ended December 31,		
	2019	2018	2017
Net income	\$ 427,792	\$ 377,047	\$ 263,269
Other comprehensive income (loss), net of tax:			
Foreign currency translation adjustments	(1,590)	(21,911)	25,107
Unrealized gain (loss) on Euro-denominated notes, net of tax expense (benefit) of \$564 in 2019, \$1,148 in 2018 and (\$4,555) in 2017	1,790	3,917	(8,347)
Unrealized gain (loss) on investments, net of tax expense (benefit) of \$84 in 2019, (\$40) in 2018 and \$0 in 2017	267	(135)	(42)
Unrealized gain (loss) on derivative instruments:			
Unrealized gain (loss) on foreign currency exchange contracts, net of tax expense (benefit) of \$362 in 2019, \$2,529 in 2018 and (\$5,304) in 2017	1,196	10,659	(10,332)
Unrealized gain on cross currency swaps, net of tax expense of \$664 in 2019, \$323 in 2018 and \$0 in 2017	2,107	1,360	—
Less: reclassification adjustment for (gains) losses included in net income, net of tax (expense) benefit of (\$2,467) in 2019, \$187 in 2018 and \$224 in 2017	(8,161)	789	197
Unrealized (loss) gain on derivative instruments	(4,858)	12,808	(10,135)
Other comprehensive (loss) gain, net of tax	(4,391)	(5,321)	6,583
Comprehensive income	423,401	371,726	269,852
Less: comprehensive income attributable to noncontrolling interest	72	16	125
Comprehensive income attributable to IDEXX Laboratories, Inc.	\$ 423,329	\$ 371,710	\$ 269,727

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

IDEXX LABORATORIES, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY (DEFICIT)

(in thousands, except per share amounts)

	<u>Common Stock</u>				<u>Retained Earnings</u>	<u>Accumulated Other Comprehensive Loss</u>	<u>Treasury Stock</u>	<u>Noncontrolling Interest</u>	<u>Total Stockholders' Equity (Deficit)</u>
	<u>Number of Shares</u>	<u>\$0.10 Par Value</u>	<u>Additional Paid-in Capital</u>	<u>Deferred Stock Units</u>					
Balance January 1, 2017	103,341	\$ 10,334	\$ 1,011,895	\$ 5,514	\$ 540,401	\$ (43,053)	\$ (1,633,443)	\$ 139	\$ (108,213)
Net income	—	—	—	—	263,144	—	—	125	263,269
Other comprehensive income, net	—	—	—	—	—	6,583	—	—	6,583
Repurchases of common stock, net	—	—	—	—	—	—	(278,085)	—	(278,085)
Common stock issued under stock plans, net	934	94	39,005	—	—	—	—	—	39,099
Deferred stock units activity	—	—	(350)	338	—	—	—	—	(12)
Share-based compensation cost	—	—	23,381	136	—	—	—	—	23,517
Balance December 31, 2017	104,275	\$ 10,428	\$ 1,073,931	\$ 5,988	\$ 803,545	\$ (36,470)	\$ (1,911,528)	\$ 264	\$ (53,842)
Cumulative effect of accounting changes from adoptions of ASU 2014-09 and ASU 2016-16	—	—	—	—	(12,648)	—	—	—	(12,648)
Net income	—	—	—	—	377,031	—	—	16	377,047
Other comprehensive loss, net	—	—	—	—	—	(5,321)	—	—	(5,321)
Repurchases of common stock, net	—	—	—	—	—	—	(377,371)	—	(377,371)
Common stock issued under stock plans, net	812	81	39,756	(2,092)	—	—	—	—	37,745
Deferred stock units activity	—	—	(385)	385	—	—	—	—	—
Share-based compensation cost	—	—	24,914	243	—	—	—	—	25,157
Balance December 31, 2018	105,087	\$ 10,509	\$ 1,138,216	\$ 4,524	\$ 1,167,928	\$ (41,791)	\$ (2,288,899)	\$ 280	\$ (9,233)
Net income	—	—	—	—	427,720	—	—	72	427,792
Other comprehensive loss, net	—	—	—	—	—	(4,391)	—	—	(4,391)
Repurchases of common stock, net	—	—	—	—	—	—	(311,644)	—	(311,644)
Common stock issued under stock plans, net	624	62	36,551	(590)	—	—	—	—	36,023
Deferred stock units activity	—	—	(324)	324	—	—	—	—	—
Share-based compensation cost	—	—	39,074	204	—	—	—	—	39,278
Balance December 31, 2019	105,711	\$ 10,571	\$ 1,213,517	\$ 4,462	\$ 1,595,648	\$ (46,182)	\$ (2,600,543)	\$ 352	\$ 177,825

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

IDEXX LABORATORIES, INC. AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)

For the Years Ended December 31,

2019 2018 2017

	2019	2018	2017
Cash Flows from Operating Activities:			
Net income	\$ 427,792	\$ 377,047	\$ 263,269
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	88,011	83,178	83,140
Impairment charge	968	2,629	—
Provision for uncollectible accounts	662	1,609	1,881
Benefit of (provision for) deferred income taxes	6,162	1,209	(7,918)
Share-based compensation expense	39,278	25,157	23,517
Other	1,254	895	1,007
Changes in assets and liabilities:			
Accounts receivable	(22,472)	(18,401)	(24,918)
Inventories	(37,306)	(25,623)	(19,062)
Accounts payable	1,957	(166)	1,391
Deferred revenue	(12,360)	(7,719)	3,551
Other assets and liabilities	(34,788)	(39,731)	47,418
Net cash provided by operating activities	<u>459,158</u>	<u>400,084</u>	<u>373,276</u>
Cash Flows from Investing Activities:			
Purchases of property and equipment	(154,969)	(115,751)	(74,384)
Purchases of marketable securities	—	(87)	(334,164)
Proceeds from the sale and maturities of marketable securities	—	284,125	286,759
Acquisitions of intangible assets and equity investment	(255)	(7,185)	(2,320)
Acquisitions of businesses	(50,304)	(22,500)	(14,579)
Net cash (used) provided by investing activities	<u>(205,528)</u>	<u>138,602</u>	<u>(138,688)</u>
Cash Flows from Financing Activities:			
(Repayment) borrowings on revolving credit facilities, net	(110,275)	(256,040)	44,000
Issuance of senior notes	100,000	—	—
Debt issuance costs	(154)	—	—
Repurchases of common stock, net	(301,658)	(369,319)	(282,565)
Proceeds from exercises of stock options and employee stock purchase plans	36,106	38,201	38,622
Payment of acquisition-related contingent consideration	(2,375)	(1,266)	—
Shares withheld for statutory tax withholding on restricted stock	(8,053)	(9,375)	(8,073)
Net cash used by financing activities	<u>(286,409)</u>	<u>(597,799)</u>	<u>(208,016)</u>
Net effect of changes in exchange rates on cash	(689)	(4,768)	6,202
Net (decrease) increase in cash and cash equivalents	<u>(33,468)</u>	<u>(63,881)</u>	<u>32,774</u>
Cash and cash equivalents at beginning of period	<u>123,794</u>	<u>187,675</u>	<u>154,901</u>
Cash and cash equivalents at end of period	<u>\$ 90,326</u>	<u>\$ 123,794</u>	<u>\$ 187,675</u>

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

IDEXX LABORATORIES, INC. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

NOTE 1. NATURE OF BUSINESS, BASIS OF PRESENTATION AND PRINCIPLES OF CONSOLIDATION

The accompanying consolidated financial statements of IDEXX Laboratories, Inc. and its subsidiaries have been prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") and with the requirements of Regulation S-X.

These statements include the accounts of IDEXX Laboratories, Inc., and our wholly-owned and majority-owned subsidiaries ("IDEXX," the "Company," "we" or "our"). We do not have any variable interest entities for which we are the primary beneficiary. All intercompany transactions and balances have been eliminated in consolidation.

We have included certain terms and abbreviations used throughout this Annual Report on Form 10-K in the "Glossary of Terms and Selected Abbreviations."

We develop, manufacture, and distribute products and provide services primarily for the companion animal veterinary, livestock and poultry, dairy and water testing markets. We also sell a line of portable electrolytes and blood gas analyzers for the human point-of-care medical diagnostics market. Our principal line of business, which we refer to as our Companion Animal Group ("CAG") operating segment, provides diagnostic capabilities and information management solutions for the veterinary market as well as biological materials testing and services for the bioresearch market. Our principal markets for these products and services are the United States ("U.S."), Europe, Japan, and Australia, but we also sell to customers and distributors in many other countries around the world. Our Water operating segment provides innovative testing solutions for the quality and safety of water in our principal markets of the U.S. and Europe, but we also sell to customers in many other countries around the world. Our Livestock, Poultry and Dairy ("LPD") operating segment provides diagnostic tests and related instrumentation and performs services that are used to manage the health status of livestock and poultry, to improve producer efficiency, and to ensure the quality and safety of milk and food. Our principal markets for these products and services are Europe, China, and Australia but we also sell to customers in many other countries around the world. We also operate a smaller operating segment that comprises products for the human point-of-care medical diagnostics market ("OPTI Medical"). Financial information about our OPTI Medical operating segment is combined and presented with our out-licensing arrangements remaining from our pharmaceutical business in an "Other" category because they do not meet the quantitative or qualitative thresholds for reportable segments. See "Note 3. Revenue Recognition" for additional information regarding disaggregated revenue by segment and major product and service categories. See "Note 16. Segment Reporting" for additional information regarding our reportable operating segments and geographical areas.

NOTE 2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

(a) Estimates

The preparation of these consolidated financial statements in accordance with U.S. GAAP requires management to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosures. On an ongoing basis, we evaluate these estimates, including those related to reserves for accounts receivable; goodwill and other intangible assets; income taxes; inventory valuation; revenue recognition, product returns, customer programs and multiple element arrangements; share-based compensation; warranty reserves; self-insurance reserves; fair value measurements and loss contingencies. We accrue contingent liabilities when it is probable that future expenditures will be made and such expenditures can be reasonably estimated. We base our estimates on historical experience and on various other assumptions that we believe 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. Actual results may differ from these estimates.

(b) Cash and Cash Equivalents

We consider all highly liquid investments with original maturities of ninety days or less to be cash equivalents. Cash and cash equivalents consist primarily of demand deposits, money market funds and short duration agency bonds and commercial paper as described above. There is no restricted cash on our consolidated balance sheet for the years ended December 31, 2019, 2018, and 2017.

- (c) **Inventories – See Note 6**
- (d) **Property and Equipment – See Note 8**
- (e) **Goodwill and Other Intangible Assets – See Note 10**
- (f) **Warranty Reserves**

We provide a standard twelve-month warranty on all instruments sold. We recognize the cost of instrument warranties in cost of product revenue at the time revenue is recognized based on the estimated cost to repair the instrument over its warranty period. Cost of product revenue reflects not only estimated warranty expense for instruments sold in the current period, but also any changes in estimated warranty expense for the portion of the aggregate installed base that is under warranty. Estimated warranty expense is based on a variety of inputs, including historical instrument performance in the customers' environment, historical and estimated costs incurred in servicing instruments and projected instrument reliability. Should actual service rates or costs differ from our estimates, revisions to the estimated warranty liability would be required. The liability for warranties is included in accrued liabilities in the accompanying consolidated balance sheets. The amount of warranty reserve during the years ended December 31, 2019 and 2018, was not material.

- (g) **Income Taxes – See Note 13**
- (h) **Taxes Remitted to Governmental Authorities by IDEXX on Behalf of Customer**

We calculate, collect from our customers, and remit to governmental authorities sales, value-added and excise taxes assessed by governmental authorities in connection with revenue-producing transactions with our customers. We report these taxes on a net basis and do not include these tax amounts in revenue or cost of product or service revenue.

- (i) **Revenue Recognition – See Note 3**
- (j) **Research and Development Costs**

Research and development costs, which consist of salaries, employee benefits, materials and external consulting and product development costs, are expensed as incurred. We evaluate our research and development costs for capitalization after the technological feasibility has been established for software and products containing software to be sold, however no costs were capitalized during the years ended December 31, 2019, 2018 and 2017. Software developed to deliver hosted services to our customers has been designated as internal use and we capitalize certain costs incurred in connection with developing or obtaining software designated for internal use based on three distinct stages of development. See "Note 8. Property and Equipment, Net" for further information on internal use software.

- (k) **Advertising Costs**

Advertising costs, which are recognized as sales and marketing expense in the period in which they are incurred, were \$1.5 million, \$1.8 million, and \$1.7 million for the years ended December 31, 2019, 2018 and 2017, respectively.

- (l) **Legal Costs**

Legal costs are considered period costs and accordingly are expensed in the year services are provided.

- (m) **Share-Based Compensation – See Note 5**
- (n) **Self-Insurance Accruals – See Note 15**
- (o) **Leases – See Note 7**
- (p) **Earnings per Share – See Note 14**

(q) Foreign Currency

The functional currency of all but four of our subsidiaries is their local currency. Assets and liabilities of these foreign subsidiaries are translated to the U.S. dollar using the exchange rate in effect at the balance sheet date. Revenue and expense accounts are translated to the U.S. dollar using the exchange rate at the date which those elements are recognized, and where it is impractical to do so, an average exchange rate in effect during the period is used to translate those elements. Cumulative translation gains and losses are shown in the accompanying consolidated balance sheets as a separate component of accumulated other comprehensive income (“AOCI”).

Revenues and expenses denominated in a currency other than the respective subsidiary’s functional currency are recorded at the current exchange rate when the transaction is recognized. Monetary assets and liabilities denominated in a currency other than the respective subsidiary’s functional currency are remeasured at each balance sheet date using the exchange rate in effect at each balance sheet date. These foreign currency gains and losses are included in general and administrative expenses. We recognized aggregate foreign currency losses of \$1.1 million, losses of \$3.1 million, and gains of \$1.1 million for the years ended December 31, 2019, 2018, and 2017, respectively.

(r) Hedging Instruments – See Note 18

(s) Fair Value Measurements – See Note 17

(t) Comprehensive Income

We report all changes in equity, including net income and transactions or other events and circumstances from non-owner sources during the period in which they are recognized. We have chosen to present comprehensive income, which encompasses net income, foreign currency translation adjustments, gains and losses on our net investment hedges and the difference between the cost and the fair market value of investments in debt and equity securities, and forward currency exchange contracts, in the consolidated statements of comprehensive income. See "Note 20. Accumulated Other Comprehensive Income" for information about the effects on net income of significant amounts reclassified out of each component of AOCI for the years ended December 31, 2019, 2018 and 2017.

(u) Concentrations of Risk

Financial Instruments. Financial instruments that potentially subject us to concentrations of credit risk are principally cash, cash equivalents, accounts receivable and derivatives. To mitigate such risk with respect to cash and cash equivalents, we place our cash with highly-rated financial institutions, in non-interest bearing accounts that are insured by the U.S. government and money market funds invested in government securities. Concentration of credit risk with respect to accounts receivable is limited to certain customers to whom we make substantial sales. To reduce risk, we routinely assess the financial strength of our most significant customers and monitor the amounts owed to us, taking appropriate action when necessary. As a result, we believe that accounts receivable credit risk exposure is limited. We maintain an allowance for doubtful accounts, but historically have not experienced any material losses related to an individual customer or group of customers in any particular industry or geographic area.

To mitigate concentration of credit risk with respect to derivatives we enter into transactions with highly-rated financial institutions, enter into master netting arrangements with counterparties to our derivative transactions and frequently monitor the credit worthiness of our counterparties. Our master netting arrangements reduce our exposure in that they permit outstanding receivables and payables with the counterparties to our derivative transactions to be offset in the event of default. We have not incurred such losses and consider the risk of counterparty default to be minimal.

Inventory. If we are unable to obtain adequate quantities of the inventory we need to sell our products, we could face cost increases or delays or discontinuations in product shipments, which could have a material adverse effect on our results of operations. Many of the third parties that provide us with the instruments we sell as well as certain components, raw materials and consumables used in or with our products are sole or single source suppliers. Some of the products that we purchase from these sources are proprietary or complex in nature, and, therefore, cannot be readily or easily replaced by alternative sources.

(v) New Accounting Pronouncements Adopted

We adopted ASU 2016-02, *Leases (Topic 842)* (the "New Leasing Standard"), as of January 1, 2019, using the optional transition method that allows for a cumulative-effect adjustment in the period of adoption and did not restate prior periods. In

addition, we elected the package of practical expedients permitted under the transition guidance within the new standard, which among other things, allowed us to carry forward the historical lease classification. The adoption of the New Leasing Standard resulted in the recording of operating lease liabilities of \$86.7 million and right-of-use assets of \$83.7 million. Prior to our adoption of the New Leasing Standard, rent prepayments of approximately \$1.0 million were recorded within other current assets and the impact of recognizing rent expense on a straight-line basis of approximately \$4.0 million was recorded within other current and long-term liabilities. Upon adoption of the New Leasing Standard, these rent prepayments and straight-line rent impacts are now recorded within operating lease right-of-use assets and represent the net differences between operating lease liabilities and right-of-use assets.

The New Leasing Standard requires us to classify certain reagent rental programs as sales-type leases and thus accelerate instrument revenue and cost recognition at the time of instrument placement. We did not change the historical lease classification for placements prior to January 1, 2019, therefore this change applied to certain new placements beginning on January 1, 2019. Under prior U.S. GAAP, instruments placed under our reagent rental programs were classified as operating leases and instrument revenue and cost was recognized over the term of the program. The New Leasing Standard did not have a material impact on our consolidated earnings and had no impact on cash flows for the year ended December 31, 2019.

Adoption of the New Leasing Standard impacted our consolidated balance sheet as follows:

<i>(in thousands)</i>	Consolidated Balance Sheet		
	Previous U.S. GAAP December 31, 2018 (Reported)	New U.S. GAAP January 1, 2019	Impact of the New Leasing Standard
ASSETS			
Other current assets	\$ 108,220	\$ 107,228	\$ (992)
Total current assets	\$ 654,172	\$ 653,180	\$ (992)
Operating lease right-of-use asset	\$ —	\$ 83,707	\$ 83,707
Total long-term assets	\$ 883,177	\$ 966,884	\$ 83,707
TOTAL ASSETS	\$ 1,537,349	\$ 1,620,064	\$ 82,715
LIABILITIES			
Accrued liabilities	\$ 260,683	\$ 274,459	\$ 13,776
Total current liabilities	\$ 770,444	\$ 784,220	\$ 13,776
Long-term operating lease liability	\$ —	\$ 68,939	\$ 68,939
Total long-term liabilities	\$ 776,138	\$ 845,077	\$ 68,939
TOTAL LIABILITIES	\$ 1,546,582	\$ 1,629,297	\$ 82,715

We adopted ASU 2018-02, *Income Statement – Reporting Comprehensive Income (Topic 220) Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income*, on January 1, 2019. We elected not to reclassify the \$1.7 million of stranded tax effects from the 2017 Tax Cuts and Job Act (the “2017 Tax Act”) enacted on December 22, 2017, from accumulated other comprehensive income to retained earnings in the period of adoption.

(w) New Accounting Pronouncements Not Yet Adopted

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments – Credit Losses (Topic 326)*, which require that financial assets measured at amortized cost be presented at the net amount expected to be collected. Since then, the FASB has issued an update to ASU 2016-13. The allowance for credit losses is a valuation account that is deducted from the amortized cost basis of the financial asset to present the net carrying value at the amount expected to be collected. The income statement reflects the measurement of credit losses for newly recognized financial assets, as well as the increases or decreases of expected credit losses that have taken place during the period. The measurement of expected credit losses is based upon historical experience, current conditions, and reasonable and supportable forecasts that affect the collectability of the reported amount. The amendments in this update are effective for fiscal years beginning after December 15, 2019 and interim periods within those annual periods. We do not anticipate any material impact related to our allowance for doubtful accounts or otherwise from this amendment on the consolidated financial statements.

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement* (“ASU 2018-13”), which modifies the disclosure

requirements of fair value measurements. ASU 2018-13 is effective for fiscal years beginning after December 15, 2019, and early adoption is permitted. The adoption of this guidance will not have a material impact on the consolidated financial statements.

NOTE 3. REVENUE RECOGNITION

Effective January 1, 2018, we adopted the New Revenue Standard using the modified retrospective method for all contracts not completed as of the date of adoption. We recognized the cumulative effect of initially applying the New Revenue Standard as an adjustment to the opening balance of retained earnings. The comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods presented.

Our revenue is recognized when, or as, performance obligations under the terms of a contract are satisfied, which occurs when control of the promised products or services is transferred to a customer. We exclude sales, use, value-added, and other taxes we collect on behalf of third parties from revenue. Revenue is measured as the amount of consideration we expect to receive in exchange for transferring products or services to a customer. To accurately present the consideration received in exchange for promised products or services, we apply the five-step model outlined below:

1. Identification of a contract or agreement with a customer
2. Identification of our performance obligations in the contract or agreement
3. Determination of the transaction price
4. Allocation of the transaction price to the performance obligations
5. Recognition of revenue when, or as, we satisfy a performance obligation

We enter into contracts that include various combinations of products and services, which are generally capable of being distinct and accounted for as separate performance obligations. The timing of revenue recognition, billings, and cash collections results in accounts receivable, contract assets, and lease receivables as a result of revenue recognized in advance of billings (included within other assets), and contract liabilities or deferred revenue as a result of receiving consideration in advance of revenue recognition within our consolidated balance sheet. Our general payment terms range from 30 to 60 days, with exceptions in certain geographies. Below is a listing of our major categories of revenue for our products and services:

Diagnostic Products and Accessories. Diagnostic products and accessories revenues, including IDEXX VetLab[®] consumables and accessories, rapid assay, LPD, Water, and OPTI testing products, are predominantly recognized and invoiced at the time of shipment, which is when the customer obtains control of the product based on legal title transfer and we have the right to payment. Shipping costs reimbursed by the customer are included in revenue and cost of sales. As a practical expedient, we do not account for shipping activities as a separate performance obligation.

Reference Laboratory Diagnostic and Consulting Services. Reference laboratory revenues are recognized and invoiced when the laboratory diagnostic service is performed.

Instruments, Software and Systems. CAG Diagnostics capital instruments, veterinary software and diagnostic imaging systems revenues are generally recognized and invoiced when the customer obtains control of the products based on legal title transfer and we have the right to payment, which generally occurs at the time of installation and customer acceptance. Our instruments, software, and systems are often included in one of our significant customer programs, as further described below. For veterinary software systems that include multiple performance obligations, such as perpetual software licenses and computer hardware, we allocate revenue to each performance obligation based on estimates of the price that we would charge the customer for each promised product or service if it were sold on a standalone basis.

Lease Revenue. Revenues from instrument rental agreements and reagent rental programs are recognized either as operating leases on a ratable basis over the term of the agreement or as sales-type leases at the time of installation and customer acceptance. Customers typically pay for the right to use instruments under rental agreements in equal monthly amounts over the term of the rental agreement. Our reagent rental programs provide our customers the right to use our instruments upon entering into agreements to purchase specified amounts of consumables, which are considered embedded leases. For some agreements, the customers are provided with the right to purchase the instrument at the end of the lease term. Lease revenues from these agreements are presented in product revenue on our consolidated income statement. Lease revenue was approximately \$20.8 million for the year ended December 31, 2019, as compared to \$12.2 million for the year ended December 31, 2018, including both operating leases and sales-type leases under ASC 842, *Leases*, during 2019, and ASC 840, *Leases*, prior to 2019. See below for revenue recognition under our reagent rental programs.

Extended Warranties and Post-Contract Support. CAG Diagnostics capital instruments and diagnostic imaging systems extended warranties typically provide customers with continued coverage for a period of one to five years beyond the first-year standard warranty. Customers can either pay in full for the extended warranty at the time of instrument or system purchase or can be billed on a quarterly basis over the term of the contract. We recognize revenue associated with extended warranties over time on a ratable basis using a time elapsed measure of performance over the contract term, which approximates the expected timing in which applicable services are performed.

Veterinary software post-contract support provides customers with access to technical support when and as needed through access to call centers and online customer assistance. Post-contract support contracts typically have a term of 12 months and customers are billed for post-contract support in equal quarterly amounts over the term. We recognize revenue for post-contract support services over time on a ratable basis using a time-elapsed measure of performance over the contract term, which approximates the expected timing in which applicable services are performed.

On December 31, 2018, our deferred revenue related to extended warranties and post-contract support was \$40.7 million, of which approximately \$21.0 million was recognized during the year ended December 31, 2019. Furthermore, as a result of new agreements, our deferred revenue related to extended warranties and post-contract support was \$38.0 million at December 31, 2019. We do not disclose information about remaining performance obligations that are part of contracts with an original expected duration of one year or less and do not adjust for the effect of the financing components when the period between customer payment and revenue recognition is one year or less. Deferred revenue related to extended warranties and post-contract support with an original duration of more than one year was \$24.4 million at December 31, 2019, of which approximately 37%, 31%, 20%, 9%, and 3% are expected to be recognized during 2020, 2021, 2022, 2023, and thereafter, respectively. Additionally, we have determined these agreements do not include a significant financing component.

SaaS Subscriptions. We offer a variety of veterinary software and diagnostic imaging SaaS subscriptions including IDEXX Neo[®], Animana[®], Pet Health Network[®] Pro, Petly[®] Plans, Web PACS, rVetLink[®], and Smart Flow[™]. We recognize revenue for our SaaS subscriptions over time on a ratable basis over the contract term, beginning on the date our service is made available to the customer. Our subscription contracts vary in term from monthly to two years. Customers typically pay for our subscription contracts in equal monthly amounts over the term of the agreement. Deferred revenue related to our SaaS subscriptions is not material.

Contracts with Multiple Performance Obligations. We enter into contracts with multiple performance obligations where customers purchase a combination of IDEXX products and services. Determining whether products and services are considered distinct performance obligations that should be accounted for separately requires significant judgment. We determine the transaction price for a contract based on the total consideration we expect to receive in exchange for the transferred goods or services. To the extent the transaction price includes variable consideration, such as volume rebates or expected price adjustments, we apply judgment in constraining the estimated variable consideration due to factors that may cause reversal of revenue recognized. We evaluate constraints based on our historical and projected experience with similar customer contracts.

We allocate revenue to each performance obligation in proportion to the relative standalone selling prices and recognize revenue when control of the related goods or services is transferred for each obligation. We utilize the observable standalone selling price when available, which represents the price charged for the performance obligation when sold separately. When standalone selling prices for our products or services are not directly observable we determine the standalone selling prices using relevant information available and apply suitable estimation methods including, but not limited to, the cost plus a margin approach. We recognize revenue as each performance obligation is satisfied, either at a point in time or over time, as described in the revenue categories above. We do not disclose information about remaining performance obligations that are part of contracts with an original expected duration of one year or less.

The following customer programs represent our most significant customer contracts which contain multiple performance obligations:

Customer Commitment Programs. We offer customer incentives upon entering into multi-year agreements to purchase annual minimum amounts of products and services.

Up-Front Customer Loyalty Programs. Our up-front loyalty programs provide customers with incentives in the form of cash payments or IDEXX Points upon entering into multi-year agreements to purchase annual minimum amounts of future products or services. If a customer breaches its agreement, they are required to refund all or a portion of the up-front cash or IDEXX Points, or make other repayments,

remedial actions, or both. Up-front incentives to customers in the form of cash or IDEXX Points are not made in exchange for distinct goods or services and are capitalized as customer acquisition costs within other current and long-term assets, which are subsequently recognized as a reduction to revenue over the term of the customer agreement. If these up-front incentives are subsequently utilized to purchase instruments, we allocate total consideration, including future committed purchases less up-front incentives and estimates of expected price adjustments, based on relative standalone selling prices to identified performance obligations and recognize instrument revenue and cost at the time of installation and customer acceptance. We have determined these agreements do not include a significant financing component. Differences between estimated and actual customer purchases may impact the amount and timing of revenue recognition.

On December 31, 2018, our capitalized customer acquisition costs were \$124.4 million, of which approximately \$34.6 million were recognized as a reduction of revenue during the year ended December 31, 2019. Furthermore, as a result of new up-front customer loyalty payments, net of subsequent recognition, our capitalized customer acquisition costs were \$137.4 million at December 31, 2019. We monitor customer purchases over the term of their agreement to assess the realizability of our capitalized customer acquisition costs and review estimates of variable consideration. Impairments, revenue adjustments that relate to performance obligations satisfied in prior periods, and contract modifications during the years ended December 31, 2019 and 2018, were not material.

Volume Commitment Programs. Our volume commitment programs, such as our IDEXX 360 program, provide customers with free or discounted instruments or systems upon entering into multi-year agreements to purchase annual minimum amounts of future products and services. We allocate total consideration, including future committed purchases and expected price adjustments, based on relative standalone selling prices to identified performance obligations and recognize instrument revenue and cost at the time of installation and customer acceptance in advance of billing the customer, which is also when the customer obtains control of the instrument based on legal title transfer. Our right to future consideration related to instrument revenue is recorded as a contract asset within other current and long-term assets. The contract asset is transferred to accounts receivable when customers are billed for future products and services over the term of the contract. We have determined that these agreements do not include a significant financing component. Differences between estimated and actual customer purchases may impact the amount and timing of revenue recognition.

On December 31, 2018, our volume commitment contract assets were \$40.9 million, of which approximately \$8.9 million were reclassified to accounts receivable when customers were billed for related products and services during the year ended December 31, 2019. Furthermore, as a result of new placements under volume commitment programs, net of subsequent amounts reclassified to accounts receivable, our contract assets were \$83.9 million at December 31, 2019. We monitor customer purchases over the term of their agreement to assess the realizability of our contract assets and review estimates of variable consideration. Impairments, revenue adjustments that relate to performance obligations satisfied in prior periods, and contract modifications during the years ended December 31, 2019 and 2018, were not material.

For our up-front customer loyalty and volume commitment programs, we estimate future revenues related to multi-year agreements to be approximately \$1.9 billion, of which approximately 25%, 22%, 20%, 17%, and 16% are expected to be recognized during 2020, 2021, 2022, 2023, and thereafter, respectively. These future revenues relate to performance obligations not yet satisfied, for which customers have committed to purchase goods and services, net of the expected revenue reductions from customer acquisition costs and expected price adjustments, and as a result, are lower than stated contractual commitments by our customers.

Instrument Rebate Programs. Our instrument rebate programs, previously referred to as IDEXX Instrument Marketing Programs, require an instrument purchase and provide customers the opportunity to earn future rebates based on the volume of products and services they purchase over the term of the program. We account for the customer's right to earn rebates on future purchases as a separate performance obligation and determine the standalone selling price based on an estimate of rebates the customer will earn over the term of the program. Total consideration allocated to identified performance obligations is limited to goods and services that the customer is presently obligated to purchase and does not include estimates of future purchases that are optional. We allocate total consideration to identified performance obligations, including the customer's right to earn rebates on future purchases, which is deferred and recognized upon the purchase of future products and services, offsetting future rebates as they are earned.

On December 31, 2018, our deferred revenue related to instrument rebate programs was \$57.4 million, of which approximately \$18.1 million were recognized when customers purchased eligible products and services and earned rebates during the year ended December 31, 2019. Furthermore, as a result of new instrument purchases under rebate programs, net of subsequent recognition, our deferred revenue was \$49.1 million at December 31, 2019, of which approximately 33%, 27%, 19%, 12%, and 9% are expected to be recognized during 2020, 2021, 2022, 2023, and thereafter, respectively.

Reagent Rental Programs. Our reagent rental programs provide our customers the right to use our instruments upon entering into multi-year agreements to purchase annual minimum amounts of consumables. These types of agreements include an embedded lease for the right to use our instrument and we determine the amount of lease revenue allocated to the instrument based on relative standalone selling prices. We evaluate the terms of these embedded leases to determine classification as either a sales-type lease or an operating lease, as defined within the New Leasing Standard. We elected the package of practical expedients permitted under the transition guidance within the New Leasing Standard, which among other things, allowed us to carryforward our historical lease classification and therefore all reagent rental program placements prior to January 1, 2019 will continue to be classified as operating leases. We have not elected the practical expedient within the New Leasing Standard to combine lease and non-lease components.

Sales-type Reagent Rental Programs. Our reagent rental programs that effectively transfer control of instruments to our customers are classified as sales-type leases and we recognize instrument revenue and cost in advance of billing the customer, at the time of installation and customer acceptance. Our right to future consideration related to instrument revenue is recorded as a lease receivable within other current and long-term assets, and is transferred to accounts receivable when customers are billed for future products and services over the term of the contract. As a result of new placements under reagent rental programs, our lease receivable assets were \$7.2 million at December 31, 2019. The impacts of discounting and unearned income at December 31, 2019, were not material. Profit and loss recognized at the commencement date and interest income during the year ended December 31, 2019, were not material. We monitor customer purchases over the term of their agreement to assess the realizability of our lease receivable assets. Impairments during the year ended December 31, 2019, were not material.

Operating-type Reagent Rental Programs. Our reagent rental programs that do not effectively transfer control of instruments to our customers are classified as operating leases and we recognize instrument revenue and costs ratably over the term of the agreement. The cost of the instrument is capitalized within property and equipment. See "Note 8. Property and Equipment, Net," for amounts transferred from inventory to property and equipment.

We estimate future revenue to be recognized related to our reagent rental programs of approximately \$31.6 million, of which approximately 39%, 29%, 18%, 8%, and 6% are expected to be recognized during 2020, 2021, 2022, 2023, and thereafter, respectively. These future revenues relate to performance obligations not yet satisfied for which customers have committed to future purchases, net of any expected price adjustments, and as a result, may be lower than stated contractual commitments by our customers.

Other Customer Incentive Programs. Certain agreements with customers include discounts or rebates on the sale of products and services applied retrospectively, such as volume rebates achieved by purchasing a specified purchase threshold of goods and services. We account for these discounts as variable consideration and estimate the likelihood of a customer meeting the threshold in order to determine the transaction price using the most predictive approach. We typically use the most-likely-amount method, for incentives that are offered to individual customers, and the expected-value method, for programs that are offered to a broad group of customers. Revenue adjustments that relate to performance obligations satisfied in prior periods during the years ended December 31, 2019 and 2018, were not material. Refund obligations related to customer incentive programs are recorded in accrued liabilities for the actual issuance of incentives, incentives earned but not yet issued and estimates of incentives to be earned in the future.

Program Combinations. At times, we combine elements of our significant customer programs within a single customer contract. We separate each significant program element and include the contract assets, customer acquisition costs, deferred revenues and estimated future revenues within the most relevant program disclosures above. Each customer contract is presented as a net contract asset or net contract liability on our consolidated balance sheet.

Future market conditions and changes in product offerings may cause us to change marketing strategies to increase or decrease customer incentive offerings, possibly resulting in incremental reductions of revenue in future periods as compared to reductions in the current or prior periods. Additionally, certain customer programs require us to estimate, based on historical experience, and apply judgment to predict the amounts of future customer purchases, customer rebates and other incentive payments, and price adjustments related to multi-year agreements. Differences between estimated and actual customer purchases may impact the amount and timing of revenue recognition.

IDEXX Points. IDEXX Points may be applied to trade receivables due to us, converted to cash, or applied against the purchase price of IDEXX products and services. We consider IDEXX Points equivalent to cash. IDEXX Points that have not yet been used by customers are included in accrued liabilities until utilized or expired. Breakage is not material because customers can apply IDEXX Points to trade receivables at any time.

Accounts Receivable. We recognize revenue when it is probable that we will collect substantially all of the consideration to which we will be entitled, based on the customer's intent and ability to pay the promised consideration. We apply judgment in determining the customer's ability and intention to pay, which is based on a variety of factors including the customer's historical payment experience or, in the case of a new customer, published credit and financial information pertaining to the customer. We maintain allowances for doubtful accounts for potentially uncollectible receivables. We base our estimates on a detailed analysis of specific customer situations and a percentage of our accounts receivable by aging category. Additional allowances may be required if either the financial condition of our customers were to deteriorate, or a strengthening U.S. dollar impacts the ability of foreign customers to make payments to us on their U.S. dollar-denominated purchases. Account balances are charged off against the allowance when we believe it is probable the receivable will not be recovered. We do not have any off-balance sheet credit exposure related to our customers. We have no significant customers that accounted for greater than 10% of our consolidated revenues and we have no concentration of credit risk as of December 31, 2019.

Disaggregated Revenues. We present disaggregated revenue for our CAG segment based on major product and service categories. Our Water segment is comprised of a single major product category. Although our LPD segment does not meet the quantitative thresholds to be reported as a separate segment, we believe it is important to disaggregate these revenues as a major product and service category within our Other reportable segment given its distinct markets, and therefore we have elected to report LPD as a reportable segment.

The following table presents disaggregated revenue by major product and service categories:

<i>(in thousands)</i>	For the Years Ended December 31,		
	2019	2018	2017
CAG segment revenue:			
CAG Diagnostics recurring revenue:	\$ 1,828,329	\$ 1,654,530	\$ 1,451,701
<i>IDEXX VetLab consumables</i>	<i>693,360</i>	<i>617,237</i>	<i>518,774</i>
<i>Rapid assay products</i>	<i>232,149</i>	<i>217,541</i>	<i>205,309</i>
<i>Reference laboratory diagnostic and consulting services</i>	<i>822,497</i>	<i>746,794</i>	<i>660,142</i>
<i>CAG Diagnostics services and accessories</i>	<i>80,323</i>	<i>72,958</i>	<i>67,476</i>
CAG Diagnostics capital - instruments	132,685	134,264	119,963
Veterinary software, services and diagnostic imaging systems	158,169	146,634	131,713
CAG segment revenue	<u>2,119,183</u>	<u>1,935,428</u>	<u>1,703,377</u>
Water segment revenue	132,850	125,198	114,395
LPD segment revenue	132,635	130,581	128,481
Other segment revenue	22,240	22,035	22,805
Total revenue	<u>\$ 2,406,908</u>	<u>\$ 2,213,242</u>	<u>\$ 1,969,058</u>

Revenue by principal geographic area, based on customers' domiciles, was as follows:

<i>(in thousands)</i>	For the Years Ended December 31,		
	2019	2018	2017
Americas			
United States	\$ 1,495,516	\$ 1,357,909	\$ 1,203,547
Canada	99,550	94,206	83,818
Latin America	56,515	50,969	46,893
	<u>1,651,581</u>	<u>1,503,084</u>	<u>1,334,258</u>
Europe, the Middle East and Africa			
Germany	104,081	100,459	88,328
United Kingdom	90,969	87,807	80,149
France	64,767	60,319	55,993
Italy	39,725	36,956	31,889
Spain	36,439	33,687	28,866
Switzerland	20,855	19,875	17,913
Netherlands	19,397	18,090	15,877
Other	122,206	114,877	100,409
	<u>498,439</u>	<u>472,070</u>	<u>419,424</u>
Asia Pacific Region			
Australia	71,069	63,386	56,994
Japan	67,246	60,213	53,344
China	57,518	57,621	55,810
Other	61,055	56,868	49,228
	<u>256,888</u>	<u>238,088</u>	<u>215,376</u>
Total	<u>\$ 2,406,908</u>	<u>\$ 2,213,242</u>	<u>\$ 1,969,058</u>

Costs to Obtain a Contract. We capitalize sales commissions and the related fringe benefits earned by our sales force when considered incremental and recoverable costs of obtaining a contract. Our contracts include performance obligations related to various goods and services, some of which are satisfied at a point in time and others over time. Commission costs related to performance obligations satisfied at a point in time are expensed at the time of sale, which is when revenue is recognized. Commission costs related to long-term service contracts and performance obligations satisfied over time, including extended warranties and SaaS subscriptions, are deferred and recognized on a systematic basis that is consistent with the transfer of the goods or services to which the asset relates. We apply judgment in estimating the amortization period, which ranges from 3 to 7 years, by taking into consideration our customer contract terms, history of renewals, expected length of customer relationship, as well as the useful life of the underlying technology and products. Amortization expense is included in sales and marketing expenses in the accompanying consolidated statements of income. Deferred commission costs are periodically reviewed for impairment.

On December 31, 2018, our deferred commission costs, included within other assets, were \$13.9 million, of which approximately \$4.5 million of commission expense were recognized during the year ended December 31, 2019. Furthermore, as a result of commissions related to new extended warranties and SaaS subscriptions, net of subsequent recognition, our deferred commission costs were \$15.6 million at December 31, 2019. Impairments of deferred commission costs during the years ended December 31, 2019 and 2018, were not material.

NOTE 4. ACQUISITIONS AND INVESTMENTS

We believe that our acquisitions of businesses and other assets enhance our existing businesses by either expanding our geographic range and customer base or expanding our existing product lines.

On October 7, 2019, we acquired the assets of a multi-site reference laboratory business in the mid-west of the U.S. for \$50.0 million in cash. This acquisition expands our national reference laboratory presence in the U.S., and was accounted for as a business combination. The preliminary fair value of the assets acquired consists of \$25.0 million in intangible assets, primarily for customer relationships, with a weighted average life of 10 years, \$0.2 million of tangible assets, and \$24.8 million of goodwill, representing synergies within our reference laboratory portfolio. The purchase price allocation is subject to change if additional information becomes available concerning the fair value of the assets acquired. Additional adjustments, if any, to the purchase price allocation will be made as soon as practicable but no later than one year from the date of acquisition. The

goodwill is expected to be deductible for income tax purposes. Pro forma information has not been presented for this acquisition because such information is not material to the financial statements. The results of operations have been included in our CAG segment since the acquisition date. The acquisition expenses incurred were not material.

During the fourth quarter of 2018, we invested \$5.0 million for a noncontrolling minority interest in a technology company. This equity investment has been accounted for under the cost method of accounting.

During the third quarter of 2018, we acquired substantially all of the assets of a software company for \$25.0 million. This acquisition expands the IDEXX suite of veterinary software offerings and further underscores our commitment to investing in software innovations that advance the veterinary profession. This acquisition was accounted for as a business combination. The fair value of the assets acquired consist of \$20.3 million of goodwill, representing synergies with our current software product offerings, \$2.6 million in technology intangible assets, \$2.4 million in customer relationship intangible assets, and \$0.3 million of net liabilities. The goodwill is expected to be deductible for income tax purposes. Pro forma information has not been presented for this acquisition because such information is not material to the financial statements. The results of operations have been included in our CAG segment since the acquisition date. The acquisition expenses incurred were not material.

During the second quarter of 2017, we acquired the assets of two software companies that expand our suite of technology applications for the veterinary profession, specifically related to patient referral management and other connectivity needs between practices and other parties. The combined purchase price of \$15.0 million consists of \$12.0 million paid at closing and a \$3.0 million contingent payment to be paid within 36 months if certain commercial goals are achieved, of which \$1.0 million was paid in 2019 and in 2018, respectively. We finalized the valuation of the acquired assets in the third quarter of 2017. The fair value estimate of the assets acquired consists of \$13.3 million of goodwill, representing synergies within our broader CAG portfolio, \$1.0 million of customer relationship intangibles and \$0.6 million of technology intangible assets. Goodwill related to these acquisitions is expected to be deductible for income tax purposes. The amount of net tangible assets acquired was immaterial. Pro forma information has not been presented for these acquisitions because such information is not material to the financial statements. The results of operations have been included in our CAG segment since the acquisition date. The acquisition expenses incurred were not material.

NOTE 5. SHARE-BASED COMPENSATION

We provide for various forms of share-based compensation awards to our employees and non-employee directors. Our share-based compensation plans allow for the issuance of a mix of stock options, restricted stock, stock appreciation rights, employee stock purchase rights and other stock unit awards. With the exception of stock options, the fair value of our awards is equal to the closing stock price of IDEXX common stock on the date of grant. We calculate the fair value of our stock option awards using the Black-Scholes-Merton option-pricing model. For stock options, restricted stock units ("RSUs"), and deferred stock units ("DSUs"), share-based compensation expense is recognized net of estimated forfeitures, on a straight-line basis over the requisite service period of the award for stock options. For performance-based restricted stock units ("PBRsUs"), share-based compensation expense is recognized net of estimated forfeitures, on a grade-vesting methodology over the requisite service period.

Stock options permit a holder to buy IDEXX stock upon vesting at the stock option exercise price set on the day of grant. An RSU is an agreement to issue shares of IDEXX stock at the time of vesting. A PBRsU is an agreement to issue shares of IDEXX stock at the time of vesting upon successful completion of certain performance goals. DSUs are granted under our Executive Deferred Compensation Plan (the "Executive Plan") and non-employee Director Deferred Compensation Plan (the "Director Plan"). DSUs may or may not have vesting conditions depending on the plan under which they are issued. We did not issue any restricted stock or stock appreciation rights during the years ended December 31, 2019, 2018 and 2017, nor were any restricted stock or stock appreciation rights outstanding as of those years ended.

We primarily issue shares of common stock to satisfy stock option exercises and employee stock purchase rights and to settle RSUs, PBRsUs, and DSUs. We issue shares of treasury stock to settle certain RSUs and upon the exercise of certain stock options, which were not material for the years ended December 31, 2019, 2018 and 2017. The number of shares of common stock and treasury stock issued are equivalent to the number of awards exercised or settled.

With the exception of employee stock purchase rights, equity awards are issued to employees and non-employee directors under the 2018 Stock Incentive Plan (the "2018 Stock Plan"). Our Board of Directors has authorized the issuance of 7.5 million shares of our common stock under the 2018 Stock Plan. Any shares that are subject to awards of stock options or stock appreciation rights will be counted against the share limit as one share for every share granted. Any shares that are issued

other than stock options and stock appreciation rights will be counted against the share limit as 2.4 shares for every share granted. If any shares issued under our prior plans are forfeited, settled for cash, or expire, these shares, to the extent of such forfeiture, cash settlement or expiration, will again be available for issuance under the 2018 Stock Plan. As of December 31, 2019, there were approximately 6.8 million remaining shares available for issuance under the 2018 Stock Plan.

Share-Based Compensation

Share-based compensation costs are classified in the consolidated financial statements consistent with the classification of cash compensation paid to the employees receiving such share-based compensation. The following is a summary of share-based compensation costs and related tax benefits recorded in our consolidated statements of income:

	For the Years Ended December 31,		
	2019	2018	2017
<i>(in thousands)</i>			
Share-based compensation expense included in cost of revenue	\$ 2,681	\$ 2,816	\$ 2,675
Share-based compensation expense included in operating expenses	36,597	22,341	20,842
Total share-based compensation expense included in consolidated statements of income	39,278	25,157	23,517
Income tax benefit resulting from share-based compensation expense	(4,861)	(4,190)	(6,810)
Net share-based compensation expense included in consolidated statements of income, excluding tax benefit from settlement of share-based awards	34,417	20,967	16,707
Income tax benefit resulting from settlement of share-based awards	(19,140)	(21,496)	(27,743)
Net expense (benefit) related to share-based compensation arrangements included in consolidated statements of income	<u>\$ 15,277</u>	<u>\$ (529)</u>	<u>\$ (11,036)</u>

In connection with our CEO transition, we entered into a mutual separation agreement with our former CEO, pursuant to which Mr. Ayers's outstanding stock options were modified. As a result of the modification of Mr. Ayers's outstanding stock options, we recognized share-based compensation expense of approximately \$10.9 million in the fourth quarter of 2019, primarily representing an acceleration of the cost of the equity awards, which was offset by a reduction to our provision for income taxes of approximately \$0.8 million. Other than the modification to Mr. Ayers's stock options, as described above, there were no other material modifications to the terms of outstanding options, RSUs, PBRs, or DSUs during the years ended December 31, 2019, 2018 or 2017.

Share-based compensation expense is reduced for an estimate of the number of awards that are expected to be forfeited. We use historical data and other factors to estimate expected employee terminations and to evaluate whether particular groups of employees have significantly different forfeiture expectations.

The total unrecognized compensation expense, net of estimated forfeitures, for unvested share-based compensation awards at December 31, 2019, was \$50.1 million, which will be recognized over a weighted average period of approximately 1.7 years.

Stock Options

Prior to December 4, 2019, all options granted to employees primarily vest ratably over five years on each anniversary of the date of grant. Options granted to non-employee directors vest fully on the first anniversary of the date of grant. Employee grants after December 4, 2019, will vest ratably over 4 years. Vesting of option awards issued is conditional based on continuous service. Options granted after May 8, 2013 have a contractual term of ten years and options granted between January 1, 2006 and May 8, 2013 have contractual terms of seven years. Upon any change in control of the company, 25% of the unvested stock options then outstanding will vest and become exercisable. However, if the acquiring entity does not assume outstanding options, then all options will vest immediately prior to the change in control.

We use the Black-Scholes-Merton option-pricing model to determine the fair value of options granted. Option-pricing models require the input of highly subjective assumptions, particularly for the expected stock price volatility and the expected term of options. Changes in the subjective input assumptions can materially affect the fair value estimate. Our expected stock price volatility assumptions are based on the historical volatility of our stock over periods that are similar to the expected terms of grants and other relevant factors. We derive the expected term based on historical experience and other relevant factors concerning expected employee behavior with regard to option exercise. The risk-free interest rate is based on U.S. Treasury yields for a maturity approximating the expected term calculated at the date of grant. We have never paid any cash dividends on

our common stock and we have no intention to pay a dividend at this time; therefore, we assume that no dividends will be paid over the expected terms of option awards.

We determine the assumptions used in the valuation of option awards as of the date of grant. Differences in the expected stock price volatility, expected term or risk-free interest rate may necessitate distinct valuation assumptions at those grant dates. As such, we may use different assumptions for options granted throughout the year. The weighted averages of the valuation assumptions used to determine the fair value of each option award on the date of grant and the weighted average estimated fair values were as follows:

	For the Years Ended December 31,		
	2019	2018	2017
Share price at grant	\$ 218.66	\$ 179.56	\$ 142.89
Share exercise price	\$ 220.88	\$ 179.56	\$ 142.89
Expected stock price volatility	26%	24%	26%
Expected term, in years	6.0	5.8	5.8
Risk-free interest rate	2.4%	2.7%	2.0%
Weighted average fair value of options granted	\$ 65.53	\$ 52.99	\$ 40.83

A summary of the status of options granted under our share-based compensation plans at December 31, 2019, and changes during the year then ended, are presented in the table below:

	Number of Options (000)	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term	Aggregate Intrinsic Value (\$000)
Outstanding as of December 31, 2018	2,449	\$ 91.64		
Granted	351	\$ 220.88		
Exercised	(445)	\$ 58.32		
Forfeited	(44)	\$ 122.23		
Outstanding as of December 31, 2019	2,311	\$ 117.13	6.4	\$ 334,116
Fully vested as of December 31, 2019	1,222	\$ 83.11	5.4	\$ 217,569
Fully vested and expected to vest as of December 31, 2019	2,277	\$ 116.52	6.4	\$ 330,606

The total fair value of options vested was \$12.2 million, \$10.5 million, and \$9.2 million during the years ended December 31, 2019, 2018 and 2017, respectively.

Intrinsic value of stock options exercised represents the amount by which the market price of the common stock exceeded the exercise price, before applicable income taxes. The total intrinsic value of stock options exercised was \$83.7 million, \$87.1 million, and \$78.3 million during the years ended December 31, 2019, 2018 and 2017, respectively.

Restricted Stock Units

Prior to December 4, 2019, the majority of RSUs, including our PBRsUs, granted to employees vest ratably over five years on each anniversary of the date of grant. Employee grants after December 4, 2019, will vest ratably over 4 years. PBRsUs granted to employees vest based on meeting performance goals set on the day of grant. RSUs granted to non-employee directors vest fully on the first anniversary of the date of grant. Vesting as it relates to RSUs and PBRsUs issued is conditional based on continuous service. Upon any change in control of the company, 25 percent of the unvested RSUs and PBRsUs then outstanding will vest, provided, however, that if the acquiring entity does not assume the RSUs and PBRsUs, then all such units will vest immediately prior to the change in control. At time of grant, we assume all PBRsUs will meet performance goals to vest.

A summary of the status of RSUs and PBRsUs granted under our share-based compensation plans at December 31, 2019, and changes during the period then ended, are presented in the table below:

	Number of Units (000)	Weighted Average Grant- Date Fair Value
Nonvested as of December 31, 2018	306	\$ 113.87
Granted	80	\$ 209.39
Vested	(113)	\$ 95.20
Forfeited	(15)	\$ 134.89
Nonvested as of December 31, 2019	258	\$ 150.50
Expected to vest as of December 31, 2019	243	\$ 149.65

The total fair value of RSUs and PBRsUs vested was \$23.8 million, \$24.5 million, and \$22.1 million during the years ended December 31, 2019, 2018 and 2017, respectively. The aggregate intrinsic value of nonvested RSUs and PBRsUs as of December 31, 2019, is equal to the fair value of IDEXX's common stock as of December 31, 2019, multiplied by the number of nonvested units as of December 31, 2019.

Deferred Stock Units

Under our Director Plan, non-employee directors may defer a portion of their cash fees in the form of vested DSUs. Prior to 2014, certain members of our management could elect to defer a portion of their cash compensation in the form of vested deferred stock units under our Executive Plan. Each DSU represents the right to receive one unissued share of our common stock. These recipients receive a number of DSUs equal to the amount of cash fees or compensation deferred divided by the closing sale price of the common stock on the date of deferral. Also, under the Director Plan, non-employee directors are awarded annual grants of DSUs that vest fully on the first anniversary of the date of grant. Vesting for these annual DSU grants is conditional based on continuous service. DSUs are exchanged for a fixed number of shares of common stock, upon vesting if vesting criteria apply, subject to the limitations of the Director and Executive Plans and applicable law.

There were approximately 143,000 and 162,000 vested DSUs outstanding under our share-based compensation plans as of December 31, 2019 and 2018, respectively. Unvested DSUs as of December 31, 2019 and 2018, were not material.

Employee Stock Purchase Rights

Employee stock purchase rights are issued under the 1997 Employee Stock Purchase Plan, under which we reserved and may issue up to an aggregate of 4.7 million shares of common stock in periodic offerings. Under this plan, stock is sold to employees at a 15% discount off the closing price of the stock on the last day of each quarter. The dollar value of this discount is equal to the fair value of purchase rights recognized as share-based compensation. We issued approximately 47,000, 52,000, and 61,000 shares of common stock in connection with the Employee Stock Purchase Plan during the years ended December 31, 2019, 2018 and 2017, respectively. As of December 31, 2019, there were approximately 1.1 million remaining shares available for issuance under the 1997 Employee Stock Purchase Plan.

NOTE 6. INVENTORIES

Inventories are stated at the lower of cost (first-in, first-out) or net realizable value. Net realizable value is the estimated selling price in the ordinary course of business, less reasonably predictable costs of completion, disposal, and transportation. We write down the carrying value of inventory for estimated obsolescence by an amount equal to the difference between the cost of inventory and the estimated market value when warranted based on assumptions of future demand, market conditions, remaining shelf life, or product functionality. If actual market conditions or results of estimated functionality are less favorable than those we estimated, additional inventory write-downs may be required, which would have a negative effect on results of operations.

Unpaid inventory reflected within accounts payable in our consolidated balance sheets was \$39.5 million, \$41.3 million, and \$37.2 million at December 31, 2019, 2018 and 2017, respectively.

The components of inventories are as follows:

<i>(in thousands)</i>	December 31, 2019	December 31, 2018
Raw materials	\$ 41,202	\$ 31,973
Work-in-process	20,077	17,009
Finished goods	133,740	124,321
Inventories	\$ 195,019	\$ 173,303

NOTE 7. LEASES

The majority of our facilities are occupied under operating lease arrangements with various expiration dates through 2067, some of which include options to extend the life of the lease, and some of which include options to terminate the lease within 1 year. In certain instances, we are responsible for the real estate taxes and operating expenses related to these facilities. Additionally, we enter into operating leases for certain vehicles and office equipment in the normal course of business. We determine the expected term of any executed agreements using the non-cancelable lease term plus any renewal options by which the failure to renew imposes a penalty in such amount that renewal is reasonably assured. The derived expected term is then used in the determination of a financing or operating lease and in the calculation of straight-line rent expense. Rent escalations are considered in the calculation of minimum lease payments in our capital lease tests and in determining straight-line rent expense for operating leases. Minimum lease payments include the fixed lease component of the agreement, as well as fixed rate increases that are initially measured at the lease commencement date. Variable lease payments based on an index, payments associated with non-lease components and short-term rentals (leases with terms less than 12 months) are expensed as incurred. Consideration is allocated to the lease and non-lease components based on the estimated standalone prices.

We determine if an arrangement is a lease at its inception. Operating leases are included in operating lease right-of-use assets, accrued liabilities, and long-term operating lease liabilities in our consolidated balance sheets. Our financing leases are not material to the financial statements.

Right-of-use assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease liabilities and right-of-use assets are recognized at commencement date based on the present value of lease payments over the lease term. As most of our leases do not provide an explicit rate, we use our incremental borrowing rate based on the information available at the commencement date in determining the present value of lease payments. Our lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Rent expense for lease payments is recognized on a straight-line basis over the lease term. The operating lease right-of-use assets also includes any rent prepayments, lease incentives upon receipt, and straight-line rent expense impacts, which represent the differences between our operating lease liabilities and right-of-use assets.

Maturities of operating lease liabilities are as follows:

<i>(in thousands, except lease term and discount rate)</i>	December 31, 2019
2020	\$ 18,016
2021	17,424
2022	13,968
2023	9,358
2024	6,657
Thereafter	33,602
Total lease payments	<u>99,025</u>
Less imputed interest	(16,272)
Total	<u><u>\$ 82,753</u></u>
Current operating lease liabilities, included in accrued liabilities	\$ 15,281
Long-term operating lease liabilities	\$ 67,472
Weighted average remaining lease term - operating leases	10.3 years
Weighted average discount rate - operating leases	3.5%

Total minimum future lease payments of approximately \$4.0 million for leases that have not commenced as of December 31, 2019 are not included in the consolidated financial statements, as we do not yet control the underlying assets. These leases are expected to commence between 2020 and 2021 with lease terms of approximately 4 years to 11 years.

Rent expense charged to operations under operating leases, excluding variable and short-term leases were approximately \$21.1 million during the year ended December 31, 2019. Total rent expense, including variable rent and short-term leases, were approximately \$23.8 million, \$25.2 million, and \$23.0 million for the years ended December 31, 2019, 2018, and 2017, respectively.

Supplemental cash flow information for leases is as follows:

<i>(in thousands)</i>	For the Year Ended December 31, 2019
Cash paid for amounts included in the measurement of operating lease liabilities	\$ 20,008
Right-of-use assets obtained in exchange for operating lease obligations, net of early lease terminations	\$ 13,399

At December 31, 2018, under ASC 840, Leases, the minimum annual rental payments under our lease agreements were as follows: \$19.4 million in 2019; \$17.1 million in 2020; \$14.5 million in 2021; \$10.8 million in 2022; \$8.5 million in 2023; and \$36.5 million thereafter.

NOTE 8. PROPERTY AND EQUIPMENT, NET

Property and equipment are stated at cost, net of accumulated depreciation and amortization. The costs of additions and improvements are capitalized, while maintenance and repairs are charged to expense as incurred. When an item is sold or retired, the cost and related accumulated depreciation are relieved, and the resulting gain or loss, if any, is recognized in the consolidated statements of income. We evaluate our property and equipment for impairment periodically or as changes in circumstances or the occurrence of events suggest the remaining value is not recoverable from future cash flows. If the carrying value of our property and equipment is impaired, an impairment charge is recorded for the amount by which the carrying value of the property and equipment exceeds its fair value. We provide for depreciation and amortization primarily using the straight-line method by charges to the consolidated statements of income in amounts that allocate the cost of property and equipment over their estimated useful lives as follows:

<u>Asset Classification</u>	<u>Estimated Useful Life</u>
Land improvements	15 to 20 years
Buildings and improvements	10 to 40 years
Leasehold improvements	Shorter of remaining lease term or useful life of improvements
Machinery and equipment	3 to 8 years
Office furniture and equipment	3 to 7 years
Computer hardware and software	3 to 7 years

We capitalize interest on the acquisition and construction of significant assets that require a substantial period of time to be made ready for use. The capitalized interest is included in the cost of the completed asset and depreciated over the asset's estimated useful life. The amount of interest capitalized during the years ended December 31, 2019 and 2018 was not material.

We capitalize certain costs incurred in connection with developing or obtaining software designated for internal use based on three distinct stages of development. Qualifying costs incurred during the application development stage, which consist primarily of internal payroll and direct fringe benefits and external direct project costs, including labor and travel, are capitalized and amortized on a straight-line basis over the estimated useful life of the asset. Costs incurred during the preliminary project and post-implementation and operation phases are expensed as incurred. These costs relate primarily to the determination of performance requirements, data conversion and training. Software developed to deliver hosted services to our customers has been designated as internal use.

Property and equipment, net, consisted of the following:

<i>(in thousands)</i>	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Land and improvements	\$ 8,725	\$ 8,701
Buildings and improvements	249,918	190,809
Leasehold improvements	74,602	66,917
Machinery and equipment	322,814	299,204
Office furniture and equipment	53,210	51,661
Computer hardware and software	240,406	218,150
Construction in progress	103,200	70,561
	<u>1,052,875</u>	<u>906,003</u>
Less accumulated depreciation and amortization	519,030	468,733
Total property and equipment, net	<u>\$ 533,845</u>	<u>\$ 437,270</u>

Below are the amounts of depreciation and amortization of property and equipment, capitalized computer software for internal use, unpaid property and equipment reflected in accounts payable and accrued expenses, and rental and reagent rental program instruments transferred from inventory to property and equipment:

<i>(in thousands)</i>	For the Years Ended December 31,		
	2019	2018	2017
Depreciation and amortization expense	\$ 78,495	\$ 74,208	\$ 73,797
Capitalized computer software developed for internal use	\$ 20,130	\$ 17,115	\$ 16,131
Unpaid property and equipment, reflected in accounts payable and accrued liabilities	\$ 24,688	\$ 17,894	\$ 11,744
Rental and operating-type reagent rental program instruments transferred from inventory to property and equipment (Note 3)	\$ 14,498	\$ 20,360	\$ 16,313

NOTE 9. OTHER CURRENT AND LONG-TERM ASSETS

Other current assets consisted of the following:

<i>(in thousands)</i>	December 31, 2019	December 31, 2018
Customer acquisition costs	\$ 39,329	\$ 34,515
Prepaid expenses (Note 2)	31,992	30,314
Taxes receivable	20,516	14,098
Contract assets	17,659	9,670
Deferred sales commissions	5,202	4,464
Other	10,284	15,159
Other current assets	<u>\$ 124,982</u>	<u>\$ 108,220</u>

Other long-term assets consisted of the following:

<i>(in thousands)</i>	December 31, 2019	December 31, 2018
Customer acquisition costs	\$ 98,117	\$ 89,862
Contract assets	66,226	31,269
Taxes receivable	14,960	19,219
Investment in long-term product supply arrangements	13,657	10,894
Deferred sales commissions	10,442	9,470
Deferred income taxes	8,100	8,481
Other	28,690	20,398
Other long-term assets	<u>\$ 240,192</u>	<u>\$ 189,593</u>

NOTE 10. GOODWILL AND INTANGIBLE ASSETS, NET

A significant portion of the purchase price for acquired businesses is generally assigned to intangible assets. Intangible assets other than goodwill are initially valued at fair value. If a quoted price in an active market for the identical asset is not readily available at the measurement date, the fair value of the intangible asset is estimated based on discounted cash flows using market participant assumptions, which are assumptions that are not specific to IDEXX. The selection of appropriate valuation methodologies and the estimation of discounted cash flows require significant assumptions about the timing and amounts of future cash flows, risks, appropriate discount rates, and the useful lives of intangible assets. When material, we utilize independent valuation experts to advise and assist us in determining the fair values of the identified intangible assets acquired in connection with a business acquisition and in determining appropriate amortization methods and periods for those intangible assets. Goodwill is initially valued based on the excess of the purchase price of a business combination over the fair value of acquired net assets recognized and represents the future economic benefits arising from other assets acquired that could not be individually identified and separately recognized.

Our business combinations regularly include contingent consideration arrangements that require additional consideration to be paid based on the achievement of established objectives, most commonly related to the retention or growth of the customer base during the post-combination period. We assess contingent consideration to determine if it is part of the business combination or if it should be accounted for separately from the business combination in the post-combination period. Contingent consideration is recognized at its fair value on the acquisition date. A liability resulting from contingent consideration is remeasured to fair value at each reporting date until the contingency is resolved, with changes in fair value recognized in earnings. Changes in fair value of contingent consideration and differences arising upon settlement were not material during the years ended December 31, 2019, 2018 and 2017. See "Note 4. Acquisitions and Investments" for additional information regarding contingent consideration arising from recent business acquisitions.

We assess goodwill for impairment annually, at the reporting unit level, in the fourth quarter and whenever events or circumstances indicate impairment may exist. In evaluating goodwill for impairment, we have the option to first assess the qualitative factors to determine whether it is more likely than not that the fair value of the reporting unit is less than its carrying amount as a basis for determining whether it is necessary to perform the goodwill impairment test. The more likely than not threshold is defined as having a likelihood of more than 50%. If, after assessing the totality of events or circumstances, we determine that it is more likely than not that the fair value of a reporting unit is less than its carrying amount, we would assess the fair value of all of our reporting units and compare the fair value of the reporting unit to its carrying value to determine if the carrying value exceeds its fair value, and if a goodwill impairment loss should be recognized. In contrast, we can opt to bypass the qualitative assessment for any reporting unit in any period and proceed directly to assessing the fair value of all of our reporting units and compare the fair value of the reporting unit to carrying value to determine if any impairment is necessary. Doing so does not preclude us from performing the qualitative assessment in any subsequent period.

In the fourth quarter of 2019, we elected to bypass the qualitative approach that allows the assessment of qualitative factors to determine whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount and instead proceeded directly to assessing the fair value of all of our reporting units and comparing the fair values of the reporting units to the carrying values to determine if any impairment is necessary. We estimate the fair values of applicable reporting units using an income approach based on discounted forecasted cash flows. We make significant assumptions about the extent and timing of future cash flows, growth rates and discount rates. Model assumptions are based on our projections and best estimates, using appropriate and customary market participant assumptions. In addition, we make certain assumptions in allocating shared assets and liabilities to individual reporting units in determining the carrying value of each reporting unit. Changes in forecasted cash flows or the discount rate would affect the estimated fair values of our reporting units and could result in a goodwill impairment loss in a future period.

No goodwill impairments were identified during the years ended December 31, 2019, 2018 or 2017.

We assess the realizability of intangible assets other than goodwill whenever events or changes in circumstances indicate that the carrying value may not be recoverable. If an impairment review is triggered, we evaluate the carrying value of intangible assets based on estimated undiscounted future cash flows over the remaining useful life of the primary asset of the asset group and compare that value to the carrying value of the asset group. The cash flows that are used contain our best estimates, using appropriate and customary assumptions and projections at the time. If the net carrying value of an intangible asset exceeds the related estimated undiscounted future cash flows, an impairment loss to adjust the intangible asset to its fair value would be reported as a non-cash charge to earnings. If necessary, we would calculate the fair value of an intangible asset using the present value of the estimated future cash flows to be generated by the intangible asset, and applying a risk-adjusted discount rate. We had no impairments of our intangible assets during the years ended December 31, 2019, 2018, and 2017.

We provide for amortization primarily using the straight-line method by charges to income in amounts that allocate the intangible assets over their estimated useful lives as follows:

Asset Classification	Estimated Useful Life
Customer-related intangible assets ⁽¹⁾	3 to 17 years
Product rights ⁽²⁾	5 to 15 years
Noncompete agreements	3 to 5 years

(1) Customer-related intangible assets are comprised of customer lists and customer relationships acquired from third parties.

(2) Product rights comprise certain technologies, intellectual property, licenses, and trade names acquired from third parties.

Intangible assets other than goodwill consisted of the following:

<i>(in thousands)</i>	December 31, 2019			December 31, 2018		
	Cost	Accumulated Amortization	Net	Cost	Accumulated Amortization	Net
Customer-related intangible assets ⁽¹⁾	\$ 99,301	\$ 46,801	\$ 52,500	\$ 77,015	\$ 43,352	\$ 33,663
Product rights ⁽²⁾	16,130	10,214	5,916	27,060	19,153	7,907
Noncompete agreements	170	118	52	856	601	255
	<u>\$ 115,601</u>	<u>\$ 57,133</u>	<u>\$ 58,468</u>	<u>\$ 104,931</u>	<u>\$ 63,106</u>	<u>\$ 41,825</u>

The above table excludes fully amortized intangible assets for the periods presented.

(1) Customer-related intangible assets are comprised of customer lists and customer relationships acquired from third parties.

(2) Product rights comprise certain technologies, intellectual property, licenses, and trade names acquired from third parties.

Amortization expense of intangible assets other than goodwill was \$9.4 million, \$8.9 million, and \$9.0 million for the years ended December 31, 2019, 2018 and 2017, respectively.

At December 31, 2019, the aggregate amortization expense associated with intangible assets is estimated to be as follows for each of the next five years and thereafter:

<i>(in thousands)</i>	Amortization Expense
2020	\$ 9,782
2021	8,915
2022	7,697
2023	5,905
2024	4,917
Thereafter	21,252
	<u>\$ 58,468</u>

The changes in the carrying amount of goodwill for the years ended December 31, 2019, 2018 and 2017, were as follows:

<i>(in thousands)</i>	CAG	Water	LPD	Other	Consolidated Total
Balance as of December 31, 2016	\$ 146,194	\$ 10,890	\$ 14,613	\$ 6,531	\$ 178,228
Business combinations	13,541	—	—	—	13,541
Impact of changes in foreign currency exchange rates	6,501	1,061	542	—	8,104
Balance as of December 31, 2017	\$ 166,236	\$ 11,951	\$ 15,155	\$ 6,531	\$ 199,873
Business combinations	20,282	—	—	—	20,282
Impact of changes in foreign currency exchange rates	(4,132)	(730)	(804)	—	(5,666)
Balance as of December 31, 2018	\$ 182,386	\$ 11,221	\$ 14,351	\$ 6,531	\$ 214,489
Business combinations	24,826	—	—	—	24,826
Impact of changes in foreign currency exchange rates	138	390	(119)	—	409
Balance as of December 31, 2019	<u>\$ 207,350</u>	<u>\$ 11,611</u>	<u>\$ 14,232</u>	<u>\$ 6,531</u>	<u>\$ 239,724</u>

See "Note 4. Acquisitions and Investments" for information regarding goodwill and other intangible assets recognized in connection with the acquisition of businesses and other assets during the years ended December 31, 2019, 2018 and 2017.

NOTE 11. ACCRUED LIABILITIES AND OTHER LONG-TERM LIABILITIES

Accrued liabilities consisted of the following:

<i>(in thousands)</i>	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Accrued employee compensation and related expenses	\$ 127,174	\$ 109,488
Accrued expenses (Note 2)	86,296	65,212
Accrued customer incentives and refund obligations	63,079	59,374
Accrued taxes	31,108	26,609
Current lease liabilities (Notes 2 and 7)	15,281	—
Accrued liabilities	<u>\$ 322,938</u>	<u>\$ 260,683</u>

Other long-term liabilities consisted of the following:

<i>(in thousands)</i>	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Accrued taxes	\$ 67,463	\$ 66,767
Other accrued long-term expenses (Note 2)	13,701	18,059
Other long-term liabilities	<u>\$ 81,164</u>	<u>\$ 84,826</u>

NOTE 12. DEBT

Credit Facility

In December 2015, we refinanced our existing \$700 million unsecured revolving credit facility by entering into a second amended and restated credit agreement relating to a five-year unsecured revolving credit facility in the principal amount of \$850 million with a syndicate of multinational banks, which matures on December 4, 2020, (“Credit Facility”) and requires no scheduled prepayments before that date. Although the Credit Facility does not mature until December 4, 2020, all individual borrowings under the terms of the Credit Facility have a stated term between 30 and 180 days. At the end of each term, the obligation is either repaid or rolled over into a new borrowing. The Credit Facility contains a subjective material adverse event clause, which allows the debt holders to call the loans under the Credit Facility if we fail to provide prompt written notice to the syndicate of such an event. Based on the stated term and the existence of the subjective material adverse event clause, this Credit Facility has been reflected in the current liabilities section of our consolidated balance sheets. At December 31, 2019, we had \$288.8 million outstanding under our Credit Facility with a weighted average effective interest rate of 2.78%. At December 31, 2018, we had \$398.9 million outstanding under our Credit Facility with a weighted average effective interest rate 3.63%. The funds available under the Credit Facility at December 31, 2019, and December 31, 2018, reflect a further reduction due to the issuance of letters of credit for \$1.4 million and \$1.3 million, respectively, which were issued in connection with our workers’ compensation policy.

Applicable interest rates on borrowings under the Credit Facility generally range from 0.875% to 1.375% (“Credit Spread”) above the London interbank offered rate, based on our leverage ratio, or the prevailing prime rate plus a maximum spread of up to 0.375%, based on our leverage ratio. See "Note 18. Hedging Instruments" for a discussion of our derivative instruments and hedging activities. Under the Credit Facility, we pay quarterly commitment fees of 0.075% to 0.25%, based on our leverage ratio, on any unused commitment.

The obligations under the Credit Facility may be accelerated upon the occurrence of an event of default under the Credit Facility, which includes customary events of default including payment defaults, defaults in the performance of the affirmative, negative and financial covenants, the inaccuracy of representations or warranties, bankruptcy and insolvency related defaults, defaults relating to judgments, certain events related to employee pension benefit plans under the Employee Retirement Income Security Act of 1974, the failure to pay specified indebtedness, cross-acceleration to specified indebtedness and a change of control default. The Credit Facility contains affirmative, negative, and financial covenants customary for financings of this type. The negative covenants include restrictions on liens, indebtedness of subsidiaries of the Company, fundamental changes, investments, transactions with affiliates and certain restrictive agreements. The sole financial covenant is a consolidated leverage ratio test that requires our ratio of debt to earnings before interest, taxes, depreciation, amortization, and

share-based compensation defined as the consolidated leverage ratio under the terms of the Credit Facility, not to exceed 3.5-to-1. At December 31, 2019, we were in compliance with the covenants of the Credit Facility.

Senior Notes

The following describes all of our currently outstanding unsecured senior notes issued and sold in private placements (collectively, the "Senior Notes"):

(Principal Amount in thousands)

Issue Date	Due Date	Series	Principal Amount	Coupon Rate	Senior Note Agreement
12/11/2013	12/11/2023	2023 Series A Notes	\$ 75,000	3.94%	NY Life 2013 Note Agreement
12/11/2013	12/11/2025	2025 Series B Notes	\$ 75,000	4.04%	NY Life 2013 Note Agreement
9/4/2014	9/4/2026	2026 Senior Notes	\$ 75,000	3.72%	NY Life 2014 Note Agreement
7/21/2014	7/21/2021	2021 Series A Notes	\$ 50,000	3.32%	Prudential 2015 Amended Agreement
7/21/2014	7/21/2024	2024 Series B Notes	\$ 75,000	3.76%	Prudential 2015 Amended Agreement
6/18/2015	6/18/2025	2025 Series C Notes	€ 88,857	1.785%	Prudential 2015 Amended Agreement
2/12/2015	2/12/2022	2022 Series A Notes	\$ 75,000	3.25%	MetLife 2014 Note Agreement, as Amended
2/12/2015	2/12/2027	2027 Series B Notes	\$ 75,000	3.72%	MetLife 2014 Note Agreement, as Amended
3/14/2019	3/14/2029	2029 Series C Notes	\$ 100,000	4.19%	MetLife 2014 Note Agreement, as Amended

The following narrative represents our Senior Note activity:

NY Life 2013 and 2014 Note Agreements

In December 2013, we issued and sold through a private placement an aggregate principal amount of \$150 million of unsecured senior notes consisting of \$75 million of 3.94% Series A Senior Notes due December 11, 2023 (the "2023 Series A Notes") and \$75 million of 4.04% Series B Senior Notes due December 11, 2025 (the "2025 Series B Notes") under a Note Purchase Agreement among the Company, New York Life Insurance Company and the accredited institutional purchasers named therein (the "NY Life 2013 Note Agreement").

In September 2014, we issued and sold through a private placement an aggregate principal amount of \$75 million of unsecured 3.72% senior notes due September 4, 2026 (the "2026 Senior Notes") under a Note Purchase Agreement dated as of July 22, 2014, among the Company, New York Life Insurance Company and the accredited institutional purchasers named therein (the "NY Life 2014 Note Agreement").

Prudential 2015 Amended Agreement

In July 2014, we issued and sold through a private placement an aggregate principal amount of \$125 million of unsecured senior notes consisting of \$50 million of 3.32% Series A Senior Notes due July 21, 2021 (the "2021 Series A Notes") and \$75 million of 3.76% Series B Senior Notes due July 21, 2024 (the "2024 Series B Notes") under a Note Purchase and Private Shelf Agreement among the Company, Prudential Investment Management, Inc. ("Prudential") and the accredited institutional purchasers named therein (the "Prudential 2014 Note Agreement").

In June 2015, we entered into an Amended and Restated Multi-Currency Note Purchase and Private Shelf Agreement (the "Prudential 2015 Amended Agreement"), among the Company, Prudential, and the accredited institutional purchasers named therein, which amends and restates the Prudential 2014 Note Agreement. Pursuant to the Prudential 2015 Amended Agreement, we issued and sold through an aggregated private placement an aggregate principal amount of €88.9 million of unsecured 1.785% Series C Senior Notes due June 18, 2025 (the "2025 Series C Notes").

MetLife 2014 Note Agreement and Amendment

We entered into a Multicurrency Note Purchase and Private Shelf Agreement, dated as of December 19, 2014 (the "MetLife 2014 Note Agreement"), among the Company, Metropolitan Life Insurance Company ("MetLife") and the accredited institutional purchasers named therein pursuant to which we agreed to issue and sell an aggregate principal amount of \$150 million of unsecured senior notes consisting of \$75 million of our 3.25% Series A Senior Notes having a seven-year term (the

"2022 Series A Notes"), and \$75 million of our 3.72% Series B Senior Notes having a twelve-year term ("2027 Series B Notes"). The issuance, sale and purchase of these notes occurred in February 2015.

On March 14, 2019, we amended the MetLife 2014 Note Agreement. Pursuant to the MetLife 2014 Note Agreement, as so amended, we issued and sold through a private placement an aggregate principal amount of \$100 million of unsecured senior notes at a 4.19% per annum rate, due March 14, 2029 (the "2029 Series C Notes").

We refer to the MetLife 2014 Agreement, as so amended, together with the NY Life 2013 Note Agreement, NY Life 2014 Note Agreement, and Prudential 2015 Amended Note Agreement, collectively, as the "Senior Note Agreements."

Senior Note Agreements

The Senior Note Agreements contain affirmative, negative, and financial covenants customary for agreements of this type. The negative covenants include restrictions on liens, indebtedness of our subsidiaries, priority indebtedness, fundamental changes, investments, transactions with affiliates, certain restrictive agreements, and violations of laws and regulations. The sole financial covenant is a consolidated leverage ratio test that requires our ratio of debt to earnings before interest, taxes, depreciation, amortization, and share-based compensation, as defined in the Senior Note Agreements, not to exceed 3.5-to-1. At December 31, 2019, we were in compliance with the covenants of the Senior Note Agreements.

Should we elect to prepay the Senior Notes, such aggregate prepayment will include the applicable make-whole amount(s), as defined within the applicable Senior Note Agreements. Additionally, in the event of a change in control of the Company or upon the disposition of certain assets of the Company the proceeds of which are not reinvested (as defined in the Senior Note Agreements), we may be required to prepay all or a portion of the Senior Notes. The obligations under the Senior Notes may be accelerated upon the occurrence of an event of default under the applicable Senior Note Agreement, each of which includes customary events of default including payment defaults, defaults in the performance of the affirmative, negative and financial covenants, the inaccuracy of representations or warranties, bankruptcy and insolvency related defaults, defaults relating to judgments, certain events related to employee pension benefit plans under the Employee Retirement Income Security Act of 1974, the failure to pay specified indebtedness and cross-acceleration to specified indebtedness.

The MetLife 2014 Note Agreement, as amended on March 14, 2019, provides for an uncommitted shelf facility by which we may request until December 20, 2021, that MetLife purchase up to \$50 million of additional senior notes of the Company at an interest rate to be determined at the time of purchase and with a maturity date not to exceed fifteen years.

We used the net proceeds from the issuances and sale of the Senior Notes for general corporate purposes. Total Company interest paid on all debt for the periods ended December 31, 2019, 2018 and 2017, was \$29.7 million, \$34.7 million, and \$37.6 million, respectively.

Annual principal payments on long-term debt at December 31, 2019, are as follows:

(in thousands)

Years Ending December 31,	Amount
2020	\$ —
2021	50,000
2022	75,000
2023	75,000
2024	75,000
Thereafter	424,422
	\$ 699,422

NOTE 13. INCOME TAXES

The provision for income taxes is determined using the asset and liability approach of accounting for income taxes. Under this approach, deferred taxes represent the estimated future tax effects of temporary differences between book and tax treatment of assets and liabilities and carryforwards to the extent they are realizable. We record a valuation allowance to reduce our deferred tax assets to the amount that is more likely than not to be realized. While we consider future taxable income and ongoing prudent and feasible tax planning strategies in assessing the need for a valuation allowance, in the event we determine that we would be able to realize our deferred tax assets in the future in excess of the net recorded amount, a reduction of the

valuation allowance would increase income in the period such determination was made. Likewise, should we determine that we would not be able to realize all or part of our net deferred tax asset in the future, a reduction to the deferred tax asset would be charged to income in the period such determination was made.

We record a liability for uncertain tax positions that do not meet the more likely than not standard as prescribed by the authoritative guidance for income tax accounting. We record tax benefits for only those positions that we believe will more likely than not be sustained. Unrecognized tax benefits are the differences between tax positions taken, or expected to be taken, in tax returns, and the benefits recognized for accounting purposes. We classify uncertain tax positions as long-term liabilities.

Significant judgment is required in determining our worldwide provision for income taxes and our income tax filings are regularly under audit by tax authorities. Any audit result differing from amounts recorded would increase or decrease income in the period that we determine such adjustment is likely. Interest expense and penalties associated with the underpayment of income taxes are included in income tax expense.

The 2017 Tax Act was enacted on December 22, 2017, and includes significant changes to the U.S. corporate tax system. Effective January 1, 2018, the 2017 Tax Act reduced the U.S. federal corporate tax rate from 35% to 21%, transitioned the U.S. federal tax system from a worldwide tax system to a territorial tax system, and eliminated or reduced certain domestic deductions among other changes. In converting to the new territorial tax system, a deemed repatriation tax on previously tax-deferred earnings of certain foreign subsidiaries was required to be recognized as of December 31, 2017, and is payable over eight years.

Earnings before income taxes were as follows:

(in thousands)

	For the Years Ended December 31,		
	2019	2018	2017
Domestic	\$ 377,964	\$ 337,437	\$ 268,714
International	144,254	120,305	112,343
	<u>\$ 522,218</u>	<u>\$ 457,742</u>	<u>\$ 381,057</u>

The provision (benefit) for income taxes comprised the following:

(in thousands)

	For the Years Ended December 31,		
	2019	2018	2017
Current			
Federal	\$ 52,194	\$ 47,130	\$ 92,453
State	11,967	10,415	9,258
International	24,239	22,015	23,993
	<u>88,400</u>	<u>79,560</u>	<u>125,704</u>
Deferred			
Federal	4,826	3,970	(1,201)
State	269	(937)	(4,102)
International	931	(1,898)	(2,613)
	<u>6,026</u>	<u>1,135</u>	<u>(7,916)</u>
	<u>\$ 94,426</u>	<u>\$ 80,695</u>	<u>\$ 117,788</u>

The provision for income taxes differs from the amounts computed by applying the statutory federal income tax rate as follows:

	For the Years Ended December 31,		
	2019	2018	2017
U.S. federal statutory rate	21.0%	21.0%	35.0%
State income tax, net of federal tax benefit	2.3	2.6	1.9
Taxation on international earnings	(1.1)	(0.8)	(5.5)
Foreign derived intangible income	(1.1)	(1.3)	—
Share-based compensation from settlements	(3.6)	(4.7)	(7.3)
Domestic manufacturing exclusions	—	—	(1.1)
Research and development credit	(0.8)	(0.9)	(0.9)
Impact of the 2017 Tax Act	—	0.5	9.4
State income tax carryforwards	—	(0.2)	(1.4)
Other, net	1.4	1.4	0.8
Effective tax rate	<u>18.1%</u>	<u>17.6%</u>	<u>30.9%</u>

Our effective income tax rate was 18.1% for the year ended December 31, 2019, and 17.6% for the year ended December 31, 2018. Our effective income tax rate for the year ended December 31, 2019 was higher primarily due to lower tax benefits related to share-based compensation, partially offset by a nonrecurring item recorded in the first quarter of 2018, that resulted from the 2017 Tax Cut and Jobs Act.

Our effective income tax rate was 17.6% for the year ended December 31, 2018, and 30.9% for the year ended December 31, 2017. Our effective income tax rate for the year ended December 31, 2018, was lower primarily related to the reduction in the 2018 U.S. statutory tax rate to 21% from 35%, as well as the comparison to a nonrecurring charge resulting from the 2017 Tax Act for the year ended December 31, 2017. These favorable impacts were offset by lower tax benefits related to share-based compensation and the prior year utilization of foreign tax credits.

Income taxes paid, net of refunds received, for the periods ended December 31, 2019, 2018 and 2017 were \$88.0 million, \$69.7 million, and \$81.2 million, respectively.

We have received a tax ruling from the Netherlands that documents our mutual understanding of how existing tax laws apply to our circumstances. This ruling expires as of December 31, 2022, and we have been informed that it will not be renewed due to changes to the advance ruling policy in the Netherlands. While the absence of an advance agreement does not preclude our ability to continue to apply existing tax laws in the same manner as allowed by the existing ruling, the lack of such agreement could create uncertainty as to our future tax rate. Primarily as a result of this tax ruling, our net income was higher by \$13.7 million, \$9.2 million, and \$8.9 million for the years ended December 31, 2019, 2018, and 2017, respectively. The benefit from these tax rulings is reflected within the overall benefit received from international income taxes in the table above.

The components of the net deferred tax assets (liabilities) included in the accompanying consolidated balance sheets are as follows:

<i>(in thousands)</i>	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Assets		
Accrued expenses	\$ 25,296	\$ 22,652
Accounts receivable reserves	617	776
Deferred revenue	6,073	7,637
Inventory basis differences	3,315	2,787
Property-based differences	3,113	1,652
Share-based compensation	10,593	9,267
Other	1,160	2,314
Net operating loss carryforwards	4,045	3,208
Tax credit carryforwards	12,276	10,226
Unrealized losses on foreign currency exchange contracts and investments	20	404
Total assets	<u>66,508</u>	<u>60,923</u>
Valuation allowance	<u>(9,454)</u>	<u>(6,212)</u>
Total assets, net of valuation allowance	57,054	54,711
Liabilities		
Customer acquisition costs	(28,519)	(24,323)
Property-based differences	(33,802)	(32,494)
Intangible asset basis differences	(14,513)	(13,454)
Other	(3,961)	(3,319)
Unrealized gains on foreign currency exchange contracts and investments	(1,183)	(1,907)
Total liabilities	<u>(81,978)</u>	<u>(75,497)</u>
Net deferred tax assets (liabilities)	<u>\$ (24,924)</u>	<u>\$ (20,786)</u>

As of December 31, 2019, we have recorded a valuation allowance of \$9.5 million against certain deferred tax assets related to temporary differences including net operating loss (“NOL”) and tax credit carryforwards, as it is more likely than not that they will not be realized or utilized within the carryforward period.

As of December 31, 2019, we have NOL’s in certain state and international jurisdictions of approximately \$17.0 million available to offset future taxable income. Most of these NOL’s will expire at various dates between 2021 and 2026 and the remainder have indefinite lives.

The following table summarizes the changes in unrecognized tax positions:

<i>(in thousands)</i>	<u>For the Years Ended December 31,</u>		
	<u>2019</u>	<u>2018</u>	<u>2017</u>
Total amounts of unrecognized tax benefits, beginning of period	\$ 24,247	\$ 21,417	\$ 18,463
Gross (decreases) increases in unrecognized tax positions as a result of tax positions taken during a prior period	(276)	2,991	74
Gross increases in unrecognized tax positions as a result of tax positions taken in the current period	4,083	461	4,681
Decreases in unrecognized tax positions relating to settlements with taxing authorities	—	—	(713)
Decreases in unrecognized tax positions as a result of a lapse of the applicable statutes of limitations	(1,213)	(622)	(1,088)
Total amounts of unrecognized tax benefits, end of period	<u>\$ 26,841</u>	<u>\$ 24,247</u>	<u>\$ 21,417</u>

The total amount of unrecognized tax benefits at December 31, 2019 and December 31, 2018, was \$26.8 million and \$24.2 million, respectively. Of the total unrecognized tax benefits at December 31, 2019 and 2018, \$21.2 million and \$18.3 million, respectively, comprise unrecognized tax positions that would, if recognized, affect our effective tax rate.

During the years ended December 31, 2019, 2018 and 2017, we recorded interest expense and penalties of \$1.8 million, \$1.2 million, and \$0.9 million, respectively, as income tax expense in our consolidated statement of income. At December 31, 2019 and 2018, we had \$3.6 million and \$2.1 million, respectively, of estimated interest expense and penalties accrued in our consolidated balance sheets.

In the ordinary course of our business, our income tax filings are regularly under audit by tax authorities. While we believe we have appropriately provided for all uncertain tax positions, amounts asserted by taxing authorities could be greater or less than our accrued position. Accordingly, additional provisions on income tax matters, or reductions of previously accrued provisions, could be recorded in the future as we revise our estimates due to changing facts and circumstances or the underlying matters are settled or otherwise resolved. We are currently under tax examinations in various jurisdictions. We anticipate that these examinations will be concluded within the next two years. With few exceptions, we are no longer subject to income tax examinations in any jurisdiction in which we conduct significant taxable activities for years before 2014.

NOTE 14. EARNINGS PER SHARE

Basic earnings per share is computed by dividing net income attributable to our stockholders by the weighted average number of shares of common stock and vested deferred stock units outstanding during the year. The computation of diluted earnings per share is similar to the computation of basic earnings per share, except that the denominator is increased for the assumed exercise of dilutive options and assumed issuance of unvested restricted stock units and unvested deferred stock units using the treasury stock method unless the effect is anti-dilutive. The treasury stock method assumes that proceeds, including cash received from the exercise of employee stock options and the total unrecognized compensation expense for unvested share-based compensation awards, would be used to purchase our common stock at the average market price during the period. Vested deferred stock units outstanding are included in shares outstanding for basic and diluted earnings per share because the associated shares of our common stock are issuable for no cash consideration, the number of shares of our common stock to be issued is fixed and issuance is not contingent. See "Note 5. Share-Based Compensation" for additional information regarding deferred stock units.

The following is a reconciliation of weighted average shares outstanding for basic and diluted earnings per share:

<i>(in thousands)</i>	For the Years Ended December 31,		
	2019	2018	2017
Shares outstanding for basic earnings per share:	86,115	86,864	87,769
Shares outstanding for diluted earnings per share:			
Shares outstanding for basic earnings per share	86,115	86,864	87,769
Dilutive effect of share-based payment awards	1,427	1,606	1,798
	<u>87,542</u>	<u>88,470</u>	<u>89,567</u>

Certain options to acquire shares have been excluded from the calculation of shares outstanding for diluted earnings per share because they were anti-dilutive. The following table presents information concerning those anti-dilutive options:

<i>(in thousands)</i>	For the Years Ended December 31,		
	2019	2018	2017
Weighted average number of shares underlying anti-dilutive options	200	287	327

NOTE 15. COMMITMENTS, CONTINGENCIES AND GUARANTEES

Commitments

See "Note 7. Leases", for more information regarding our lease commitments.

We are required to annually purchase a minimum amount of inventory from certain suppliers. Through 2025, we have a total of \$5.3 million in minimum purchase commitments under these arrangements.

Contingencies

We are subject to claims that may arise in the ordinary course of business, including with respect to actual and threatened litigation and other matters. We accrue for loss contingencies when it is probable that future expenditures will be made, and such expenditures can be reasonably estimated. However, the results of legal actions cannot be predicted with certainty, and therefore our actual losses with respect to these contingencies could exceed our accruals. At December 31, 2019, our accruals with respect to actual and threatened litigation were not material.

We self-insure costs associated with health, workers' compensation, auto, and general welfare claims incurred by our U.S. and Canadian employees up to certain limits. Insurance companies provide insurance for claims above these limits. Claim liabilities are recorded for estimates of the loss that we will ultimately incur on reported claims, as well as estimates of claims that have been incurred but not yet reported. Such liabilities are based on individual coverage, the average time from when a claim is incurred to the time it is paid and judgments about the present and expected levels of claim frequency and severity. Estimated claim liabilities could be significantly affected if future occurrences and claims differ from these assumptions and historical trends. Estimated claim liabilities are included in accrued liabilities in the accompanying consolidated balance sheets.

Under our current employee healthcare insurance policy for U.S. employees, we retain claims liability risk per incident up to \$1 million per year in 2019, 2018, and 2017. We recognized U.S. employee healthcare claim expense of \$59.3 million, \$52.7 million, and \$47.2 million for the years ended December 31, 2019, 2018, and 2017, respectively, which represents actual claims paid and an estimate of our liability for the uninsured portion of employee healthcare obligations that have been incurred but not paid. Should employee health insurance claims exceed our estimated liability, we would have further obligations. Our estimated liability for healthcare claims that have been incurred but not paid as of December 31, 2019 and 2018, was approximately \$5.0 million.

Workers' compensation and automobile claim expenses recognized during the years ended December 31, 2019, 2018 and 2017 and our respective liability for such claims as of December 31, 2019, 2018 and 2017 were not material. For the years ended on or prior to December 31, 2017, based on our retained claim liability per incident and our aggregate claim liability per year, our maximum liability in excess of the amounts deemed probable and previously recognized is not material as of December 31, 2019. As of December 31, 2019, we had outstanding letters of credit totaling \$1.4 million to the insurance companies as security for the claims in connection with these policies.

We have entered into an employment agreement with our chief executive officer whereby payment may be required if we terminate his employment without cause other than following a change in control. The amount payable is based upon the executive's salary at the time of termination and the cost to us of continuing to provide certain benefits. Had this officer been terminated without cause at December 31, 2019, other than following a change in control, we would have had an obligation for salaries and benefits of approximately \$1.8 million under such agreement. In addition, the agreement provides for continued vesting of his outstanding equity awards for a period of two years, which would accelerate approximately \$3.8 million of share-based compensation expense as of December 31, 2019.

We have entered into employment agreements with each of our officers that require us to make certain payments in the event the officer's employment is terminated under certain circumstances within a certain period following a change in control. The amount payable by us under each of these agreements is based on the officer's salary and bonus history at the time of termination and the cost to us of continuing to provide certain benefits. Had all of our officers been terminated in qualifying terminations following a change in control at December 31, 2019, we would have had aggregate obligations of approximately \$30.7 million under these agreements. These agreements also provide for the acceleration of the vesting of all stock options and restricted stock units upon any qualifying termination following a change in control. At this time, we believe the likelihood of terminations as a result of the scenarios described is remote, and therefore, we have not accrued for such loss contingencies.

From time to time, we have received notices alleging that our products infringe third-party proprietary rights, although we are not aware of any pending litigation with respect to such claims. Patent litigation frequently is complex and expensive, and the outcome of patent litigation can be difficult to predict. There can be no assurance that we will prevail in any infringement proceedings that may be commenced against us. If we lose any such litigation, we may be stopped from selling certain products and/or we may be required to pay damages as a result of the litigation.

Guarantees

We enter into agreements with third parties in the ordinary course of business under which we are obligated to indemnify such third parties for and against various risks and losses. The precise terms of such indemnities vary with the nature of the agreement. In many cases, we limit the maximum amount of our indemnification obligations, but in some cases those obligations may be theoretically unlimited. We have not incurred material expenses in discharging any of these indemnification obligations, and based on our analysis of the nature of the risks involved, we believe that the fair value of potential indemnification under these agreements is minimal. Accordingly, we have recorded no liabilities for these obligations at December 31, 2019 and 2018.

When acquiring a business, we sometimes assume liability for certain events or occurrences that took place prior to the date of acquisition. As of December 31, 2019 and 2018, we do not have any material pre-acquisition liabilities recorded.

NOTE 16. SEGMENT REPORTING

We operate primarily through three business segments: diagnostic and information technology-based products and services for the veterinary market, which we refer to as CAG; water quality products (“Water”); and diagnostic products and services for livestock and poultry health and to ensure the quality and safety of milk and improve producer efficiency, which we refer to as LPD. Our Other operating segment combines and presents products for the human point-of-care medical diagnostics market with our out-licensing arrangements because they do not meet the quantitative or qualitative thresholds for reportable segments.

Operating segments are defined as components of an enterprise about which separate financial information is available that is evaluated regularly by the chief operating decision-maker (the “CODM”), or decision-making group, in deciding how to allocate resources and in assessing performance. Our CODM is our Chief Executive Officer. Our reportable segments include: CAG, Water, LPD, and Other. Assets are not allocated to segments for internal reporting purposes.

CAG develops, designs, manufactures, and distributes products and performs services for veterinarians and the biomedical analytics market, primarily related to diagnostics and information management. Water develops, designs, manufactures, and distributes a range of products used in the detection of various microbiological parameters in water. LPD develops, designs, manufactures, and distributes diagnostic tests and related instrumentation and performs services that are used to manage the health status of livestock and poultry, to improve producer efficiency, and to ensure the quality and safety of milk and food. OPTI Medical manufactures and distributes point-of-care electrolyte and blood gas analyzers and related consumable products for the human medical diagnostics market.

Intersegment revenues, which are not included in the table below, were not material for the years ended December 31, 2019, 2018 and 2017.

Certain costs are not allocated to our operating segments and are instead reported under the caption “Unallocated Amounts”. These costs include costs that do not align with one of our existing operating segments which primarily consist of our R&D function, regional and country expenses, certain foreign currency revaluation and settlement gains and losses on monetary balances in currencies other than our subsidiaries’ functional currency and unusual items. Corporate support function costs (such as information technology, facilities, human resources, finance and legal), health benefits and incentive compensation are charged to our business segments at pre-determined budgeted amounts or rates. Differences from these pre-determined budgeted amounts or rates are also captured within Unallocated Amounts.

The following is a summary of segment performance:

(in thousands)

	For the Years Ended December 31,					Consolidated
	CAG	Water	LPD	Other	Unallocated Amounts	Total
2019						
Revenue	\$ 2,119,183	\$ 132,850	\$ 132,635	\$ 22,240	\$ —	\$ 2,406,908
Income (loss) from operations	\$ 491,602	\$ 62,435	\$ 25,374	\$ 4,940	\$ (31,505)	\$ 552,846
Interest expense, net						(30,628)
Income before provision for income taxes						522,218
Provision for income taxes						94,426
Net income						427,792
Less: Net income attributable to noncontrolling interest						72
Net income attributable to IDEXX Laboratories, Inc. stockholders						\$ 427,720
Depreciation and amortization	\$ 77,620	\$ 2,794	\$ 4,007	\$ 3,590	\$ —	\$ 88,011
2018						
Revenue	\$ 1,935,428	\$ 125,198	\$ 130,581	\$ 22,035	\$ —	\$ 2,213,242
Income (loss) from operations	\$ 429,483	\$ 56,607	\$ 19,412	\$ 3,729	\$ (17,896)	\$ 491,335
Interest expense, net						(33,593)
Income before provision for income taxes						457,742
Provision for income taxes						80,695
Net income						377,047
Less: Net income attributable to noncontrolling interest						16
Net income attributable to IDEXX Laboratories, Inc. stockholders						\$ 377,031
Depreciation and amortization	\$ 72,789	\$ 2,592	\$ 4,094	\$ 3,703	\$ —	\$ 83,178
2017						
Revenue	\$ 1,703,377	\$ 114,395	\$ 128,481	\$ 22,805	\$ —	\$ 1,969,058
Income (loss) from operations	\$ 363,557	\$ 50,616	\$ 16,464	\$ 4,837	\$ (22,446)	\$ 413,028
Interest expense, net						(31,971)
Income before provision for income taxes						381,057
Provision for income taxes						117,788
Net income						263,269
Less: Net income attributable to noncontrolling interest						125
Net income attributable to IDEXX Laboratories, Inc. stockholders						\$ 263,144
Depreciation and amortization	\$ 71,835	\$ 2,856	\$ 5,052	\$ 3,397	\$ —	\$ 83,140

See "Note 3. Revenue Recognition" for a summary of disaggregated revenue by reportable segment and by major product and service category for the years ended December 31, 2019, 2018 and 2017.

Net long-lived assets, consisting of net property and equipment, are subject to geographic risks because they are generally difficult to move and to effectively utilize in another geographic area in a reasonable time period and because they are relatively illiquid. Net long-lived assets by principal geographic areas were as follows:

(in thousands)

	<u>December 31, 2019</u>	<u>December 31, 2018</u>
Americas		
United States	\$ 401,248	\$ 348,240
Brazil	22,274	16,735
Canada	7,784	1,859
	<u>431,306</u>	<u>366,834</u>
Europe, the Middle East and Africa		
Germany	52,032	25,036
United Kingdom	12,114	11,517
Netherlands	13,586	10,273
France	2,061	2,130
Switzerland	3,508	2,742
Other	3,395	3,763
	<u>86,696</u>	<u>55,461</u>
Asia Pacific Region		
Japan	5,409	5,296
Australia	4,088	4,257
Other	6,346	5,422
	<u>15,843</u>	<u>14,975</u>
Total	<u>\$ 533,845</u>	<u>\$ 437,270</u>

NOTE 17. FAIR VALUE MEASUREMENTS

U.S. GAAP defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. U.S. GAAP requires an entity to maximize the use of observable inputs, where available, and minimize the use of unobservable inputs when measuring fair value.

We have certain financial assets and liabilities that are measured at fair value on a recurring basis, certain nonfinancial assets and liabilities that may be measured at fair value on a non-recurring basis and certain financial assets and liabilities that are not measured at fair value in our consolidated balance sheets but for which we disclose the fair value. The fair value disclosures of these assets and liabilities are based on a three-level hierarchy, which is defined as follows:

- Level 1** Quoted prices in active markets for identical assets or liabilities that the entity can access at the measurement date.
- Level 2** Observable inputs other than Level 1 prices, such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or other inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3** Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the assets or liabilities.

Assets and liabilities measured at fair value are classified in their entirety based on the lowest level of input that is significant to the fair value measurement. Our assessment of the significance of a particular input to the fair value measurement in its entirety requires judgment and considers factors specific to the asset or liability. We did not have any transfers between Level 1 and Level 2 or transfers in or out of Level 3 of the fair value hierarchy during the years ended December 31, 2019 and 2018.

Our cross currency swap contracts are measured at fair value on a recurring basis in our accompanying consolidated balance sheets. We measure the fair value of our cross currency swap contracts classified as derivative instruments using prevailing market conditions as of the close of business on each balance sheet date. The product of this calculation is then adjusted for counterparty risk.

Our foreign currency exchange contracts are measured at fair value on a recurring basis in our accompanying consolidated balance sheets. We measure the fair value of our foreign currency exchange contracts classified as derivative

instruments using an income approach, based on prevailing market forward rates less the contract rate multiplied by the notional amount. The product of this calculation is then adjusted for counterparty risk.

The amounts outstanding under our unsecured revolving credit facility ("Credit Facility" or "line of credit") and senior notes ("long-term debt") are measured at carrying value in our accompanying consolidated balance sheets though we disclose the fair value of these financial instruments. We determine the fair value of the amount outstanding under our Credit Facility and long-term debt using an income approach, utilizing a discounted cash flow analysis based on current market interest rates for debt issues with similar remaining years to maturity, adjusted for applicable credit risk. Our Credit Facility and long-term debt are valued using Level 2 inputs. The estimated fair value of our Credit Facility approximates its carrying value. At December 31, 2019, the estimated fair value and carrying value of our long-term debt were \$753.6 million and \$699.4 million, respectively. At December 31, 2018, the estimated fair value and carrying value of our long-term debt were \$607.3 million and \$601.8 million, respectively.

The following tables set forth our assets and liabilities that were measured at fair value on a recurring basis by level within the fair value hierarchy:

(in thousands)

As of December 31, 2019	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Balance at December 31, 2019
Assets				
Money market funds ⁽¹⁾	\$ 71	\$ —	\$ —	\$ 71
Equity mutual funds ⁽²⁾	\$ 1,676	\$ —	\$ —	\$ 1,676
Cross currency swaps ⁽³⁾	\$ —	\$ 4,559	\$ —	\$ 4,559
Foreign currency exchange contracts ⁽³⁾	\$ —	\$ 1,791	\$ —	\$ 1,791
Liabilities				
Foreign currency exchange contracts ⁽³⁾	\$ —	\$ 2,886	\$ —	\$ 2,886
Deferred compensation ⁽⁴⁾	\$ 1,676	\$ —	\$ —	\$ 1,676

(in thousands)

As of December 31, 2018	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)	Balance at December 31, 2018
Assets				
Money market funds ⁽¹⁾	\$ 250	\$ —	\$ —	\$ 250
Equity mutual funds ⁽²⁾	\$ 1,673	\$ —	\$ —	\$ 1,673
Cross currency swaps ⁽³⁾	\$ —	\$ 1,789	\$ —	\$ 1,789
Foreign currency exchange contracts ⁽³⁾	\$ —	\$ 8,163	\$ —	\$ 8,163
Liabilities				
Foreign currency exchange contracts ⁽³⁾	\$ —	\$ 603	\$ —	\$ 603
Deferred compensation ⁽⁴⁾	\$ 1,673	\$ —	\$ —	\$ 1,673

- (1) Money market funds with an original maturity of less than ninety days are included within cash and cash equivalents. The remaining balance of cash and cash equivalents as of December 31, 2019, and December 31, 2018, consisted of demand deposits.
- (2) Equity mutual funds relate to a deferred compensation plan that was assumed as part of a previous business combination. This amount is included within other long-term assets. See footnote (4) below for a discussion of the related deferred compensation liability.
- (3) Cross currency swaps and foreign currency exchange contracts are included within other current assets; other long-term assets; accrued liabilities; or other long-term liabilities depending on the gain (loss) position and anticipated settlement date.
- (4) A deferred compensation plan assumed as part of a previous business combination is included within accrued liabilities and other long-term liabilities. The fair value of our deferred compensation plan is indexed to the performance of the underlying equity mutual funds discussed in footnote (2) above.

The estimated fair values of certain financial instruments, including cash and cash equivalents, accounts receivable and accounts payable, approximate carrying value due to their short maturity.

NOTE 18. HEDGING INSTRUMENTS

Disclosure within this note is presented to provide transparency about how and why we use derivative and non-derivative instruments (collectively “hedging instruments”), how the instruments and related hedged items are accounted for, and how the instruments and related hedged items affect our financial position, results of operations and cash flows.

We are exposed to certain risks related to our ongoing business operations. The primary risk that we currently manage by using hedging instruments is foreign currency exchange risk. We may also enter into interest rate swaps to minimize the impact of interest rate fluctuations associated with borrowings under our variable-rate Credit Facility.

Our subsidiaries enter into foreign currency exchange contracts to manage the exchange risk associated with their forecasted intercompany inventory purchases and sales for the next year. From time to time, we may also enter into other foreign currency exchange contracts, cross currency swaps or foreign-denominated debt issuances to minimize the impact of foreign currency fluctuations associated with specific balance sheet exposures, including net investments in certain foreign subsidiaries.

The primary purpose of our foreign currency hedging activities is to protect against the volatility associated with foreign currency transactions, including transactions denominated in euro, British pound, Japanese yen, Canadian dollar, and Australian dollar. We also utilize natural hedges to mitigate our transaction and commitment exposures. Our corporate policy prescribes the range of allowable hedging activity. We enter into foreign currency exchange contracts with well-capitalized multinational financial institutions, and we do not hold or engage in transactions involving hedging instruments for purposes other than risk management. Our accounting policies for these contracts are based on our designation of such instruments as hedging transactions.

We recognize all hedging instruments on the balance sheet at fair value at the balance sheet date. Instruments that do not qualify for hedge accounting treatment must be recorded at fair value through earnings. To qualify for hedge accounting treatment, cash flow and net investment hedges must be highly effective in offsetting changes to expected future cash flows or fair value on hedged transactions. If the instrument qualifies for hedge accounting, changes in the fair value of the hedging instrument from the effective portion of the hedge are deferred in AOCI, net of tax, and reclassified into earnings in the same period or periods during which the hedged transaction affects earnings. We immediately record in earnings the extent to which a hedging instrument is not effective in achieving offsetting changes in fair value. We de-designate hedging instruments from hedge accounting when the likelihood of the hedged transaction occurring becomes less than probable. For de-designated instruments, the gain or loss from the time of de-designation through maturity of the instrument is recognized in earnings. Any gain or loss in AOCI at the time of de-designation is reclassified into earnings in the same period or periods during which the hedged transaction affects earnings. See “Note 20. Accumulated Other Comprehensive Income” for further information regarding the effect of hedging instruments on the consolidated statements of income for the years ended December 31, 2019, 2018 and 2017.

We enter into master netting arrangements with the counterparties to our derivative transactions which permit certain outstanding receivables and payables to be offset in the event of default. Our derivative contracts do not require either party to post cash collateral. We elect to present our derivative assets and liabilities in the accompanying consolidated balance sheets on a gross basis. All cash flows related to our foreign currency exchange contracts are classified as operating cash flows, which is consistent with the cash flow treatment of the underlying items being hedged.

See "Note 17. Fair Value Measurements" for additional information regarding the fair value of our derivative instruments and "Note 20. Accumulated Other Comprehensive Income" for additional information regarding the effect of derivative instruments designated as cash flow hedges on the consolidated statements of income.

Cash Flow Hedges

We have designated our foreign currency exchange contracts as cash flow hedges as these derivative instruments mitigate the exposure to variability in the cash flows of forecasted transactions attributable to foreign currency exchange. Unless noted otherwise, we have also designated our derivative instruments as qualifying for hedge accounting treatment.

We did not de-designate any instruments from hedge accounting treatment during the years ended December 31, 2019, 2018 and 2017. Gains and losses related to hedge ineffectiveness recognized in earnings during the years ended December 31, 2019, 2018 and 2017 were not material. At December 31, 2019, the estimated amount of net losses, net of tax, which are

expected to be reclassified out of AOCI and into earnings within the next twelve months is \$0.7 million if exchange rates do not fluctuate from the levels at December 31, 2019.

We hedge approximately 85% of the estimated exposure from intercompany product purchases and sales denominated in the euro, British pound, Canadian dollar, Japanese yen, Australian dollar, and, in prior years, the Swiss franc. We have additional unhedged foreign currency exposures related to foreign services and emerging markets where it is not practical to hedge. We primarily utilize foreign currency exchange contracts with durations of less than 24 months. Quarterly, we enter into contracts to hedge incremental portions of anticipated foreign currency transactions for the current and following year. As a result, our risk with respect to foreign currency exchange rate fluctuations and the notional value of foreign currency exchange contracts may vary throughout the year. The U.S. dollar is the currency purchased or sold in all of our foreign currency exchange contracts. The notional amount of foreign currency exchange contracts to hedge forecasted intercompany inventory purchases and sales totaled \$210.9 million, and \$190.9 million at December 31, 2019 and 2018, respectively.

The following table presents the effect of cash flow hedge accounting on our consolidated statements of income and comprehensive income, and provides information regarding the location and amounts of pretax gains or losses of derivatives:

(in thousands)

	Years Ended December 31,		
	2019	2018	2017
Financial statement line items in which effects of cash flow hedges are recorded			
Cost of revenue	\$ 1,041,359	\$ 971,700	\$ 871,676
Foreign exchange contracts			
Amount of gain (loss) reclassified from accumulated other comprehensive income into income	\$ 10,628	\$ (976)	\$ 27

Net Investment Hedges, Euro-Denominated Notes

In June 2015, we issued and sold through a private placement an aggregate principal amount of €88.9 million in euro-denominated 1.785% Series C Senior Notes due June 18, 2025. We have designated these euro-denominated notes as a hedge of our euro net investment in certain foreign subsidiaries to reduce the volatility in stockholders' equity caused by changes in foreign currency exchange rates in the euro relative to the U.S. dollar. As a result of this designation, gains and losses from the change in translated U.S. dollar value of these euro-denominated notes are recorded in AOCI rather than to earnings. We recorded gains of \$1.8 million and \$3.9 million, and a loss of \$8.3 million, net of tax, within AOCI as a result of this net investment hedge for the years ended December 31, 2019, 2018, and 2017, respectively. The related cumulative unrealized gain recorded at December 31, 2019, will not be reclassified in earnings until the complete or substantially complete liquidation of the net investment in the hedged foreign operations or all or a portion of the hedge no longer qualifies for hedge accounting treatment. See "Note 12. Debt" to the consolidated financial statements included in this Annual Report on Form 10-K for further information regarding the issuance of these euro-denominated notes.

Net Investment Hedges, Cross Currency Swaps

During May 2018, January 2019, March 2019, and November 2019, we entered into cross currency swap contracts as a hedge of our net investment in foreign operations to offset foreign currency translation gains and losses on the net investment. The cross currency swaps have a maturity date of June 30, 2023. At maturity of the cross currency swap contracts, we will deliver the notional amount of €90.0 million and will receive approximately \$104.5 million from the counterparties. The change in fair value of the cross currency swap contracts are recorded in AOCI and will be reclassified to earnings when the foreign subsidiaries are sold or substantially liquidated. During the years ended December 31, 2019 and 2018, we recorded gains of \$2.1 million and \$1.4 million, net of tax, within AOCI as a result of these net investment hedges, respectively. We will receive quarterly interest payments from the counterparties based on a fixed interest rate until maturity of the cross currency swaps. This interest rate component is excluded from the assessment of hedge effectiveness and, thus is recognized as a reduction to interest expense over the life of the hedge instrument. We recognized approximately \$2.4 million and \$1.0 million related to the excluded component as a reduction of interest expense for the years ended December 31, 2019 and 2018, respectively.

Fair Values of Hedging Instruments Designated as Hedges in Consolidated Balance Sheets

The fair values of hedging instruments, and their respective classification on the consolidated balance sheets, and amounts subject to offset under master netting arrangements consisted of the following derivative instruments, unless otherwise noted:

(in thousands)

		Hedging Assets	
		December 31, 2019	December 31, 2018

Derivatives and non-derivatives designated as hedging instruments	Balance Sheet Classification		
Foreign currency exchange contracts	Other current assets	\$ 1,791	\$ 8,163
Cross currency swaps	Other long-term assets	4,559	1,789
Total derivative instruments presented as hedge instruments on the balance sheet		6,350	9,952
Gross amounts subject to master netting arrangements not offset on the balance sheet		(1,354)	(603)
Net amount		\$ 4,996	\$ 9,349

(in thousands)

		Hedging Liabilities	
		December 31, 2019	December 31, 2018

Derivatives and non-derivatives designated as hedging instruments	Balance Sheet Classification		
Foreign currency exchange contracts	Accrued liabilities	\$ 2,886	\$ 603
Total derivative instruments presented as cash flow hedges on the balance sheet		2,886	603
Non-derivative foreign currency denominated debt designated as net investment hedge on the balance sheet ⁽¹⁾	Long-term debt	99,422	101,777
Total hedging instruments presented on the balance sheet		102,308	102,380
Gross amounts subject to master netting arrangements not offset on the balance sheet		(1,354)	(603)
Net amount		\$ 100,954	\$ 101,777

(1) Amounts represent reported carrying amounts of our foreign currency denominated debt. See "Note 17. Fair Value Measurements" for information regarding the fair value of our long-term debt.

NOTE 19. REPURCHASES OF COMMON STOCK

As of December 31, 2019, our Board of Directors has authorized the repurchase of up to 68.0 million shares of our common stock in the open market or in negotiated transactions pursuant to the Company's share repurchase program. We believe that the repurchase of our common stock is a favorable means of returning value to our stockholders, and we also repurchase to offset the dilutive effect of our share-based compensation programs. Repurchases of our common stock may vary depending upon the level of other investing activities and the share price. As of December 31, 2019, there are approximately 2.0 million remaining shares available for repurchase under this authorization.

We primarily acquire shares by repurchases in the open market. However, we also acquire shares that are surrendered by employees in payment for the minimum required statutory withholding taxes due on the vesting of restricted stock units and the settlement of deferred stock units, otherwise referred to herein as employee surrenders. We issue shares of treasury stock upon the vesting of certain restricted stock units and upon the exercise of certain stock options. The number of shares of treasury stock issued during the years ended December 31, 2019, 2018 and 2017, was not material.

The following is a summary of our open market common stock repurchases, reported on a trade date basis, and shares acquired through employee surrenders:

(in thousands, except per share amounts)

	For the Years Ended December 31,		
	2019	2018	2017
Shares repurchased in the open market	1,215	1,773	1,749
Shares acquired through employee surrenders for statutory tax withholding	39	52	57
Total shares repurchased	<u>1,254</u>	<u>1,825</u>	<u>1,806</u>
Cost of shares repurchased in the open market	\$ 303,838	\$ 368,691	\$ 270,297
Cost of shares for employee surrenders	8,054	9,375	8,074
Total cost of shares	<u>\$ 311,892</u>	<u>\$ 378,066</u>	<u>\$ 278,371</u>
Average cost per share - open market repurchases	\$ 249.84	\$ 207.92	\$ 154.51
Average cost per share - employee surrenders	\$ 210.10	\$ 182.18	\$ 142.55
Average cost per share - total	\$ 248.62	\$ 207.19	\$ 154.13

NOTE 20. ACCUMULATED OTHER COMPREHENSIVE INCOME

The changes in AOCI, net of tax, consisted of the following:

	For the Years Ended December 31, 2019 and 2018					
	Unrealized (Loss) Gain on Investments, Net of Tax	Unrealized (Loss) Gain on Cash Flow Hedges, Net of Tax	Unrealized (Loss) Gain on Net Investment Hedges, Net of Tax			Total
		Foreign Currency Exchange Contracts	Euro-Denominated Notes	Cross Currency Swaps	Cumulative Translation Adjustment	
(in thousands)						
Balance as of December 31, 2017	\$ (22)	\$ (5,219)	\$ (4,311)	\$ —	\$ (26,918)	\$ (36,470)
Other comprehensive (loss) income before reclassifications	(135)	10,659	3,917	1,360	(21,911)	(6,110)
Losses reclassified from accumulated other comprehensive income	—	789	—	—	—	789
Balance as of December 31, 2018	<u>(157)</u>	<u>6,229</u>	<u>(394)</u>	<u>1,360</u>	<u>(48,829)</u>	<u>(41,791)</u>
Other comprehensive income (loss) before reclassifications	267	1,196	1,790	2,107	(1,590)	3,770
Gains reclassified from accumulated other comprehensive income	—	(8,161)	—	—	—	(8,161)
Balance as of December 31, 2019	<u>\$ 110</u>	<u>\$ (736)</u>	<u>\$ 1,396</u>	<u>\$ 3,467</u>	<u>\$ (50,419)</u>	<u>\$ (46,182)</u>

The following table presents components and amounts reclassified out of AOCI to net income:

	Affected Line Item in the Statements of Income	Amounts Reclassified from AOCI for the Years Ended December 31,		
		2019	2018	2017
(in thousands)				
Gains (losses) on derivative instruments included in net income:				
Foreign currency exchange contracts	Cost of revenue	\$ 10,628	\$ (976)	\$ 27
	Tax expense (benefit)	2,467	(187)	224
	Gains (losses), net of tax	<u>\$ 8,161</u>	<u>\$ (789)</u>	<u>\$ (197)</u>

NOTE 21. PREFERRED STOCK

Our Board of Directors is authorized, subject to any limitations prescribed by law, without further stockholder approval, to issue from time to time up to 500,000 shares of Preferred Stock, \$1.00 par value per share (“Preferred Stock”), in one or more series. Each such series of Preferred Stock shall have such number of shares, designations, preferences, voting powers, qualifications and special or relative rights or privileges as shall be determined by the Board of Directors, which may include, among others, dividend rights, voting rights, redemption and sinking fund provisions, liquidation preferences, conversion rights and preemptive rights. There are no shares of Preferred Stock outstanding as of December 31, 2019 and 2018.

NOTE 22. IDEXX RETIREMENT AND INCENTIVE SAVINGS PLAN

We have established the IDEXX Retirement and Incentive Savings Plan (the “401(k) Plan”). U.S. employees eligible to participate in the 401(k) Plan may contribute specified percentages of their salaries. Beginning January 1, 2018, we matched a portion of these contributions, not to exceed 5% of participants’ eligible compensation. Prior to January 1, 2018, we matched a portion of these contributions, not to exceed 4% of participants’ eligible compensation. We matched \$21.1 million, \$19.0 million, and \$13.8 million for the years ended December 31, 2019, 2018 and 2017, respectively. In addition, we may make contributions to the 401(k) Plan at the discretion of the Board of Directors. There were no discretionary contributions in 2019, 2018 or 2017.

We also have established defined contribution plans for regional employees in Europe and in Canada. With respect to these plans, our contributions over the past three years have not been material.

NOTE 23. SUMMARY OF QUARTERLY DATA (UNAUDITED)

A summary of quarterly data ⁽¹⁾ follows:

(in thousands, except per share data)

	For the Three Months Ended			
	March 31,	June 30,	September 30,	December 31,
2019				
Revenue	\$ 576,056	\$ 620,103	\$ 605,303	\$ 605,446
Gross profit	\$ 331,597	\$ 357,853	\$ 344,950	\$ 331,149
Operating income	\$ 133,138	\$ 164,275	\$ 139,802	\$ 115,631
Net income attributable to IDEXX Laboratories, Inc. stockholders	\$ 102,681	\$ 125,706	\$ 108,837	\$ 90,496
Earnings per share:				
Basic	\$ 1.19	\$ 1.46	\$ 1.26	\$ 1.05
Diluted	\$ 1.17	\$ 1.43	\$ 1.24	\$ 1.04
2018				
Revenue	\$ 537,656	\$ 580,752	\$ 545,448	\$ 549,386
Gross profit	\$ 303,099	\$ 332,439	\$ 305,643	\$ 300,361
Operating income	\$ 113,044	\$ 145,594	\$ 117,350	\$ 115,347
Net income attributable to IDEXX Laboratories, Inc. stockholders	\$ 89,451	\$ 108,691	\$ 93,251	\$ 85,638
Earnings per share:				
Basic	\$ 1.02	\$ 1.25	\$ 1.07	\$ 0.99
Diluted	\$ 1.01	\$ 1.23	\$ 1.05	\$ 0.98

(1) Amounts presented may not recalculate to full-year totals due to rounding.

IDEXX LABORATORIES, INC. AND SUBSIDIARIES

VALUATION AND QUALIFYING ACCOUNTS

(in thousands)

	Balance at Beginning of Year	Charges to Costs and Expenses	Write-Offs/ Cash Payments	Foreign Currency Translation	Balance at End of Year
Reserves for doubtful accounts receivable:					
December 31, 2017	\$ 4,523	\$ 591	\$ (1,660)	\$ 1,122	\$ 4,576
December 31, 2018	\$ 4,576	390	(969)	705	4,702
December 31, 2019	\$ 4,702	562	(813)	(870)	3,581
Valuation allowance for deferred tax assets:					
December 31, 2017	\$ 4,891	\$ 1,789	\$ (679)	\$ 210	\$ 6,211
December 31, 2018	\$ 6,211	402	—	(401)	6,212
December 31, 2019	\$ 6,212	3,489	(226)	(21)	9,454

EXHIBIT INDEX

<u>Exhibit No.</u>	<u>Description</u>
3.1	Restated Certificate of Incorporation of the Company, as amended (filed as Exhibit No. 3(i) to Quarterly Report on Form 10-Q for the quarter ended June 30, 2006, File No. 0-19271, and incorporated herein by reference).
3.2	Amended and Restated By-Laws of the Company (filed as Exhibit No. 3.1 to Current Report on Form 8-K filed December 12, 2017, File No. 0-19271, and incorporated herein by reference).
4.1	Description of the Registrant's Securities Registered Pursuant to Section 12 of the Securities Exchange Act of 1934 filed herewith.
4.2	Note Purchase Agreement, dated as of December 11, 2013, among the Company, as issuer, New York Life Insurance Company, New York Life Insurance and Annuity Corporation and New York Life Insurance and Annuity Corporation Institutionally Owned Life Insurance Separate Account (BOLI 30C), as purchasers (filed as Exhibit No. 99.1 to Current Report on Form 8-K filed December 12, 2013, File No. 0-19271, and incorporated herein by reference).
4.3	Note Purchase and Private Shelf Agreement, dated as of July 21, 2014, among the Company, as issuer, Prudential Investment Management, Inc., Pruco Life Insurance Company, The Prudential Insurance Company of America, The Gibraltar Life Insurance Co., Ltd., PAR U Hartford Life Insurance Comfort Trust, The Independent Order of Foresters, Zurich American Insurance Company, Globe Life and Accident Insurance Company, Family Heritage Life Insurance Company of America, MTL Insurance Company, The Lincoln National Life Insurance Company, William Penn Life Insurance Company of New York, Farmers Insurance Exchange and Mid Century Insurance Company, as purchasers (filed as Exhibit No. 99.1 to Current Report on Form 8-K Filed July 25, 2014, File No. 0-19271, and incorporated herein by reference).
4.4	Note Purchase Agreement, dated as of July 22, 2014, among the Company, as issuer, New York Life Insurance Company, New York Life Insurance and Annuity Corporation and New York Life Insurance and Annuity Corporation Institutionally Owned Life Insurance Separate Account (BOLI 30C), as purchasers (filed as Exhibit No. 99.2 to Current Report on Form 8-K file July 25, 2014, File No. 0-19271, and incorporated herein by reference).
4.5	Amended and Restated Multi-Currency Note Purchase and Private Shelf Agreement, dated as of June 18, 2015, among the Company, Prudential Investment Management, Inc., Pruco Life Insurance Company, The Prudential Insurance Company of America, The Gibraltar Life Insurance Co., Ltd., PAR U Harford Life Insurance Comfort Trust, The Independent Order of Foresters, Zurich American Insurance Company, Globe Life and Accident Insurance Company, Family Heritage Life Insurance Company of America, MTL Insurance Company, The Lincoln National Life Insurance Company, William Penn Life Insurance Company of New York, Farmers Insurance Exchange, Mid Century Insurance Company and Farmers New World Life Insurance Company, as purchasers (filed as Exhibit No. 99.1 to Current Report on Form 8-K filed June 24, 2015, File No. 0-19271, and incorporated herein by reference).
4.6	Multicurrency Note Purchase and Private Shelf Agreement, dated as of December 19, 2014, among the Company, as issuer, and Metropolitan Life Insurance Company, MetLife Insurance Company USA, Symetra Life Insurance Company, MetLife Insurance K.K., AXIS Reinsurance Company, and Union Fidelity Life Insurance Company, as purchasers (filed as Exhibit 10.1 to Current Report on Form 8-K filed March 15, 2019, File No. 0-19271, and incorporated herein by reference).
4.7	First Amendment to Multicurrency Note Purchase and Private Shelf Agreement, dated March 14, 2019, among the Company, as issuer, and IDEXX Distribution, Inc., IDEXX Operations, Inc., and OPTI Medical Systems, Inc., each as a subsidiary guarantor, and Metropolitan Life Insurance Company, MetLife Reinsurance Company of Bermuda, Ltd., Brighthouse Life Insurance Company, Symetra Life Insurance Company, and AXIS Reinsurance Company (filed as Exhibit 10.2 to Current Report on Form 8-K filed March 15, 2019, File No. 0-19271, and incorporated herein by reference).
10.1*	U.S. Supply Agreement, effective as of October 16, 2003, among IDEXX Operations, Inc., the Company and Ortho-Clinical Diagnostics, Inc. ("Ortho") (filed as Exhibit No. 10.7 to Annual Report on Form 10-K for the year ended December 31, 2003, File No. 0-19271 ("2003 Form 10-K"), and incorporated herein by reference).

- 10.2* Amendment No. 1 to U.S. Supply Agreement effective as of January 1, 2005, among IDEXX Operations, Inc., the Company and Ortho (filed as Exhibit No. 10.1 to Quarterly Report on Form 10-Q for the quarter ended June 30, 2005, File No. 0-19271 (“June 2005 Form 10-Q”), and incorporated herein by reference).
- 10.3 Amendment No. 2 to U.S. Supply Agreement effective as of October 15, 2006, among IDEXX Operations, Inc., the Company and Ortho (filed as Exhibit No. 10.4 to Annual Report on Form 10-K for the year ended December 31, 2007, File No. 0-19271 (“2007 Form 10-K”), and incorporated herein by reference).
- 10.4* Amendment No. 3 to U.S. Supply Agreement effective as of January 18, 2008, among IDEXX Operations, Inc., the Company and Ortho (filed as Exhibit No. 10.5 to 2007 Form 10-K, and incorporated herein by reference).
- 10.5* Amendment No. 4 to U.S. Supply Agreement effective as of December 28, 2011, among IDEXX Operations, Inc., the Company and Ortho (filed as Exhibit No. 10.5 to Annual Report on Form 10-K for the year ended December 31, 2011, File No. 0-19271 (“2011 Form 10-K”), and incorporated herein by reference).
- 10.6* Amendment No. 5 to U.S. Supply Agreement effective as of December 9, 2013, among IDEXX Operations, Inc., the Company and Ortho (filed as Exhibit No. 10.6 to Annual Report on Form 10-K for the year ended December 31, 2013, File No. 0-19271 (“2013 Form 10-K”), and incorporated herein by reference).
- 10.7* Amendment No. 6 to U.S. Supply Agreement effective as of January 1, 2017, among IDEXX Operations, Inc., the Company and Ortho (filed as Exhibit No. 10.27 to Annual Report on Form 10-K for the year ended December 31, 2017, File No. 0-19271, and incorporated herein by reference).
- 10.8* European Supply Agreement, effective as of October 17, 2003, among IDEXX Europe B.V., the Company and Ortho (filed as Exhibit No. 10.8 to 2003 Form 10-K, and incorporated herein by reference).
- 10.9* Amendment No. 1 to European Supply Agreement effective as of January 1, 2005, among IDEXX Europe B.V., the Company and Ortho (filed as Exhibit No. 10.2 to June 2005 Form 10-Q, and incorporated herein by reference).
- 10.10* Amendment No. 2 to European Supply Agreement effective as of January 18, 2008, among IDEXX Europe B.V., the Company and Ortho (filed as Exhibit No. 10.8 to 2007 Form 10-K, and incorporated herein by reference).
- 10.11* Amendment No. 3 to European Supply Agreement effective as of December 28, 2011, among IDEXX Europe B.V., the Company and Ortho (filed as Exhibit No. 10.9 to 2011 Form 10-K, and incorporated herein by reference).
- 10.12* Amendment No. 4 to European Supply Agreement effective as of December 9, 2013, among IDEXX Europe B.V., the Company and Ortho (filed as Exhibit No. 10.11 to 2013 Form 10-K, and incorporated herein by reference).
- 10.13 Amendment, Release and Settlement Agreement dated as of September 12, 2002, among the Company, IDEXX Europe B.V., and Ortho (filed as Exhibit No. 10.1 to Quarterly Report on Form 10-Q for the quarter ended September 30, 2002, File No. 0-19271, and incorporated herein by reference).
- 10.14** Employment Agreement dated January 22, 2002, between the Company and Jonathan W. Ayers (filed as Exhibit No. 10.13 to Annual Report on Form 10-K for the year ended December 31, 2001, File No. 0-19271, and incorporated herein by reference).
- 10.15** Amended and Restated Executive Employment Agreement dated May 26, 2013, between the Company and Jonathan W. Ayers (filed as Exhibit No. 10.2 to Quarter Report on Form 10-Q for the quarter ended June 30, 2013, File No. 0-19271 (“June 2013 Form 10-Q”), and incorporated herein by reference).
- 10.16** Form of Executive Employment Agreement dated May 26, 2013, between the Company and each of the Company’s Executive Officers, other than the Chief Executive Officer (filed as Exhibit No. 10.3 to June 2013 Form 10-Q, and incorporated herein by reference).

- 10.17** Restated Director Deferred Compensation Plan, as amended (filed as Exhibit No. 10.1 to Quarterly Report on Form 10-Q for the quarter ended September 30, 2010, File No. 0-19271, and incorporated herein by reference).
- 10.18** Restated Executive Deferred Compensation Plan, as amended (filed as Exhibit No. 10.3 to Quarterly Report on Form 10-Q for the quarter ended June 30, 2010, File No. 0-19271, and incorporated herein by reference).
- 10.19** IDEXX Laboratories 1997 Employee Stock Purchase Plan, as amended (filed as Exhibit No. 10.2 to Quarterly Report on Form 10-Q for the quarter ended June 30, 2015, File No. 0-19271, and incorporated herein by reference).
- 10.20** 2009 Stock Incentive Plan, as amended (filed as Exhibit No. 99.1 to Registration Statement on Form S-8 filed December 30, 2013, File No. 333-193136, and incorporated herein by reference).
- 10.21** 2018 Stock Incentive Plan (filed as Appendix B to the Definitive Proxy Statement on Schedule 14A for the 2018 Annual Meeting of Stockholders filed on March 28, 2018, and incorporated herein by reference).
- 10.22** Summary of Executive Incentive Plan (filed herewith).
- 10.23** Form of Director Stock Option Agreement (filed as Exhibit 10.24 to Annual Report on Form 10-K for the year ended December 31, 2018, File No. 0-19271, and incorporated by reference herein).
- 10.24** Form of Director Restricted Stock Unit (filed herewith).
- 10.25** Form of Employee Stock Option Agreement for grants in 2010 to 2015 (filed as Exhibit 10.21 to Annual Report on Form 10-K for the year ended December 31, 2009, File No. 0-19271, and incorporated by reference herein).
- 10.26** Form of Employee Stock Option Agreement for grants in 2016 and 2017 (filed as Exhibit 10.20 to Annual Report on Form 10-K for the year ended December 31, 2015, File No. 0-19271, and incorporated by reference herein).
- 10.27** Form of Employee Stock Option Agreement for grants in 2018 and 2019 (filed as Exhibit 10.25 to Annual Report on Form 10-K for the year ended December 31, 2018, File No. 0-19271, and incorporated by reference herein).
- 10.28** Form of Employee Stock Option Agreement for grants in 2020 (filed herewith).
- 10.29** Form of Employee Restricted Stock Unit Agreement for grants in 2015 (filed as Exhibit 10.24 to Annual Report on Form 10-K for the year ended December 31, 2009, File No. 0-19271, and incorporated by reference herein).
- 10.30** Form of Employee Restricted Stock Unit Agreement for grants in 2016 and 2017 (filed as Exhibit 10.22 to Annual Report on Form 10-K for the year ended December 31, 2015, File No. 0-19271, and incorporated by reference herein).
- 10.31** Form of Employee Restricted Stock Unit Agreement for grants in 2018 and 2019 (filed as Exhibit 10.26 to Annual Report on Form 10-K for the year ended December 31, 2018, File No. 0-19271, and incorporated by reference herein).
- 10.32** Form of Employee Restricted Stock Unit for grants in 2020 (filed herewith).
- 10.33** Form of Employee Performance-Based Restricted Stock Unit Agreement (filed as Exhibit 10.27 to Annual Report on Form 10-K for the year ended December 31, 2018, File No. 0-19271, and incorporated by reference herein).

- 10.34 Second Amended and Restated Credit Agreement, dated as of December 4, 2015, among the Company, IDEXX Distribution, Inc., IDEXX Operations, Inc., OPTI Medical Systems, Inc., IDEXX Laboratories Canada Corporation and IDEXX Europe B.V., as borrowers, JPMorgan Chase Bank, N.A., Bank of America, N.A., Wells Fargo Bank, N.A., Keybank National Association, MUFG Union Bank, N.A., HSBC Bank USA, National Association, Citibank, N.A. The Northern Trust Company, People's United Bank, National Association, TD Bank N.A., U.S. Bank National Association and Deutsche Bank AG New York Branch. as lenders, JPMorgan Chase Bank, N.A., as administrative agent, JPMorgan Chase Bank, N.A., Toronto Branch, as Toronto agent, and J.P. Morgan Europe Limited, as London agent (filed as Exhibit No. 10.1 to the Current Report on Form 8-K filed December 8, 2015, File No.0-19271, and incorporated herein by reference).
- 10.35** Mutual Separation Agreement, dated October 23, 2019, by and between the Company and Mr. Jonathan W. Ayers (filed as Exhibit 10.1 to Current Report on Form 8-K filed October 24, 2019, File No. 0-19271, and incorporated herein by reference).
- 10.36** Senior Advisory Agreement, dated October 23, 2019, by and between the Company. and Mr. Jonathan W. Ayers (filed as Exhibit 10.2 to Current Report on Form 8-K filed October 24, 2019, File No. 0-19271, and incorporated herein by reference).
- 10.37** Second Amended and Restated Employment Agreement, dated October 23, 2019, by and between the Company and Jonathan (Jay) Mazelsky (filed as Exhibit 10.3 to Current Report on Form 8-K filed October 24, 2019, File No. 0-19271, and incorporated herein by reference).
- 21 Subsidiaries of the Company (filed herewith).
- 23 Consent of PricewaterhouseCoopers LLP, an independent registered public accounting firm (filed herewith).
- 31.1 Certification of Principal Executive Officer pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith).
- 31.2 Certification of Principal Financial Officer pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as adopted pursuant to Section 302 of the Sarbanes-Oxley Act of 2002 (filed herewith).
- 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 (filed herewith).
- 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 (filed herewith).
- 101 The following financial and related information from IDEXX Laboratories, Inc.'s Annual Report on Form 10-K for the fiscal year ended December 31, 2019, formatted in Inline eXtensible Business Reportable Language (iXBRL) includes: (i) the Consolidated Balance Sheet; (ii) the Consolidated Statement of Income; (iii) the Consolidated Statements of Comprehensive Income; (iv) the Consolidated Statement of Changes in Stockholders' Equity (Deficit); (v) the Consolidated Statement of Cash Flows; and, (vi) Notes to Consolidated Financial Statements.
- 104 The cover page from the Company's Annual Report of Form 10-K for the fiscal year ended December 31, 2019, formatted in Inline XBRL and contained in Exhibit 101.
- * Confidential treatment requested as to certain portions.
- ** Management contract or compensatory arrangement required to be filed as an exhibit pursuant to Item 15(a) (3) of Form 10-K.

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.

IDEXX LABORATORIES, INC.

By: /s/ Jonathan J. Mazelsky

Jonathan J. Mazelsky

President and Chief Executive Officer

Date: February 14, 2020

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:

<u>SIGNATURE</u>	<u>TITLE</u>	<u>DATE</u>
<u>/s/ Jonathan J. Mazelsky</u> Jonathan J. Mazelsky	President, Chief Executive Officer and Director (Principal Executive Officer)	February 14, 2020
<u>/s/ Brian P. McKeon</u> Brian P. McKeon	Executive Vice President, Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)	February 14, 2020
<u>/s/ Lawrence D. Kingsley</u> Lawrence D. Kingsley	Non-Executive Board Chair	February 14, 2020
<u>/s/ Jonathan W. Ayers</u> Jonathan W. Ayers	Director	February 14, 2020
<u>/s/ Bruce L. Claflin</u> Bruce L. Claflin	Director	February 14, 2020
<u>/s/ Stuart M. Essig, PhD</u> Stuart M. Essig	Director	February 14, 2020
<u>/s/ Rebecca M. Henderson, PhD</u> Rebecca M. Henderson, PhD	Director	February 14, 2020
<u>/s/ Daniel M. Junius</u> Daniel M. Junius	Director	February 14, 2020
<u>/s/ Sam A. Samad</u> Sam A. Samad	Director	February 14, 2020
<u>/s/ M. Anne Szostak</u> M. Anne Szostak	Director	February 14, 2020
<u>/s/ Sophie V. Vandebroek, PhD</u> Sophie V. Vandebroek, PhD	Director	February 14, 2020

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Form 10-K

A copy of our Annual Report on Form 10-K for the fiscal year ended December 31, 2019 ("2019 10-K") is included as part of this 2019 Annual Report, has been furnished to all shareholders together with the proxy statement for the 2020 Annual Meeting of Shareholders, which is scheduled to be held on May 6, 2020, and is incorporated herein by reference. Additionally, copies of the 2019 10-K are available without charge on the internet by visiting the EDGAR section of the Securities and Exchange Commission (SEC) website (www.sec.gov/edgar.shtml) or the Investors section of our website www.idexx.com. We will also provide a copy of the 2019 10-K without charge, upon written request from shareholders to Investor Relations at the address provided below.

The copy of the 2019 10-K that is included as part of this 2019 Annual Report is not accompanied by the exhibits that were filed with the SEC. These exhibits are accessible on the internet by visiting the EDGAR section of the SEC website (www.sec.gov/edgar.shtml) or the Investors section of our website www.idexx.com. We will furnish any printed copies of the exhibits to those shareholders who request copies upon payment to the Company of its reasonable expenses in furnishing the exhibits. Requests for copies of the exhibits should be made to Investor Relations at the address provided below.

Investor Relations

IDEXX Laboratories, Inc.
One IDEXX Drive
Westbrook, Maine 04092
Tel: 207-556-8155
Email: investorrelations@idexx.com

Quarterly Reports and Proxy Statements

Our Quarterly Reports on Form 10-Q and proxy statements can be obtained on the internet by visiting the EDGAR section of the SEC website (www.sec.gov/edgar.shtml) or via the Investors section of our website www.idexx.com or by contacting Investor Relations.

2020 Annual Meeting of Shareholders

May 6, 2020, 10:00 a.m., Eastern time
Virtual meeting only via webcast at
www.virtualshareholdermeeting.com/IDXX2020

Common Stock Listing

NASDAQ Global Select Market
Trading Symbol: **IDXX**

Transfer Agent and Registrar

American Stock Transfer & Trust Company
6201 15th Avenue
Brooklyn, New York 11219
Tel: 800-937-5449
Outside U.S. and Canada: +1-718-921-8124
Email: info@astfinancial.com

Corporate Offices

IDEXX Laboratories, Inc.
One IDEXX Drive
Westbrook, Maine 04092
Tel: 207-556-0300
www.idexx.com

References to websites are inactive textual references only and the contents of our website are not incorporated by reference into this 2019 Annual Report for any purpose.

