UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 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
or

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

For the transition period from to

COMMISSION FILE NO. 0-26224

INTEGRA LIFESCIENCES HOLDINGS CORPORATION
(EXACT NAME OF REGISTRANT AS SPECIFIED IN ITS CHARTER)

Delaware	**51-0317849**
(STATE OR OTHER JURISDICTION OF INCORPORATION OR ORGANIZATION)	**(I.R.S. EMPLOYER IDENTIFICATION NO.)**
1100 Campus Road **Princeton , New Jersey** **(ADDRESS OF PRINCIPAL EXECUTIVE OFFICES)**	**08540** **(ZIP CODE)**

REGISTRANT'S TELEPHONE NUMBER, INCLUDING AREA CODE: (609) 275-0500

SECURITIES REGISTERED PURSUANT TO SECTION 12(b) OF THE ACT:

Title of Each Class	Trading Symbol	Name of Exchange on Which Registered
Common Stock, Par Value $.01 Per Share	IART	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 15(d) of the Securities Exchange 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. (Check one):

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

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

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐

No ☒

As of June 30, 2019, the aggregate market value of the registrant’s common stock held by non-affiliates was approximately $3,945.6 million based upon the closing sales price of the registrant’s common stock on The Nasdaq Global Select Market on such date. The number of shares of the registrant’s Common Stock, $0.01 par value, outstanding as of February 18, 2020 was 84,442,804.

DOCUMENTS INCORPORATED BY REFERENCE:

Certain portions of the registrant’s definitive proxy statement relating to its scheduled May 13, 2020 Annual Meeting of Stockholders are incorporated by reference in Part III of this report.

INTEGRA LIFESCIENCES HOLDINGS CORPORATION
TABLE OF CONTENTS

PART I

ITEM 1. *BUSINESS*

OVERVIEW

The terms “we,” “our,” “us,” “Company” and “Integra” refer to Integra LifeSciences Holdings Corporation, a Delaware corporation, and its subsidiaries, unless the context suggests otherwise.

Integra, headquartered in Princeton, New Jersey, is a world leader in medical technology. The Company was founded in 1989 with the acquisition of an engineered collagen technology platform used to repair and regenerate tissue. Since then, Integra has developed numerous product lines from this technology for applications ranging from burn and deep tissue wounds, to the repair of dura mater in the brain, as well as nerves and tendons. The Company has expanded its base regenerative technology business to include surgical instruments, neurosurgical products, advanced wound care, and orthopedic hardware, through a combination of several global acquisitions and development of products internally to further meet the needs of its customers and impact patient care.

We manufacture and sell our products in two reportable business segments: Codman Specialty Surgical and Orthopedics and Tissue Technologies. Our Codman Specialty Surgical products comprise specialty surgical implants and instrumentation for a broad range of specialties. This segment includes products and solutions for dural access and repair, precision tools and instruments, advanced energy, cerebral spinal fluid ("CSF") management and neuro monitoring including market-leading product portfolios used in neurosurgery operation suites and critical care units. Our Orthopedics and Tissue Technologies product portfolios consist of differentiated regenerative technology products for soft tissue repair and tissue regeneration products, surgical reconstruction, and small bone fixation and joint replacement hardware products for both upper extremities and lower extremities. This business also includes private label sales of a broad set of our regenerative and wound care medicine technologies.

We have key manufacturing and research facilities located in California, New Jersey, Ohio, Massachusetts, Tennessee, Texas, Canada, France, Germany, Ireland, Switzerland, and Puerto Rico. We also source most of our handheld surgical instruments, specialty metal and pyrocarbon implants, and dural sealant products through specialized third-party vendors.

Codman Specialty Surgical products are sold through a combination of directly employed sales representatives, distributors and wholesalers, depending on the customer call point.

Orthopedics and Tissue Technologies products are sold through directly employed sales representatives, distributors focused on their respective surgical specialties, and strategic partners.

VISION

We aspire to be a worldwide leader in neurosurgery & reconstructive surgery, with a portfolio of leading businesses that delivers outstanding customer experience through innovation, execution and teamwork to positively impact the lives of millions of patients and families.

STRATEGY

Integra is committed to delivering high quality products that positively impact the lives of millions of patients and their families. We focus on four key pillars of our strategy: 1) building an execution-focused culture, 2) achieving relevant scale, 3) improving agility and innovation, and 4) leading in customer experience. We believe that by sharpening our focus on these areas through improved planning and communication, optimization of our infrastructure, and strategically aligned tuck-in acquisitions, we can build scale, increase competitiveness and achieve our long-term goals.

To this end, the executive leadership team has established the following key priorities aligned to the following areas of focus:

Strategic Acquisitions. An important part of our strategy is pursuing strategic transactions and licensing agreements that increase relevant scale in the clinical areas in which Integra competes. In 2019, we closed out of 45 transition service agreements, covering 90 countries, marking the successful completion of the integration of the Codman Neurosurgery acquisition, the most significant acquisition in the Company’s history. This acquisition expanded our portfolio of neurosurgery products and established us as the world leader in neurosurgery. It has also enabled us to bring our entire product portfolio to a global market. In 2019, Integra acquired Arkis Biosciences, Inc. and Rebound Therapeutics Corporation, both of which align with Company’s strategy to acquire and develop innovative technologies that address unmet needs in patient care.

Portfolio Optimization and New Product Introductions. We are investing in innovative product development to drive a multi-generational pipeline for our key product franchises. Our product development efforts span across our key global franchises focused on potential for significant returns on investment. In 2019, we launched ten new products across our key product franchises. In addition to new product development, we are funding studies to gather clinical evidence to support launches, ensure market access and improve reimbursement for existing products. In 2019, we discontinued

certain low-growth, low margin products. We continue to identify ways of optimizing our portfolio including identifying low-growth, low-margin products and product franchises for discontinuation.

Commercial Channel Investments. With acquisitions, new product introductions and a broader portfolio of products, investing in our sales channels is a core part of our strategy to create specialization and greater focus on reaching new and existing customers and addressing their needs. Internationally, we have increased our commercial resources significantly in many markets and are making investments to support our sales organization and maximize our commercial opportunities. We now have a strong international sales channel that will deliver our current portfolio as well as position us for expansion. In addition, we continue to build upon our leadership brands across our product franchises to enable us to engage hospital systems through enterprise-wide contracts.

Customer Experience. We aspire to be ranked as a best-in-class provider and are committed to strengthening our relationships with all customers. We strive to consistently deliver outstanding customer service and continue to invest in technologies, systems and processes to improve the way our customers do business with us. Additionally, we expect to build on the success of our professional education programs to drive continued customer familiarity with our growing portfolio of medical technologies globally.

BUSINESS SEGMENTS

We currently manufacture and sell our products in the following two global reportable business segments: Codman Specialty Surgical and Orthopedics and Tissue Technologies. We include financial information regarding our reportable business segments and certain geographic information under "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" and in Note 16, *Segment and Geographic Information* to our consolidated financial statements.

Codman Specialty Surgical

Our Codman Specialty Surgical business offers global, neurosurgery market-leading technologies, brands and instrumentation. The product portfolio represents a continuum of care from pre-operative, to the neurosurgery operating room, to the neuro-critical care unit and post care for both adult and pediatric patients suffering from brain tumors, brain injury, cerebrospinal fluid pressure complications and other neurological conditions.

The acquisition of Codman Neurosurgery from Johnson & Johnson increased our global direct sales representation and commercial presence. This acquisition expanded the product portfolio of our well known, leading technologies in dural repair, ultrasonic tissue ablation, intracranial pressure ("ICP") monitoring, hydrocephalus management, and cranial stabilization systems, while providing a rich research and development pipeline for growth.

Rounding out the portfolio is a catalog of surgical headlamps, surgical instrumentation, as well as asset management software and support, and after-market service. With thousands of surgical instrument products, including specialty surgical instruments, we call on the central sterile processing unit of hospitals and acute care surgical centers. Additionally, through a strong U.S. distribution model, we can serve the needs of hundreds of physician, dental and veterinary offices.

Our global commercial network includes clinical specialists, a large direct global sales force and strategic partnerships and distributors that serve hospitals, integrated health networks, group purchasing organizations, clinicians, surgery centers and health care providers.

Orthopedics and Tissue Technologies

Orthopedics and Tissue Technologies products serve some of the fastest growing markets in the medical technology industry and provide solutions that primarily address the needs of orthopedic, plastic, reconstructive and general surgeons. These products focus on addressing soft tissue, nerve, and tendon repairs as well as reconstruction in the hand, wrist, elbow, shoulder, ankle and foot.

We provide regenerative technology solutions for the treatment of acute wounds, such as burns, chronic wounds, including diabetic foot ulcers, surgical tissue repair including hernia repair, peripheral nerve repair and protection, and tendon repair. For extremity bone and joint reconstruction procedures, we sell hardware products, such as bone and joint fixation and joint replacement devices, implants and instruments, which provide for the reconstruction of bone in the hand, wrist, elbow and shoulder (Upper Extremity), and the foot, ankle and leg below the knee (Lower Extremity). In addition, we created opportunities to further expand our presence in the plastic and reconstructive surgery segments with our advanced wound care products such as Medihoney®, weight offloading, and amniotic tissue.

We made significant investments with our channel expansion in the U.S. and created four dedicated sales channels to have more focus and specialization within our call points to drive sustainable growth. We have a specialized sales organization composed of directly employed sales representatives, as well as specialty distributors, organized based upon their call point. Our extremity orthopedics sales representatives call on surgeons who treat extremity orthopedic disorders, including osteoarthritis, rheumatoid arthritis, wrist, ankle and shoulder arthroplasty, and other conditions requiring foot or hand

reconstruction. Additionally, we sell our shoulder products through a specialty distributor network of sales agents who call on shoulder surgeons. Our wound reconstruction acute (inpatient) sales representatives call on surgeons doing procedures in limb salvage, trauma, wound reconstruction and burns, while our advanced wound care sales representatives call on physicians who treat chronic wounds in the outpatient wound care clinic setting. We also have a dedicated surgical reconstruction sales team focused on plastic and reconstructive surgery and hernia procedures with differentiated products. Finally, we have a distributor network focused on biologics.

Outside the U.S., we have a small direct sales presence, primarily in certain European countries, Australia, New Zealand, and Canada, and use distributors in other international markets to sell certain product lines.

This business segment also includes private-label sales of a broad set of our regenerative and wound care technologies. Our customers are other medical technology companies that sell to end markets primarily in orthopedics, spine, surgical and wound care.

RESEARCH AND DEVELOPMENT STRATEGY

Our research and development activities focus on identifying unmet surgical needs and addressing those needs with innovative solutions and products. We apply our core competency in regenerative technology to products for neurosurgical, orthopedic and wound applications, plastic surgery, reconstructive surgery and we have extensive programs for our core platforms of orthopedic hardware and electromechanical technologies. We are focusing our research and development efforts on products and clinical studies to generate efficacy and health economic evidence.

Regenerative Technologies. Integra was the first Company to receive a United States Food and Drug Administration ("FDA") claim for regeneration of dermal tissue and is a world leader in regenerative technology. Because regenerative technology products represent a fast-growing, high-margin opportunity for us, we allocate a large portion of our research and development budget to these projects. Our regenerative technology development program applies our expertise in bioengineering to a range of biomaterials including natural collagen and human tissues as well as synthetics such as polymers. These unique product designs are used for neurosurgical and orthopedic surgical applications, as well as dermal regeneration, including the healing of chronic and acute wounds, tendon and nerve repair. Our regenerative technology platform includes our legacy Integra® Dermal Regeneration Template (IDRT) products and complementary technologies that we have acquired over the last few years. Our collagen manufacturing capability, combined with our history of innovation, provides us with strong platform technologies for multiple indications. In 2019, we launched DuraGen® in Japan. DuraGen is the first and only non-autologous collagen xenograft approved for use as a dural substitute in Japan.

Orthopedic Reconstruction. We develop fixation and small joint reconstruction implants and instruments for upper and lower extremities to both provide next generation solutions and expand our product portfolio. This portfolio focuses on joint replacement products. Integra has a strong shoulder portfolio, which includes a total shoulder system and a reverse shoulder. We continue to work on advanced shoulder products and are developing next generation anatomical designs, bone preserving products and techniques, and a pyrocarbon shoulder hemiarthroplasty product to add to that portfolio. We have a strong differentiated asset that resides in our patented pyrocarbon products, and we continue to invest to bring new products to market with this technology, which has shown significantly less wear on bone than traditional metals. To expand our ankle offering, in 2018 we launched the Integra® XT Ankle Revision System which may be used to revise most ankle prosthesis currently in the market. In 2019, we launched the Panta® II TTC Arthrodesis Nail System in the U.S. The Panta II system is our new fusion nail used in ankle fixation. We also added a small post baseplate in our Titan™ Reverse Shoulder System which allows us to accommodate smaller patients.

Electromechanical Technologies and Instrumentation. Because our electromechanical products and instruments address significant needs in surgical procedures and limit uncertainty for surgeons, we continue to invest in approvals for new indications and next generation improvements to our market-leading products. We have several active programs focused on life cycle management and innovation, for capital and disposable products in our portfolio. Our product development efforts are focused on core clinical applications in cerebral spinal fluid (CSF) management, neuro-critical care (NCC) monitoring, minimally invasive instruments and electrosurgery and ultrasonic medical technologies. In 2019, we launched an innovative customer-centric toolkit for our Certas™ Plus Programmable Valve along with additional shunt configurations. In addition, we launched our next generation of LED technology with our DUO LED Surgical Headlight System. Duo LED Surgical Headlight System™. We also work with several instrument partners to bring new surgical instrument patterns to the market, enabling us to add new instruments with minimal expense. Our lighting franchise is among the most dynamic in the industry.

COMPETITION

Our competitors for Codman Specialty Surgical are the Aesculap division of B. Braun Medical, Inc., Medtronic, Inc., Stryker Corporation and Becton Dickinson and Company. In addition, we compete with many smaller specialized companies and larger companies that do not otherwise focus on the offerings of Codman Specialty Surgical technologies. We rely on the depth and

breadth of our sales and marketing organization, our innovative technology, and our procurement and manufacturing operations to maintain our competitive position.

Our competition in Orthopedics and Tissue Technologies includes the DePuy/Synthes business of Johnson & Johnson, ACell, Inc., Stryker Corporation, Wright Medical Group, N.V., Smith & Nephew plc, MiMedx Group, Inc., LifeCell Corporation, a subsidiary of Allergan PLC, and Zimmer Biomet Holdings, Inc., as well as other major orthopedic companies that carry a full line of small bone and joint fixation and soft tissue products.

Finally, in certain cases our products compete primarily against medical practices that treat a condition without using a medical device or any particular product, such as medical practices that utilize autograft tissue instead of our dermal regeneration products, duraplasty products and nerve repair products. Depending on the product line, we compete based on our products' features, strength of our sales force or distributors, sophistication of our technology and cost effectiveness of our solution.

GOVERNMENT REGULATION

We are a manufacturer and marketer of medical devices, and therefore are subject to extensive regulation by the FDA, the Center for Medicare Services of the U.S. Department of Health and Human Services, other federal governmental agencies and, in some jurisdictions, by state and foreign governmental authorities. These regulations govern the introduction of new medical devices, the observance of certain standards with respect to the design, manufacture, testing, labeling, promotion and sales of the devices, the maintenance of certain records, the ability to track devices, the reporting of potential product defects, the import and export of devices, and other matters.

United States Food and Drug Administration

The regulatory process for obtaining product approvals and clearances can be onerous and costly. The FDA requires, as a condition to marketing a medical device in the U.S., that we secure a Premarket Notification clearance pursuant to Section 510(k) of the Federal Food, Drug and Cosmetic Act (the “FD&C Act”) or an approved PMA application (or supplemental PMA application). Obtaining these approvals and clearances can take up to several years and may involve preclinical studies and clinical trials. The FDA also may require a post-approval clinical study as a condition of approval. To perform clinical trials for significant risk devices in the U.S. on an unapproved product, we are required to obtain an Investigational Device Exemption ("IDE") from the FDA. The FDA may also require a filing for approval prior to marketing products that are modifications of existing products or new indications for existing products. Moreover, after clearance/approval is given, if the product is shown to be hazardous or defective, the FDA and foreign regulatory agencies have the power to withdraw the clearance or approval, as the case may be, or require us to change the device, its manufacturing process or its labeling, to supply additional proof of its safety and effectiveness or to recall, repair, replace or refund the cost of the medical device. Because we currently export medical devices manufactured in the U.S. that have not been approved by the FDA for distribution in the U.S., we are required to obtain approval/registration in the country to which we are exporting and maintain certain records relating to exports and make these available to the FDA for inspection, if required.

Human Cells, Tissues and Cellular and Tissue-Based Products

Integra, through the acquisition of Derma Sciences and BioD LLC ("BioD") is involved with the recovery, processing, storage, transportation and distribution of donated amniotic tissue. The FDA has specific regulations governing human cells, tissues and cellular and tissue-based products, or HCT/Ps. An HCT/P is a product containing, or consisting of, human cells or tissue intended for transplantation into a human patient. Examples include bone, ligament, skin and cornea.

Some HCT/Ps fall within the definition of a biological product, medical device or drug regulated under the FD&C Act. These biologic, device or drug HCT/Ps must comply both with the requirements exclusively applicable to HCT/Ps and, in addition, with requirements applicable to biologics, devices or drugs, including premarket clearance or approval from the FDA.

Section 361 of the Public Health Service Act (“Section 361”), authorizes the FDA to issue regulations to prevent the introduction, transmission or spread of communicable disease. HCT/Ps regulated as “361” HCT/Ps are subject to requirements relating to registering facilities and listing products with the FDA, screening and testing for tissue donor eligibility, and Good Tissue Practice when processing, storing, labeling, and distributing HCT/Ps, including required labeling information, stringent record keeping, and adverse event reporting.

The American Association of Tissue Banks (“AATB”) has issued operating standards for tissue banking. Compliance with these standards is a requirement in order to become an AATB-accredited tissue establishment. In addition, some states have their own tissue banking regulations. We are licensed or have permits for tissue banking in California, Delaware, Illinois, Maryland, New York, Oregon, and Tennessee. In Tennessee, we are registered with the FDA Center for Biological Evaluations and Research.

National Organ Transplant Act. Procurement

of certain human organs and tissue for transplantation is subject to the restrictions of the National Organ Transplant Act, which prohibits the transfer of certain human organs, including skin and related tissue for valuable consideration, but permits the reasonable payment associated with the removal, transportation, implantation, processing, preservation, quality control and storage of human

tissue and skin. Our subsidiary, BioD LLC is a registered Tissue Bank and is involved with the recovery, storage and transportation of donated human amniotic tissue.

Amniotic tissue is considered an HCT/P. However, on June 22, 2015, the FDA issued an Untitled Letter alleging that BioD's morselized amniotic membrane tissue-based products do not meet the criteria for regulation as HCT/Ps solely under Section 361 and that, as a result, BioD would need a biologics license to lawfully market those morselized products. Since the issuance of the Untitled Letter, BioD and more recently the company have been in discussions with the FDA to communicate their disagreement with the FDA's assertion that certain products are more than minimally manipulated. The FDA has not changed its position that certain of the BioD acquired products are not eligible for marketing solely under Section 361.

In November 2017, the FDA issued the final guidance document related to human tissue titled, "Regulatory Considerations for Human Cells, Tissues, and Cellular and Tissue-Based Products: Minimal Manipulation and Homologous Use" (the "HCT/P Final Guidance"). The HCT/P Final Guidance maintains the FDA's position that products such as the company's morselized amniotic membrane tissue-based products do not meet the criteria for regulation solely as HCT/Ps. In addition, the FDA articulated a risk-based approach to enforcement and, while some uses for amniotic membrane tissue-based products would have as much as thirty-six months of enforcement discretion, other high risk uses could be subject to immediate enforcement action. The company does not believe the uses for its amniotic membrane tissue-based products fall into the high-risk category. As of February 21, 2020, the company has not received any further notice of enforcement action from the FDA regarding its morselized amniotic tissue-based products. Nonetheless, we can make no assurances that the FDA will continue to exercise its enforcement discretion with respect to the company's morselized amniotic membrane tissue-based products, and any potential action of the FDA could have a financial impact regarding the sales of such products. The company has been considering and continues to consider regulatory approval pathways for its morselized amniotic membrane tissue-based products.

Revenues from BioD morselized amniotic membrane-based products for the year ended December 31, 2019 were less than 1.0% of consolidated revenues.

See "Item 1A. Risk Factors — *Certain of our products are derived from human tissue and are subject to additional regulations and requirements.*"

Medical Device Regulations

We also are required to register with the FDA as a medical device manufacturer. As such, our manufacturing sites are subject to periodic inspection by the FDA for compliance with the FDA's Quality System Regulations. These regulations require that we manufacture our products and maintain our documents in a prescribed manner with respect to design, manufacturing, testing and control activities. Further, we are required to comply with various FDA requirements and other legal requirements for labeling and promotion. If the FDA believes that a company is not in compliance with applicable regulations, it may issue a warning letter, institute proceedings to detain or seize products, issue a recall order, impose operating restrictions, enjoin future violations and assess civil penalties against that company, its officers or its employees and may recommend criminal prosecution to the U.S. Department of Justice.

Medical device regulations also are in effect in many of the countries in which we do business outside the U.S. These laws range from comprehensive medical device approval and Quality System requirements for some or all of our medical device products to simpler requests for product data or certifications. Under the European Union Medical Device Directive, medical devices must meet the Medical Device Directive standards and receive CE Mark Certification prior to marketing in the European Union (the "EU"). In addition, the EU enacted the EU Medical Device Regulation, which imposes stricter requirements on the marketing and sales of medical devices which includes but is not limited to quality systems and labeling. CE Mark Certification requires a comprehensive quality system program, technical documentation, clinical evaluation and data on the product, which are then reviewed by a Notified Body. A Notified Body is an organization designated by the national governments of the EU member states to make independent judgments about whether a product complies with the requirements established by each CE marking directive. The Medical Device Directive, Medical Device Regulation, ISO 9000 series and ISO 13485 are recognized international quality standards that are designed to ensure that we develop and manufacture quality medical devices. Other countries are also instituting regulations regarding medical devices or interpreting and enforcing existing regulations more strictly. Compliance with these regulations requires extensive documentation and clinical reports for all of our products, revisions to labeling, and other requirements such as facility inspections to comply with the registration requirements. A recognized Notified Body audits our facilities annually to verify our compliance with the ISO 13485 Quality System standard.

Certain countries, as well as the EU, have issued regulations that govern products that contain materials derived from animal sources. Regulatory authorities are particularly concerned with materials infected with the agent that causes bovine spongiform encephalopathy ("BSE"), otherwise known as mad cow disease. These regulations affect our dermal regeneration products, duraplasty products, hernia repair products, biomaterial products for the spine, nerve and tendon repair products and certain other products, all of which contain material derived from bovine tissue. Although we take great care to provide that our products are safe and free of agents that can cause disease, products that contain materials derived from animals, including our products, may become subject to additional regulation, or even be banned in certain countries, because of concern over the potential for prion

transmission. Significant new regulations, a ban of our products, or a movement away from bovine-derived products because of an outbreak of BSE could have a material, adverse effect on our current business or our ability to expand our business. See “Item 1A. Risk Factors - *Certain of our products contain materials derived from animal sources and may become subject to additional regulation*.”

Postmarket Requirements. After a device is cleared or approved for commercial distribution, numerous regulatory requirements apply. These include the FDA Quality System Regulations which cover the procedures and documentation of the design, testing, production, control, quality assurance, labeling, packaging, sterilization, storage and shipping of medical devices; the FDA's general prohibition against promoting products for unapproved or 'off-label' uses; the Medical Device Reporting regulation, which requires that manufacturers report to the FDA if their device may have caused or contributed to a death or serious injury or malfunctioned in a way that would likely cause or contribute to a death or serious injury if it were to recur; and the Reports of Corrections and Removals regulation, which require manufacturers to report recalls and field corrective actions to the FDA if initiated to reduce a risk to health posed by the device or to remedy a violation of the FD&C Act.

Other regulations

Anti-Bribery Laws. In the U.S., we are subject to laws and regulations pertaining to healthcare fraud and abuse, including anti-kickback laws and physician self-referral laws that regulate the means by which companies in the health care industry may market their products to hospitals and health care professionals and may compete by discounting the prices of their products. Similar anti-bribery laws exist in many of the countries in which we sell our products outside the U.S., as well as the United States Foreign Corrupt Practices Act (which addresses the activities of U.S. companies in foreign markets). Our products also are subject to regulation regarding reimbursement, and U.S. healthcare laws apply when a customer submits a claim for a product that is reimbursed under a federally funded healthcare program. These global laws require that we exercise care in designing our sales and marketing practices, including involving interactions with healthcare professionals, and customer discount arrangements. See “Item 1A. Risk Factors - *Oversight of the medical device industry might affect the manner in which we may sell medical devices and compete in the marketplace*.”

Import-export. Our international operations subject us to laws regarding sanctioned countries, entities and persons, customs, and import-export. Among other things, these laws restrict, and in some cases can prevent, U.S. companies from directly or indirectly selling goods, technology or services to people or entities in certain countries. In addition, these laws require that we exercise care in our business dealings with entities in and from foreign countries.

Hazardous materials. Our research, development and manufacturing processes involve the controlled use of certain hazardous materials. We are subject to country-specific, federal, state and local laws and regulations governing the use, manufacture, storage, handling and disposal of these materials and certain waste products. We believe that our environmental, health and safety procedures for handling and disposing of these materials comply with the standards prescribed by the controlling laws and regulations. However, risk of accidental releases or injury from these materials is possible. These risks are managed to minimize or eliminate associated business impacts. In the event of this type of accident, we could be held liable for damages that may result, and any liability could exceed our resources. We could be subject to a regulatory shutdown of a facility that could prevent the distribution and sale of products manufactured there for a significant period of time, and we could suffer a casualty loss that could require a shutdown of the facility in order to repair it, any of which could have a material, adverse effect on our business. Although we continuously strive to maintain full compliance with respect to all applicable global environmental, health and safety laws and regulations, we could incur substantial costs to fully comply with future laws and regulations, and our operations, business or assets may be negatively affected. Furthermore, global environmental, health and safety compliance is an ongoing process. Integra has compliance procedures in place for compliance with Employee Health & Safety laws, driven by a centrally led organizational structure that ensures proper implementation, which is essential to our overall business objectives.

In addition to the above regulations, we are, and may be, subject to regulation under country-specific federal and state laws, including, but not limited to, requirements regarding record keeping, and the maintenance of personal information, including personal health information. As a public Company, we are subject to the securities laws and regulations, including the Sarbanes-Oxley Act of 2002. We also are subject to other present and could be subject to possible future, local, state, federal and foreign regulations.

Third-Party Reimbursement. Healthcare providers that purchase medical devices generally rely on third-party payors, including, in the U.S., the Medicare and Medicaid programs and private payors, such as indemnity insurers, employer group health insurance programs and managed care plans, to reimburse all or part of the cost of the products. As a result, demand for our products is and will continue to be dependent in part on the coverage and reimbursement policies of these payors. The manner in which reimbursement is sought and obtained varies based upon the type of payor involved and the setting in which the product is furnished and utilized. Reimbursement from Medicare, Medicaid and other third-party payors may be subject to periodic adjustments as a result of legislative, regulatory and policy changes, as well as budgetary pressures. Possible reductions in, or eliminations of, coverage or reimbursement by third-party payors, or denial of, or provision of uneconomical reimbursement for new products may affect our customers' revenue and ability to purchase our products. Any changes in the healthcare regulatory, payment or

enforcement landscape relative to our customers' healthcare services have the potential to significantly affect our operations and revenue.

Data Privacy and Cybersecurity Laws and Regulations. As a business with a significant global footprint, compliance with evolving regulations and standards in data privacy and cybersecurity (relating to the confidentiality and security of our information technology systems, products such as medical devices, and other services provided by us) may result in increased costs, lower revenue, new complexities in compliance, new challenges for competition, and the threat of increased regulatory enforcement activity. Our business relies on the secure electronic transmission, storage and hosting of sensitive information, including personal information, financial information, intellectual property, and other sensitive information related to our customers and workforce.

For example, in the U.S., the collection, maintenance, protection, use, transmission, disclosure and disposal of certain personal information and the security of medical devices are regulated at the U.S. federal and state, and industry levels. U.S. federal and state laws protect the confidentiality of certain patient health information, including patient medical records, and restrict the use and disclosure of patient health information by health care providers. In addition, the FDA has issued guidance advising manufacturers to take cybersecurity risks into account in product design for connected medical devices and systems, to assure that appropriate safeguards are in place to reduce the risk of unauthorized access or modification to medical devices that contain software and reduce the risk of introducing threats into hospital systems that are connected to such devices. The FDA also issued guidance on post market management of cyber security in medical devices.

Outside the U.S., we are impacted by the privacy and data security requirements at the international, national and regional level, and on an industry specific basis. Legal requirements in these countries relating to the collection, storage, handling and transfer of personal data and, potentially, intellectual property continue to evolve with increasingly strict enforcement regimes. In Europe, for example, we are subject to the EU data protection regulations, including the current EU Directive on Data Protection, which requires member states to impose minimum restrictions on the collection, use and transfer of personal data. A new EU General Data Protection Regulation ("GDPR") which became enforceable in May 2018 includes, among other things, a requirement for prompt notice of data breaches to data subjects and supervisory authorities in certain circumstances and significant fines for non-compliance. The GDPR also requires companies processing personal data of individuals residing in the EU to comply with EU privacy and data protection rules.

These laws and regulations impact the ways in which we use and manage personal data, protected health information, and our information technology systems. They also impact our ability to move, store, and access data across geographic boundaries. Compliance with these requirements may require changes in business practices, complicate our operations, and add complexity and additional management and oversight needs. They also may complicate our clinical research activities, as well as product offerings that involve transmission or use of clinical data.

INTELLECTUAL PROPERTY

We seek patent and trademark protection for our key technology, products and product improvements, both in the U.S. and in selected foreign countries. When determined appropriate, we have enforced and plan to continue to enforce and defend our patent and trademark rights. In general, however, we do not rely solely on our patent and trademark estate to provide us with any significant competitive advantages as it relates to our existing product lines. We also rely upon trade secrets and continuing technological innovations to develop and maintain our competitive position. In an effort to protect our trade secrets, we have a policy of requiring our employees, consultants and advisors to execute proprietary information and invention assignment agreements upon commencement of employment or consulting relationships with us. These agreements also provide that all confidential information developed or made known to the individual during the course of their relationship with us must be kept confidential, except in specified circumstances.

AccuDrain®, AmnioExcel®, AmnioMatrix®, BioDFactor®, BioDFence®, BioDOptix®, BioDRestore™, Bioguard®, BioMotion®, Bold®, Budde®, Buzz™, Cadence®, Capture™, Codman®, Codman Certas®, Codman VersaTru®, CRW®, CUSA®, DigiFuse®, DirectLink®, DuraGen®, DuraSeal®, First Choice®, Hallu®, HeliCote®, HeliPlug®, HeliTape®, HeliMend®, Helistat®, Helitene®, Integra®, IntegraLink®, IPP-ON®, Isocool®, Jarit®, Licox®, LimiTorr™, Luxtec®, MediHoney®, MemoFix®, MicroFrance®, Miltex®, Movement®, NeuraGen®, NeuraWrap™, NuGrip®, Omnigraft®, Omni-Tract®, OSV II®, Qwix®, Padgett®, Panta®, PriMatrix®, PyroSphere®, Redmond™, Ruggles®, SafeGuard®, Salto Talaris®, Subtalar MBA®, SurgiMend®, TCC-EZ®, TenoGlide®, Ti6®, Tibiaxys®, TissueMend®, Titan™ , TruArch®, Uni-CP®, Uni-Clip®, Xtrasorb® and the Integra logo are some of the material trademarks of Integra LifeSciences Corporation and its subsidiaries. MAYFIELD® is a registered trademark of SM USA, Inc., and is used by Integra under license.

EMPLOYEES

At December 31, 2019, we had approximately 4,000 employees engaged in production and production support for warehouse, engineering and facilities, quality assurance, quality control, research and development, regulatory and clinical affairs, sales, marketing, administration and finance. Except for certain employees at our facilities in Austria, Belgium, Brazil, France, Germany, Italy and Mexico, none of our employees are subject to a collective bargaining agreement.

FINANCIAL INFORMATION ABOUT GEOGRAPHIC AREAS

Financial information about our geographical areas is set forth under “Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations - Geographic Product Revenues and Operations” and in our financial statements Note 16, *Segment and Geographic Information*, to our consolidated financial statements.

SOURCES OF RAW MATERIALS

In general, raw materials essential to our businesses are readily available from multiple sources. For reasons of quality assurance, availability, or cost effectiveness, certain components and raw materials are available only from a sole supplier. Our policy is to maintain sufficient inventory of components so that our production will not be significantly disrupted even if a particular component or material is not available for a period of time.

Certain of our products, including our dermal regeneration products, duraplasty products, wound care products, bone void fillers, nerve and tendon repair products and certain other products, contain material derived from bovine tissue. We take great care to provide that our products are safe and free of agents that can cause disease. In particular, the collagen used in the products that Integra manufactures is derived either from the deep flexor tendon of cattle less than 24 months old from New Zealand, a country that has never had a reported case of bovine spongiform encephalopathy, or from the U.S. or from fetal bovine dermis. The World Health Organization classifies different types of cattle tissue for relative risk of BSE transmission. Deep flexor tendon and fetal bovine skin are in the lowest-risk category for BSE transmission, and is therefore considered to have a negligible risk of containing the agent that causes BSE.

SEASONALITY

Revenues during our fourth quarter tend to be stronger than other quarters because many hospitals increase their purchases of our products during the fourth quarter to coincide with the end of their budget cycles in the U.S. In general, our first quarter usually has lower revenues than the preceding fourth quarter, the second and third quarters have higher revenues than the first quarter, and the fourth quarter revenues are the highest in the year. The main exceptions to this pattern occur because of material intervening acquisitions.

AVAILABLE INFORMATION

We are subject to the informational requirements of the Securities Exchange Act of 1934, as amended, (the “Exchange Act”). In accordance with the Exchange Act, we file annual, quarterly and special reports, proxy statements and other information with the Securities and Exchange Commission (the "SEC"). Our financial information may be viewed, including the information contained in this report, and other reports we file with the SEC, on the Internet, without charge as soon as reasonably practicable after we file them with the SEC, in the “SEC Filings” page of the Investor Relations section of our website at www.integralife.com. A copy may also be obtained for any of these reports, without charge, from our Investor Relations department, 1100 Campus Road, Princeton, NJ 08540. Alternatively, reports filed may be viewed or obtained with the SEC at the SEC's website at www.sec.gov.

SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

We have made statements in this report, including statements under “Business” and “Management's Discussion and Analysis of Financial Condition and Results of Operations” that constitute forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), and Section 21E of the Exchange Act. These forward-looking statements are subject to a number of risks, uncertainties and assumptions about us including, among other things:

- general economic and business conditions, both nationally and in our international markets;
- our expectations and estimates concerning future financial performance, financing plans and the impact of competition;
- anticipated trends in our business;
- anticipated demand for our products, particularly capital equipment;
- our ability to produce regenerative-based products in sufficient quantities to meet sales demands;
- our expectations concerning our ongoing restructuring, integration and manufacturing transfer and expansion activities;
- existing and future regulations affecting our business, and enforcement of those regulations;
- our ability to obtain additional debt and equity financing to fund capital expenditures, working capital requirements and acquisitions;
- physicians' willingness to adopt our recently launched and planned products, third-party payors' willingness to provide or continue reimbursement for any of our products and our ability to secure regulatory approval for products in development;
- initiatives launched by our competitors;
- our ability to protect our intellectual property, including trade secrets;
- our ability to complete acquisitions, integrate operations post-acquisition and maintain relationships with customers of acquired entities;
- our ability to remediate all matters identified in FDA observations and warning letters that we received or may receive; and
- other risk factors described in the section entitled "Risk Factors" in this report.

Forward-looking statements can be identified by forward-looking words such as “believe,” “may,” “could,” “might,” “will,” “estimate,” “continue,” “anticipate,” “intend,” “seek,” “plan,” “expect,” “should,” “would” and similar expressions in this report. We undertake no obligation to publicly update or revise any forward-looking statements, whether as a result of new information, future events or otherwise. In light of these risks and uncertainties, the forward-looking events and circumstances discussed in this report may not occur and actual results could differ materially from those anticipated or implied in the forward-looking statements.

ITEM 1A. *RISK FACTORS*

Risks Related to Our Business

Our operating results may fluctuate.

Our operating results, including components of operating results such as gross margin and cost of product sales, may fluctuate from time to time, and such fluctuations could affect our stock price. Our operating results have fluctuated in the past and can be expected to fluctuate from time to time in the future. Some of the factors that may cause these fluctuations include:

- economic conditions worldwide, which could affect the ability of hospitals and other customers to purchase our products and could result in a reduction in elective and non-reimbursed operative procedures;
- the impact of acquisitions and our ability to integrate acquisitions;
- the impact of our restructuring activities including portfolio rationalization;
- expenditures for major initiatives, including acquired businesses and integrations thereof and restructuring;
- the timing of significant customer orders, which tend to increase in the fourth quarter to coincide with the end of budget cycles for many hospitals;
- increased competition for a wide range of customers across all our product lines in the markets our products are sold;
- market acceptance of our existing products, as well as products in development;
- the timing of regulatory approvals as well as changes in country-specific regulatory requirements;
- changes in the rates of exchange between the U.S. dollar and other currencies of foreign countries in which we do business;
- changes in the variable interest rates of our debt instruments which could impact debt service requirements;
- potential backorders, lost sales and expenses incurred in connection with product recalls or field corrective actions;
- disruption of our operations and sales resulting from extreme weather conditions or natural disasters that damage our manufacturing or distribution facilities, the suppliers and service providers for those facilities, or the infrastructure in the locations of those facilities;
- our ability to manufacture and ship our products efficiently or in sufficient quantities to meet sales demands;

- changes in the cost or decreases in the supply of raw materials and services, including sterilization, energy, steel, pyrocarbon and honey;
- the timing of our research and development expenditures;
- reimbursement for our products by third-party payors such as Medicare, Medicaid, private and public health insurers and foreign governmental health systems;
- the ability to maintain existing distribution rights to and from certain third parties;
- the ability to maintain business if or when we opt to convert such business from distributors to a direct sales model;
- the ability of our commercial sales representatives to obtain sales targets in a reasonable time frame;
- the impact of changes to our sales organization, continued channel expansion, including increased specialization;
- peer-reviewed publications discussing the clinical effectiveness of the products we sell;
- inspections of our manufacturing facilities for compliance with Quality System Regulations (Good Manufacturing Practices) which could result in Form 483 observations, warning letters, injunctions or other adverse findings from the FDA or from equivalent regulatory bodies, and corrective actions, procedural changes and other actions that we determine are necessary or appropriate to address the results of those inspections, any of which may affect production and our ability to supply our customers with our products;
- changes in regulations or guidelines that impact the sales and marketing practices for products that we sell;
- the increased regulatory scrutiny of certain of our products, including products which we manufacture for others, could result in their being removed from the market or involve field corrective actions that could affect the marketability of our products;
- enforcement or defense of intellectual property rights;
- changes in tax laws, or their interpretations; and
- the impact of goodwill and intangible asset impairment charges if future operating results of the acquired businesses are significantly less than the results anticipated at the time of the acquisitions.

The industry and market segments in which we operate are highly competitive, and we may be unable to compete effectively with other companies.

There is intense competition among medical device companies. We compete with established medical technology companies in many of our product areas. Competition also comes from early-stage companies that have alternative technological solutions for our primary clinical targets, as well as universities, research institutions and other non-profit entities. In certain cases, our products compete primarily against medical practices that treat a condition without using a device or any particular product, such as the medical practices that use autograft tissue instead of our dermal regeneration products, duraplasty products and nerve repair products, or that use other technologies that cost less than our products. Many of our competitors have access to greater financial, technical, research and development, marketing, manufacturing, sales, distribution, administrative, consulting and other resources than we do. Our competitors may be more effective at developing commercial products. Our competitors may be able to gain market share by offering lower-cost products or by offering products that enjoy better reimbursement from third-party payors, such as Medicare, Medicaid, private and public health insurers and foreign governmental health systems.

Our competitive position depends on our ability to achieve market acceptance for our products, develop new products, implement production and marketing plans, secure regulatory approval for products under development, demonstrate clinical and economic effectiveness, obtain and maintain reimbursement coverage and funding under Medicare, Medicaid, private and public health insurers and foreign governmental health systems, obtain patent protection and produce products consistently in sufficient quantities to meet demand. We may need to develop new applications for our products to remain competitive. Technological advances by one or more of our current or future competitors or their achievement of superior reimbursement from Medicare, Medicaid, private and public health insurers and foreign governmental health systems could render our present or future products obsolete or uneconomical. Our future success will depend upon our ability to compete effectively against current technology as well as to respond effectively to technological advances, changes in customers' requirements, or changes in payor or regulatory evidence requirements. Additionally, purchasing decisions of our customers may be based on clinical evidence or comparative effectiveness studies and, because of our vast array of products, we might not be able to fund the studies necessary to gain entry or maintain our position or provide the required information to compete effectively. Other companies may have more resources available to fund such studies. For example, competitors have launched and have been developing products to compete with our dural repair products, extremity reconstruction implants, regenerative skin, neuro critical care monitors and ultrasonic tissue ablation devices, among others. Further, in the current environment of managed care, consolidation among health care providers, increased competition, and declining reimbursement rates, we have been increasingly required to compete on the basis of price. Competitive pressures could adversely affect our profitability. Given these factors, we cannot guarantee that we will be able to compete effectively or continue our level of success in the areas in which we compete.

Our current strategy involves growth through acquisitions, which requires us to incur substantial costs and potential liabilities for which we may never realize the anticipated benefits.

In addition to internally generated growth, our current strategy involves growth through acquisitions. Between January 1, 2017 and December 31, 2019, we have acquired 5 businesses at a total cost of approximately $1.3 billion.

We may be unable to continue to implement our growth strategy, and our strategy ultimately may be unsuccessful. A significant portion of our growth in revenues has resulted from, and is expected to continue to result from, the acquisition of businesses or products complementary to our own. We engage in evaluations of potential acquisitions and are in various stages of discussion regarding possible acquisitions, certain of which, if consummated, could be significant to us. Any new acquisition could result in material transaction expenses, increased interest and amortization expense, increased depreciation expense, increased operating expense, and possible in-process research and development charges for acquisitions that do not meet the definition of a "business," any of which could have a material, adverse effect on our operating results. Certain businesses that we acquire may not have adequate financial, disclosure, regulatory, quality or other compliance controls at the time we acquire them and could require significant expenditures to address those controls or subject us to increased risk. As we grow by acquisition, we must manage and integrate the new businesses to bring them into our systems for financial, disclosure, compliance, regulatory and quality control, realize economies of scale, and control costs. If we cannot integrate acquired businesses and operations, manage the cost of providing our products or price our products appropriately, our profitability could suffer. In addition, acquisitions involve other risks, including diversion of management resources otherwise available for the running of our business and the development of our business as well as risks associated with entering markets in which our marketing teams and sales force has limited experience or where experienced distribution alliances are not available. Some acquisitions may include the need for ongoing product development to occur consistent with time sensitive milestones in order for the Company to achieve its commercial projections for the acquisition. Our future profitability will depend in part upon our ability to develop further our resources to adapt to these new products or business areas and to identify and enter into or maintain satisfactory distribution networks. Further, as a result of our acquisitions of other healthcare businesses, we may be subject to the risk of unanticipated business uncertainties, regulatory and other compliance matters or legal liabilities relating to those acquired businesses for which the sellers of the acquired businesses may not indemnify us, for which we may not be able to obtain insurance (or adequate insurance), or for which the indemnification may not be sufficient to cover the ultimate liabilities. We may not be able to identify suitable acquisition candidates in the future, obtain acceptable financing or consummate any future acquisitions. Certain potential acquisitions are subject to antitrust and competition laws, which laws could impact our ability to pursue strategic acquisitions and could result in mandated divestitures. If we are unsuccessful in our acquisition strategy, we may be unable to meet our financial targets and our financial performance could be materially and adversely affected.

Our future financial results could be adversely affected by impairments or other charges.

Since we have grown through acquisitions, we have $954.3 million of goodwill and $163.1 million of indefinite-lived intangible assets as of December 31, 2019. We are required to test both goodwill and indefinite-lived intangible assets for impairment on an annual basis based upon a fair value approach, rather than amortizing them over time. We are also required to test goodwill and indefinite-lived intangible assets for impairment between annual tests if an event occurs such as a significant decline in revenues or cash flows for certain products, or the discount rates used in the calculations of discounted cash flow change significantly, or circumstances change that would more likely than not reduce our enterprise fair value below its book value. If such a decline, rate change or circumstance were to materialize, we may record an impairment of these intangible assets that could be material to the financial statements. See "Management's Discussion and Analysis of Financial Condition and Results of Operations - Critical Accounting Estimates" of this report.

The guidance on long-lived assets requires that we assess the impairment of our long-lived assets, including finite-lived intangible assets, whenever events or changes in circumstances indicate that the carrying value may not be recoverable as measured by the sum of the expected future undiscounted cash flows. As of December 31, 2019, we had $337.4 million and $868.5 million of property, plant and equipment and finite-lived intangible assets, respectively.

At December 31, 2019, our trade names had a carrying value of $238.5 million. Company decisions and other economic factors relating to our trade names may occur over time. For instance, we may discontinue certain products in the future as we continue to assess the profitability of our product lines. As a result, we may need to record impairment charges or accelerate amortization on certain trade names or technology-related intangible assets in the future.

The value of a medical device business is often volatile, and the assumptions underlying our estimates made in connection with our assessments under the guidance may change as a result of that volatility or other factors outside our control and may result in impairment charges. The amount of any such impairment charges could be significant and could have a material, adverse effect on our reported financial results for the period in which the charge is taken and could have an adverse effect on the market price of our securities, including the notes and the common stock into which they may be converted.

The adoption of healthcare reform in the U.S. and initiatives sponsored by other governments may adversely affect our business, results of operations and/or financial condition.

Our operations may be substantially affected by potential fundamental changes in the global political, economic and regulatory landscape of the healthcare industry. Government and private sector initiatives to limit the growth of healthcare costs are continuing in the U.S., and in many other countries in which we do business, causing the marketplace to put increased emphasis on the delivery of more cost-effective treatments. These initiatives include price regulation, competitive pricing, coverage and payment policies, comparative effectiveness of therapies, technology assessments and managed-care arrangements. The adoption of some or all of these initiatives could have a material, adverse effect on our financial condition and results of operations.

The Patient Protection and Affordable Care Act (the "ACA"), signed into law in March 2010, includes several provisions that impact our businesses in the U.S. The ACA includes provisions that, among other things, reduce and/or limit Medicare reimbursement, require all individuals to have health insurance (with limited exceptions), require detailed disclosure of gifts and other remuneration made to healthcare professionals.

Since the adoption of the ACA, the law has been challenged before the U.S. Supreme Court, and several bills have been and may continue to be introduced in Congress to delay, defund or repeal implementation of or amend significant provisions of the ACA. In addition, there continues to be ongoing litigation over the interpretation and implementation of certain provisions of the law. Furthermore, on January 20, 2017, an executive order was issued that, among other things, stated the intention of the administration to repeal the ACA and, pending that repeal, instructed the executive branch of the Federal government to defer or delay the implementation of any provision or requirement of the ACA that would impose a fiscal burden on any state or a cost, fee, tax or penalty on any individual, family, health care provider, health insurer, or manufacturer of pharmaceuticals or medical devices. On December 22, 2017, President Trump signed into law the Tax Cuts and Jobs Act, which eliminates the penalty for individuals who fail to purchase acceptable health insurance starting in 2019 and will most likely result in the reduction in the number of insured people in the U.S. On December 20, 2019 President Trump signed into law the 2020 federal spending package, which included a provision to permanently repeal the 2.3% medical device excise tax, which was part of the ACA. We cannot predict whether the ACA will be repealed, replaced, or further modified, what impact the President's executive order will have on the implementation and enforcement of the provisions of the ACA, or what impact the elimination of the penalty and resulting reduction in the number of insured people in the U.S. will have on the demand and pricing for our products. In addition, if the ACA is replaced or modified, we cannot predict what the replacement plan or modifications would be, when the replacement plan or modifications would become effective, or whether any of the existing provisions of the ACA would remain in place. As a result, while we are unable to predict the effect of the ACA and the various activities surrounding it on our business, financial condition or results of operations, changes to this law, or a new law that replaces it, could materially and adversely affect our business and results of operations.

In addition to the ACA, the Medicare Access and CHIP Reauthorization Act of 2015 ("MACRA") repealed the Sustainable Growth Rate formula used to calculate Medicare payment updates for physicians providing services to Medicare beneficiaries. In its place, MACRA introduced the Quality Payment Program ("QPP"), which is a value-based program that focuses on quality and outcomes as a metric for physician reimbursement. The Centers for Medicare and Medicaid Services released its final rules for the QPP in October 2016. The QPP, which impacts more than 600,000 physicians and other practice-based clinicians, represents a fundamental change in physician reimbursement, transitioning from a system that solely rewards volume of care to one that also rewards quality and value of care. The rule may have an impact on our revenue in the future. The program's increased emphasis on quality and cost of care may encourage physicians to merge practices or seek direct employment with hospitals. In addition, the ACA encourages hospitals and physicians to work collaboratively through shared savings programs as well as other bundled payment initiatives. These shifts could lead to a consolidation of hospital providers into larger delivery networks with increased price negotiation strength resulting in downward pressure on our selling prices. Although we believe that we are well positioned to minimize any such impact on our business, our inability to address the consolidation trend could materially and adversely affect our business and results of operations.

While the federally mandated ACA continues to evolve, states are enacting their own payment reforms aimed at reducing costs and improving quality of care by hospitals and other providers operating within their borders. These include 'all-payer', 'total cost of care' and other capitated models. It is possible that other states will adopt similar payment reforms which will, in turn, increase pressure on manufacturers to lower prices and/or total cost of care and to demonstrate with clinical and economic evidence how their technologies improve patient outcomes.

Other initiatives sponsored by government agencies, legislative bodies and the private sector to limit the growth of healthcare costs, including price regulation and competitive pricing, are ongoing in the markets where we do business. We cannot predict what healthcare programs and regulations will ultimately be implemented at the U.S. federal or state level or elsewhere, or the effect of any future legislation or regulation in the U.S. or elsewhere. That said, any changes that lower reimbursements for our products or reduce medical procedure volumes could have a material, adverse effect on our business, financial condition and results of operations. We continue to monitor the implementation of such legislation and, to the extent new market or industry trends or new governmental programs evolve, we will consider implementing or implement programs in response.

Changes in the healthcare industry may require us to decrease the selling price for our products, may reduce the size of the market for our products, or may eliminate a market, any of which could have a negative impact on our financial performance.

Trends toward managed care, healthcare cost containment and other changes in government and private sector initiatives in the U.S. and other countries in which we do business are placing increased emphasis on the delivery of more cost-effective medical therapies that could adversely affect the sale and/or the prices of our products. For example:

- third-party payors of hospital services and hospital outpatient services, including Medicare, Medicaid, private and public health insurers and foreign governmental health systems, annually revise their payment methodologies, which can result in stricter standards for reimbursement of hospital charges for certain medical procedures or the elimination of reimbursement;
- several foreign countries have implemented reforms of their respective healthcare sectors in an effort to reduce healthcare spending, including restricting funding to only those medical technologies and procedures with proven effectiveness, and increasing patient co-payments. Governmental health systems have revised and continue to consider revisions of healthcare budgets, which could result in stricter standards for implementing certain medical procedures, increased scrutiny of medical devices, and downward pricing pressure;
- Medicare, Medicaid, private and public health insurer and foreign governmental cutbacks could create downward pricing pressure on our products;
- in the U.S., Medicare and Medicaid coverage as well as commercial payor coverage determinations could reduce or eliminate reimbursement or coverage for certain of our wound matrix, amniotic, surgical reconstruction and advanced wound dressing products as well as other products in most regions, negatively affecting our market for these products, and future determinations could reduce or eliminate reimbursement or coverage for these products in other regions and could reduce or eliminate reimbursement or coverage for other products;
- there has been a consolidation among healthcare facilities and purchasers of medical devices in the U.S., some of whom prefer to limit the number of suppliers from whom they purchase medical products, and these entities may decide to stop purchasing our products or demand discounts on our prices;
- there has been a growing movement of physicians becoming employees of hospitals and other healthcare entities, which aligns surgeon product choices with his or her employers' purchasing decisions, and adds to pricing pressures;
- in the U.S., we are party to contracts with group purchasing organizations, which negotiate pricing for many member hospitals, require us to discount our prices for certain of our products and limit our ability to raise prices for certain of our products, particularly surgical instruments;
- there is economic pressure to contain healthcare costs in domestic and international markets, and, regardless of the consolidation discussed above, providers generally are exploring ways to cut costs by eliminating purchases or driving reductions in the prices that they pay for medical devices, or increasing clinical or economic evidence thresholds for product formularies;
- there are proposed and existing laws, regulations and industry policies in domestic and international markets regulating the sales and marketing practices and the pricing and profitability of companies in the healthcare industry;
- proposed laws or regulations may permit hospitals to provide financial incentives to doctors for reducing hospital costs, will award physician efficiency, and will encourage partnerships with healthcare service and goods providers to reduce prices; and
- there have been initiatives by third-party payors and foreign governmental health systems to challenge the prices charged for medical products that could affect our ability to sell products on a competitive basis.

Any and all of the above factors could materially and adversely affect our levels of revenue and our profitability.

We are subject to stringent domestic and foreign medical device regulations and any adverse regulatory action may adversely affect our financial condition and business operations.

Our products, development activities and manufacturing processes are subject to extensive and rigorous regulation by numerous government agencies, including the FDA and comparable foreign agencies. To varying degrees, each of these agencies monitors and enforces our compliance with laws and regulations governing the development, testing, manufacturing, labeling, marketing and distribution of our medical devices. We are also subject to regulations that may apply to certain of our products that are Drug/Device Combination products or are considered to be subject to pharmaceutical regulations outside the U.S. The process of obtaining marketing approval or clearance from the FDA and comparable foreign regulatory agencies for new products, or for enhancements or modifications to existing products, could

- take a significant amount of time;
- require the expenditure of substantial financial and other resources;
- involve rigorous and expensive pre-clinical and clinical testing, as well as increased post-market surveillance;
- lead to failed clinical trials or weakened clinical evidence
- involve modifications, repairs or replacements of our products; and

- result in limitations on the indicated uses of our products.

We cannot be certain that we will receive required approval or clearance from the FDA and foreign regulatory agencies for new products or modifications to existing products on a timely basis. The failure to receive approval or clearance for significant new products or modifications to existing products on a timely basis could have a material, adverse effect on our financial condition and results of operations.

Both before and after a product is commercially released, we have ongoing responsibilities under FDA and foreign regulations. For example, we are required to comply with the FDA's Quality System Regulation, which mandates that manufacturers of medical devices adhere to certain quality assurance requirements pertaining to, among other things, validation of manufacturing processes, controls for purchasing product components, and documentation practices. As another example, the Federal Medical Device Reporting regulation requires us to provide information to the FDA whenever there is evidence that reasonably suggests that a device may have caused or contributed to a death or serious injury or, that a malfunction occurred which would be likely to cause or contribute to a death or serious injury upon recurrence. Compliance with applicable regulatory requirements is subject to continual review and is monitored rigorously through periodic inspections by the FDA, which may result in observations on Form 483, and in some cases warning letters, that require corrective action. If the FDA or equivalent foreign agency were to conclude that we are not in compliance with applicable laws or regulations, or that any of our medical devices are ineffective or pose an unreasonable health risk, the FDA or equivalent foreign agency could ban such medical devices, detain or seize such medical devices, order a recall, repair, replacement, or refund of such devices, or require us to notify health professionals and others that the devices present unreasonable risks of substantial harm to the public health.

Governments are expected to continue to scrutinize the industry closely with inspections, and possibly enforcement actions, by the FDA or equivalent foreign agencies. Additionally, the FDA may restrict manufacturing and impose other operating restrictions, enjoin and restrain certain violations of applicable law pertaining to medical devices, and assess civil or criminal penalties against our officers, employees, or us. The FDA may also recommend prosecution to the Department of Justice. Any adverse regulatory action, depending on its magnitude, may restrict us from effectively manufacturing, marketing and selling our products and could have a material, adverse effect on our financial condition and results of operations. In addition, negative publicity and product liability claims resulting from any adverse regulatory action could have a material, adverse effect on our financial condition and results of operations.

While we have taken measures to enhance our Quality System, we cannot assure that future inspections by the FDA and the standards they apply will not result in warning letters for any facility in the future. We are also subject to inspections of our Quality System by regulatory agencies outside the U.S. which could result in the issuance of nonconformance or significant requirements to our Quality System.

The FDA Reauthorization Act of 2017 (“FDARA”), which includes the reauthorization of the Medical Device User Fee Amendments of 2012, as well as other medical device provisions, went into effect October 1, 2017. This includes performance goals and user fees paid to the FDA by medical device companies when they register and list with the FDA and when they submit an application to market a device in the U.S. Under FDARA, this user fee program has been reauthorized through fiscal year 2022. Under the Medical Device User Fee Amendments, or MDUFA III, there are additional requirements regarding the FDA Establishment Registration and Listing of Medical Devices. All U.S. and foreign manufacturers must register and list medical devices for sale in the U.S. All of our facilities comply with these requirements. That said, we also source products from foreign contract manufacturers and we continue to monitor their compliance with these regulations. In such an event, we will need to determine if there are alternative foreign contract manufacturers who comply with the FDA Establishment Registration requirements. If such a foreign contract manufacturer is a sole supplier of one of our products, there is a risk that we may not be able to source another supplier and our business could be adversely affected.

We are subject to extensive complex regulatory requirements by domestic and foreign government agencies and any failure to comply with our ongoing responsibilities under their applicable laws and regulations could result in a material adverse impact on our business.

In addition, the United States Federal Food, Drug, and Cosmetic Act (“FDCA”) permits device manufacturers to promote products solely for the uses and indications set forth in the approved product labeling. A number of enforcement actions have been taken against manufacturers that promote products for “off-label” uses, including actions alleging that federal health care program reimbursement of products promoted for "off-label" uses are false and fraudulent claims to the government. The failure to comply with “off-label” promotion restrictions can result in significant financial penalties and a required corporate integrity agreement with the federal government imposing significant administrative obligations and costs, and potential evaluation from federal health care programs.

Foreign governmental regulations have become more stringent and we may become subject to even more rigorous regulation by foreign governmental authorities in the future, which could have a material, adverse effect on our business, financial condition and results of operations. Penalties for a company's noncompliance with foreign governmental regulation could be severe, including revocation or suspension of a company's business license and criminal sanctions. For example, we are subject to Good

Manufacturing Practice regulations for Pharmaceuticals in the EU for certain of our products. These regulations also mandate that manufacturers of medical devices (or those that are considered pharmaceuticals) adhere to certain quality assurance requirements pertaining to, among other things, validation of manufacturing processes, controls for purchasing product components, and documentation practices. There may be additional regulations if such products are considered pharmaceuticals outside the U.S.

In addition, the European Medical Device Regulation ("EU MDR") passed in the European Parliament on April 5, 2017 and went into effect on May 25, 2017, replacing the Medical Device Directive. The EU MDR is an extensive reform of the rules that govern the medical device industry in Europe. Under this regulation, manufacturers will have three (3) years to comply with a broad set of new rules for almost every kind of medical device. The EU MDR will require changes in the clinical evidence required for medical devices, post-market clinical follow-up evidence, annual reporting of safety information for Class III products, and bi-annual reporting for Class II products, Unique Device Identification ("UDI") for all products, submission of core data elements to a European UDI database prior to placement of a device on the market, reclassification of medical devices, and multiple other labeling changes. The European Parliament has recently announced changes to the timing of implementation for Class I Reusable from May 26, 2020 to May 26, 2024 and the EUDAMED Database from May 26, 2020 to May, 26, 2022.

Under the EU MDR rules, medical device companies will have to, among other things, do the following:

- provide significantly more clinical evidence to bring new products to market and even to keep existing products on the market;
- make changes to product labeling, register every CE Marked product and make certain product data available tin the EUDAMED database which will be available to the public; and
- conduct product portfolio assessments to determine the impact of the EU MDR on the Company's margins.

Overall, medical device companies can expect longer lead times to obtain product registrations (CE Mark Certification) in the EU and a substantially costlier pathway to compliance in the EU. We are not yet able to determine the costs of complying with these regulations, how the EU will interpret and enforce them, what the timelines for approvals of products will be and the overall effect of the EU MDR on the marketplace. Given the significant additional pre-market and post-market requirements imposed by the EU MDR, the overall impact of these new rules could have a material, adverse effect on the Company's revenues and expenses.

Certain of our products contain materials derived from animal sources and may become subject to additional regulation.

Certain of our products, including our dermal regeneration products, duraplasty products, wound care products, bone void fillers, nerve and tendon repair products and certain other products, contain material derived from bovine tissue. In 2019, approximately 37.0% of our revenues derived from products containing material derived from bovine tissue. Products that contain materials derived from animal sources, including food, pharmaceuticals and medical devices, are subject to scrutiny in the media and by regulatory authorities. Regulatory authorities are concerned about the potential for the transmission of disease from animals to humans via those materials. This public scrutiny has been particularly acute in Japan and Western Europe with respect to products derived from animal sources, because of concern that materials infected with the agent that causes bovine spongiform encephalopathy, otherwise known as BSE or mad cow disease, may, if ingested or implanted, cause a variant of the human Creutzfeldt-Jakob Disease, an ultimately fatal disease with no known cure. The World Organization for Animal Health ("OIE") recognizes the U.S. as having a negligible risk for BSE, which is the highest status available.

We take care to provide that our products are safe and free of agents that can cause disease. In particular, we qualified a source of collagen from a country outside the U.S. that is considered BSE/TSE-free. The World Health Organization classifies different types of bovine tissue for relative risk of BSE transmission. Deep flexor tendon and bovine fetal skin, which are used in our products, are in the lowest-risk categories for BSE transmission and are therefore considered to have a negligible risk of containing the agent that causes BSE (an improperly folded protein known as a prion). Nevertheless, products that contain materials derived from animals, including our products, could become subject to additional regulation, or even be banned in certain countries, because of concern over the potential for the transmission of prions. Significant new regulation, or a ban of our products, could have a material, adverse effect on our current business or our ability to expand our business.

Certain countries, such as Japan, China, Taiwan and Argentina, have issued regulations that require our collagen products be sourced from countries where no cases of BSE have occurred, and the EU has requested that our dural replacement products and other products that are used in neurological tissue be sourced from a country where no cases of BSE have occurred. Currently, we source bovine fetal hides from the U.S. and purchase tendon from the U.S. and New Zealand. New Zealand has never had a case of BSE. We received approval in the U.S., the EU, Japan, Taiwan, China, Argentina as well as other countries for the use of New Zealand-sourced tendon in the manufacturing of our products. If we cannot continue to use or qualify a source of tendon from New Zealand or another country that has never had a case of BSE, we could be prohibited from selling our collagen products in certain countries.

Certain of our products are derived from human tissue and are subject to additional regulations and requirements.

We manufacture and distribute products derived from human tissue. The FDA has specific regulations governing human cells, tissues and cellular and tissue-based products, or HCT/Ps. An HCT/P is a product containing or consisting of human cells or tissue intended for transplantation into a human patient. Examples include bone, ligament, skin, amniotic tissue and cornea. HCT/Ps that meet the criteria for regulation solely under Section 361 of the Public Health Service Act ("Section 361") are not subject to any premarket clearance or approval requirements but are subject to post-market regulatory requirements.

Some HCT/Ps also meet the definition of a biological product, medical device or drug regulated under the FDCA. These biologic, device or drug HCT/Ps must comply both with the requirements exclusively applicable to Section 361 HCT/Ps and, in addition, with requirements applicable to biologics, devices or drugs, including premarket clearance or approval.

On June 22, 2015, the FDA issued an Untitled Letter alleging that BioD Logic LLC's ("BioD") morselized amniotic membrane tissue based products do not meet the criteria for regulation as HCT/Ps solely under Section 361 and that, as a result, BioD would need a biologics license to lawfully market those morselized products. Since the issuance of the Untitled Letter, BioD and more recently the Company have been in discussions with the FDA to communicate their disagreement with the FDA's assertion that certain products are more than minimally manipulated. The FDA has not changed its position that certain of the BioD acquired products are not eligible for marketing solely under Section 361.

In November 2017, the FDA issued the final guidance document related to human tissue titled, "Regulatory Considerations for Human Cells, Tissues, and Cellular and Tissue-Based Products: Minimal Manipulation and Homologous Use" (the "HCT/P Final Guidance"). The HCT/P Final Guidance maintains the FDA's position that products such as the Company's morselized amniotic membrane tissue-based products do not meet the criteria for regulation solely as HCT/Ps. In addition, the FDA articulated a risk-based approach to enforcement and, while some uses for amniotic membrane tissue-based products would enjoy as much as thirty-six months of enforcement discretion, other high risk uses could be subject to immediate enforcement action. The Company does not believe the uses for its amniotic membrane tissue-based products fall into the high risk-category. Nonetheless, we can make no assurances that the FDA will continue to exercise its enforcement discretion with respect to the Company's amniotic membrane tissue-based products, and any potential action of the FDA could have a financial impact regarding the sales of such products. The Company has been considering and continues to consider regulatory approval pathways for its amniotic membrane tissue-based products. Revenues from BioD morselized amniotic material-based products for the year ended December 31, 2019 was less than 1% of consolidated revenues.

Lack of market acceptance for our products or market preference for technologies that compete with our products could reduce our revenues and profitability.

We cannot be certain that our current products or any other products that we develop or market will achieve or maintain market acceptance. Certain of the medical indications that our devices can treat can also be treated by other medical devices or by medical practices that do not include a device. The medical community widely accepts many alternative treatments, and certain of these other treatments have a long history of use. For example, the use of autograft tissue is a well-established means for repairing the dermis, and it competes for acceptance in the market with our collagen-based wound care products.

We cannot be certain that our new devices and procedures will be able to replace those established treatments or that physicians, the medical community or third-party payors, including Medicare, Medicaid, private and public health insurers and foreign governmental health systems, will accept and utilize our devices or any other medical products that we may develop. For example, greater market acceptance of our wound graft products may ultimately depend on our ability to demonstrate that coverage and reimbursement are justified because they are an attractive and cost-effective alternative to other treatment options. Additionally, if there are negative events in the industry, whether real or perceived, there could be a negative impact on the industry as a whole.

In addition, our future success depends, in part, on our ability to license and develop additional products. Even if we determine that a product candidate has medical benefits, the cost of commercializing that product candidate, either through internal development or payments associated with licensing arrangements, could be too high to justify development. Competitors could develop products that are more effective, achieve or maintain more favorable reimbursement status from third-party payors both domestically and internationally, including Medicare, Medicaid, private and public health insurers, and foreign governmental health systems, cost less or are ready for commercial introduction before our products. If we are unable to develop additional commercially viable products, our future prospects could be materially and adversely affected.

Market acceptance of our products depends on many factors, including our ability to convince prospective collaborators and customers that our technology is an attractive alternative to other technologies, to manufacture products in sufficient quantities and at acceptable costs, and to supply and service sufficient quantities of our products directly or through our distribution alliances. In addition, unfavorable reimbursement methodologies, or adverse determinations of third-party payors, including Medicare, Medicaid, private and public health insurers, and foreign governmental health systems, regarding our products or third-party determinations that favor a competitor's product over ours, could harm acceptance or continued use of our products. The industry is subject to rapid and continuous change arising from, among other things, consolidation, technological improvements, the pressure on governments, third-party payors and providers to reduce healthcare costs, and healthcare reform legislation and initiatives domestically and internationally. One or more of these factors could vary unpredictably, and such variations could have a material,

adverse effect on our competitive position. We may not be able to adjust our contemplated plan of development to meet changing market demands.

Economic and political instability around the world could adversely affect the ability of hospitals, other customers, suppliers and distributors to access funds or otherwise have available liquidity, which could reduce orders for our products or interrupt our production or distribution or result in a reduction in elective and non-reimbursed operative procedures.

Economic and political instability around the world could adversely affect the ability of hospitals and other customers to access funds to enable them to fund their operating and capital budgets. As a result, hospitals and other customers could reduce budgets or put all or part of their budgets on hold or close their operations, which could have a negative effect on our sales, particularly the sales of capital equipment such as our ultrasonic surgical aspirators, neuromonitors and stereotactic products, or result in a reduction in elective and non-reimbursed procedures. The occurrence of those economic conditions could make it more difficult for us to accurately forecast and plan our future business activities and depending on their severity, could have a material, adverse effect on our business, financial condition and results of operations.

We may have additional tax liabilities.

We are subject to income taxes in the U.S. and many foreign jurisdictions and are commonly audited by various tax authorities. In the ordinary course of our business, there are many transactions and calculations where the ultimate tax determination is uncertain. Significant judgment is required in determining our worldwide provision for income taxes. Although we believe that our tax estimates are reasonable, the final determination of tax audits and any related litigation could be materially different from our historical income tax provisions and accruals. The results of an audit or litigation could have a material, adverse effect on our financial statements in the period or periods for which that determination is made.

Our leverage and debt service obligations could adversely affect our business.

As of December 31, 2019, our total consolidated external debt was approximately $1.3 billion. (See Item 7 and Note 17 for a discussion of our consolidated external debt.) We may also incur additional indebtedness in the future. Our substantial indebtedness could have material, adverse consequences, including:

- making it more difficult for us to satisfy our financial obligations;
- increasing our vulnerability to adverse economic, regulatory and industry conditions, and placing us at a disadvantage compared to our competitors that are less leveraged;
- limiting our ability to compete and our flexibility in planning for, or reacting to, changes in our business and the industry in which we operate; and
- limiting our ability to borrow additional funds for working capital, capital expenditures, acquisitions and general corporate or other purposes.

Our debt service obligations will require us to use a portion of our operating cash flow to pay interest and principal on indebtedness instead of for other corporate purposes, including funding future expansion of our business, acquisitions, and ongoing capital expenditures, which could impede our growth. In addition, the Company may attempt to refinance or extend this obligation depending on prevailing market conditions. Our ability to refinance or extend this obligation will depend on our operating and financial performance, which in turn is subject to prevailing economic conditions and financial, business and other factors beyond our control. Any disruptions in our operations, the financial markets, or overall economy may adversely affect the availability and cost of credit to us.

It could be difficult to replace some of our suppliers.

Outside vendors, some of whom are sole-source suppliers, provide key components and raw materials used in the manufacture of our products. Although we believe that alternative sources for many of these components and raw materials are available, any interruption in supply of a limited or sole-source component or raw material could harm our ability to manufacture our products until a new or alternative source of supply is identified and qualified. In addition, an uncorrected defect or supplier's variation in a component or raw material, either unknown to us or incompatible with our manufacturing process, could harm our ability to manufacture products. We may not be able to find a sufficient alternative supplier in a reasonable time period, or on commercially reasonable terms, if at all, and our ability to produce and supply our products could be impaired. We believe that these factors are most likely to affect the following products that we manufacture:

- our collagen-based products, such as the Integra Dermal Regeneration Template and wound matrix products, the DuraGen® family of products, our Absorbable Collagen Sponges, PriMatrix and SurgiMend products;
- our products made from silicone, such as our neurosurgical shunts and drainage systems and hemodynamic shunts;
- products which use many different specialty parts or chemicals from numerous suppliers, such as our intracranial monitors, shunts, catheters and headlights;
- products that use pyrolytic carbon (i.e., PyroCarbon) technology, such as certain of our reconstructive extremity orthopedic implants;

- products which are amniotic tissue based;
- products that use medical grade leptospermum honey, such as our Medihoney products; and
- our TCC-EZ® total contact cast system products.

The availability of amniotic tissue-based products depends upon, among other factors, the availability of tissue from human donors. Access to donated amniotic tissue could also be adversely impacted by regulatory changes or evolving public perceptions of the donor process.

Additionally, many of our products require sterilization by third-party suppliers. To the extent these suppliers are unable to provide sterilization services, whether due to lack of capacity, regulatory requirements, environmental concerns such as those relating to ethylene oxide or otherwise, we may be unable to transition sterilization to other suppliers in a timely or cost effective manner, or at all, which could have an adverse impact on our operating results.

If we were suddenly unable to purchase products or services from one or more of the companies identified above, we would need a significant period of time to qualify a replacement, and the production of any affected products could be disrupted, which could have a material, adverse effect on our financial condition and business operations.

While it is our policy to maintain sufficient inventory of components so that our production will not be significantly disrupted even if a particular component or material is not available for a period of time, we remain at risk that we will not be able to qualify new components or materials quickly enough to prevent a disruption if one or more of our suppliers ceases production of important components or materials.

Our intellectual property rights may not provide meaningful commercial protection for our products, potentially enabling third parties to use our technology or very similar technology and could reduce our ability to compete in the market.

To compete effectively, we depend, in part, on our ability to maintain the proprietary nature of our technologies and manufacturing processes, which includes the ability to obtain, protect and enforce patents on our technology and to protect our trade secrets. We own or have licensed patents that cover aspects of some of our product lines. Our patents, however, may not provide us with any significant competitive advantage. Others may challenge our patents and, as a result, our patents could be narrowed, invalidated or rendered unenforceable. Competitors may develop products similar to ours that our patents do not cover. In addition, the approval or rejection of patent applications may take several years and our current and future patent applications may not result in the issuance of patents in the U.S. or foreign countries.

Our competitive position depends, in part, upon unpatented trade secrets, which we may be unable to protect.

Our competitive position also depends upon unpatented trade secrets, which are difficult to protect. We cannot assure that others will not independently develop substantially equivalent proprietary information and techniques or otherwise gain access to our trade secrets, that our trade secrets will not be disclosed or that we can effectively protect our rights to unpatented trade secrets.

In an effort to protect our trade secrets, we require our employees, consultants and advisors to execute confidentiality and invention assignment agreements upon commencement of employment or consulting relationships with us. These agreements provide that, except in specified circumstances, all confidential information developed or made known to the individual during the course of their relationships with us must be kept confidential. We cannot assure, however, that these agreements will provide meaningful protection for our trade secrets or other proprietary information in the event of the unauthorized use or disclosure of confidential information.

Our success will depend partly on our ability to operate without infringing or misappropriating the proprietary rights of others.

We may be sued for infringing the intellectual property rights of others. In addition, we may find it necessary, if threatened, to initiate a lawsuit seeking a declaration from a court that we do not infringe the proprietary rights of others or that their rights are invalid or unenforceable. If we do not prevail in any litigation, in addition to any damages we might have to pay, we would be required to stop the infringing activity (which could include a cessation of selling the products in question) or obtain a license for the proprietary rights involved. Any required license may be unavailable to us on acceptable terms, if at all. In addition, some licenses may be nonexclusive and allow our competitors to access the same technology we license.

If we fail to obtain a required license or are unable to design our products so as not to infringe on the proprietary rights of others, we may be unable to sell some of our products, and this potential inability could have a material, adverse effect on our revenues and profitability.

We may be involved in lawsuits relating to our intellectual property rights and promotional practices, which may be expensive.

To protect or enforce our intellectual property rights, we may have to initiate or defend legal proceedings, such as infringement suits or opposition proceedings, against or by third parties. In addition, we may have to institute proceedings regarding our competitors' promotional practices or defend proceedings regarding our promotional practices. Legal proceedings are costly, and, even if we prevail, the cost of the legal proceedings could affect our profitability. In addition, litigation is time-consuming and

could divert management's attention and resources away from our business. Moreover, in response to our claims against other parties, those parties could assert counterclaims against us.

If we do not successfully integrate acquired businesses into our business operations, our business could be materially and adversely affected.

We will need to successfully integrate the operations of recent acquired businesses or future acquisitions, with our business operations. The failure to integrate the business operations of the acquired businesses successfully would have a material, adverse effect on our business, financial condition and results of operations. Integrating the operations of multiple new businesses with that of our own is a complex, costly and time-consuming process, which requires significant management attention and resources, including the coordination of information technologies, sales and marketing, research and development, operations, manufacturing and finance functions. The integration process could disrupt the businesses and, if implemented ineffectively, could preclude realization of the full benefits that we expect from these transactions. Our failure to meet the challenges involved in integrating the businesses in order to realize the anticipated benefits of the acquisitions could cause an interruption of, or a loss of momentum in, our activities and could materially and adversely affect our results of operations. Prior to each acquisition, the acquired business operated independently, with its own business, corporate culture, locations, employees and systems. There may be substantial difficulties, costs and delays involved in any integration of other businesses with that of our own. These may include:

- distracting management from day-to-day operations;
- potential incompatibility of corporate cultures;
- an inability to achieve synergies as planned;
- risks associated with the assumption of contingent or other liabilities of acquisition targets;
- adverse effects on existing business relationships with suppliers or customers, including failure to retain key customers and suppliers;
- failure to retain key employees of our Company and of the acquired businesses;
- inheriting and uncovering previously unknown issues, problems and costs from the acquired Company;
- delays between our expenditures to acquire new products, technologies or businesses and the generation of revenues from those acquired products, technologies or businesses;
- realization of assets and settlement of liabilities at amounts equal to estimated fair value as of the acquisition date of any acquisition or disposition;
- an inability to integrate information technology systems of acquired businesses in a secure and reliable manner;
- costs and delays in implementing common systems and procedures (including technology, compliance programs, financial systems, distribution and general business operations, among others);
- liabilities that are significantly larger than we currently anticipate and unforeseen increased expenses or delays associated with the acquisitions, including transition costs to integrate the businesses that may exceed the costs that we currently anticipate;
- challenges involved with the increased scale of our operations resulting from the acquisitions; and
- increased difficulties in managing our business due to the addition of international locations.

These risks may be heightened in cases where the majority of the former businesses' operations, employees and customers are located outside the U.S. Any one or all of these factors could increase operating costs or lower anticipated financial performance. Many of these factors are also outside of our control. In addition, dispositions of certain key products, technologies and other rights, including pursuant to conditions imposed on us to obtain regulatory approvals, may affect our business operations.

Even if the operations of the businesses are integrated successfully, we may not realize the full benefits of the acquisition, including the synergies, cost savings or sales or growth opportunities that we expect. These benefits may not be achieved within the anticipated time frame, or at all. Additional unanticipated costs could be incurred in the integration of the businesses. All of these factors could cause a reduction to our earnings per share, decrease or delay the expected accretive effect of the transaction, and negatively impact the price of our ordinary shares.

If any of our facilities were damaged and/or our manufacturing or business processes interrupted, we could experience lost revenues and our business could be seriously harmed.

Damage to our manufacturing, distribution, development and/or research facilities because of fire, extreme weather conditions, natural disaster, power loss, communications failure, unauthorized entry or other events, such as a flu or other health epidemic, such as the novel coronavirus, could significantly disrupt our operations, the operations of suppliers and critical infrastructure and delay or prevent product manufacture and shipment during the time required to repair, rebuild or replace the damaged facilities. Certain of our manufacturing facilities are located in Puerto Rico, which in the past has experienced both severe earthquakes and other natural disasters. We believe the risk associated with operating a manufacturing plant in Puerto Rico, post Hurricane Maria, has returned to historical levels. While there are still some challenges with the energy system and service is occasionally disrupted for short periods, it has not impacted operations primarily due to the generator capacity at the plant. Although we maintain property damage and business interruption insurance coverage on these facilities, our insurance might not cover all losses under such

circumstances, and we may not be able to renew or obtain such insurance in the future on acceptable terms with adequate coverage or at reasonable costs.

In addition, certain of our surgical instruments have some manufacturing processes performed by third parties in Pakistan, and we purchase a much smaller amount of instruments directly from vendors there. Pakistan is subject to political instability and unrest. Such instability could interrupt our ability to sell surgical instruments to our customers and could have a material, adverse effect on our revenues and earnings. While we have developed a relationship with an alternative provider of these services in another country, and continue to work to develop other providers in other countries, we cannot guarantee that we will be completely successful in establishing all of these relationships. Even if we are successful in establishing all of these alternative relationships, we cannot guarantee that we will be able to do so at the same level of costs or that we will be able to pass along additional costs to our customers.

Further, we manufacture certain products in Europe and our European headquarters is located in France. Thus far, strikes and acts of terrorism occurring in Europe have not had a material impact on our business; however, if either were to occur, there is no assurance that they would not disrupt our business, and any such disruption could have a material, adverse effect on our business.

An experienced third-party hosts and maintains the enterprise business system used to support certain of our transaction processing for accounting and financial reporting, supply chain and manufacturing. Currently, we have developed a comprehensive disaster recovery plan for the Company's infrastructure and we have tested this plan. In addition, we have implemented procedures to conduct annual disaster recovery testing for our enterprise business system. We also implemented a comprehensive backup and recovery process for our key applications. Our global production and distribution operations are dependent on the effective management of information flow between facilities. An interruption of the support provided by our enterprise business systems could have a material, adverse effect on the business.

We may experience difficulties, delays, performance impact or unexpected costs from consolidation of facilities.

We consolidated several facilities in recent years and may further consolidate our operations in the future in order to improve our cost structure, achieve increased operating efficiencies, and improve our competitive standing or results of operations and/or to address unfavorable economic conditions. As part of these initiatives, we may also lose favorable tax incentives or not be able to renew leases on acceptable terms. We may further reduce staff, make changes to certain capital projects, close certain production operations and abandon leases for certain facilities that will not be used in our operations. In conjunction with any actions, we will continue to make significant investments and build the framework for our future growth. We may not realize, in full or in part, the anticipated benefits and savings from these efforts because of unforeseen difficulties, delays, implementation issues or unexpected costs. If we are unable to achieve or maintain all of the resulting savings or benefits to our business or other unforeseen events occur, our business and results of operations may be adversely affected.

We are exposed to a variety of risks relating to our international sales and operations.

We generate significant revenues outside the U.S. in multiple foreign currencies, and in U.S. dollar-denominated transactions conducted with customers who generate revenue in currencies other than the U.S. dollar. For those foreign customers who purchase our products in U.S. dollars, currency fluctuations between the U.S. dollar and the currencies in which those customers do business may have a negative impact on the demand for our products in foreign countries where the U.S. dollar has increased in value compared to the local currency.

Since we have operations based outside the U.S. and we generate revenues and incur operating expenses in multiple foreign currencies, we experience currency exchange risk with respect to those foreign currency-denominated revenues and expenses. Our most significant currency exchange risk relates to transactions conducted in Australian dollars, British pounds, Canadian dollars, Chinese yuan, euros, Japanese yen, and Swiss francs.

We cannot predict the consolidated effects of exchange rate fluctuations upon our future operating results because of the number of currencies involved, the variability of currency exposure and the potential volatility of currency exchange rates. Although we address currency risk management through regular operating and financing activities, and, on a limited basis, through the use of derivative financial instruments, those actions may not prove to be fully effective. For a description of our use of derivative financial instruments, see Note 6, *Derivative Instruments* in our consolidated financial statements.

Our international operations subject us to laws regarding sanctioned countries, entities and persons, customs, import-export, laws regarding transactions in foreign countries, the U.S. Foreign Corrupt Practices Act and local anti-bribery and other laws regarding interactions with healthcare professionals, and product registration requirements. Among other things, these laws restrict, and in some cases prevent, U.S. companies from directly or indirectly selling goods, technology or services to people or entities in certain countries. In addition, these laws require that we exercise care in structuring our sales and marketing practices and effecting product registrations in foreign countries.

On June 23, 2016, the United Kingdom (UK) held a referendum in which voters approved an exit from the EU, commonly referred to as "Brexit." As a result of the referendum, the British government began negotiating the terms of the UK's future relationship with the EU. The UK exited the EU on January 31, 2020 and entered a transition period which extends through

December 31, 2020. It is possible that Brexit could, among other things, affect the legal and regulatory environments to which our business is subject, impose greater restrictions on imports and exports between the UK and the EU and other parties, and create economic and political uncertainty in the region.

From time to time, proposals are made to significantly change existing trade agreements and relationships between the U.S. and other countries. For instance, the U.S. and China have imposed tariffs on products imported into their respective countries. While we currently do not anticipate that these tariffs will have a material impact on our business, the list of items subject to these tariffs could change and it is possible that they could adversely impact our supply chain costs or our ability to sell certain of our products in China. More generally, additional tariffs or other trade barriers imposed by the U.S. or other countries could materially and adversely affect our operations and financial results.

Oversight of the medical device industry might affect the manner in which we may sell medical devices and compete in the marketplace.

There are laws and regulations that govern the means by which companies in the healthcare industry may market their products to healthcare professionals and may compete by discounting the prices of their products, including for example, the federal Anti-Kickback Statute, the federal False Claims Act, the federal Health Insurance Portability and Accountability Act of 1996, state law equivalents to these federal laws that are meant to protect against fraud and abuse and analogous laws in foreign countries. Violations of these laws are punishable by criminal and civil sanctions, including, but not limited to, in some instances civil and criminal penalties, damages, fines, exclusion from participation in federal and state healthcare programs, including Medicare and Medicaid. Although we exercise care in structuring our sales and marketing practices and customer discount arrangements to comply with those laws and regulations, we cannot assure that:

- government officials charged with responsibility for enforcing those laws will not assert that our sales and marketing practices or customer discount arrangements are in violation of those laws or regulations; or
- government regulators or courts will interpret those laws or regulations in a manner consistent with our interpretation.

Correspondingly, federal and state laws are also sometimes open to interpretation, and from time to time we may find ourselves at a competitive disadvantage if our interpretation differs from that of our competitors. AdvaMed (for the U.S. and China), MedTech Europe (Europe), Mecomed (Middle East), and APACMed (Asia Pacific), some of the principal trade associations for the medical device industry, promulgate model codes of ethics that set forth standards by which its members should (and non-member companies may) abide in the promotion of their products. We have in place policies and procedures for compliance that we believe are at least as stringent as those set forth in the AdvaMed Code, and we regularly train our sales and marketing personnel on our policies regarding sales and marketing practices. Pursuant to the AdvaMed Code, we have certified our adoption of the AdvaMed Code. Nevertheless, the sales and marketing practices of our industry have been the subject of increased scrutiny from federal and state government agencies, and we believe that this trend will continue. Various hospital organizations, medical societies and trade associations are establishing their own practices that may require detailed disclosures of relationships between healthcare professionals and medical device companies or ban or restrict certain marketing and sales practices such as gifts and business meals.

Our private-label product lines depend significantly on key relationships with third parties, which we could be unable to establish and maintain.

Our private-label business depends in part on our entering into and maintaining long-term supply agreements with third parties. The third parties with whom we have entered into agreements might terminate these agreements for a variety of reasons, including developing other sources for the products that we supply. Termination of our most important relationships could adversely affect our expectations for the growth of private-label products.

We may have significant product liability exposure and our insurance may not cover all potential claims.

We are exposed to product liability and other claims if our technologies or products are alleged to have caused harm. We may not be able to obtain insurance for the potential liability on acceptable terms with adequate coverage or at reasonable costs. Any potential product liability claims could exceed the amount of our insurance coverage or may be excluded from coverage under the terms of the policy. Our insurance may not be renewed at a cost and level of coverage comparable to that then in effect.

We are subject to requirements relating to hazardous materials which may impose significant compliance or other costs on us.

Our manufacturing, product development, research, and development operations and processes involve the controlled use of certain hazardous materials. In addition, we own and/or lease a number of facilities at which hazardous materials have been used in the past. Finally, we have acquired various companies that historically have used certain hazardous materials and that have owned and/or leased facilities at which hazardous materials have been used. For all of these reasons, we are subject to federal, state, foreign, and local laws and regulations governing the use, manufacture, storage, transportation, handling, treatment, remediation, and disposal of hazardous materials and certain waste products (“Environmental, Health, Safety and Transportation Laws”). Although we believe that our procedures for handling, transporting, and disposing of hazardous materials comply with

the Environmental, Health, Safety and Transportation Laws, the Environmental Health, Safety and Transportation Laws may be amended in ways that increase our cost of compliance, perhaps materially.

Furthermore, the potential risk of accidental contamination or injury from these materials cannot be eliminated, and there is also a risk that such contamination previously has occurred in connection with one of our facilities or in connection with one of the companies we have purchased. In the event of such an accident or contamination, we could be held liable for any damages that result and any related liability could exceed the limits or fall outside the coverage of our insurance and could exceed our resources. We may not be able to maintain insurance on acceptable terms or at all.

Cyber-attacks or other disruptions to our information technology systems could adversely affect our business.

We are increasingly dependent on sophisticated information technology for our infrastructure and to support business decisions. Our information systems require an ongoing commitment of significant resources to maintain, protect, and enhance existing systems and develop new systems to keep pace with continuing changes in information processing technology, evolving systems and regulatory standards, the increasing need to protect patient and customer information, and changing customer patterns. Any significant breakdown, intrusion, interruption, corruption, or destruction of these systems, as well as any data breaches, could have a material, adverse effect on our business.

In addition, third parties may attempt to breach our systems and may obtain data relating to patients, the Company's proprietary information, or other sensitive data. If we fail to maintain or protect our information systems and data integrity effectively, we could lose existing customers, have difficulty attracting new customers, suffer backlash from negative public relations, have problems in determining product cost estimates and establishing appropriate pricing, have difficulty preventing, detecting, and controlling fraud, have disputes with customers, physicians, and other health care professionals, have regulatory sanctions or penalties imposed, have increases in operating expenses, incur expenses or lose revenues as a result of a data privacy breach, or suffer other adverse consequences.

We have programs, processes and technologies in place to prevent, detect, contain, respond to and mitigate security related threats and potential incidents. We undertake considerable ongoing improvements to our systems, connected devices and information-sharing products in order to minimize vulnerabilities, in accordance with industry and regulatory standards. Because the techniques used to obtain unauthorized access change frequently and can be difficult to detect, anticipating, identifying or preventing these intrusions or mitigating them if and when they occur, may be challenging.

We also rely on third party vendors to supply and/or support certain aspects of our information technology systems. Third party systems may contain defects in design or manufacture or other problems that could result in system disruption or unexpectedly compromise the information security of our own systems, and we are dependent on these third parties to provide reliable systems and software and to deploy appropriate security programs to protect their systems.

In addition, we continue to grow in part through new business acquisitions. As a result of acquisitions, we may face risks due to implementation, modification, or remediation of controls, procedures, and policies relating to data privacy and cybersecurity at the acquired business. We continue to consolidate and integrate the number of systems we operate, and to upgrade and expand our information system capabilities for stable and secure business operations.

If we are unable to maintain reliable information technology systems and prevent disruptions, outages, or data breaches, we may suffer regulatory consequences in addition to business consequences. Our worldwide operations mean that we are subject to laws and regulations, including data protection and cyber security laws and regulations, in many jurisdictions. The variety of U.S. and international privacy and cybersecurity laws and regulations impacting our operations are described in "Item 1. Business - Government Regulation - Other Factors - Data Privacy and Cybersecurity Laws and Regulations." We have programs to ensure compliance with such laws and regulations. However, there is no guarantee that we will avoid enforcement actions by governmental bodies. Enforcement actions may be costly and interrupt regular operations of our business. In addition, there has been a developing trend of civil lawsuits and class actions relating to breaches of consumer data held by large companies or incidents arising from other cyber-attacks. While Integra has not been named in any such suits, if a substantial breach or loss of data were to occur, we could become a target of such litigation.

Changes in the calculation and or complete replacement of LIBOR could have an impact on our business.

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. This announcement and global financial benchmark reforms generally have resulted in the future of certain interest rate benchmarks being more uncertain. LIBOR may be disrupted, materially change, or no longer be published in the future. We have multiple debt facilities which utilizes a variable rate equal to Eurodollar LIBOR rate as a component of our interest rate. The upcoming transition away from LIBOR as a common reference rate in the global financial market could have a material, adverse effect on our business. Management continues to monitor the status and discussions regarding LIBOR.

ITEM 1B. ***UNRESOLVED STAFF COMMENTS***

As of the filing of this Annual Report on Form 10-K, we had no unresolved comments from the staff of the Securities and Exchange Commission that were received not less than 180 days before the end of our 2019 fiscal year.

ITEM 2. ***PROPERTIES***

As of December 31, 2019, we lease approximately 166,991 square feet of space in Princeton, NJ, where we house our principal headquarters, sales operations, research and development, and support functions. This lease expires in 2036.

We have key manufacturing and research facilities located in New Jersey, Ohio, Massachusetts, Tennessee, Texas, Canada, France, Germany, Ireland, Switzerland, California and Puerto Rico. Our instrument procurement operations are located in Germany. Our primary distribution centers are located in Nevada, Ohio, Kentucky, Australia, Belgium, Canada and France. In addition, we lease several smaller facilities to support additional administrative, assembly, and distribution operations. Third parties own and operate the facilities in Nevada, Kentucky and Belgium. We own facilities in Biot, France, Saint Aubin Le Monial, France, Rietheim-Weilheim, Germany, Ohio, and Pennsylvania and we lease all of our other facilities. We also have repair centers in California, Massachusetts, Ohio, Australia and Germany.

Our manufacturing facilities are registered with the FDA. Our facilities are subject to FDA inspection to ensure compliance with Quality System regulations. For further information regarding the status of FDA inspections, see the "Government Regulation" and "Management's Discussion and Analysis of Financial Condition and Results of Operations - Update on Remediation Activities" sections in this Form 10-K.

ITEM 3. ***LEGAL PROCEEDINGS***

Information pertaining to legal proceedings can be found in Note 15. Commitment and Contingencies in our 2019 Financial Statements.

ITEM 4. ***MINE SAFETY DISCLOSURES***

Not applicable.

PART II

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

Market Information, Holders and Dividends

Our common stock trades on The NASDAQ Global Select Market under the symbol "IART." The number of stockholders of record as of February 18, 2020 was approximately 892, which includes stockholders whose shares were held in nominee name.

Sales of Unregistered Securities

There were no sales of unregistered securities during the years ended December 31, 2019, 2018 or 2017.

Sale of Registered Securities

In May 2018, the Company commenced and closed on a public offering of common stock. The Company issued 6.0 million shares of common stock and received total proceeds, net of underwriting fees and offering expenses, of approximately $349.6 million. The net proceeds from the offering were used to reduce outstanding borrowings under the revolving credit portion of the Company's Senior Credit Facility.

Issuer Purchases of Equity Securities

On December 11, 2018, the Board of Directors authorized the Company to repurchase up to $225.0 million of the Company's common stock. The program allows the Company to repurchase its shares opportunistically from time to time. The repurchase authorization expires in December 2020. Purchases may be affected through one or more open market transactions, privately negotiated transactions, transactions structured through investment banking institutions, or a combination of the foregoing.

There have been no shares of common stock repurchased by the Company for the years ended December 31, 2019, 2018 or 2017.

See Note 8, *Treasury Stock*, in our consolidated financial statements for further details.

On February 4, 2020, the Company offered and sold in a private placement $575.0 million of 0.5% convertible notes due in 2025. The Company intends to use $100.0 million of the net proceeds from the offering to repurchase shares of the Company's stock. This includes up to approximately $7.6 million from certain purchasers of the convertible notes in conjunction with the closing of the offering. Additionally, the Company intends to use $92.4 million of the proceeds to repurchase shares through an accelerated share repurchase transaction ("ASR").

ITEM 6. *SELECTED FINANCIAL DATA*

The information set forth below should be read in conjunction with "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations" and our consolidated financial statements and related notes included elsewhere in this report. All results and data in the tables below reflect continuing operations, unless otherwise noted. As a result, the data presented below will not necessarily agree to previously issued financial statements. See Note 4, *Acquisitions and Pro Forma Results* for additional information regarding the impact of 2019, 2018 and 2017 acquisitions in Item 15 of this Form 10-K.

	Years Ended December 31,				
	2019	2018	2017	2016	2015
	(In thousands, except per share data)				
Operating Results:					
Total revenues, net	$ 1,517,557	$ 1,472,441	$ 1,188,236	$ 992,075	$ 882,734
Costs and expenses	1,423,797	1,361,443	1,143,432	876,735	803,147
Operating income (4)	93,760	110,998	44,804	115,340	79,587
Interest expense, net (1) (2)	(43,178)	(61,883)	(34,764)	(25,779)	(23,504)
Other income, net	9,522	8,288	1,345	845	4,588
Income from continuing operations before income taxes	60,104	57,403	11,385	90,406	60,671
(Benefit from) provision for income taxes (4) (6)	9,903	(3,398)	(53,358)	15,842	53,820
Net income from continuing operations	$ 50,201	$ 60,801	$ 64,743	$ 74,564	$ 6,851
Loss from discontinued operations (net of tax benefit)	$ —	$ —	$ —	$ —	$ (10,370)
Net income (loss)	$ 50,201	$ 60,801	$ 64,743	$ 74,564	$ (3,519)
Diluted net income per common share from continuing operations	$ 0.58	$ 0.72	$ 0.82	$ 0.94	$ 0.10
Diluted net loss per common share from discontinued operations	$ —	$ —	$ —	$ —	$ (0.15)
Diluted net income (loss) per common share	$ 0.58	$ 0.72	$ 0.82	$ 0.94	$ (0.05)
Weighted average common shares outstanding for diluted net income per share	86,494	83,999	79,121	79,194	71,354

	As of December 31,				
	2019	2018	2017	2016	2015
	(In thousands)				
Financial Position:					
Cash, cash equivalents	$ 198,911	$ 138,838	$ 174,935	$ 102,055	$ 48,132
Total assets (5) (7)	3,303,240	3,107,887	3,211,257	1,807,954	1,774,224
Short-term borrowings under the term loan of the Senior Credit Facility	45,000	22,500	60,000	—	14,375
Long-term borrowings including the revolving portion of the Senior Credit Facility (1)	1,198,561	1,210,513	1,781,142	665,000	481,875
Long-term debt (2) (8)	104,500	121,200	—	—	218,240
Retained earnings (4)	398,574	348,373	285,186	220,443	145,879
Stockholders' equity (3)	1,416,736	1,375,796	962,306	839,667	751,443

(1) For the years ended December 31, 2019, 2018, 2017, 2016 and 2015, we reported the borrowings outstanding under the revolving portion of our Senior Credit Facility as long-term debt as well as the 1.625% convertible senior notes due in 2016 ("2016 Convertible Notes"). We also reported the term loan as long-term debt with the exception of current principal payments due within 12 months, which are classified as short-term. At December 31, 2019, we have a total of $1.3 billion outstanding under our Senior Credit Facility and $947.5 million available for future borrowings.

(2) In 2011, we issued $230.0 million of the 2016 Convertible Notes. The 2016 Convertible Notes were repaid in December 2016 in accordance with their terms.

(3) In 2018, we closed on a public offering of common stock. We issued 6.0 million shares of common stock and received total proceeds, net of underwriting fees and offering expenses, of approximately $349.6 million.

In 2015, we closed on a public offering of common stock. We issued 8.0 million shares of common stock and received total proceeds, net of underwriting fees and offering expenses, of approximately $219.7 million.

(4) On September 9, 2019, the Company acquired Rebound Therapeutics Corporation (“Rebound”). The Company made an initial upfront payment of $67.1 million. The initial payment resulted in a $59.9 million in-process research and development expense. During the fourth quarter of 2019, the Company triggered a $5.0 milestone to be paid to former shareholders of Rebound. The Company recorded the $5.0 million as additional in-process research and development expense which was included in accrued liabilities at December 31, 2019. (see Note 4, *Acquisitions and Pro forma results*, of the consolidated financial statements).

On January 1, 2018, we adopted Topic 606 using the modified retrospective method. Results of operations for the reporting periods after January 1, 2018 are presented under Topic 606, while prior period amounts are not adjusted and continue to be reported in accordance with Topic 605, *Revenue Recognition*. The adoption of Topic 606 resulted in an increase to the opening retained earnings of $1.9 million, which was recorded net of taxes as of January 1, 2018 to reflect the change in timing of the recognition of revenue related to the Company's private label business from point in time to over time during the manufacturing process and goods in transit for which control was transferred to customers at the time of shipment. Total assets and liabilities increased by $7.1 million and $5.2 million, respectively, as of January 1, 2018.

In 2016, the Company elected to adopt Accounting Standard Update 2016-09, *Improvements to Employee Share-Based Payment Accounting (Topic 718)*. The Company elected to account for forfeitures as they occur. The impact in retained earnings as of December 31, 2015 from this provision was not significant. Amendments related to accounting for excess tax benefits have been adopted prospectively, resulting in recognition of excess tax benefits against income tax expenses rather than additional paid-in capital of $3.8 million for the year ended December 31, 2016.

(5) On January 1, 2019, the Company adopted the Lease Standard using a modified retrospective transition. Under this method, financial results reported in periods prior to January 1, 2019 are unchanged. As a result of the adoption of the New Lease Standard, the Company had an impact on our consolidated balance sheet due to the recognition of $76.4 million of lease liabilities with corresponding right-of-use assets ("ROU") of $67.3 million for operating leases. (see Note 11, Leases and Related party leases, of the consolidated financial statements).

In 2016, the Company adopted Accounting Standard Update 2015-03, *Simplifying the Presentation of Debt Issuance Costs*. The Company adopted this guidance effective January 1, 2016 on a retrospective basis. The Company reclassified a portion of the debt issuance costs from other assets to long-term debt as of December 31, 2015.

(6) The benefit from income taxes in 2017 includes $43.4 million related to the re-measurement of our deferred taxes resulting from a reduction of the federal statutory rate from 35% to 21% from the Tax Cuts and Jobs Act (the "2017 Tax Act"), enacted in December 2017 (see Note 12, *Income Taxes*, of the consolidated financial statements).

(7) Presented for continuing operations only.

(8) During the fourth quarter of 2018, the Company entered into an accounts receivable securitization facility (the "Securitization Facility"). As of December 31, 2019, the Company had $104.5 million of outstanding borrowings under its Securitization Facility. Refer to Note 5, *Debt*, for further information on the Securitization Facility.

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 together with the selected consolidated financial data and our financial statements and the related notes appearing elsewhere in this report. This discussion and analysis contains forward-looking statements that involve risks, uncertainties and assumptions. Our actual results may differ materially from those anticipated in these forward-looking statements as a result of many factors, including but not limited to those under the heading “Risk Factors.”

GENERAL

Integra, headquartered in Princeton, New Jersey, is a world leader in medical technology. The Company was founded in 1989 with the acquisition of an engineered collagen technology platform used to repair and regenerate tissue. Since then, Integra has developed numerous product lines from this technology for applications ranging from burn and deep tissue wounds, to the repair of dura mater in the brain, and repair of nerves and tendons. The Company has expanded its base regenerative technology business to include surgical instruments, neurosurgical products, advanced wound care, collagen matrix products for hernia and plastic & reconstructive surgery, and orthopedic hardware, through a combination of several global acquisitions and development of products internally to further meet the needs of its customers and impact patient care.

We manufacture and sell our products in two reportable business segments: Codman Specialty Surgical and Orthopedics and Tissue Technologies. Our Codman Specialty Surgical products comprise of specialty surgical implants and instrumentation for a broad range of specialties. This segment includes products and solutions for dural access and repair, precision tools and instruments, advanced energy, cerebral spinal fluid ("CSF") management and neuro monitoring including market-leading product portfolios used in neurosurgery operation suites and critical care units. Our Orthopedics and Tissue Technologies product portfolios consist of differentiated regenerative technology products for soft tissue repair and tissue regeneration products, surgical reconstruction, and small bone fixation and joint replacement hardware products for both upper extremities and lower extremities. This business also includes private label sales of a broad set of our regenerative and wound care medical technologies.

We have key manufacturing and research facilities located in California, New Jersey, Ohio, Massachusetts, Tennessee, Texas, Canada, France, Germany, Ireland, Switzerland, and Puerto Rico. We also source most of our handheld surgical instruments, specialty metal and pyrocarbon implants, and dural sealant products through specialized third-party vendors.

Codman Specialty Surgical products are sold through a combination of directly employed sales representatives, distributors and wholesalers, depending on the customer call point.

Orthopedics and Tissue Technologies products are sold through directly employed sales representatives, distributors focused on their respective surgical specialties, and strategic partners.

Integra is committed to delivering high quality products that positively impact the lives of millions of patients and their families. We focus on four key pillars of our strategy: 1) building an execution-focused culture, 2) achieving relevant scale, 3) improving agility and innovation, and 4) leading in customer experience. We believe that by sharpening our focus on these areas through improved planning and communication, optimization of our infrastructure, and strategically aligned tuck-in acquisitions, we can build scale, increase competitiveness and achieve our long-term goals.

To this end, the executive leadership team has established the following key priorities aligned to the following areas of focus:

Strategic Acquisitions. An important part of our strategy is pursuing strategic transactions and licensing agreements that increase relevant scale in the clinical areas in which Integra competes. In 2019, we closed out of 45 transition service agreements, covering 90 countries, marking the successful completion of the integration of the Codman Neurosurgery acquisition, the most significant acquisition in the Company’s history. This acquisition expanded our portfolio of neurosurgery products and established us as the world leader in neurosurgery. It has also enabled us to bring our entire product portfolio to a global market. In 2019, we acquired Arkis Biosciences, Inc. and Rebound Therapeutics Corporation, both of which align with Company’s strategy to acquire and develop innovative technologies that address unmet needs.

Portfolio Optimization and New Product Introductions. We are investing in innovative product development to drive a multi-generational pipeline for our key product franchises. Our product development efforts span across our key global franchises focused on potential for significant returns on investment. In 2019, we launched ten new products across our key product franchises. In addition to new product development, we are funding studies to gather clinical evidence to support launches, ensure market access and improve reimbursement for existing products. In 2019, we discontinued certain low-growth, low margin products. We continue to identify ways of optimizing our portfolio including identifying low-growth, low-margin products and product franchises for discontinuation.

Commercial Channel Investments. With acquisitions, new product introductions and a broader portfolio of products, investing in our sales channels is a core part of our strategy to create specialization and greater focus on reaching new and existing customers and addressing their needs. Internationally, we have increased our commercial resources significantly in many markets and are making investments to support our sales organization and maximize our commercial opportunities. We now have a strong international sales channel that will deliver our current portfolio as well as position us for expansion. In addition, we continue to build upon our leadership brands across our product franchises to enable us to engage hospital systems through enterprise-wide contracts.

Customer Experience. We aspire to be ranked as a best-in-class provider and are committed to strengthen our relationships with all customers. We strive to consistently deliver outstanding customer service and continue to invest in technologies, systems

and processes to improve the way our customers do business with us. Additionally, we expect to build on the success of our professional education programs to drive continued customer familiarity with our growing portfolio of medical technologies globally.

Equity Offering

In May 2018, the Company commenced and closed on a public offering of common stock. The Company issued 6.0 million shares of common stock and received total proceeds, net of underwriting fees and offering expenses of approximately $349.6 million. The net proceeds from the offering were used to reduce outstanding borrowings under the revolving credit portion of the Company's Senior Credit Facility.

Clinical and Product Development Activities

We continue to invest in collecting clinical evidence to support our existing products and new product launches, and to ensure that we obtain market access for broader and more cost-effective solutions.

Within the Codman Speciality Surgical segment, we launched our new electrosurgery generator and irrigator system, an innovative customer-centric toolkit for our Certas™ Plus Programmable Valve along with additional shunt configurations. We launched DuraGen® in Japan. DuraGen is the first and only non-autologous collagen xenograft approved for use as a dural substitute in Japan. We are focused on the development of core clinical applications in our our electromechanical technologies portfolio. Also during 2019, we updated our CUSA Clarity platform to incorporate new ultrasonic tips and integrated electrosurgical capabilities.We continue to work with several instrument partners to bring new surgical instrument patterns to the market. This enables us to add new instruments with minimal expense and invest in ongoing development, such as our next generation of LED technology with our DUO LED Surgical Headlight System.

Within our Orthopedic and Tissue Technolgies segment, we launched the Panta® II TTC Arthrodesis Nail System in the U.S. The Panta II system is our new fusion nail used in ankle fixation. We also launched a Small Post Baseplate in our Reverse Shoulder System that accommodates smaller patients. We initiated the limited market release of enhancements to our Salto Talaris® Total Ankle System. We continue to work on advanced shoulder products and are developing a pyrocarbon shoulder hemiarthroplasty product to add to our orthopedic reconstruction portfolio.

FDA Untitled Letter

On June 22, 2015, the FDA issued an Untitled Letter (the "Untitled Letter") alleging that BioD LLC's ("BioD") morselized amniotic membrane tissue based products do not meet the criteria for regulation as HCT/Ps solely under Section 361 of the Public Health Services Act ("Section 361") and that, as a result, BioD would need a biologics license to lawfully market those morselized products. Since the issuance of the Untitled Letter, BioD and more recently the Company have been in discussions with the FDA to communicate their disagreement with the FDA’s assertion that certain products are more than minimally manipulated. The FDA has not changed its position that certain of the BioD acquired products are not eligible for marketing solely under Section 361.

In November 2017, the FDA issued the final guidance document related to human tissue titled, “Regulatory Considerations for Human Cells, Tissues, and Cellular and Tissue-Based Products: Minimal Manipulation and Homologous Use” (the “HCT/P Final Guidance”). The HCT/P Final Guidance maintains the FDA’s position that products such as the Company’s morselized amniotic membrane tissue-based products do not meet the criteria for regulation solely as HCT/Ps. In addition, the FDA articulated a risk-based approach to enforcement and, while some uses for amniotic membrane tissue-based products would have as much as thirty-six months of enforcement discretion, other high risk uses could be subject to immediate enforcement action. The Company does not believe the uses for its amniotic membrane tissue-based products fall into the high-risk category. As of February 21, 2020 the Company has not received any further notice of enforcement action from the FDA regarding its morselized amniotic tissue-based products. Nonetheless, we can make no assurances that the FDA will continue to exercise its enforcement discretion with respect to the Company’s morselized amniotic membrane tissue-based products, and any potential action of the FDA could have a financial impact regarding the sales of such products. The Company has been considering and continues to consider regulatory approval pathways for its morselized amniotic membrane tissue-based products.

Revenues from BioD morselized amniotic material-based products for the year ended December 31, 2019 were less than 1.0% of consolidated revenues.

On March 7, 2019, TEI Biosciences, Inc. a subsidiary of the Company received a Warning Letter (the “Warning Letter”), dated March 6, 2019, from the United States Food and Drug Administration (the “FDA”). The warning letter relates to quality systems issues at our manufacturing facility located in Boston, Massachusetts. The letter resulted from an inspection held at that facility in October and November 2018 and did not identify any new observations that were not already provided in the Form 483 that followed the inspection. The Company has provided detailed responses to the FDA as to its corrective actions on a monthly basis and, since the conclusion of the inspection, has undertaken significant efforts to remediate the observations and continues to do so. The warning letter does not restrict the Company’s ability to manufacture or ship products or require the recall of any products. Nor does it restrict our ability to seek FDA 510(k) clearance of products. The letter states that requests

for Certificates to Foreign Governments will not be granted until the violations have been corrected. Additionally, premarket approval applications for Class III devices to which the Quality System regulation violations are reasonably related will not be approved until the violations have been corrected. The TEI Boston facility manufactures extracellular bovine matrix (EBM) products. The company does not expect to incur material incremental expense for remediation activities. The company submitted its initial response to the FDA Warning Letter on March 28, 2019 and provides regular progress reports to the FDA. We cannot, however, give any assurances that the FDA will be satisfied with our response to the letter or as to the expected date of the resolution of the matters included in the letter. Until the issues cited in the letter are resolved to the FDA's satisfaction, the FDA may initiate additional regulatory action without further notice. Any adverse regulatory action, depending on its magnitude, may restrict us from effectively manufacturing, marketing and selling our products and could have a material adverse effect on our business, financial condition and results of operations.

Revenues of products manufactured in the TEI Boston facility for the year ended December 31, 2019 were approximately 4.2% of consolidated revenues.

ACQUISITIONS & DIVESTITURES

Acquisitions

Our growth strategy includes the acquisition of businesses, assets or products lines to increase the breadth of our offerings and reach of our product portfolios and drive relevant scale to our customers. As a result of several recent acquisitions, our financial results for the year ended December 31, 2019 may not be directly comparable to those of the corresponding prior-year periods. See Note 4 - *Acquisitions and Pro Forma Results*, to our consolidated financial statements for a further discussion.

Arkis BioSciences Inc.

On July 29, 2019, the Company acquired Arkis BioSciences Inc. ("Arkis") for an acquisition purchase price of $30.9 million (the "Arkis Acquisition") plus contingent consideration of up to $25.5 million, that may be payable based on the successful completion of certain development and commercial milestones. The contingent consideration had an acquisition date fair value of $13.1 million. The estimated fair value as of December 31, 2019 was $14.2 million. This amount is included in other liabilities at December 31, 2019 in the consolidated balance sheets of the Company. Arkis was a privately-held company that marketed the CerebroFlo® external ventricular drainage (EVD) catheter with Endexo® technology, a permanent additive designed to reduce the potential for catheter obstruction due to clotting.

Rebound Therapeutics Corporation

On September 9, 2019, the Company acquired Rebound Therapeutics Corporation ("Rebound"), developers of a single-use medical device known as the AURORA Surgiscope® System ("Aurora") which enables minimally invasive access, using optics and illumination, for visualization, diagnostic and therapeutic use in neurosurgery (the "Rebound transaction"). The transaction was accounted for as an asset acquisition as the Company concluded that it acquired primarily one asset. Under the terms of the Rebound transaction, the Company made an upfront payment of $67.1 million and committed to pay up to $35.0 million of contingent development milestones upon achievement of certain regulatory milestones. During the fourth quarter of 2019, the Company triggered a $5.0 million obligation to be paid to former shareholders of Rebound. The Company recorded the $5.0 million as an additional in-process research and development expense which was included in accrued liabilities at December 31, 2019.

Integrated Shoulder Collaboration, Inc.

On January 4, 2019, the Company entered into a licensing agreement with Integrated Shoulder Collaboration, Inc ("ISC"). Under the terms of the agreement, the Company paid ISC $1.7 million for the exclusive, worldwide license to commercialize its short stem and stemless shoulder system. A patent related to short stem and stemless shoulder systems was issued to ISC during the first quarter of 2019. ISC is eligible to receive royalties on sales of the short stem and stemless shoulder system upon commercialization. The Company has the option to acquire ISC at a date four years subsequent to the first commercial sale, which becomes mandatory upon the achievement of a certain sales thresholds of the short stem and stemless shoulder system, for an amount not to exceed $80.0 million. The transaction was accounted for as an asset acquisition as the Company concluded that it acquired primarily one asset. The total upfront payment of $1.7 million was expensed as a component of research and development expense and the future milestone and option payments will be recorded if the corresponding events become probable.

Johnson & Johnson's Codman Neurosurgery Business

On May 11, 2017, the Company entered into an asset purchase agreement (the "Purchase Agreement") with DePuy Synthes, Inc., a Delaware corporation ("DePuy Synthes"), a wholly-owned subsidiary of Johnson & Johnson, pursuant to which the Company agreed to acquire certain assets, and assume certain liabilities, of Johnson & Johnson's Codman neurosurgery business (the "Codman

Acquisition”). The assets and liabilities subject to the Codman Acquisition relate to the research, development, manufacturing, marketing, distribution and sale of certain products used in connection with neurosurgery procedures.

On October 2, 2017, based upon the terms and subject to the conditions set forth in the Purchase Agreement, the Codman Acquisition was completed. Under the terms of the Purchase Agreement, the Company paid an aggregate purchase price of $1.014 billion, subject to adjustments set forth in the Purchase Agreement relating to the book value of inventory transferred to us at the closing of the Codman Acquisition, the book value of certain inventory retained by DePuy Synthes that will be transferred to the Company in the future along with certain prepaid taxes.

Derma Sciences

On February 24, 2017, the Company executed the Agreement and Plan of Merger (the "Merger Agreement") under which the Company acquired all the outstanding shares of Derma Sciences, Inc., a Delaware corporation ("Derma Sciences") for an aggregate purchase price of approximately $210.8 million including payment of certain of Derma Sciences' closing expenses and settlement of stock-based compensation plans of $4.8 million and $4.3 million, respectively. The purchase price consisted of a cash payment to the former shareholders of Derma Sciences of approximately $201.7 million upon the closing of the transaction.

Derma Sciences is a tissue regeneration company focused on advanced wound and burn care that offers products to help manage chronic and hard-to-heal wounds, especially those resulting from diabetes and poor vascular functioning.

Divestitures

On September 8, 2017, the Company and certain of its subsidiaries entered into an asset purchase agreement (the “Divestiture Agreement”) with Natus Medical Incorporated (“Natus”), pursuant to which the Company agreed to divest its Camino Intracranial Pressure monitoring and the U.S. rights to the fixed pressure shunts businesses together with certain of the neurosurgery assets that were acquired as part of the Codman Acquisition (the “Divestiture”). The Divestiture Agreement was entered in connection with the review of the Codman Acquisition by the Federal Trade Commission and the antitrust authority of Spain. The Divestiture was conditioned upon completion of the Codman Acquisition.

On October 6, 2017, upon the terms and subject to the conditions set forth in the Divestiture Agreement (see Note 4 - *Acquisitions and Pro Forma Results*), the Divestiture was completed and Natus paid an aggregate purchase price of $46.4 million. Revenues related to the Divestiture included in the Company's financial results for the period ended December 31, 2017 was $27.0 million.

OPTIMIZATION AND INTEGRATION ACTIVITIES

As a result of our ongoing acquisition strategy and significant growth in recent years, we have undertaken cost-saving initiatives to consolidate manufacturing operations, distribution facilities and transfer activities, implement a common ERP system, eliminate duplicative positions, realign various sales and marketing activities, and expand and upgrade production capacity for our regenerative technology products. These efforts are expected to continue and while we expect a positive impact from ongoing restructuring, integration, and manufacturing transfer and expansion activities, such results remain uncertain.

RESULTS OF OPERATIONS

Executive Summary

Revenues from 2019 to 2017 increased $329.3 million, generating $200.2 million of additional gross margin over that time period resulting primarily from the businesses that we acquired and organic growth.

Costs and expenses increased in 2019 compared to 2018 primarily due to in-process research and development expenses within acquisition and integration-related charges as a result of the Rebound transaction.

Costs and expenses increased sequentially in 2018 compared to 2018 as new employees, especially in selling, general and administrative functions, joined the Company as a result of acquisitions.

The benefit from income taxes in 2017 was primarily driven by a re-measurement of our deferred taxes resulting from a reduction of the federal statutory rate from 35% to 21% from the 2017 Tax Act and a decrease in income before income taxes in 2017 resulting from acquisition and integration costs related to the Derma Sciences and the Codman Neurosurgery acquisitions.

Our net income in 2019 was $50.2 million, or $0.58 per diluted share, as compared to $60.8 million, or $0.72 per diluted share in 2018, and $64.7 million, or $0.82 per diluted share, in 2017.

Special Charges

Income before taxes includes the following special charges:

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
Acquisition and integration-related charges	$ 124,665	$ 93,926	$ 117,947
Structural optimization charges	17,582	19,598	7,461
Discontinued product lines charges	9,168	—	1,156
EU medical device regulation	6,221	—	—
Impairment charges	5,764	4,941	3,290
Litigation matters	96	4,598	—
Other	—	—	5,538
Total	$ 163,496	$ 123,063	$ 135,392

The items reported above are reflected in the consolidated statements of operations as follows:

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
Cost of goods sold [1]	$ 25,266	$ 34,563	$ 28,413
Research and development	2,786	—	—
In-process research and development	64,916	—	—
Selling, general and administrative	67,265	87,709	107,361
Intangible asset amortization [2]	5,764	—	—
Other (income) expense	(2,501)	791	(382)
Total	$ 163,496	$ 123,063	$ 135,392

(1) Amortization and impairment charges related to technology based intangible assets is included in cost of goods sold.

(2) Impairment charges related to non-technology based intangible assets such as customer relationships are included in Intangible asset amortization.

We typically define special charges as items for which the amounts and/or timing of such expenses may vary significantly from period to period, depending upon our acquisition, integration and restructuring activities, and for which the amounts are non-cash in nature, or for which the amounts are not expected to recur at the same magnitude. We believe that given our ongoing strategy of seeking acquisitions, our continuing focus on rationalizing our existing manufacturing and distribution infrastructure and our continuing review of various product lines in relation to our current business strategy, some of the special charges discussed above could recur with similar materiality in the future.

We believe that the separate identification of these special charges provides important supplemental information to investors regarding financial and business trends relating to our financial condition and results of operations. Investors may find this information useful in assessing comparability of our operating performance from period to period, against the business model objectives that management has established, and against other companies in our industry. We provide this information to investors so that they can analyze our operating results in the same way that management does and to use this information in their assessment of our core business and valuation of Integra.

Revenues and Gross Margin

Our revenues and gross margin on product revenues were as follows:

	Years Ended December 31,		
	2019	2018	2017
Segment Net Sales	(In thousands)		
Codman Specialty Surgical	$ 996,206	$ 963,929	$ 720,301
Orthopedics and Tissue Technologies	521,351	508,512	467,935
Total revenues	1,517,557	1,472,441	1,188,236
Cost of goods sold	564,681	571,496	435,511
Gross margin on total revenues	$ 952,876	$ 900,945	$ 752,725
Gross margin as a percentage of total revenues	62.8%	61.2%	63.3%

Revenues

Year Ended December 31, 2019 Compared with Year Ended December 31, 2018.

For the year ended December 31, 2019, total revenues increased by $45.1 million, or 3.1%, to $1,517.6 million from $1,472.4 million during the prior year. Domestic revenues increased $31.5 million, or 3.0%, to $1,077.4 million and were 71.0% of total revenues for the year ended December 31, 2019. International revenues increased to $440.2 million, compared to $426.5 million during 2018. The net increase of $45.1 million was a result of growth in both segments of $68.4 million offset by a $12.5 million unfavorable impact of foreign exchanges, which mainly impacts the Codman Specialty Surgical segment, and a $10.8 million unfavorable impact due to discontinued and divested products.

Codman Specialty Surgical revenues were $996.2 million, an increase of 3.3% from the prior-year period. Growth in Codman Specialty Surgical revenues were driven by sales of our dural repair, CUSA® capital and related disposables, and programmable valve products. Precision Tools and Instruments revenues increased low-single digits compared to the prior period due to increased volume in the business.

Orthopedics and Tissue Technologies revenues were $521.4 million, an increase of 2.5% from the prior-year period. In our Wound Reconstruction and Care portfolio used in inpatient and outpatient procedures, sales of our core tissue products including PriMatrix and SurgiMend increased in the mid-teens. Our private label business sales increased by low-single digits over the prior period due to increased volume in the business. Extremity Orthopedic sales were flat when compared to the same period last year.

With our global reach, we generate revenues in multiple foreign currencies. Accordingly, we will experience currency exchange risk with respect to those foreign currency denominated revenues.

Year Ended December 31, 2018 Compared with Year Ended December 31, 2017.

For the year ended December 31, 2018, total revenues increased by $284.2 million, or 23.9%, to $1,472.4 million from $1,188.2 million during the prior year. Domestic revenues increased $151.6 million, or 17.0%, to $1,045.9 million and were 71.0% of total revenues for the year ended December 31, 2018. International revenues increased to $426.6 million, compared to $293.9 million during 2017. The increase compared to the prior year primarily resulted from the full-year sales impact of products acquired as part of the Codman Neurosurgery acquisition, which resulted in incremental revenue of $235.6 million, a $3.8 million favorable impact of foreign exchange as well as growth in both segments of $71.8 million, which includes twelve months of Derma Sciences revenue in 2018, offset by $27.0 million of revenue from divested products in 2017.

Codman Specialty Surgical revenues were $963.9 million, an increase of 33.8% from the prior-year period. The increase primarily resulted from incremental revenues from Codman Neurosurgery of $235.6 million. Growth in our legacy Neurosurgery portfolio was primarily driven by our CUSA® capital and disposables portfolio and dural repair. Revenues for Precision Tools and Instruments increased by low-single digits over the prior period due to increased volume in the business.

Orthopedics and Tissue Technologies revenues were $508.5 million, an increase of 8.7% from the prior-year period. In our Wound Reconstruction portfolio used in inpatient and outpatient procedures, sales of Integra skin products, including PriMatrix and amniotic tissue products, increased mid-double digits. Revenues for Private Label increased by mid-single digits over the prior period due to increased volume in the business. In our Extremity Orthopedics business, sales declined low-single digits driven by a decline in our lower fixation portfolio offset by growth in our shoulder and ankle portfolios.

Gross Margin

Gross margin as a percentage of revenues was 62.8% in 2019, 61.2% in 2018, and 63.3% in 2017. The increase in gross margin percentage from 2018 to 2019 resulted primarily from reduction in Codman Neurosurgery acquisition and integration costs. The decrease in gross margin percentage of total revenue from 2017 to 2018 resulted primarily from dilution related to full-year product sales from the Codman Neurosurgery acquisition at lower margins than the Company's historical average. Additionally, there were higher net costs associated with the full year amortization of technology-based intangible assets capitalized in connection with the Codman Neurosurgery acquisition.

Operating Expenses

The following is a summary of operating expenses as a percent of total revenues:

	Years Ended December 31,		
	2019	2018	2017
Research and development	5.2%	5.3%	5.3%
In-process research and development	4.3%	—%	—%
Selling, general and administrative	45.3%	46.9%	52.5%
Intangible asset amortization	1.8%	1.4%	1.7%

Operating expenses, which consist of research and development, in-process research and development, selling, general and administrative, and amortization, increased $69.2 million or 8.8% to $859.1 million in 2019, compared to $789.9 million in the prior year.

RESEARCH AND DEVELOPMENT. Research and development expenses totaled $79.6 million in 2019, compared to $78.0 million in 2018 and $63.5 million in 2017. The increase in research and development expenses in 2018 compared to 2017 primarily resulted from the full-year impact of the acquisitions of Derma Sciences and Codman Neurosurgery and additional spending on new product development and clinical studies.

IN-PROCESS RESEARCH AND DEVELOPMENT. The increase to our in-process research and development expenses in 2019, totaling $64.9 million compared to $0.0 million in 2018 and 2017, was primarily attributed to expenses related to acquisition of Rebound. See Note 4, *Acquisitions and Pro Forma Results*, of our consolidated financial statements for more information.

SELLING, GENERAL AND ADMINISTRATIVE. Selling, general and administrative expenses in 2019 decreased by $3.1 million or 0.5% to $687.6 million, compared to $690.7 million in 2018. General and administrative costs decreased by $20.7 million compared to the prior year, primarily resulting from a decrease in costs related to structural optimization and acquisition and integration-related charges. Offsetting this decrease was an increase of $17.6 million in selling and marketing expense primarily attributable to channel expansion.

Selling, general and administrative expenses for the year ended December 31, 2018 increased by $66.7 million or 10.7% to $690.7 million, compared to $624.1 million in 2017. Selling and marketing expenses increased by $72.3 million, primarily resulting from the full-year impact of the Derma Sciences and Codman Neurosurgery acquisitions, higher headcount in our sales force compared

to the prior year, higher commission costs resulting from increases in revenue and channel expansion. General and administrative costs decreased by $5.6 million, primarily resulting from one-time costs for the year ended December 31, 2017 related to acquiring and integrating the Derma Sciences and Codman Neurosurgery businesses in the year of acquisition.

INTANGIBLE ASSET AMORTIZATION.

Amortization expense (excluding amounts reported in cost of product revenues for technology-based intangible assets) in 2019 was $27.0 million compared to $21.2 million in 2018. The increase is primarily attributed to an impairment charge of $5.8 million related to a customer relationship intangible asset.

In 2018, amortization expense (excluding amounts reported in cost of product revenues for technology-based intangible assets) was $21.2 million, compared to $20.4 million in 2017. The increase primarily resulted from the full-year amortization of intangible assets capitalized as part of our Derma Sciences acquisition.

We may discontinue certain products in the future as we continue to assess the profitability of our product lines. As our profitability assessment evolves, we may make further decisions about our trade names and incur additional impairment charges or accelerated amortization. We expect total annual amortization expense (including amounts reported in cost of product revenues, but excluding any possible future amortization associated with acquired in-process research and development ("IPR&D")) to be approximately $74.6 million in 2020, $64.1 million in 2021, $60.6 million in 2022, $59.7 million in 2023, $58.9 million in 2024 and $547.7 million thereafter.

Non-Operating Income and Expenses

The following is a summary of non-operating income and expenses:

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
Interest income	$ 10,779	$ 2,800	$ 255
Interest expense	(53,957)	(64,683)	(35,019)
Other income, net	9,522	8,288	1,345
Total non-operating income and expense	$ (33,656)	$ (53,595)	$ (33,419)

Interest Income

Interest income increased in 2019 as compared to 2018 primarily due to the full-year impact of interest rate differential on cross-currency swaps designated as net investment hedges.

Interest income increased in 2018 as compared to 2017 primarily due to the interest rate differential on cross-currency swaps designated as net investment hedges. These cross-currency swaps were consummated during the fourth quarter of 2018.

Interest Expense

Interest expense was $54.0 million, $64.7 million and $35.0 million in 2019, 2018 and 2017, respectively. Interest expense decreased in 2019 as compared to 2018 primarily resulting from a decrease in our weighted average interest rate and a decrease in the outstanding balance of our Senior Credit Facility compared to the same period in 2018.

Interest expense increased in 2018 as compared to 2017 primarily resulting from an increase in our weighted average interest rate and the full-year impact of increased borrowings under our Senior Credit Facility to fund the acquisitions of Derma Sciences and Codman Neurosurgery in 2017.

As of December 31, 2019, 2018 and 2017, our weighted average interest rate was 3.2%, 3.9% and 3.6%, respectively

Our reported interest expense for 2019, 2018 and 2017 included $5.4 million, $6.3 million and $2.7 million, respectively, of amortization of debt issuance costs.

Other Income, Net

Other income, net increased in 2019 by $1.2 million as compared to 2018 primarily driven from a $3 million gain from a legal settlement.

Other income, net increased in 2018 by $6.9 million as compared to 2017 primarily due to the full-year impact of the interest rate differential on cross-currency swaps designated as cash flow hedges. These cross-currency swaps were consummated during the fourth quarter of 2017.

Income Taxes

Our effective income tax rate was 16.5%, (5.9)% and (468.7)% of income before income taxes in 2019, 2018 and 2017, respectively. See Note 12, “Income Taxes,” in our consolidated financial statements for a reconciliation of the United States federal statutory rate to our effective tax rate.

In 2019, the Company's higher worldwide effective tax rate, as compared to 2018, is primarily driven by the impact of the Rebound transaction, resulting in a $64.9 million non-deductible in–process research and development (IPR&D) expense, which had a $13.6 million tax effect on the U.S. federal rate.

In 2018, the Company's higher worldwide effective tax rate, as compared to 2017, was primarily attributable to a 2017 tax benefit of $43.4 million as a result of the re-measurement of deferred taxes using a reduced federal tax rate.

The 2017 Tax Act included numerous changes to existing U.S. tax laws that have and will continue to impact the Company. The most notable change was a reduction in the federal statutory tax rate from 35% to 21%. In 2017, the lower effective tax rate was primarily driven by a tax benefit of $43.4 million as a result of the re-measurement of deferred taxes using this reduced federal tax rate.

Our effective tax rate could vary from year to year depending on, among other factors, tax law changes, the geographic and business mix and taxable earnings and losses. We consider these factors and others, including our history of generating taxable earnings, in assessing our ability to realize deferred tax assets. We estimate our worldwide effective income tax rate for 2020 to be approximately 20.0%.

At December 31, 2019, the Company had $9.9 million of valuation allowance against the remaining $141.9 million of gross deferred tax assets recorded at December 31, 2019. Our deferred tax asset valuation allowance increased by $2.9 million in 2019 and decreased by $1.0 million in 2018. This valuation allowance relates to deferred tax assets for which the Company does not believe it has satisfied the more likely than not threshold for realization. The increase in valuation allowance in 2019 primarily resulted from certain assets from the Rebound and Arkis acquisitions. The decrease in valuation allowance in 2018 primarily resulted from the realization of certain deferred tax assets related to the acquisition of Derma Sciences and the impact of current year activity. If we determine that we would be able to realize more or less than the recorded amount of net deferred tax assets, we will record an adjustment to the deferred tax asset valuation allowance in the period such a determination is made.

At December 31, 2019, we had net operating loss carryforwards of $130.1 million for federal income tax purposes, $37.5 million for foreign income tax purposes and $42.8 million for state income tax purposes to offset future taxable income.The federal net operating loss carryforwards increased during 2019 from the acquisition of Arkis and Rebound, offset by usage of federal net operating losses during 2019. Of the total federal net operating loss carryforwards, $111.2 million expire through 2037 and $18.9 million have an indefinite carryforward period. Regarding the foreign net operating loss carryforwards, $1.3 million expire through 2024, $0.9 million expire through 2025, and the remaining $35.3 million have an indefinite carryforward period. The state net operating loss carryforwards expire through 2036.

The 2017 Tax Act imposed a one-time repatriation tax on accumulated foreign subsidiaries’ untaxed foreign earnings (“Toll Tax”). As of December 31, 2017, we recorded income tax expense of approximately $5.5 million as an estimate of the Toll Tax on certain foreign earnings. The calculation of the Toll Tax allows for the ability to offset positive foreign earnings with existing foreign deficits and use of foreign tax credits. We finalized our 2017 tax return filings and recorded a benefit of $1.0 million as an adjustment to the Toll Tax liability during 2018; resulting in a total Toll Tax liability of $4.5 million. The Company asserts that it has the ability and intent to indefinitely reinvest the undistributed earnings from its foreign operations unless there is a tax-free manner under which to remit the earnings.

As of December 31, 2019, the Company has not provided deferred income taxes on unrepatriated earnings from foreign subsidiaries as they are deemed to be indefinitely reinvested. Such taxes would primarily be attributable to foreign withholding taxes and local income taxes when such earnings are distributed. As such, the Company has determined the tax impact of repatriating these earnings would not be material as of December 31, 2019.

The 2017 Tax Act subjects the Company to GILTI tax on certain income earned by foreign subsidiaries. The Company can make an accounting policy election to either recognize deferred taxes related to GILTI or to provide for the tax expense related to GILTI in the year the tax is incurred as a period expense. The Company has elected to account for the GILTI tax in the year the tax is incurred.

GEOGRAPHIC PRODUCT REVENUES AND OPERATIONS

We attribute revenues to geographic areas based on the location of the customer. Total revenue by major geographic area consisted of the following:

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
United States	$ 1,077,379	$ 1,045,887	$ 894,260
Europe	197,468	201,354	150,147
Asia Pacific	157,391	144,253	80,636
Rest of World	85,319	80,947	63,193
Total Revenues	$ 1,517,557	$ 1,472,441	$ 1,188,236

We generate significant revenues outside the U.S., a portion of which are U.S. dollar-denominated transactions conducted with customers who generate revenue in currencies other than the U.S. dollar. As a result, currency fluctuations between the U.S. dollar and the currencies in which those customers do business could have an impact on the demand for our products in foreign countries. Local economic conditions, regulatory compliance or political considerations, the effectiveness of our sales representatives and distributors, local competition and changes in local medical practice all may combine to affect our sales into markets outside the U.S.

Domestic revenues increased to $1,077.4 million, or 71.0% of total revenues, for the year ended December 31, 2019, from $1,045.9 million, or 71.0% of total revenues. Growth in domestic revenues was driven by our dural repair, programmable valves, and our core tissue products. European sales decreased by $3.9 million for the year ended December 31, 2019 compared to the same period last year, resulting primarily from unfavorable impacts of foreign exchange partially offset by an increase in sales of our programmable valve and core tissue products. Sales to customers in Asia Pacific and the Rest of the World for the year ended December 31, 2019 increased by $17.5 million, primarily driven by increases in our dural repair products and CUSA® capital and related disposables partially offset by unfavorable impacts of foreign exchange.

In 2018, domestic revenues increased to $1,045.9 million or 71% of total revenues, for the year ended December 31, 2018, from $894.2 million, or 75% of total revenues. The increase was primarily driven by the full-year sales impact of the acquisitions of Codman Neurosurgery and Derma Sciences. In addition, growth in domestic revenues were driven by sales of our CUSA® capital and related disposables, core tissue products and private label products. European sales increased $51.2 million for the year ended December 31, 2018 compared to the prior year, resulting primarily from increase in sales in our Codman Specialty Surgical portfolio as well as regenerative technologies. Both areas included contributions from the Codman Neurosurgery and Derma Sciences acquisitions. Sales to customers in Asia Pacific and Rest of World increased by $81.4 million in December 31, 2018 as compared to the prior year, primarily driven by the Derma Sciences and Codman Neurosurgery acquisitions.

LIQUIDITY AND CAPITAL RESOURCES

Cash and Marketable Securities

We had cash and cash equivalents totaling $198.9 million and $138.8 million at December 31, 2019 and 2018, respectively.

At December 31, 2019, our non-U.S. subsidiaries held approximately $143.7 million of cash and cash equivalents that are available for use by all of our operations around the world. The Company asserts that it has the ability and intent to indefinitely reinvest the undistributed earnings from its foreign operations unless there is a tax-free manner under which to remit the earnings.

Cash Flows

	Year Ended December 31,		
	2019	2018	2017
	(In thousands)		
Net cash provided by operating activities	$ 231,433	$ 199,683	$ 114,544
Net cash used in investing activities	(162,668)	(49,705)	(1,221,335)
Net cash used (provided) by financing activities	(8,766)	(180,872)	1,168,947
Effect of exchange rate fluctuations on cash	74	(5,203)	10,724
Net increase (decrease) in cash and cash equivalents	$ 60,073	$ (36,097)	$ 72,880

Cash Flows Provided by Operating Activities

We generated operating cash flows of $231.4 million, $199.7 million and $114.5 million for years ended December 31, 2019, 2018 and 2017, respectively.

Operating cash flows in 2019 increased compared to the same period in 2018. Net income after non-cash adjustments increased by approximately $48.0 million compared to the same period in 2018. The changes in assets and liabilities, net of business acquisitions, decreased cash flows from operating activities by $14.5 million in the year ended December 31, 2019 compared to an increase of $1.7 million for the same period in 2018. The decrease in 2019 was primarily driven by increased investment in inventories related to new product launches and legal entity manufacturing changes associated with the Codman Neurosurgery acquisition integration. In addition, decreases were also driven by growth in accounts receivable in foreign jurisdictions which have longer payment terms on average than domestic receivables.

Operating cash flows in 2018 increased compared to the same period in 2017. Net income after non-cash adjustments increased by approximately $82.1 million compared to the same period in 2017. Net income after non-cash adjustments increased primarily due to the full-year operating impact of the Derma and Codman acquisitions consummated during 2017 and organic growth of the Company during 2018. Changes in working capital in 2018 increased cash flows by approximately $0.3 million. Among the changes in working capital, accounts receivable used $17.0 million of cash, inventory provided $8.3 million of cash, prepaid expenses and other current assets provided $3.9 million of cash, accounts payable, accrued expenses and other current liabilities provided $3.6 million of cash and deferred revenue provided $1.5 million of cash.

Operating cash flows in 2017 decreased compared to the same period in 2016. Net income after non-cash adjustments decreased by $11.8 million primarily due to costs and expenses associated with the Derma and Codman acquisitions. Changes in working capital in 2017 decreased cash flows by approximately $24.2 million. Among the changes in working capital, accounts receivable used $89.7 million of cash, inventory provided $0.1 million of cash, prepaid expenses and other current assets used $33.8 million of cash, and accounts payable, accrued expenses and other current liabilities provided $95.3 million of cash.

Cash Flows Used in Investing Activities

During the year ended December 31, 2019, we paid $69.5 million for capital expenditures, most of which were directed to our new Mansfield, Massachusetts facility, Princeton, New Jersey facility and commercial expansion. Further we paid $95.5 million for the Arkis and Rebound transactions, net of cash acquired.

During the year ended December 31, 2018, we paid $77.7 million for capital expenditures, most of which were directed to the expansion of our new Mansfield, Massachusetts facility and commercial expansion. We received $26.7 million from the Codman Neurosurgery acquisition for a working capital adjustment.

During the year ended December 31, 2017, we paid an aggregate of $1.2 billion for the acquisitions of Codman Neurosurgery and Derma Sciences. The payment for Derma Sciences included a $210.5 million payment of the purchase price plus a $26.6 million payment for the BioD Product Payment in May 2017 (see Note 4, *Acquisitions and Pro Forma Results*). We received $17.0 million from the sale of short-term investments acquired from Derma Sciences. We also received $46.4 million from the Divestiture to Natus in October 2017. We paid $43.5 million in cash for capital expenditures, most of which was directed towards the expansion of our manufacturing facilities and commercial expansion.

Cash Flows Provided by (Used in) Financing Activities

Our principal sources of cash from financing activities for the year ended December 31, 2019 were $236.9 million in borrowings under our Senior Credit Facility and Securitization Facility. These were offset by repayments of $246.1 million on borrowings under our Senior Credit Facility and Securitization Facility.

Our principal sources of cash from financing activities in the year ended December 31, 2018 were $349.6 from the issuance of common stock and $171.2 million in borrowings under our Senior Credit Facility and Securitization Facility. These were offset by repayments of $660.0 million on the revolving portion of our Senior Credit Facility, payments of $15.9 million for inventory that was included in the initial purchase accounting for Codman Neurosurgery and $22.3 million of payments relating to contingent consideration.

Our principal sources of cash from financing activities in the year ended December 31, 2017 were $700.0 million under the Term Loan component of our Senior Credit Facility, and $607.0 million of borrowings under the revolver component of our Senior Credit Facility offset by $117.0 million in repayments under our Senior Credit Facility, and $19.0 million in debt issuance costs related to our Senior Credit Facility.

Working Capital

At December 31, 2019 and December 31, 2018, working capital was $526.9 million and $512.5 million, respectively. Working capital consists of total current assets less total current liabilities as presented in the consolidated balance sheets.

Sixth Amended and Restated Senior Credit Agreement

On February 3, 2020, the Company entered into the sixth amendment and restatement (the "February 2020 Amendment") of its credit agreement with a syndicate of lending banks. The sixth amended and restated credit agreement makes an aggregate principal amount of up to approximately $2.2 billion available to the Company through the following facilities: (i) a $877.5 million term loan facility (decreased from $900 million), and (ii) a $1.3 billion revolving credit facility, which includes a $60 million sublimit for the issuance of standby letters of credit and a $60 million sublimit for swingline loans. The sixth amendment and restatement extends the credit facility's maturity date from May 3, 2023 to February 3, 2025. The first mandatory repayment under the term loan portion of the sixth amended and restated credit agreement is due June 30, 2021. In connection with the February 2020 Amendment, the Company's maximum consolidated total leverage ratio in the financial covenants was modified to the following:

Fiscal Quarter	Maximum Consolidated Total Leverage Ratio
First fiscal quarter ending after the Closing Date through June 30, 2022	5.00 to 1.00
September 30, 2022 through June 30, 2023	4.50 to 1.00
September 30, 2023 and the last day of each fiscal quarter thereafter	4.00 to 1.00

Fifth Amended and Restated Senior Credit Agreement

On May 3, 2018, the Company entered into the fifth amendment and restatement (the "May 2018 Amendment") of its Senior Credit Facility (the "Senior Credit Facility") with a syndicate of lending banks with Bank of America, N.A., as Administrative Agent. Refer to Note 5, *Debt* for further information on the terms of the Senior Credit Facility.

We plan to utilize the Senior Credit Facility for working capital, capital expenditures, acquisitions, debt repayments and other general corporate purposes. At December 31, 2019 and 2018, there was $375.0 million and $345.0 million outstanding, respectively, under the revolving portion of the Senior Credit Facility at a weighted average interest rate of 3.2% and 4.0%, respectively. At December 31, 2019 and 2018, there was $877.5 million and $900.0 million outstanding under the Term Loan component of the Senior Credit Facility at a weighted average interest rate of 3.2% and 3.9%, respectively.

The Senior Credit Facility is collateralized by substantially all of the assets of the Company's U.S. subsidiaries, excluding intangible assets. The Senior Credit Facility is subject to various financial and negative covenants and at December 31, 2019 the Company was in compliance with all such covenants. The Company capitalized $4.2 million and $19.1 million of incremental financing costs in 2018 and 2017, respectively, in connection with modifications of the Senior Credit Facility.

Upcoming Debt Maturities

The Company has classified $45.0 million as a current liability based on the terms of the May 2018 Amendment in the Company's consolidated balance sheet to reflect payments due within a year.

Securitization Facility

During the fourth quarter of 2018, the Company entered into an accounts receivable Securitization Facility under which accounts receivable of certain domestic subsidiaries are sold on a non-recourse basis to a special purpose entity ("SPE"), which is a bankruptcy-remote, consolidated subsidiary of the Company. Accordingly, the assets of the SPE are not available to satisfy the obligations of the Company or any of its subsidiaries. From time to time, the SPE may finance such accounts receivable with a revolving loan facility secured by a pledge of such accounts receivable. The amount of outstanding borrowings on the revolving loan facility at any one time is limited to $150.0 million. The Securitization Facility agreement is for an initial three-year term and may be extended. The agreement governing the Securitization Facility contains certain covenants and termination events. An occurrence of an event of default or a termination event under this facility may give rise to the right of its counterparty to terminate this facility. As of December 31, 2019, the Company was in compliance with the covenants and none of the termination events had occurred. As of December 31, 2019 and 2018, the Company had $104.5 million and $121.2 million of outstanding borrowings under its Securitization Facility, respectively.

The fair value of outstanding borrowings of the Senior Credit Facility's revolving credit facility and Term Loan component at December 31, 2019 were approximately $381.1 million and $889.9 million, respectively. The fair value of the outstanding borrowing of the Securitization Facility at December 31, 2019 was approximately $105.8 million. These fair values were determined by using a discounted cash flow model based on current market interest rates available to the Company. These inputs are corroborated by observable market data for similar liabilities and therefore classified within Level 2 of the fair value hierarchy. Level 2 inputs represent inputs that are observable for the asset or liability, either directly or indirectly and are other than active market observable inputs that reflect unadjusted quoted prices for identical assets or liabilities.

Letters of credit outstanding as of December 31, 2019 and 2018 totaled $0.8 million and $0.6 million, respectively. There were no amounts drawn as of December 31, 2019.

Share Repurchase Plan

On December 11, 2018, the Board of Directors authorized the Company to repurchase up to $225 million of the Company's common stock. The program allows the Company to repurchase its shares opportunistically from time to time. The repurchase authorization expires in December 2020. Purchases may be affected through one or more open market transactions, privately negotiated transactions, transactions structured through investment banking institutions, or a combination of the foregoing. This stock repurchase authorization replaces the previous $150 million stock repurchase authorization which was approved by the Board in 2016.

The Company has not repurchased any shares of common stock under these authorizations through the year ended December 31, 2019.

On February 4, 2020, the Company offered and sold in a private placement $575.0 million of 0.5% convertible notes due in 2025. The Company intended to use $100.0 million of the net proceeds from the offering to repurchase shares of the Company's stock. This included up to approximately $7.6 million from certain purchasers of the convertible notes in conjunction with the closing of the offering. Additionally, the Company intends to use $92.4 million of the proceeds will be used to repurchase shares through an accelerated share repurchase transaction ("ASR"). Total shares repurchased through February 21, 2020 were 1,438,615.

Dividend Policy

We have not paid any cash dividends on our common stock since our formation. Our Senior Credit Facility limits the amount of dividends that we may pay. Any future determinations to pay cash dividends on our common stock will be at the discretion of our Board of Directors and will depend upon our financial condition, results of operations, cash flows and other factors deemed relevant by the Board of Directors.

Contractual Obligations and Commitments

As of December 31, 2019, we were obligated to pay the following amounts under the following agreements:

		Payments Due by Calendar Year			
	Total	2020	2021-2022	2023-2024	Thereafter
		(In millions)			
Senior Credit Facility - Revolver (1)	$ 375.0	$ —	$ —	$ 375.0	$ —
Senior Credit Facility - Term Loan	877.5	45.0	123.8	708.8	—
Interest on Term loan (2)	$ 83.2	27.0	48.7	7.5	
Securitization Facility (1)	104.5	—	104.5	—	—
Operating Leases (3)	155.4	12.4	27.3	23.0	92.7
Purchase Obligations	10.7	10.7	—	—	—
Others	5.7	2.1	0.7	1.7	1.1
Total	$ 1,612.0	$ 97.2	$ 305.0	$ 1,116.0	$ 93.8

(1) Under the May 2018 Amendment, the Company may borrow and make payments against the revolving credit portion of its Senior Credit Facility and Securitization Facility from time to time and considers all of the outstanding amounts to be long term based on its current intent and ability to repay the borrowing outside of the next twelve-month period.

(2) Interest is calculated on the term loan portion of the Senior Credit Facility based on current interest rates paid by the Company. [As the revolving credit facility and Securitization Facility can be repaid at any time, no interest has been included in the calculation.]

(3) During 2018, the Company entered into an operating lease with a term of 18 years for a new corporate headquarters in Princeton, NJ which commenced during the second quarter of 2019. The Company recorded a ROU asset and lease liability of $35.6 million. The gross payments over the lease term of approximately $67.0 million are included in the table above.

The Company has excluded its contingent consideration obligation related to a prior and current year acquisitions from the contractual obligations table above; this liability had a total estimated fair value of $14.5 million at December 31, 2019. This liability has been excluded because the amount to be paid and the potential payment date is not fixed.

The Company has excluded its option to acquire Integrated Shoulder Collaboration Inc., which becomes mandatory upon achievement of a certain sales threshold, for an amount not to exceed $80.0 million. This liability has been excluded because the amount to be paid and the potential payment date is not fixed.

The Company has excluded its future pension contribution obligations from the table above. This has been excluded because the future amounts to be paid and the potential payment dates are not fixed.

Excluded from the contractual obligations table is the liability for uncertain tax benefits, including interest and penalties, totaling $0.8 million.

Off-Balance Sheet Arrangements

There were no off-balance sheet arrangements during the year ended December 31, 2019 that have or are reasonably likely to have, a current or future effect on our financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that is material to our interests.

CRITICAL ACCOUNTING POLICIES AND THE USE OF ESTIMATES

Our discussion and analysis of financial condition and results of operations is based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States of America. The preparation of these financial statements requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent liabilities, and the reported amounts of revenues and expenses. Significant estimates affecting amounts reported or disclosed in the consolidated financial statements include allowances for doubtful accounts receivable and sales returns and allowances, net realizable value of inventories, valuation of intangible assets including in-process research and development, amortization periods for acquired intangible assets, estimates of projected cash flows and discount rates used to value intangible assets and test goodwill and intangible assets for impairment, estimates of projected cash flows and depreciation and amortization periods for long-lived assets, computation of taxes, computation of valuation allowances recorded against deferred tax assets, valuation of stock-based compensation, valuation of pension assets and liabilities, valuation of derivative instruments, valuation of the equity component of convertible debt instruments, valuation of debt instruments and loss contingencies. These estimates are based on historical experience and on various other assumptions that are believed to be reasonable under the current circumstances. Actual results could differ from these estimates.

We believe that the following accounting policies, which form the basis for developing these estimates, are those that are most critical to the presentation of our consolidated financial statements and require the more difficult subjective and complex judgments:

Allowances for Doubtful Accounts Receivable and Sales Returns and Allowances

We evaluate the collectability of accounts receivable based on a combination of factors. In circumstances where a specific customer is unable to meet its financial obligations to us, we record an allowance against amounts due to reduce the net recognized receivable to the amount that we reasonably expect to collect. For all other customers, we record allowances for doubtful accounts based on the length of time the receivables are past due, the current business environment and our historical experience. If the financial condition of customers or the length of time that receivables are past due were to change, we may change the recorded amount of allowances for doubtful accounts in the future through charges or reductions to selling, general and administrative expense.

We record a provision for estimated sales returns and allowances on revenues in the same period as the related revenues are recorded. We base these estimates on historical sales returns and allowances and other known factors. If actual returns or allowances differ from our estimates and the related provisions for sales returns and allowances, we may change the provision in the future through an increase or decrease in revenues.

Inventories

Inventories, consisting of purchased materials, direct labor and manufacturing overhead, are stated at the lower of cost (determined by the first-in, first-out method) or net realizable value. At each balance sheet date, we evaluate ending inventories for excess quantities, obsolescence or shelf-life expiration. Our evaluation includes an analysis of historical sales levels by product, projections of future demand by product, the risk of technological or competitive obsolescence for our products, general market conditions, a review of the shelf-life expiration dates for our products, and the feasibility of reworking or using excess or obsolete products or components in the production or assembly of other products that are not obsolete or for which we do not have excess quantities in inventory. To the extent that we determine there are excess or obsolete quantities or quantities with a shelf life that is too near its expiration for us to reasonably expect that we can sell those products prior to their expiration, we adjust their carrying value to estimated net realizable value. If future demand or market conditions are lower than our projections, or if we are unable to rework excess or obsolete quantities into other products, we may record further adjustments to the carrying value of inventory through a charge to cost of product revenues in the period the revision is made.

Acquisitions

Results of operations of acquired companies are included in the Company’s results of operations as of the respective acquisition dates. Net assets acquired are recorded at fair value at the date of the acquisition. Any purchase price in excess of these net assets is recorded as goodwill. The fair values of net assets acquired may be subject to revision based on the final determination of fair values during the measurement period, which may be up to one year from the acquisition date.

Contingent consideration is recognized at the estimated fair value on the acquisition date for a business combination and recorded when probable for an asset acquisition. Subsequent changes to the fair value of contingent payments are recognized in earnings. Contingent payments related to acquisitions consist of development, regulatory, and commercial milestone payments, in addition to sales-based payments, and are valued using discounted cash flow techniques. The fair value of development, regulatory, and commercial milestone payments reflects management's expectations of the probability of payment and increases or decreases as the probability of payment or expectation of timing of payments changes. The fair value of sales-based payments is based upon probability-weighted future revenue estimates and increases or decreases as revenue estimates or expectation of timing of payments changes.

Valuation of Goodwill

The excess of the cost over the fair value of net assets of acquired businesses is recorded as goodwill. Goodwill is not subject to amortization, but is reviewed for impairment at the reporting unit level annually, or more frequently if impairment indicators arise. Our assessment of the recoverability of goodwill is based upon a comparison of the carrying value of goodwill with its estimated fair value. We review goodwill for impairment annually as of July 31 and whenever events or changes in circumstances indicate the carrying value of goodwill may not be recoverable. Refer to Note 7 - *Goodwill and Other Intangible Assets* for more information on reportable segments.

Valuation of Identifiable Intangible Assets

Other intangible assets include patents, trademarks, purchased technology, and supplier and customer relationships. Identifiable intangible assets are initially recorded at fair market value at the time of acquisition generally using an income or cost approach. The Company capitalizes costs incurred to renew or extend the term of recognized intangible assets and amortizes those costs over their expected useful lives.

Derivatives

We develop, manufacture, and sell medical devices globally. Our earnings and cash flows are exposed to market risk from changes in interest rates and currency exchange rates. We address these risks through a risk management program that includes the use of derivative financial instruments and operate the program pursuant to documented corporate risk management policies. All derivative financial instruments are recognized in the financial statements at fair value in accordance with the authoritative guidance. Under the guidance, for those instruments that are designated and qualify as hedging instruments, the hedging instrument must be designated as a fair value hedge, cash flow hedge, or a hedge of a net investment in a foreign operation, based on the exposure being hedged. The accounting for changes in the fair value of a derivative instrument depends on whether it has been designated and qualifies as part of a hedging relationship and, further, on the type of hedging relationship. Our derivative instruments do not subject our earnings or cash flows to material risk, and gains and losses on these derivatives generally offset losses and gains on the item being hedged. We have not entered into derivative transactions for speculative purposes and from time to time, we may enter into derivatives that are not designated as hedging instruments in order to protect the Company from currency volatility due to intercompany balances.

All derivative instruments are recognized at their fair values as either assets or liabilities on the balance sheet. We determine the fair value of our derivative instruments, using the framework prescribed by the authoritative guidance, by considering the estimated amount we would receive to sell or transfer these instruments at the reporting date and by taking into account expected forward interest rates, currency exchange rates, the creditworthiness of the counterparty for assets, and our creditworthiness for liabilities. In certain instances, we may utilize a discounted cash flow model to measure fair value. Generally, we use inputs that include quoted prices for similar assets or liabilities in active markets, other observable inputs for the asset or liability, and inputs that are derived principally from, or corroborated by, observable market data by correlation or other means.

Income Taxes

Since we conduct operations on a global basis, our effective tax rate has and will depend upon the geographic distribution of our pre-tax earnings among locations with varying tax rates. Changes in the tax rates of the various jurisdictions in which we operate affect our profits. In addition, we maintain a reserve for uncertain tax benefits, changes to which could impact our effective tax rate in the period such changes are made. The effective tax rate can also be impacted by changes in valuation allowances of deferred tax assets, and tax law changes.

Our provision for income taxes may change period-to-period based on specific events, such as the settlement of income tax audits and changes in tax laws, as well as general factors, including the geographic mix of income before taxes, state and local taxes and the effects of the Company's global income tax strategies. We maintain strategic management and operational activities in overseas subsidiaries. See Note 12, *Income Taxes*, in our consolidated financial statements for disclosures related to foreign and domestic pretax income, foreign and domestic income tax expense (benefit) and the effect foreign taxes have on our overall effective tax rate.

We recognize a tax benefit from an uncertain tax position only if it is more likely than not to be sustained upon examination based on the technical merits of the position. The amount of the accrual for which an exposure exists is measured by determining the

amount that has a greater than 50 percent likelihood of being realized upon ultimate settlement of the position. Components of the reserve are classified as a long-term liability in the consolidated balance sheets. We record interest and penalties accrued in relation to uncertain tax benefits as a component of income tax expense.

We believe that we have identified all reasonably identifiable exposures and that the reserve we have established for identifiable exposures is appropriate under the circumstances; however, it is possible that additional exposures exist and that exposures will be settled at amounts different from the amounts reserved. It is also possible that changes in facts and circumstances could cause us to either materially increase or reduce the carrying amount of our tax reserves.

Our deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and their basis for income tax purposes, and the temporary differences created by the tax effects of capital loss, net operating loss and tax credit carryforwards. We record valuation allowances to reduce deferred tax assets to the amounts that are more likely than not to be realized. We could recognize no benefit from our deferred tax assets or we could recognize some or all of the future benefit depending on the amount and timing of taxable income we generate in the future.

We intend to indefinitely reinvest substantially all of our foreign earnings in our foreign subsidiaries unless there is a tax–free manner under which to remit the earnings. The current analysis indicates that we have sufficient U.S. liquidity, including borrowing capacity, to fund foreseeable U.S. cash needs without requiring the repatriation of foreign cash. The 2017 Tax Act imposed a Toll Tax on a deemed repatriation of undistributed earnings of foreign subsidiaries. One time or unusual items that may impact our ability or intent to keep the foreign earnings and cash indefinitely reinvested include significant U.S. acquisitions, loans from a foreign subsidiary, and changes in tax laws.

As of December 31, 2019, the Company has not provided deferred income taxes on unrepatriated earnings from foreign subsidiaries as they are deemed to be indefinitely reinvested. Such taxes would primarily be attributable to foreign withholding taxes and local income taxes when such earnings are distributed. As such, the Company has determined the tax impact of repatriating these earnings would not be material as of December 31, 2019.

Loss Contingencies

We are subject to claims and lawsuits in the ordinary course of our business, including claims by employees or former employees, with respect to our products and involving commercial disputes. We accrue for loss contingencies when it is deemed probable that a loss has been incurred and that loss is estimable. The amounts accrued are based on the full amount of the estimated loss before considering insurance proceeds, if applicable, and do not include an estimate for legal fees expected to be incurred in connection with the loss contingency. We consistently accrue legal fees expected to be incurred in connection with loss contingencies as those fees are incurred by outside counsel as a period cost. Our financial statements do not reflect any material amounts related to possible unfavorable outcomes of claims and lawsuits to which we are currently a party because we currently believe that such claims and lawsuits are not expected, individually or in the aggregate, to result in a material, adverse effect on our financial condition. However, it is possible that these contingencies could materially affect our results of operations, financial position and cash flows in a particular period if we change our assessment of the likely outcome of these matters.

Pension Benefits

The Company maintains defined benefit pension plans that cover certain employees in Austria, France, Japan, Germany and Switzerland. Various factors are considered in determining the pension liability, including the number of employees expected to be paid their salary levels and years of service, the expected return on plan assets, the discount rate used to determine the benefit obligations, the timing of benefit payments and other actuarial assumptions. If the actual results and events for the pension plans differ from current assumptions, the benefit obligation may be over or under valued. We recognize the underfunded status of the defined benefit pension plans as an asset or a liability in the balance sheet, with changes in the funded status recorded through other comprehensive income in the year in which those changes occur.

The Company’s discount rates are determined by considering current yield curves representing high quality, long-term fixed income instruments. The resulting discount rates are consistent with the duration of plan liabilities. In 2019, the discount rate was prescribed as the current yield on corporate bonds with an average rating of AA or AAA of equivalent currency and term to the liabilities.

The expected return on plan assets represents the average rate of return expected to be earned on plan assets over the period the benefits included in the benefit obligation are to be paid. In developing the expected rate of return, the Company considers returns of historical market data as well as actual returns on the plan assets. Using this reference information, the long-term return expectations for each asset category are developed according to the allocation among those investment categories.

The net plan assets of the pension plans are invested in common trusts as of December 31, 2019. Common trusts are classified as Level 2 in fair value hierarchy. The fair value of common trusts are valued at net asset value based on the fair values of the underlying investments of the trusts as determined by the sponsor of the trusts.

The following weighted average assumptions were used to develop net periodic pension benefit cost and the actuarial present value of projected pension benefit obligations for the year ended December 31, 2019 and 2018, respectively:

	As of December 31,	
	2019	2018
Discount rate	0.40%	1.00%
Expected return on plan assets	3.33%	3.40%
Rate of compensation increase	2.25%	1.70%

A change of plus (minus) 25 basis points on expected rate of return on plan assets, with other assumptions held constant, would have an estimated $0.1 million favorable (unfavorable) impact on pension plan costs. As of December 31, 2019, contributions expected to be paid to the plan in 2020 are $2.1 million.

We use the corridor approach in the valuation of defined benefit pension benefit plans. The corridor approach defers all actuarial gains and losses resulting from variances between actual results and actuarial assumptions. Those unrecognized gains and losses are amortized when the net gains and losses exceed 10% of the greater of the market-related value of plan assets or the projected benefit obligation at the beginning of the year. The amount in excess of the corridor is amortized over the average remaining service period to retirement date of active plan participants.

Stock-based Compensation

We apply the authoritative guidance for stock-based compensation. This guidance requires companies to recognize the expense related to the fair value of their stock-based compensation awards. Stock-based compensation expense for stock option awards is based on the grant date fair value on using the binomial distribution model. The Company recognizes compensation expense for stock option awards, restricted stock awards, performance stock awards and contract stock awards on a ratable basis over the requisite service period of the award. All excess tax benefits and taxes and tax deficiencies from stock-based compensation are included in the provision for income taxes in the consolidated statement of operations.

Recently Issued and Adopted Accounting Standards

Refer to Note 2, *Summary of Significant Accounting Policies*, to the consolidated financial statements for recently adopted accounting pronouncements.

ITEM 7A. *QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK*

We are exposed to various market risks, including changes in foreign currency exchange rates and interest rates that could adversely affect our results of operations and financial condition. To manage the volatility relating to these typical business exposures, we may enter into various derivative transactions when appropriate. We do not hold or issue derivative instruments for trading or other speculative purposes.

Foreign Currency Exchange and Other Rate Risks

We operate on a global basis and are exposed to the risk that changes in foreign currency exchange rates could adversely affect our financial condition, results of operations and cash flows. We are primarily exposed to foreign currency exchange rate risk with respect to transactions and net assets denominated in Euros ("EUR"), British pounds ("GBP"), Swiss francs ("CHF"), Canadian dollars, Japanese yen, Mexican pesos, Brazilian reais, Australian dollars and Chinese yuan. We manage the foreign currency exposure centrally, on a combined basis, which allows us to net exposures and to take advantage of any natural offsets. To mitigate the impact of currency fluctuations on transactions denominated in nonfunctional currencies, we periodically enter into derivative financial instruments in the form of foreign currency exchange forward contracts with major financial institutions. We temporarily record realized and unrealized gains and losses on these contracts that qualify as cash flow hedges in other comprehensive income, and then recognize them in other income or expense when the hedged item affects net earnings.

From time to time, we enter into foreign currency forward exchange contracts to manage currency exposures for transactions denominated in a currency other than an entity’s functional currency. As a result, the impact of foreign currency gains/losses recognized in earnings are partially offset by gains/losses on the related foreign currency forward exchange contracts in the same reporting period. Refer to Note 6, *Derivative Instruments* for further information.

We maintain written policies and procedures governing our risk management activities. With respect to derivatives, changes in hedged items are generally expected to be completely offset by changes in the fair value of hedge instruments. Consequently, foreign currency exchange contracts would not subject us to material risk due to exchange rate movements, because gains and losses on these contracts offset gains and losses on the assets, liabilities or transactions being hedged.

The results of operations discussed herein have not been materially affected by inflation.

Interest Rate Risk

Cash and Cash Equivalents - We are exposed to the risk of interest rate fluctuations on the interest income earned on our cash and cash equivalents. A hypothetical 100 basis points movement in interest rates applicable to our cash and cash equivalents outstanding at December 31, 2019 would increase interest income by approximately $2.0 million on an annual basis. No significant decrease in interest income would be expected as our cash balances are earning interest at rates of approximately 2 basis points. We are subject to foreign currency exchange risk with respect to cash balances maintained in foreign currencies.

Debt - Our interest rate risk relates primarily to U.S. dollar LIBOR-indexed borrowings. We use interest rate swap derivative instruments to manage our earnings and cash flow exposure to changes in interest rates. These interest rate swaps fix the interest rate on a portion of our expected LIBOR-indexed floating-rate borrowings. The Company held the following interest rate swaps as of December 31, 2019 (dollar amounts in thousands):

Hedged Item	Current Notional Amount	Designation Date	Effective Date	Termination Date	Fixed Interest Rate	Estimated Fair Value
						Assets (Liabilities)
3-month USD LIBOR	50,000	February 6, 2017	June 30, 2017	June 30, 2020	1.834%	(2)
1-month USD LIBOR	100,000	February 6, 2017	June 30, 2017	June 30, 2020	1.652%	12
1-month USD LIBOR	100,000	March 27, 2017	December 31, 2017	June 30, 2021	1.971%	(581)
1-month USD LIBOR	150,000	December 13, 2017	January 1, 2018	December 31, 2022	2.201%	(2,880)
1-month USD LIBOR	150,000	December 13, 2017	January 1, 2018	December 31, 2022	2.201%	(2,880)
1-month USD LIBOR	100,000	December 13, 2017	July 1, 2019	June 30, 2024	2.423%	(3,517)
1-month USD LIBOR	50,000	December 13, 2017	July 1, 2019	June 30, 2024	2.423%	(1,778)
1-month USD LIBOR	200,000	December 13, 2017	January 1, 2018	December 31, 2024	2.313%	(6,595)
1-month USD LIBOR	75,000	October 10, 2018	July 1, 2020	June 30, 2025	3.220%	(5,750)
1-month USD LIBOR	75,000	October 10, 2018	July 1, 2020	June 30, 2025	3.199%	(5,747)
1-month USD LIBOR	75,000	October 10, 2018	July 1, 2020	June 30, 2025	3.209%	(5,807)
1-month USD LIBOR	100,000	December 18, 2018	December 30, 2022	December 31, 2027	2.885%	(4,930)
1-month USD LIBOR	100,000	December 18, 2018	December 30, 2022	December 31, 2027	2.867%	(4,691)
Total interest rate derivatives designated as cash flow hedge	$ 1,325,000					(45,145)

These interest rate swaps were designated as cash flow hedges as of December 31, 2019. The total notional amount of interest rate swaps in effect as of December 31, 2019 was $900 million. Based on our outstanding borrowings at December 31, 2019, a 100 basis points change in interest rates would have impacted interest expense on the unhedged portion of the debt by $4.6 million on an annualized basis.

ITEM 8. *FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA*

Financial statements and the financial statement schedule specified by this Item, together with the report thereon of PricewaterhouseCoopers LLP, are presented following Item 15 of this report.

Information on quarterly results of operations is set forth in our financial statements under Note 18, “Selected Quarterly Information — Unaudited,” to our consolidated financial statements.

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

Not applicable.

ITEM 9A. *CONTROLS AND PROCEDURES*

Evaluation of Disclosure Controls and Procedures

We maintain disclosure controls and procedures that are designed to provide reasonable assurance that information required to be disclosed in our Exchange Act reports is recorded, processed, summarized and reported within the time periods specified in the Securities and Exchange Commission's rules and forms and that such information is accumulated and communicated to our management, including our principal executive officer and principal financial officer, as appropriate, to allow for timely decisions regarding required disclosure. Disclosure controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving the desired control objectives, and management is required to apply its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Management has designed our disclosure controls and procedures to provide reasonable assurance of achieving the desired control objectives.

As required by Exchange Act Rule 13a-15(b), we have carried out an evaluation, under the supervision and with the participation of our management, including our principal executive officer and principal financial officer, of the effectiveness of the design and operation of our disclosure controls and procedures as of December 31, 2019. Based upon this evaluation, our principal executive officer and principal financial officer concluded that our disclosure controls and procedures were effective as of December 31, 2019 to provide such reasonable assurance.

Management's Report on Internal Control Over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting as defined in Rules 13a-15(f) under the Securities Exchange Act of 1934, as amended. 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 generally accepted accounting principles in the United States of America ("GAAP"). We recognize that 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 and procedures may deteriorate.

To evaluate the effectiveness of our internal control over financial reporting, management used the criteria described in *Internal Control — Integrated Framework* (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission ("COSO"). Based upon this evaluation, management concluded that our internal control over financial reporting was effective as of December 31, 2019.

The effectiveness of the Company's internal control over financial reporting as of 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 Rule 13a-15(f) under the Exchange Act) that occurred during the quarter ended December 31, 2019 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

ITEM 9B. *OTHER INFORMATION*

Not applicable.

PART III

INCORPORATION BY REFERENCE

The information called for by Item 5. Market for Registrant's Common Equity, Related Stockholder Matters and Issuer Purchases of Equity Securities relating to equity compensation plans, Item 10. Directors, Executive Officers and Corporate Governance, Item 11. Executive Compensation, Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters, Item 13. Certain Relationships and Related Transactions, and Director Independence and Item 14. Principal Accountant Fees and Services is incorporated herein by reference to the Company's definitive proxy statement for its Annual Meeting of Stockholders scheduled to be held on May 13, 2020, which definitive proxy statement is expected to be filed with the Commission not later than 120 days after the end of the fiscal year to which this report relates.

PART IV

ITEM 15. ***EXHIBITS AND FINANCIAL STATEMENT SCHEDULE***

(a) Documents filed as a part of this report.

1. ***Financial Statements.***

The following financial statements and financial statement schedules are filed as a part of this report:

2. Financial Statement Schedule

All other schedules not listed above have been omitted, because they are not applicable or are not required, or because the required information is included in the consolidated financial statements or notes thereto.

3. ***Exhibits required to be filed by Item 601 of Regulation S-K.***

2.1	Stock Purchase Agreement, dated as of October 25, 2013, by and between Covidien Group S.A.R.L. and Integra LifeSciences Corporation (Incorporated by Reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on January 15, 2014)
2.2	Stock and Asset Purchase Agreement by and among Medtronic, Inc., Medtronic Xomed Instrumentation, SAS, and Integra LifeSciences Corporation, dated as of September 12, 2014 (Incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed on October 27, 2014)
2.3	Separation and Distribution Agreement between Integra LifeSciences Holdings Corporation and SeaSpine Holdings Corporation, dated as of June 30, 2015 (Incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed on July 7, 2015)
2.4	Agreement and Plan of Merger by and among Integra LifeSciences Corporation, Patriot S1, Inc., TEI Biosciences Inc. and Dr. Yiannis Monovoukas, dated as of June 26, 2015 (Incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed on July 20, 2015)
2.5	Agreement and Plan of Merger by and among Integra LifeSciences Corporation, Patriot S2, Inc., TEI Medical Inc. and Dr. Yiannis Monovoukas, dated as of June 26, 2015 (Incorporated by reference to Exhibit 2.2 to the Company's Current Report on Form 8-K filed on July 20, 2015)
2.6	Agreement and Plan of Merger by and among Integra LifeSciences Holdings Corporation, Integra Derma, Inc., and Derma Sciences, Inc. dated as of January 10, 2017 (Incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed on January 11, 2017)
2.7	Binding Offer Letter by and among Integra LifeSciences Holdings Corporation and DePuy Synthes, Inc., dated as of February 14, 2017 (Incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed on February 15, 2017

2.8(a)	Asset Purchase Agreement accepted and countersigned by DePuy Synthes, dated May 11, 2017 (Incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K filed on May 15, 2017)
2.8(b)	Asset Purchase Agreement, dated September 8, 2017, between the Company and certain of its subsidiaries and Natus Medical Incorporated (Incorporated by reference to Exhibit 2.1 to the Company's Quarterly Report on Form 10-Q filed on October 26, 2017)
3.1(a)	Amended and Restated Certificate of Incorporation of the Company dated February 16, 1993 (Incorporated by reference to Exhibit 3.1(a) to the Company's Annual Report on Form 10-K for the year ended December 31, 2005)
3.1(b)	Certificate of Amendment to Amended and Restated Certificate of Incorporation of the Company dated May 22, 1998 (Incorporated by reference to Exhibit 3.1(b) to the Company's Annual Report on Form 10-K for the year ended December 31, 1998)
3.1(c)	Certificate of Amendment to Amended and Restated Certificate of Incorporation of the Company dated May 17, 1999 (Incorporated by reference to Exhibit 3.1(c) to the Company's Annual Report on Form 10-K for the year ended December 31, 2004)
3.1(d)	Certificate of Amendment to Amended and Restated Certificate of Incorporation of the Company dated December 21, 2016 (Incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K filed on December 22, 2016)
3.2(a)	Amended and Restated Bylaws of the Company, effective as of May 17, 2012 (Incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-K filed on April 13, 2012)
3.2(b)	Second Amended and Restated Bylaws of Integra LifeSciences Holdings Corporation, effective as of December 11, 2018 (Incorporated by reference to Exhibit 3.2 to the Company's Current Report on Form 8-k filed on December 12, 2018)
4.1	Purchase Agreement, dated June 9, 2011, by and between Integra LifeSciences Holdings Corporation and J.P. Morgan Securities LLC, Merrill Lynch, Pierce, Fenner & Smith Incorporated, Morgan Stanley & Co. LLC, Deutsche Bank Securities Inc., RBC Capital Markets, LLC and Wells Fargo Securities, LLC (Incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on June 15, 2011)
4.2	Indenture, dated June 15, 2011, by and between Integra LifeSciences Holdings Corporation and Wells Fargo Bank, National Association, as trustee (Incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on June 15, 2011)
4.3	Security Agreement, dated as of December 22, 2005, among Integra LifeSciences Holdings Corporation and the additional grantors party thereto in favor of Bank of America, N.A., as administrative and collateral agent (Incorporated by reference to Exhibit 4.4 to the Company's Annual Report on Form 10-K for the year ended December 31, 2005)
4.4	Pledge Agreement, dated as of December 22, 2005, among Integra LifeSciences Holdings Corporation and the additional grantors party thereto in favor of Bank of America, N.A., as administrative and collateral agent (Incorporated by reference to Exhibit 4.5 to the Company's Annual Report on Form 10-K for the year ended December 31, 2005)
4.5	Subsidiary Guaranty Agreement, dated as of December 22, 2005, among the guarantors party thereto and individually as a "Guarantor"), in favor of Bank of America, N.A., as administrative and collateral agent (Incorporated by reference to Exhibit 4.6 to the Company's Annual Report on Form 10-K for the year ended December 31, 2005)
4.6	Indenture, dated June 11, 2007, among Integra LifeSciences Holdings Corporation, Integra LifeSciences Corporation and Wells Fargo Bank, N.A., as trustee (Incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on June 12, 2007)
4.7	Form of 2.75% Senior Convertible Note due 2010 (included in Exhibit 4.8) (Incorporated by reference to Exhibit B to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on June 12, 2007)
4.8	Indenture, dated June 11, 2007, among Integra LifeSciences Holdings Corporation, Integra LifeSciences Corporation and Wells Fargo Bank, N.A., as trustee (Incorporated by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K filed on June 12, 2007)
4.9	Form of 2.375% Senior Convertible Note due 2012 (included in Exhibit 4.10) (Incorporated by reference to Exhibit B to Exhibit 4.3 to the Company's Current Report on Form 8-K filed on June 12, 2007)

4.10(a)	Registration Rights Agreement, dated June 11, 2007, among Integra LifeSciences Holdings Corporation, Banc of America Securities LLC, J.P. Morgan Securities Inc. and Morgan Stanley & Co., Incorporated, as representatives of the several initial purchasers (Incorporated by reference to Exhibit 4.5 to the Company's Current Report on Form 8-K filed on June 12, 2007)
4.10(b)	Registration Rights Agreement, dated June 11, 2007, among Integra LifeSciences Holdings Corporation, Banc of America Securities LLC, J.P. Morgan Securities Inc. and Morgan Stanley & Co., Incorporated, as representatives of the several initial purchasers (Incorporated by reference to Exhibit 4.6 to the Company's Current Report on Form 8-K filed on June 12, 2007)
4.11	Integra LifeSciences Deferred Compensation Plan, effective as of May 16, 2019 (Incorporated by reference to Exhibit 4.13 to the Company's Current Form S-8 Registration Statement filed on May 23, 2019)
4.12	Indenture, dated as of February 7, 2020, by and between Integra LifeSciences Holdings Corporation and Citibank, N.A., as trustee. (Incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on February 7, 2020)
4.13	Description of Securities+
10.1(a)	Lease Modification #2 entered into as of October 28, 2005, by and between Plainsboro Associates and Integra LifeSciences Corporation (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on November 2, 2005)
10.1(b)	Lease Modification #3 entered into as of March 2, 2011, by and between Plainsboro Associates and Integra LifeSciences Corporation (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on March 3, 2011)
10.1(c)	Lease Modification #4 entered into as of April 20, 2017, by and between Plainsboro Associates and Integra LifeSciences Corporation (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on April 25, 2017)
10.2	Equipment Lease Agreement between Medicus Corporation and the Company, dated as of June 1, 2000 (Incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2000)
10.3(a)	Form of Indemnification Agreement for Non-Employee Directors and Officers (effective prior to February 15, 2019) (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on December 24, 2008)*
10.3(b)	10.3 (c) Form of Indemnification Agreement for Non-Employee Director and Officers effective February 15, 2019. *
10.4	1996 Incentive Stock Option and Non-Qualified Stock Option Plan (as amended through December 27, 1997) (Incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K filed on February 3, 1998)*
10.5	1998 Stock Option Plan (amended and restated as of July 26, 2005) (Incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2005)*
10.6	1999 Stock Option Plan (amended and restated as of July 26, 2005) (Incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2005)*
10.7(a)	Employee Stock Purchase Plan (as amended on May 17, 2004) (Incorporated by reference to Exhibit 4.1 to the Company's Registration Statement on Form S-8 (Registration No. 333-127488) filed on August 12, 2005)*
10.7(b)	First Amendment to Employee Stock Purchase Plan, dated October 26, 2005 (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on November 1, 2005)*
10.8(a)	2000 Equity Incentive Plan (amended and restated as of July 26, 2005) (Incorporated by reference to Exhibit 10.5 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2005)*
10.8(b)	Amendment to 2000 Equity Incentive Plan (effective as of May 17, 2012) (Incorporated by reference to Exhibit 10.7 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2012)*
10.8(c)	Amendment to 2000 Equity Incentive Plan (effective as of January 1, 2013) (Incorporated by reference to Exhibit 10.8(c) to the Company's Annual Report on Form 10-K for the year ended December 31, 2012)*
10.8(d)	2001 Equity Incentive Plan (amended and restated as of July 26, 2005) (Incorporated by reference to Exhibit 10.6 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2005)*

10.8(e)	Amendment to 2001 Equity Incentive Plan (effective as of May 17, 2012) (Incorporated by reference to Exhibit 10.8 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2012)*
10.8(f)	Amendment to 2001 Equity Incentive Plan (effective as of January 1, 2013) (Incorporated by reference to Exhibit 10.9(c) to the Company's Annual Report on Form 10-K for the year ended December 31, 2012)*
10.8(g)	Second Amended and Restated 2003 Equity Incentive Plan effective May 19, 2010 (Incorporated by reference to Exhibit 10 to the Company's Current Report on Form 8-K filed May 21, 2010)*
10.8(h)	Amendment to the Second Amended and Restated 2003 Equity Incentive Plan effective May 17, 2012 (Incorporated by reference to Exhibit 10.9 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2012)*
10.8(i)	Amendment to the Second Amended and Restated 2003 Equity Incentive Plan effective January 1, 2013 (Incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2013)*
10.8(j)	Third Amended and Restated 2003 Equity Incentive Plan effective May 22, 2015 (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 29, 2015)*
10.8(k)	Fourth Amended and Restated 2003 Equity Incentive Plan, effective May 23, 2017 (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 25, 2017)
10.9	Additional Call Option Transaction Confirmation, dated as of February 5, 2020, between Integra LifeSciences Holdings Corporation and Morgan Stanley & Co. International plc.
10.10(a)	Letter Agreement dated June 7, 2012 between Stuart M. Essig and the Company (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on June 7, 2012)*
10.10(b)	Indemnity letter agreement dated December 27, 1997 from the Company to Stuart M. Essig (Incorporated by reference to Exhibit 10.5 to the Company's Current Report on Form 8-K filed on February 3, 1998)*
10.11	Additional Warrant Confirmation, dated as of February 5, 2020, between Integra LifeSciences Holdings Corporation and Citibank, N.A.
10.12(a)	Registration Rights Provisions for Stuart M. Essig (Incorporated by reference to Exhibit B of Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 3, 1998)*
10.12(b)	Registration Rights Provisions for Stuart M. Essig (Incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on January 8, 2001)*
10.12(c)	Registration Rights Provisions for Stuart M. Essig (Incorporated by reference to Exhibit B of Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2004)*
10.13	Second Amended and Restated 2005 Employment Agreement between the Company and John B. Henneman, III (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on May 23, 2014)*
10.14	Consulting Agreement, dated October 12, 2010, between the Company and Inception Surgical (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on October 12, 2010)*
10.15	Issuer Forward Repurchase Transaction Confirmation, dated as of February 5, 2020, between Integra LifeSciences Holdings Corporation and JPMorgan Chase Bank, National Association, New York Branch.
10.16	Severance Agreement between Judith O'Grady and the Company dated as of January 3, 2012 (Incorporated by reference to Exhibit 10.16(c) to the Company's Annual Report on Form 10-K for the year ended December 31, 2011)*
10.17	Third Amended and Restated Employment Agreement between the Company and Peter J. Arduini (Incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed on October 26, 2017)*
10.18	Form of Notice of Stock Option Grant with Eight-Year Term for Peter J. Arduini (Incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed December 23, 2011)*
10.19	Letter Agreement dated February 19, 2013 between Peter J. Arduini and Integra LifeSciences Holdings Corporation (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 25, 2013)*

10.20(a)	Lease Contract, dated April 1, 2005, between the Puerto Rico Industrial Development Company and Integra CI, Inc. (executed on September 15, 2006) (Incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended September 30, 2006)
10.20(b)	Amendment to Lease Contract dated as of November 2, 2011, between Integra CI, Inc. and Puerto Rico Industrial Development Company (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on November 7, 2011)
10.20(c)	Termination of Amendment to Lease Contract, dated as of April 2, 2012, between Integra CI, Inc. and Puerto Rico Industrial Development Company (Incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2012)
10.21	Restricted Units Agreement dated December 27, 1997 between the Company and Stuart M. Essig (Incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on February 3, 1998)*
10.22(a)	Stock Option Grant and Agreement pursuant to 1999 Stock Option Plan dated December 22, 2000 between the Company and Stuart M. Essig (Incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on January 8, 2001)*
10.22(b)	Stock Option Grant and Agreement pursuant to 2000 Equity Incentive Plan dated December 22, 2000 between the Company and Stuart M. Essig (Incorporated by reference to Exhibit 4.2 to the Company's Current Report on Form 8-K filed on January 8, 2001)*
10.23(a)	Restricted Units Agreement dated December 22, 2000 between the Company and Stuart M. Essig (Incorporated by reference to Exhibit 4.3 to the Company's Current Report on Form 8-K filed on January 8, 2001)*
10.23(b)	Amendment 2006-1, dated as of October 30, 2006, to the Stuart M. Essig Restricted Units Agreement dated as of December 22, 2000 (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on November 3, 2006)*
10.24	Stock Option Grant and Agreement pursuant to 2003 Equity Incentive Plan dated July 27, 2004 between the Company and Stuart M. Essig (Incorporated by reference to Exhibit 10.30 to the Company's Annual Report on Form 10-K for the year ended December 31, 2004)*
10.25(a)	Contract Stock/Restricted Units Agreement pursuant to 2003 Equity Incentive Plan dated July 27, 2004 between the Company and Stuart M. Essig (Incorporated by reference to Exhibit 10.31 to the Company's Annual Report on Form 10-K for the year ended December 31, 2004)*
10.25(b)	Amendment 2006-1, dated as of October 30, 2006, to the Stuart M. Essig Contract Stock/Restricted Units Agreement dated as of July 27, 2004 (Incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on November 3, 2006)*
10.25(c)	Amendment 2008-1, dated as of March 6, 2008, to the Stuart M. Essig Contract Stock/Restricted Units Agreement dated as of July 27, 2004 (Incorporated by reference to Exhibit 10.25(c) to the Company's Annual Report on Form 10-K for the year ended December 31, 2007)*
10.25(d)	Amendment 2011-1, dated as of May 17, 2011, to the Stuart M. Essig Contract Stock/Restricted Units Agreement dated as of July 24, 2004 (Incorporated by reference to Exhibit 10.6 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2011)*
10/26	Contract Stock/Units Agreement dated as of May 17, 2011 between the Company and Stuart M. Essig (Incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on May 23, 2011)*
10.27	Form of Amendment 2011-1 to Contract Stock/Restricted Units Agreements between the Company and Mr. Essig (Incorporated by reference to Exhibit 10.5 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2011)*
10.28	Form of Stock Option Grant and Agreement between the Company and Stuart M. Essig (Incorporated by reference to Exhibit 10.32 to the Company's Annual Report on Form 10-K for the year ended December 31, 2004)*
10.29(a)	Form of Contract Stock/Restricted Units Agreement for Stuart M. Essig (Incorporated by reference to Exhibit 10.8 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2008)*
10.29(b)	New Form of Contract Stock/Restricted Units Agreement (for Annual Equity Awards) for Stuart M. Essig (Incorporated by reference to Exhibit 10.28(b) to the Company's Annual Report on Form 10-K for the year ended December 31, 2010)*

10.29(c)	Form of Amendment 2011-1 to Contract Stock/Restricted Units Agreement between the Company and Mr. Essig (Incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2011)*
10.30(a)	Form of Performance Stock Agreement for Stuart M. Essig (Incorporated by reference to Exhibit 10.9 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2008)*
10.30(b)	Form of Restricted Stock Agreement for Stuart M. Essig for 2009 (Incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed April 13, 2009)*
10.31(a)	Form of Performance Stock Agreement (Executive Officers) (Incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on February 25, 2013)*
10.31(b)	Form of Performance Stock Agreement (Executive Officers) (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 29, 2016)*
10.31(c)	Form of Performance Stock Agreement for Peter J. Arduini (Incorporated by reference to Exhibit 10.2 to the Company's Report on Form 8-K filed on February 29, 2016)*
10.31(d)	Form of Performance Stock Agreement (Executive Officers) (Incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2018) *
10.31(e)	Form of Performance Stock Agreement for Peter J. Arduini (Incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2018)*
10.32	Performance Incentive Compensation Plan effective January 1, 2013 (Incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2013)*
10.33(a)	First Amendment, dated as of February 15, 2017, to the Performance Incentive Compensation Plan (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 17, 2017)
10.33(b)	2018 Performance Incentive Compensation Plan, effective January 1, 2018 (Incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on May 25, 2017)
10.34	New Form of Contract Stock/Restricted Units Agreement pursuant to 2003 Equity Incentive Plan (for 2011) Annual Equity Award for Stuart M. Essig) (Incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2011)*
10.35	Form of Notice of Grant of Stock Option and Stock Option Agreement (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on July 29, 2005)*
10.36	Form of Non-Qualified Stock Option Agreement (Non-Directors) (Incorporated by reference to Exhibit 10.35 to the Company's Annual Report on Form 10-K for the year ended December 31, 2004)*
10.37	Form of Incentive Stock Option Agreement (Incorporated by reference to Exhibit 10.36 to the Company's Annual Report on Form 10-K for the year ended December 31, 2004)*
10.38	Form of Non-Qualified Stock Option Agreement (Directors) (Incorporated by reference to Exhibit 10.37 to the Company's Annual Report on Form 10-K for the year ended December 31, 2004)*
10.39	Form of Stock Option Agreement (Executive Officers) (Incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2015)*
10.40	Form of Stock Option Agreement for Glenn Coleman (Incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2015)*
10.41	Agreement and General Release by and between Robert Paltridge and Integra LifeSciences Corporation (Incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2015)*
10.42	Agreement and General Release by and between Richard D. Gorelick and Integra LifeSciences Corporation
10.43	Form of Change in Control Severance Program (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on December 13, 2019)*
10.44(a)	Form of Restricted Stock Agreement for Non-Employee Directors under the 2003 Equity Incentive Plan (Incorporated by reference to Exhibit 10.4 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2012)*

10.44(b)	New Form of Restricted Stock Agreement for Non-Employee Directors under the 2003 Equity Incentive Plan (Incorporated by reference to Exhibit 10.38(b) to the Company's Annual Report on Form 10-K for the year ended December 31, 2012)*
10.45(a)	Form of Restricted Stock Agreement for Executive Officers - Annual Vesting (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 25, 2009)*
10.45(b)	Form of Restricted Stock Agreement for Executive Officers - Annual Vesting (Incorporated by reference to Exhibit 10.5 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2012)*
10.45(c)	New Form of Restricted Stock Agreement for Executive Officers - Annual Vesting (Incorporated by reference to Exhibit 10.38(e) to the Company's Annual Report on Form 10-K for the year ended December 31, 2012)*
10.46(a)	Form of Restricted Stock Agreement for Executive Officers - Cliff Vesting (Incorporated by reference to Exhibit 10.8 to the Company's Quarter Report on Form 10-Q for the quarter ended March 31, 2009)*
10.46(b)	Form of Restricted Stock Agreement for Executive Officers - Cliff Vesting (Incorporated by reference to Exhibit 10.6 to the Company's quarterly report on Form 10-Q for the quarter ended June 30, 2012)*
10.46(c)	New Form of Restricted Stock Agreement for Executive Officers - Cliff Vesting (Incorporated by reference to Exhibit 10.38(h) to the Company's Annual Report on Form 10-K for the year ended December 31, 2012)*
10.47(a)	Form of Restricted Stock Agreement for Mr. Henneman for 2008 and 2009 (Incorporated by reference to Exhibit 10.6 to the Company's Current Report on Form 8-K filed on April 13, 2009)*
10.47(b)	Form of Contract Stock/Restricted Units Agreement pursuant to 2003 Equity Incentive Plan for Mr. Henneman (Incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K filed on December 24, 2008)*
10.47(c)	Form of Option Agreement for John B. Henneman, III (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on June 6, 2008)*
10.47(d)	Form of Performance Stock Agreement for John B. Henneman, III (Incorporated by reference to Exhibit 10.37(b) to the Company's Annual Report on Form 10-K for the year ended December 31, 2007)*
10.48(a)	Form of Contract Stock/Restricted Units Agreement (for Signing Grant) for Mr. Arduini (Incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K filed on October 12, 2010)*
10.48(b)	Form of Contract Stock/Restricted Units Agreement (for Annual Equity Awards) for Mr. Arduini (Incorporated by reference to Exhibit 10.5 to the Company's Current Report on Form 8-K filed on October 12, 2010)*
10.49	Form of Non-Qualified Stock Option Agreement for Mr. Arduini (Incorporated by reference to Exhibit 10.6 to the Company's Current Report on Form 8-K filed on October 12, 2010)*
10.50(a)	Form of Restricted Stock Agreement for Mr. Henneman (Incorporated by reference to Exhibit 10.7 to the Company's Current Report on Form 8-K filed on October 12, 2010)*
10.50(b)	Form of Restricted Stock Agreement (Annual Vesting) for Mr. Henneman (Incorporated by reference to Exhibit 10.39(n) to the Company's Annual Report on Form 10-K for the year ended December 31, 2011)*
10.51	Davis Promotion Summary, effective December 1, 2016 (Incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on December 5, 2016)*
10.52	Coleman Promotion Summary, effective June 24, 2019(Incorporated by reference to the Current Report on Form 8-K filed on June 24, 2019)
10.53	Anderson Offer Summary, effective June 24, 2019(Incorporated by reference to the Current Report on Form 8-K filed on June 24, 2019)
10.54	Annual Executive Physical Medical Exam Arrangement (Incorporated by reference to the Exhibit 10.2 to the Company's Current Report on Form 8-K filed on July 29, 2013)*
10.55	Amended and Restated Management Incentive Compensation Plan, as of January 1, 2008 (Incorporated by reference to Exhibit 10.43(c) to the Company's Annual Report on Form 10-K for the year ended December 31, 2007)*

10.56	Piggyback Registration Rights Agreement dated December 22, 2008 between Integra LifeSciences Holdings Corporation and George Heenan, Thomas Gilliam and Michael Evers, as trustees of The Bruce A. LeVahn 2008 Trust and Steven M. LeVahn (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on December 29, 2008)
10.57(a)	Lease Agreement between 109 Morgan Lane, LLC and Integra LifeSciences Corporation, dated May 15, 2008 (Incorporated by reference to Exhibit 10.10 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2008)
10.57(b)	First Amendment to Lease Agreement between 109 Morgan Lane, LLC and Integra LifeSciences Corporation, dated March 9, 2009 (Incorporated by reference to Exhibit 10.9 to the Company's Quarterly Report on Form 10-Q for the quarter ended March 31, 2009)
10.57(c)	Lease Agreement dated as of July 1, 2013, between 109 Morgan Lane, LLC and Integra LifeSciences Corporation (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on July 1, 2013)
10.58	Receivables Financing Agreement, dated as of December 21, 2018, by and among Integra Receivables LLC, Integra LifeSciences Sales LLC, as Servicer, PNC Bank, National Association, as Administrative Agent, PNC Capital Markets LLC, as Structuring Agent, and certain lenders and group agents that are parties thereto from time to time (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on December 28, 2018)
10.59	Purchase and Sale Agreement, dated as of December 21, 2018, by and among Integra LifeSciences Sales LLC, Integra LifeSciences Corporation and Integra Receivables LLC (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on December 28, 2018)
10.60(a)	Fifth Amended and Restated Credit Agreement, dated as of May 3, 2018, among Integra LifeSciences Holdings Corporation, the other lenders party hereto, Bank of America, N.A., as Administrative Agent, Swing Line Lender and L/C Issuer, JPMorgan Chase Bank, N.A. and Wells Fargo Bank, N.A., as Co-Syndication Agents, and PNC Bank, N.A., The Bank of Tokyo-Mitsubishi UFJ, Ltd., Citibank N.A., Citizens Bank, N.A., DNB Bank ASA, New York Branch, HSBC Bank plc, HSBC Bank USA, National Association, Suntrust Bank, TD Bank, N.A., Bank of Nova Scotia and Capital One, National Association, as Co-Documentation Agents (Incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on May 9, 2018)
10.60(b)	Sixth Amended and Restated Credit Agreement, dated as of February 3, 2020, among Integra LifeSciences Holdings Corporation, the lenders party thereto, Bank of America, N.A., as Administrative Agent, Swing Line Lender and an L/C Issuer, Citibank N.A., Morgan Stanley MUFG Loan Partners, LLC and Wells Fargo Bank, N.A., as Co-Syndication Agents, and PNC Bank, N.A., Bank of Nova Scotia, Bank of the West, BBVA USA, Capital One, National Association, Citizens Bank, N.A., DNB Capital LLC, Santander Bank, N.A., TD Bank, N.A. and Truist Bank, as Co-Documentation Agents.
10.61	Base Call Option Transaction Confirmation, dated as of February 4, 2020, between Integra LifeSciences Holdings Corporation and Citibank, N.A. (Incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.62	Ratification Agreement, dated as of February 3, 2020, between Integra LifeSciences Holdings Corporation, the Subsidiary Guarantors of Integra LifeSciences Holdings Corporation and Bank of America, N.A., as Administrative Agent (Incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K filed on February 3, 2020)
10.63	Base Call Option Transaction Confirmation, dated as of February 4, 2020, between Integra LifeSciences Holdings Corporation and Morgan Stanley & Co. International plc. (Incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.64	Base Call Option Transaction Confirmation, dated as of February 4, 2020, between Integra LifeSciences Holdings Corporation and Wells Fargo, National Association. (Incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.65	Base Warrant Confirmation, dated as of February 4, 2020, between Integra LifeSciences Holdings Corporation and Citibank, N.A. (Incorporated by reference to Exhibit 10.5 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.66	Base Warrant Confirmation, dated as of February 4, 2020, between Integra LifeSciences Holdings Corporation and Goldman Sachs & Co. LLC. (Incorporated by reference to Exhibit 10.6 to the Company's Current Report on Form 8-K filed on February 7, 2020)

10.67	Base Warrant Confirmation, dated as of February 4, 2020, between Integra LifeSciences Holdings Corporation and Morgan Stanley & Co. International plc. (Incorporated by reference to Exhibit 10.7 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.68	Base Warrant Confirmation, dated as of February 4, 2020, between Integra LifeSciences Holdings Corporation and Wells Fargo, National Association. (Incorporated by reference to Exhibit 10.8 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.69	Additional Call Option Transaction Confirmation, dated as of February 5, 2020, between Integra LifeSciences Holdings Corporation and Citibank, N.A. (Incorporated by reference to Exhibit 10.9 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.70	Additional Call Option Transaction Confirmation, dated as of February 5, 2020, between Integra LifeSciences Holdings Corporation and Goldman Sachs & Co. LLC. (Incorporated by reference to Exhibit 10.10 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.71	Additional Call Option Transaction Confirmation, dated as of February 5, 2020, between Integra LifeSciences Holdings Corporation and Morgan Stanley & Co. International plc. (Incorporated by reference to Exhibit 10.11 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.72	Additional Call Option Transaction Confirmation, dated as of February 5, 2020, between Integra LifeSciences Holdings Corporation and Wells Fargo, National Association. (Incorporated by reference to Exhibit 10.12 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.73	Additional Warrant Confirmation, dated as of February 5, 2020, between Integra LifeSciences Holdings Corporation and Citibank, N.A. (Incorporated by reference to Exhibit 10.13 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.74	Additional Warrant Confirmation, dated as of February 5, 2020, between Integra LifeSciences Holdings Corporation and Goldman Sachs & Co. LLC. (Incorporated by reference to Exhibit 10.14 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.75	Additional Warrant Confirmation, dated as of February 5, 2020, between Integra LifeSciences Holdings Corporation and Morgan Stanley & Co. plc. (Incorporated by reference to Exhibit 10.15 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.76	Additional Warrant Confirmation, dated as of February 5, 2020, between Integra LifeSciences Holdings Corporation and Wells Fargo, National Association. (Incorporated by reference to Exhibit 10.16 to the Company's Current Report on Form 8-K filed on February 7, 2020)
10.77	Issuer Forward Repurchase Transaction Confirmation, dated as of February 5, 2020, between Integra LifeSciences Holdings Corporation and JPMorgan Chase Bank, National Association, New York Branch. (Incorporated by reference to Exhibit 10.17 to the Company's Current Report on Form 8-K filed on February 7, 2020)
21	Subsidiaries of the Company+
23	Consent of PricewaterhouseCoopers LLP+
31.1	Certification of Principal Executive Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002+
31.2	Certification of Principal Financial Officer Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002+
32.1	Certification of Principal Executive Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002+
32.2	Certification of Principal Financial Officer Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002+
99.1	Letter, dated December 21, 2011, from the United States Food and Drug Administration to Integra LifeSciences Corporation (Incorporated by reference to Exhibit 99.1 to the Company's Current Report on Form 8-K filed on January 5, 2012)
99.2	Food and Drug Administration Form FDA-483, dated July 30, 2012, relating to inspection of Plainsboro, NJ manufacturing facility (Incorporated by reference to Exhibit 99.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2012)
99.3	Letter, dated November 1, 2012, from the United States Food and Drug Administration to Integra NeuroSciences Ltd. (Incorporated by reference to Exhibit 99.1 to the Company's Current Report on Form 8-K filed on November 13, 2012)

99.4	Letter, dated February 13, 2013, from the United States Federal Drug Administration to Integra LifeSciences Corporation (Incorporated by reference to Exhibit 99.1 to the Company's Current Report on Form 8-K filed on February 19, 2013)
99.5	Letter, dated September 24, 2013, from the United States Federal Drug Administration to Integra LifeSciences Corporation (Incorporated by reference to Exhibit 99.1 to the Company's Current Report on Form 8-K filed on September 27, 2013)
99.6	Food and Drug Administration Form FDA-483, dated November 26, 2013, relating to the inspection of the Añasco Facility (Incorporated by reference to Exhibit 99.1 to the Company's Current Report on Form 8-K filed on December 3, 2013)
99.7	Letter, dated January 14, 2015, from the United States Food and Drug Administration to Integra LifeSciences Corporation (Incorporated by reference to Exhibit 99.1 to the Company's Current Report on Form 8-K filed on January 20, 2015)
99.8	Letter, dated May 29, 2015, from the United States Food and Drug Administration to TEI Biosciences Inc. (Incorporated by reference to Exhibit 99.1 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2015)
99.9	Letter, dated June 30, 2015, from the United States Food and Drug Administration to Integra LifeSciences (Ireland) Limited (Incorporated by reference to Exhibit 99.2 to the Company's Quarterly Report on Form 10-Q for the quarter ended June 30, 2015)
101.INS	XBRL Instance Document+#
101.SCH	XBRL Taxonomy Extension Schema Document+#
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document+#
101.DEF	XBRL Definition Linkbase Document
101.LAB	XBRL Taxonomy Extension Labels Linkbase Document+#
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document+#

* Indicates a management contract or compensatory plan or arrangement.

\+ Indicates this document is filed as an exhibit herewith.

\# The financial information of Integra LifeSciences Holdings Corporation Annual Report on Form 10-K for the year ended December 31, 2019 filed on February 21, 2020 formatted in XBRL (Extensible Business Reporting Language): (i) the Consolidated Statements of Operations, (ii) the Consolidated Statement of Comprehensive Income (Loss), (iii) the Consolidated Balance Sheets, (iv) Parenthetical Data to the Consolidated Balance Sheets, (v) the Consolidated Statements of Cash Flows, (vi) the Consolidated Statements of Changes in Stockholders' Equity, and (vii) Notes to Consolidated Financial Statements, is furnished electronically herewith.

The Company's Commission File Number for Reports on Form 10-K, Form 10-Q and Form 8-K is 0-26224.

ITEM 16. ***FORM 10-K SUMMARY***

None.

SIGNATURES

Pursuant to the requirements of Section 13 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.

INTEGRA LIFESCIENCES HOLDINGS CORPORATION

By: /s/ Peter J. Arduini

Peter J. Arduini
President and Chief Executive Officer
(Principal Executive Officer)

By: /s/ Carrie L. Anderson

Carrie L. Anderson
Corporate Vice President and Chief Financial Officer
(Principal Financial Officer)

By: /s/ Jeffrey A. Mosebrook

Jeffrey A. Mosebrook
Senior Vice President, Finance
(Principal Accounting Officer)

Date: February 21, 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 in the capacities indicated.

Signature	Title	Date
/s/ Peter J. Arduini Peter J. Arduini	President and Chief Executive Officer, and Director (Principal Executive Officer)	February 21, 2020
/s/ Carrie L. Anderson Carrie L. Anderson	Corporate Vice President and Chief Financial Officer (Principal Financial Officer)	February 21, 2020
/s/ Jeffrey A. Mosebrook Jeffrey A. Mosebrook	Senior Vice President, Finance (Principal Accounting Officer)	February 21, 2020
/s/ Stuart M. Essig, Ph.D. Stuart M. Essig, Ph.D.	Chairman of the Board	February 21, 2020
/s/ Rhonda Germany Ballintyn Rhonda Germany Ballintyn	Director	February 21, 2020
/s/ Keith Bradley, Ph.D. Keith Bradley, Ph.D.	Director	February 21, 2020
/s/ Barbara B. Hill Barbara B. Hill	Director	February 21, 2020
/s/ Lloyd W. Howell, Jr. Lloyd W. Howell, Jr.	Director	February 21, 2020
/s/ Donald E. Morel, Jr., Ph.D. Donald E. Morel, Jr., Ph.D.	Director	February 21, 2020
/s/ Raymond G. Murphy Raymond G. Murphy	Director	February 21, 2020
/s/ Christian S. Schade Christian S. Schade	Director	February 21, 2020

Report of Independent Registered Public Accounting Firm

To the Board of Directors and Stockholders of
Integra LifeSciences Holdings Corporation

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Integra LifeSciences Holdings Corporation and its subsidiaries (the "Company") as of December 31, 2019 and 2018, and the related consolidated statements of operations, comprehensive income, changes in stockholders' equity 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 index appearing under Item 15(a)(2) (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.

Change in Accounting Principle

As discussed in Note 2 to the consolidated financial statements, the Company changed the manner in which it accounts for leases in 2019 and 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 Management's Report 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 matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate 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 matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Indefinite Lived Intangible Asset Impairment Assessment - Codman tradename

As described in Note 7 to the consolidated financial statements, the Codman tradename intangible asset balance was $163.1 million as of December 31, 2019. During the third quarter of 2019, management elected to bypass the qualitative impairment assessment for its Codman tradename intangible asset and perform a quantitative impairment test. In performing this test, management utilized projected sales growth rates, a royalty rate of 5%, a range of tax rates between 17.4-20.7%, and discount rate of 12.5%.

The principal considerations for our determination that performing procedures relating to the indefinite lived intangible asset impairment assessment of the Codman tradename is a critical audit matter are (i) there was significant judgment by management when developing the fair value measurement of the Codman tradename, which in turn led to a high degree of auditor judgment and subjectivity in performing procedures relating to the fair value measurement; (ii) there was significant audit effort in performing procedures to evaluate the fair value measurement and significant assumptions, including the projected sales growth rates, royalty rate, tax rates, and discount rate and (iii) the audit effort involved the use of professionals with specialized skill and knowledge to assist in performing these procedures and evaluating the audit evidence obtained.

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 indefinite lived intangible asset impairment assessment, including controls over management's significant assumptions used to estimate the fair value of the intangible asset. These procedures also included, among others, testing management's process for developing the fair value measurement; evaluating the appropriateness of the method; testing the completeness, accuracy, and relevance of underlying data used in the impairment assessment; and evaluating the reasonableness of the significant assumptions, including projected sales growth rates, royalty rate, tax rates, and discount rate. Evaluating management's assumptions related to projected sales growth rates, royalty rate, and tax rates involved evaluating whether the assumptions used by management were reasonable considering the current and past performance of the business and whether these assumptions were consistent with evidence obtained in other areas of the audit and industry data. Professionals with specialized skill and knowledge were used to assist in evaluating the appropriateness of the Company's impairment assessment and reasonableness of certain significant assumptions, including the discount rate.

Excess or Obsolete Inventory Adjustments

As described in Note 2 to the consolidated financial statements, the Company's inventory is stated at the lower of cost, the value determined by the first-in, first-out method, or net realizable value, and the net inventory balance was $316.1 million as of December 31, 2019. At each balance sheet date, management evaluates inventories for excess quantities, obsolescence or shelf life expiration. This evaluation by management includes analysis of historical sales levels by product, projections of future demand, the risk of technological or competitive obsolescence for products, general market conditions, a review of the shelf life expiration dates for products, as well as the feasibility of reworking or using excess or obsolete products or components in the production or assembly of other products that are not obsolete or for which there are not excess quantities in inventory. To the extent that management determines there are excess or obsolete inventory or quantities with a shelf life that is too near its expiration for the Company to reasonably expect that it can sell those products prior to their expiration, management adjusts the carrying value to estimated net realizable value.

The principal considerations for our determination that performing procedures relating to excess or obsolete inventory adjustments is a critical audit matter are (i) there was significant judgment by management when developing the excess or obsolete inventory adjustments, which in turn led to a high degree of auditor judgment and subjectivity in performing procedures relating to the excess or obsolete inventory adjustments; and (ii) there was significant audit effort in performing procedures to evaluate management's analysis and significant assumptions, including projections of future demand and risk of technological or competitive obsolescence for products.

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 valuation of inventory, including controls over the excess or obsolete inventory adjustments and management's projection of future demand and the risk of technological or competitive obsolescence for products. These procedures also included, among others, testing management's process for developing the estimate for excess or obsolete inventory, evaluating the appropriateness of the method, testing the completeness, accuracy, and relevance of underlying data used in the estimate; and evaluating the significant assumptions including, projections of future demand and risk of technological or competitive obsolescence for products. Evaluating management's assumption related to projections of future demand involved evaluating whether the assumption was consistent with the product's historical performance. Evaluating management's assumption related to the risk of technological or competitive obsolescence for products involved evaluating whether the assumption was consistent with technological or competitive obsolescence experiences during the product life cycle of existing products.

/s/ PricewaterhouseCoopers LLP

Florham Park, New Jersey
February 21, 2020

We have served as the Company's auditor since 1989.

INTEGRA LIFESCIENCES HOLDINGS CORPORATION
CONSOLIDATED STATEMENTS OF OPERATIONS

	Years Ended December 31,		
	2019	2018	2017
	(In thousands, except per share amounts)		
Total revenue, net	$ 1,517,557	$ 1,472,441	$ 1,188,236
Costs and expenses:			
Cost of goods sold	564,681	571,496	435,511
Research and development	79,573	78,041	63,455
In-process research and development	64,916	—	—
Selling, general and administrative	687,599	690,746	624,096
Intangible asset amortization	27,028	21,160	20,370
Total costs and expenses	1,423,797	1,361,443	1,143,432
Operating income	93,760	110,998	44,804
Interest income	10,779	2,800	255
Interest expense	(53,957)	(64,683)	(35,019)
Other income, net	9,522	8,288	1,345
Income before income taxes	60,104	57,403	11,385
Provision (benefit) for income taxes	9,903	(3,398)	(53,358)
Net income per share	$ 50,201	$ 60,801	$ 64,743
Basic	$ 0.59	$ 0.73	$ 0.84
Diluted	$ 0.58	$ 0.72	$ 0.82
Weighted average common shares outstanding (See Note 13):			
Basic	85,637	82,857	76,897
Diluted	86,494	83,999	79,121

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

INTEGRA LIFESCIENCES HOLDINGS CORPORATION
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
Net income	$ 50,201	$ 60,801	$ 64,743
Other comprehensive income (loss), before tax:			
Change in foreign currency translation adjustments	(174)	(19,159)	37,454
Unrealized gain (loss) on derivatives			
Unrealized derivative (loss) gain arising during period	(13,671)	11,709	(3,425)
Less: Reclassification adjustments for gains included in net income	14,865	13,400	2,958
Unrealized loss on derivatives	(28,536)	(1,691)	(6,383)
Defined benefit pension plan - net (loss) arising during period	(8,973)	(643)	(57)
Total other comprehensive income (loss), before tax	(37,683)	(21,493)	31,014
Income tax benefit (expense) related to items in other comprehensive loss	6,724	(143)	2,333
Total other comprehensive income (loss), net of tax	(30,959)	(21,636)	33,347
Comprehensive income, net of tax	$ 19,242	$ 39,165	$ 98,090

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

INTEGRA LIFESCIENCES HOLDINGS CORPORATION
CONSOLIDATED BALANCE SHEETS

	December 31,	
	2019	**2018**
	(In thousands)	
ASSETS		
Current Assets:		
Cash and cash equivalents	$ 198,911	$ 138,838
Trade accounts receivable, net of allowances of $4,303 and $3,719	275,296	265,737
Inventories, net	316,054	280,347
Prepaid expenses and other current assets	67,907	90,160
Total current assets	858,168	775,082
Property, plant and equipment, net	337,404	300,112
Right of use asset - operating leases	94,530	—
Intangible assets, net	1,031,591	1,079,496
Goodwill	954,280	926,475
Deferred tax assets	12,623	6,805
Other assets	14,644	19,917
Total assets	$ 3,303,240	$ 3,107,887
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities:		
Current portion of borrowings under senior credit facility	$ 45,000	$ 22,500
Current portion of lease liability - operating leases	12,253	—
Accounts payable, trade	113,090	76,050
Contract liabilities	4,772	3,764
Accrued compensation	79,385	75,693
Accrued expenses and other current liabilities	76,809	84,545
Total current liabilities	331,309	262,552
Long-term borrowings under senior credit facility	1,198,561	1,210,513
Long-term borrowings under securitization facility	104,500	121,200
Lease liability - operating leases	97,504	—
Deferred tax liabilities	36,553	57,778
Other liabilities	118,077	80,048
Total liabilities	1,886,504	1,732,091
Commitments and contingencies (Refer to Note 15)		
Stockholders' Equity:		
Preferred Stock; no par value; 15,000 authorized shares; none outstanding	—	—
Common stock; $0.01 par value; 240,000 authorized shares; 88,735 and 88,044 issued at December 31, 2019 and 2018, respectively	887	880
Additional paid-in capital	1,213,620	1,192,601
Treasury stock, at cost; 2,865 and 2,881 shares at December 31, 2019 and 2018, respectively	(119,943)	(120,615)
Accumulated other comprehensive loss	(76,402)	(45,443)
Retained earnings	398,574	348,373
Total stockholders' equity	1,416,736	1,375,796
Total liabilities and stockholders' equity	$ 3,303,240	$ 3,107,887

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

INTEGRA LIFESCIENCES HOLDINGS CORPORATION
CONSOLIDATED STATEMENTS OF CASH FLOWS

	Years Ended December 31,		
	2019	**2018**	**2017**
		(In thousands)	
OPERATING ACTIVITIES:			
Net income	$ 50,201	$ 60,801	$ 64,743
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	109,462	110,730	88,945
Non-cash in-process research and development expense	64,916	—	—
Non-cash impairment charges	5,764	4,941	3,290
Deferred income tax benefit	(19,046)	(8,184)	(67,304)
Share-based compensation	21,255	20,779	21,550
Amortization of debt issuance costs	5,390	6,270	2,722
Non-cash lease expense	5,060	—	—
Realized loss on sale of short-term investments	—	—	2,287
Loss on disposal of property and equipment	1,821	1,385	6,989
Gain on divestiture of business	—	—	(2,645)
Change in fair value of contingent consideration and others	1,119	1,214	(4,710)
Accounts receivable	(9,428)	(17,021)	(89,698)
Inventories	(43,308)	8,300	99
Prepaid expenses and other current assets	13,071	3,933	(33,808)
Other non-current assets	13,156	1,052	(914)
Accounts payable, accrued expenses and other current liabilities	14,666	3,588	95,321
Contract liabilities	(607)	1,504	3,874
Other non-current liabilities	(2,059)	391	23,803
Net cash provided by operating activities	231,433	199,683	114,544
INVESTING ACTIVITIES:			
Proceeds from sale of short-term investments	—	—	16,951
Proceeds from note receivable	752	910	483
Cash used in business acquisitions, net of cash acquired	(30,509)	26,704	(1,241,946)
Acquired in-process research and development	(64,995)	—	—
Purchases of property and equipment	(69,537)	(77,741)	(43,503)
Proceeds from sales of property and equipment	37	422	293
Proceeds from divestiture of business	—	—	46,387
Net proceeds on swaps designated as net investment hedges	1,584	—	—
Net cash used in investing activities	(162,668)	(49,705)	(1,221,335)
FINANCING ACTIVITIES:			
Proceeds from borrowings of long-term indebtedness	236,900	171,200	1,307,000
Payments on debt	(246,100)	(660,000)	(117,000)
Net cash paid for contingent consideration	—	(38,196)	(4,661)
Proceeds from the issuance of common stock, net of issuance costs	—	349,590	—
Debt issuance costs	—	(5,037)	(19,043)
Proceeds from exercised stock options	6,948	9,392	9,774
Cash taxes paid in net equity settlement	(6,514)	(7,821)	(7,123)
Net cash provided by (used in) financing activities	(8,766)	(180,872)	1,168,947
Effect of exchange rate changes on cash and cash equivalents	74	(5,203)	10,724
Net increase (decrease) in cash and cash equivalents	60,073	(36,097)	72,880
Cash and cash equivalents at beginning of period	138,838	174,935	102,055
Cash and cash equivalents at end of period	$ 198,911	$ 138,838	$ 174,935

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

INTEGRA LIFESCIENCES HOLDINGS CORPORATION
CONSOLIDATED STATEMENTS OF CHANGES IN STOCKHOLDERS' EQUITY

	Common Stock		Treasury Stock		Additional Paid-In Capital	Accumulated Other Comprehensive Income (Loss)	Retained Earnings	Total Equity
	Shares	Amount	Shares	Amount				
	(In thousands)							
Balance, January 1, 2017	77,666	$ 777	(2,946)	$ (123,051)	$ 798,652	$ (57,154)	$ 220,443	$ 839,667
Net income	—	—	—	—	—	—	64,743	64,743
Other comprehensive income (loss), net of tax	—	—	—	—	—	33,347	—	33,347
Issuance of common stock through employee stock purchase plan	12	—	—	—	509	—	—	509
Issuance of common stock for vesting of share-based awards, net of shares withheld for taxes	788	8	19	1,407	723	—	—	2,138
Exercise of warrants	2,840	28	—	—	(28)	—	—	—
Share-based compensation	—	—	—	—	21,902	—	—	21,902
Balance, December 31, 2017	81,306	$ 813	(2,927)	$ (121,644)	$ 821,758	$ (23,807)	$ 285,186	$ 962,306
Adoption of Update No. 2014-09	—	—	—	—	—	—	1,854	1,854
Adoption of Update No. 2018-02	—	—	—	—	—	—	532	532
Net income	—	—	—	—	—	—	60,801	60,801
Other comprehensive income (loss), net of tax	—	—	—	—	—	(21,636)		(21,636)
Issuance of common stock through employee stock purchase plan	—	—	—	—	553	—	—	553
Issuance of common stock for vesting of share-based awards, net of shares withheld for taxes	700	4	46	1,030	52	—	—	1,086
Equity offering	6,038	60	—	—	349,529	—	—	349,589
Share-based compensation	—	3	—	—	20,709	—	—	20,712
Balance, December 31, 2018	88,044	880	(2,881)	(120,615)	1,192,601	(45,443)	348,373	1,375,796
Net income	—	—	—	—	—	—	50,201	50,201
Other comprehensive income (loss), net of tax	—	—	—	—	—	(30,959)	—	(30,959)
Issuance of common stock through employee stock purchase plan	17	—	—	—	716	—		716
Issuance of common stock for vesting of share-based awards, net of shares withheld for taxes	674	7	16	672	(961)			(282)
Share-based compensation	—	—	—	—	21,264	—	—	21,264
Balance, December 31, 2019	88,735	887	(2,865)	(119,943)	1,213,620	(76,402)	398,574	1,416,736

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

1. BUSINESS

Integra LifeSciences Holdings Corporation (the “Company”) was incorporated in Delaware in 1989. The Company, a world leader in medical devices, is dedicated to limiting uncertainty for surgeons through the development, manufacturing, and marketing of cost-effective surgical implants and medical instruments. Its products are used primarily in neurosurgery, extremity reconstruction, orthopedics and general surgery.

The Company sells its products directly through various sales forces and through a variety of other distribution channels.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

BASIS OF PRESENTATION

These financial statements and the accompanying notes are prepared in accordance with accounting principles generally accepted in the United States of America and conform to Regulation S-X under the Securities Exchange Act of 1934, as amended.

PRINCIPLES OF CONSOLIDATION

The consolidated financial statements include the accounts of the Company and its subsidiaries, all of which are wholly owned. All intercompany accounts and transactions are eliminated in consolidation. See Note 4, *Acquisitions and Pro Forma Results*, for details of new subsidiaries included in the consolidation.

USE OF ESTIMATES

The preparation of consolidated financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent liabilities, and the reported amounts of revenues and expenses. Significant estimates affecting amounts reported or disclosed in the consolidated financial statements include allowances for doubtful accounts receivable and sales returns and allowances, net realizable value of inventories, valuation of intangible assets and in-process research and development ("IPR&D"), amortization periods for acquired intangible assets, discount rates and estimated projected cash flows used to value and test impairments of long-lived assets and goodwill, estimates of projected cash flows, depreciation and amortization periods for long-lived assets, computation of taxes, valuation allowances recorded against deferred tax assets, the valuation of stock-based compensation, valuation of pension assets and liabilities, valuation of derivative instruments, and valuation of debt instruments and loss contingencies. These estimates are based on historical experience and on various other assumptions that are believed to be reasonable under the current circumstances. Actual results could differ from these estimates.

RECLASSIFICATIONS

Certain amounts from the prior year's financial statements have been reclassified in order to conform to the current year's presentation.

CASH AND CASH EQUIVALENTS

The Company considers all short-term, highly liquid investments purchased with original maturities of three months or less to be cash equivalents. These investments are carried at cost, which approximates fair value.

TRADE ACCOUNTS RECEIVABLE AND ALLOWANCES FOR DOUBTFUL ACCOUNTS RECEIVABLE

Trade accounts receivable are recorded at the invoiced amount and do not bear interest. The Company grants credit to customers in the normal course of business, but generally does not require collateral or any other security to support its receivables.

The Company evaluates the collectability of accounts receivable based on a combination of factors. In circumstances where a specific customer is unable to meet its financial obligations to the Company, a provision to the allowances for doubtful accounts is recorded against amounts due to reduce the net recognized receivable to the amount that is reasonably expected to be collected. For all other customers, a provision to the allowances for doubtful accounts is recorded based on factors including the length of time the receivables are past due, the current business environment and the Company's historical experience. Provisions to the allowances for doubtful accounts are recorded to selling, general and administrative expenses. Account balances are charged off against the allowance when it is probable that the receivable will not be recovered. Provision for doubtful accounts net of recoveries, associated with accounts receivable, included in selling, general and administrative expense, were $2.1 million, $0.6 million, and $2.0 million for the years ended December 31, 2019, 2018 and 2017, respectively.

INVENTORIES

Inventories, consisting of purchased materials, direct labor and manufacturing overhead, are stated at the lower of cost, the value determined by the first-in, first-out method, or net realizable value. Inventories consisted of the following:

	December 31,	
	2019	2018
	(In thousands)	
Finished goods	201,870	$ 179,885
Work in process	48,333	47,715
Raw materials	65,851	52,747
Total inventories, net	316,054	$ 280,347

At each balance sheet date, the Company evaluates inventories for excess quantities, obsolescence or shelf life expiration. This evaluation includes analysis of historical sales levels by product, projections of future demand, the risk of technological or competitive obsolescence for products, general market conditions, a review of the shelf life expiration dates for products, as well as the feasibility of reworking or using excess or obsolete products or components in the production or assembly of other products that are not obsolete or for which there are not excess quantities in inventory. To the extent that management determines there are excess or obsolete inventory or quantities with a shelf life that is too near its expiration for the Company to reasonably expect that it can sell those products prior to their expiration, the Company adjusts the carrying value to estimated net realizable value.

The Company capitalizes inventory costs associated with certain products prior to regulatory approval, based on management's judgment of probable economic benefit. The Company could be required to expense previously capitalized costs related to pre-approval inventory upon a change in such judgment, due to, among other potential factors, a denial or delay of approval by necessary regulatory bodies or a decision by management to discontinue the related development program. No such amounts were capitalized at December 31, 2019 or 2018.

PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment are stated at historical cost less accumulated depreciation and any impairment charges. The Company provides for depreciation using the straight-line method over the estimated useful lives of the assets. Leasehold improvements are amortized over the lesser of the lease term or the useful life. The cost of major additions and improvements is capitalized, while maintenance and repair costs that do not improve or extend the lives of the respective assets are charged to operations as incurred. The cost of computer software developed or obtained for internal use is accounted for in accordance with the Accounting Standards Codification 350-40, *Internal-Use Software.*

Property, plant and equipment balances and corresponding lives were as follows:

	December 31,		
	2019	2018	Useful Lives
	(In thousands)		
Land	$ 1,476	$ 1,837	
Buildings and building improvements	16,262	20,472	5-40 years
Leasehold improvements	114,941	105,063	1-20 years
Machinery and production equipment	155,313	143,921	3-20 years
Surgical instrument kits	33,104	31,231	4-5 years
Information systems and hardware	138,398	129,962	1-7 years
Furniture, fixtures, and office equipment	22,145	17,731	1-15 years
Construction-in-progress	140,366	105,075	
Total	622,005	555,292	
Less: Accumulated depreciation	(284,601)	(255,180)	
Property, plant and equipment, net	$ 337,404	$ 300,112	

Depreciation expense associated with property, plant and equipment was $42.6 million, $44.1 million, and $36.1 million for the years ended December 31, 2019, 2018 and 2017, respectively.

CAPITALIZED INTEREST

The interest cost on capital projects, including facilities build-out and internal use software, is capitalized and included in the cost of the project. Capitalization commences with the first expenditure for the project and continues until the project is substantially complete and ready for its intended use. When no debt is incurred specifically for a project, interest is capitalized on project

expenditures using the weighted average cost of the Company's outstanding borrowings. For the years ended December 31, 2019 and 2018, respectively, the Company capitalized $3.1 million and $2.3 million of interest expense into property, plant and equipment.

ACQUISITIONS

Results of operations of acquired companies are included in the Company's results of operations as of the respective acquisition dates. Acquired businesses are accounted for using the acquisition method of accounting, which requires that assets acquired and liabilities assumed be recorded at fair value, with limited exceptions. Any excess of the purchase price over the fair value of the net assets acquired is recorded as goodwill. Transaction costs and costs to restructure the acquired Company are expensed as incurred. The operating results of the acquired business are reflected in the consolidated financial statements after the date of acquisition. Acquired in-process research and development ("IPR&D") is recognized at fair value and initially characterized as an indefinite-lived intangible asset, irrespective of whether the acquired IPR&D has an alternative future use. Contingent consideration is recognized at the estimated fair value on the acquisition date. Subsequent changes to the fair value of contingent payments are recognized in selling, general and administrative expense in consolidated statements of operations. Contingent payments related to acquisitions consist of development, regulatory, and commercial milestone payments, in addition to sales-based payments, and are valued using discounted cash flow techniques. The fair value of development, regulatory, and commercial milestone payments reflects management's expectations of the probability of payment and increases or decreases as the probability of payment or expectation of timing of payments changes. The fair value of sales-based payments is based upon probability-weighted future revenue estimates and increases or decreases as revenue estimates or expectation of timing of payments changes.

If the acquired net assets do not constitute a business under the acquisition method of accounting, the transaction is accounted for as an asset acquisition and no goodwill is recognized. In an asset acquisition, the amount allocated to acquired IPR&D with no alternative future use is charged to expense at the acquisition date. Payments that would be recognized as contingent consideration in a business combination are expensed when probable in an asset acquisition. Refer to Note 4, *Acquisitions and Pro Forma Results* for more information.

GOODWILL AND OTHER INTANGIBLE ASSETS

The excess of the cost over the fair value of net assets of acquired businesses is recorded as goodwill. Goodwill is not subject to amortization but is reviewed for impairment at the reporting unit level annually, or more frequently if impairment indicators arise. The Company's assessment of the recoverability of goodwill is based upon a comparison of the carrying value of goodwill with its estimated fair value. The Company reviews goodwill for impairment in the third quarter every year in accordance with ASC Topic 350 and whenever events or changes in circumstances indicate the carrying value of goodwill may not be recoverable. Refer to Note 7, *Goodwill and Other Intangibles* for more information.

The Company has two reportable segments with three underlying reporting units. Refer to Note 16, *Segment and Geographic Information* for more information on reportable segments.

When the Company acquires a business, the assets acquired, including IPR&D, and liabilities assumed are recorded at their respective fair values as of the acquisition date. The Company's policy defines IPR&D as the fair value of those projects for which the related products have not received regulatory approval and have no alternative future use. Determining the fair value of intangible assets, including IPR&D, acquired as part of a business combination requires the Company to make significant estimates. These estimates include the amount and timing of projected future cash flows, the discount rate used to discount those cash flows to present value, the assessment of the asset's life cycle, and the consideration of legal, technical, regulatory, economic, and competitive risks. The fair value assigned to other intangible assets is determined by estimating the future cash flows of each project or technology and discounting the net cash flows back to their present values. The discount rate used is determined at the time of measurement in accordance with accepted valuation methodologies.

IPR&D acquired in a business combination is capitalized as an indefinite-lived intangible asset. Development costs incurred after the acquisition are expensed as incurred. Upon receipt of regulatory approval, the indefinite-lived intangible asset is then accounted for as a finite-lived intangible asset and amortized on a straight-line basis or accelerated basis, as appropriate, over its estimated useful life. If the research and development project is subsequently abandoned, the indefinite-lived intangible asset is charged to expense. IPR&D acquired outside of a business combination is expensed immediately.

Due to the uncertainty associated with research and development projects, there is risk that actual results will differ materially from the original cash flow projections and that the research and development project will result in a successful commercial product. The risks associated with achieving commercialization include, but are not limited to, delay or failure to obtain regulatory approvals to conduct clinical trials, delay or failure to obtain required market clearances, delays or issues with patent issuance, or validity and litigation.

Other intangible assets include patents, trademarks, purchased technology, and supplier and customer relationships. Identifiable intangible assets are initially recorded at fair market value at the time of acquisition generally using an income or cost approach. The Company capitalizes costs incurred to renew or extend the term of recognized intangible assets and amortizes those costs over their expected useful lives.

LONG-LIVED ASSETS

Long-lived assets held and used by the Company, including property, plant and equipment, intangible assets, and leases are reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount of an asset may not be recoverable. For purposes of evaluating the recoverability of long-lived assets to be held and used, a recoverability test is performed using projected undiscounted net cash flows applicable to the long-lived assets. If an impairment exists, the amount of such impairment is calculated based on the estimated fair value of the asset. Impairments to long-lived assets to be disposed of are recorded based upon the difference between the carrying value and the fair value of the applicable assets.

INTEGRA FOUNDATION

The Company may periodically make contributions to the Integra Foundation, Inc. The Integra Foundation was incorporated in 2002 exclusively for charitable, educational, and scientific purposes and qualifies under IRC 501(c)(3) as an exempt private foundation. Under its charter, the Integra Foundation engages in activities that promote health, the diagnosis and treatment of disease, and the development of medical science through grants, contributions and other appropriate means. The Integra Foundation is a separate legal entity and is not a subsidiary of the Company; therefore, its results are not included in these consolidated financial statements. The Company contributed $0.3 million, $0.8 million and $0.5 million to the Integra Foundation during the years ended December 31, 2019, 2018 and 2017, respectively. These contributions were recorded in selling, general, and administrative expense.

DERIVATIVES

The Company develops, manufactures, and sells medical devices globally, and its earnings and cash flows are exposed to market risk from changes in interest rates and currency exchange rates. The Company addresses these risks through a risk management program that includes the use of derivative financial instruments and operates the program pursuant to documented corporate risk management policies. All derivative financial instruments are recognized in the financial statements at fair value in accordance with the authoritative guidance. Under the guidance, for those instruments that are designated and qualify as hedging instruments, the hedging instrument must be designated as a fair value hedge, cash flow hedge, or a hedge of a net investment in a foreign operation, based on the exposure being hedged. The accounting for changes in the fair value of a derivative instrument depends on whether it has been designated and qualifies as part of a hedging relationship and, further, on the type of hedging relationship. The Company's derivative instruments do not subject its earnings or cash flows to material risk, and gains and losses on these derivatives generally offset losses and gains on the item being hedged. The Company has not entered into derivative transactions for speculative purposes and from time to time, the Company may enter into derivatives that are not designated as hedging instruments in order to protect itself from currency volatility due to intercompany balances.

All derivative instruments are recognized at their fair values as either assets or liabilities on the balance sheet. The Company determines the fair value of its derivative instruments, using the framework prescribed by the authoritative guidance, by considering the estimated amount the Company would receive to sell or transfer these instruments at the reporting date and by taking into account: expected forward interest rates, currency exchange rates, the creditworthiness of the counterparty for assets, and its creditworthiness for liabilities. In certain instances, the Company utilizes a discounted cash flow model to measure fair value. Generally, the Company uses inputs that include quoted prices for similar assets or liabilities in active markets, other observable inputs for the asset or liability and inputs derived principally from, or corroborated by, observable market data by correlation or other means. The Company has classified all of its derivative assets and liabilities within Level 2 of the fair value hierarchy because observable inputs are available for substantially the full term of its derivative instruments. The Company classifies derivatives designated as hedges in the same category as the item being hedged for cash flow presentation purposes.

The Company entered into a foreign currency forward contract that is not designated as a hedging instrument for accounting purposes. This contract is recorded at fair value, with the changes in fair value recognized into other income, net on the consolidated financial statements. Refer to Note 6, *Derivative Instruments* for more information.

FOREIGN CURRENCY

All assets and liabilities of foreign subsidiaries which have a functional currency other than the U.S. dollar are translated at the rate of exchange at year-end, while elements of the income statement are translated at the average exchange rates in effect during the year. The net effect of these translation adjustments is shown as a component of accumulated other comprehensive income (loss). These currency translation adjustments are not currently adjusted for income taxes as they relate to permanent investments in non-U.S. subsidiaries. Foreign currency transaction loss of $0.3 million, $1.7 million and $2.9 million are reported in other income, net in the statements of operations, for the year ended December 31, 2019, 2018 and 2017, respectively.

INCOME TAXES

Income taxes are accounted for by using the asset and liability method. Deferred tax assets and liabilities are recognized for the estimated future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective tax basis. A valuation allowance is provided when it is more likely than not that some portion

or all of the deferred tax assets will not be realized. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period when the change is enacted.

The Company recognizes a tax benefit from an uncertain tax position only if it is more likely than not to be sustained upon examination based on the technical merits of the position. Reserves are established for positions that don't meet this recognition threshold. The reserve is measured as the largest amount of benefit determined on a cumulative probability basis that the Company believes is more likely than not to be realized upon ultimate settlement of the position. These reserves are classified as long-term liabilities in the consolidated balance sheets of the Company, unless the reserves are expected to be paid in cash during the next twelve months, in which case they are classified as current liabilities. The Company also records interest and penalties accrued in relation to uncertain tax benefits as a component of income tax expense.

While the Company believes it has identified all reasonably identifiable exposures and the reserve it has established for identifiable exposures is appropriate under the circumstances, it is possible that additional exposures exist and that exposures may be settled at amounts different than the amounts reserved. It is also possible that changes in facts and circumstances could cause the Company to either materially increase or reduce the carrying amount of its tax reserve.

The Company continues to indefinitely reinvest substantially all of its foreign earnings. The current provisional analysis indicates that the Company has sufficient U.S. liquidity, including borrowing capacity, to fund foreseeable U.S. cash needs without requiring the repatriation of foreign cash. The Tax Cuts and Jobs Act (the “2017 Tax Act”), enacted in December 2017, imposed a toll tax on a deemed repatriation of undistributed earnings of foreign subsidiaries. One time or unusual items that may impact the ability or intent to keep the foreign earnings and cash indefinitely reinvested include significant U.S. acquisitions, loans from a foreign subsidiary, changes in tax laws.

On December 22, 2017, the SEC staff issued Staff Accounting Bulletin No. 118 to address the application of U.S. GAAP in situations when a registrant does not have the necessary information available, prepared, or analyzed (including computations) in reasonable detail to complete the accounting for certain income tax effects of the 2017 Tax Act. The Company recognized the provisional tax impacts related to deemed repatriated earnings and the revaluation of deferred tax assets and liabilities and included these amounts in its consolidated financial statements for the year ended December 31, 2017. The Company applied the guidance of SAB No. 118 when accounting for the enactment date effects of the 2017 Tax Act in 2017 and throughout 2018. The Company finalized its calculations and completed its accounting for the income tax effect of the 2017 Tax Act in December 2018.

REVENUE RECOGNITION

On January 1, 2018, the Company adopted Topic 606 using the modified retrospective method applied to all contracts which were not completed as of January 1, 2018. Results of operations for the reporting periods after January 1, 2018 are presented under Topic 606, while prior period amounts are not adjusted and continue to be reported in accordance with Topic 605, *Revenue Recognition*. The adoption of Topic 606 resulted in an increase to the opening retained earnings of $1.9 million, which was recorded net of taxes as of January 1, 2018 to reflect the change in timing of the recognition of revenue related to the Company's private label business from point in time to over time during the manufacturing process and goods in transit for which control was transferred to customers at the time of shipment. The total assets and liabilities increased by $7.1 million and $5.2 million, respectively, as of January 1, 2018.

Revenue is recognized upon the transfer of control of promised products or services to the customers in an amount that reflects the consideration the Company expects to receive in exchange for those products and services.

Total revenue, net, includes product sales, product royalties and other revenues, such as fees received from services.

For products shipped with FOB shipping point terms, the control of the product passes to the customer at the time of shipment. For shipments in which the control of the product is transferred when the customer receives the product, the Company recognizes revenue upon receipt by the customer. Certain products that the Company produces for private label customers have no alternative use and the Company has a right of payment for performance to date. Revenues from those products are recognized over the period that the Company manufactures these products, which is typically one to three months. The Company uses the input method to measure the manufacturing activities completed to date, which depicts the progress of the Company's performance obligation of transferring control of goods being manufactured for private label customers.

A portion of the Company's product revenue is generated from consigned inventory maintained at hospitals and distributors, and also from inventory physically held by field sales representatives. For these types of products sales, the Company retains control until the product has been used or implanted, at which time revenue is recognized.

Revenues from sale of products and services are evidenced by either a contract with the customer or a valid purchase order and an invoice which includes all relevant terms of sale. For product sales, invoices are generally issued upon the transfer of control (or upon the completion of the manufacturing in the case of the private label transactions recognized over time) and are typically payable 30 days after the invoice date. The Company performs a review of each specific customer's creditworthiness and ability to pay prior to acceptance as a customer. Further, the Company performs periodic reviews of its customers' creditworthiness prospectively. Refer to Note 3, *Revenue From Contracts With Customers* for more information.

RESEARCH AND DEVELOPMENT

Research and development costs, including salaries, depreciation, consultant and other external fees, and facility costs directly attributable to research and development activities, are expensed in the period in which they are incurred.

EMPLOYEE TERMINATION BENEFITS

The Company does not have a written severance plan, and it does not offer similar termination benefits to affected employees in all restructuring initiatives. Accordingly, in situations where minimum statutory termination benefits must be paid to the affected employees, the Company records employee severance costs associated with these restructuring activities in accordance with the authoritative guidance for non-retirement post-employment benefits. Charges associated with these activities are recorded when the payment of benefits is probable and can be reasonably estimated. In all other situations where the Company pays out termination benefits, including supplemental benefits paid in excess of statutory minimum amounts and benefits offered to affected employees based on management's discretion, the Company records these termination costs in accordance with the authoritative guidance for ASC Topic 712 *Compensation-Nonretirement Benefits* and ASC Topic 420 *One-time Employee Termination Benefits*.

The timing of the recognition of charges for employee severance costs other than minimum statutory benefits depends on whether the affected employees are required to render service beyond their legal notification period in order to receive the benefits. If affected employees are required to render service beyond their legal notification period, charges are recognized over the future service period. Otherwise, charges are recognized when management has approved a specific plan and employee communication requirements have been met.

STOCK-BASED COMPENSATION

The Company applies the authoritative guidance for stock-based compensation. This guidance requires companies to recognize the expense related to the fair value of their stock-based compensation awards. Stock-based compensation expense for stock option awards are based on the grant date fair value using the binomial distribution model. The Company recognizes compensation expense for stock option awards, restricted stock awards, performance stock awards and contract stock awards over the requisite service period of the award. All excess tax benefits and taxes and tax deficiencies from stock-based compensation are included in provision for income taxes in the consolidated statement of operations. Refer to Note 9, *Stock-based Compensation* for more information.

PENSION BENEFITS

The Company maintains defined benefit pension plans that cover certain employees in Austria, France, Japan, Germany and Switzerland. Various factors are considered in determining the pension liability, including the number of employees expected to be paid their salary levels and years of service, the expected return on plan assets, the discount rate used to determine the benefit obligations, the timing of benefit payments and other actuarial assumptions.

Retirement benefit plan assumptions are reassessed on an annual basis or more frequently if changes in circumstances indicate a re-evaluation of assumptions are required. The key benefit plan assumptions are the discount rate and expected rate of return on plan assets. The discount rate is based on average rates on bonds that matched the expected cash outflows of the benefit plans. The expected rate of return is based on historical and expected returns on the various categories of plan assets.

The Company uses the corridor approach in measuring the amount of net periodic benefit pension cost to recognize each period. The corridor approach defers all actuarial gains and losses resulting from variances between actual results and actuarial assumptions. Those unrecognized gains and losses are amortized when the net gains and losses exceed 10% of the greater of the market-related value of plan assets or the projected benefit obligation at the beginning of the year. The amount in excess of the corridor is amortized over the average remaining service period to retirement date of active plan participants.

CONCENTRATION OF CREDIT RISK

Financial instruments, which potentially subject the Company to concentrations of credit risk, consist principally of cash and cash equivalents, which are held at major financial institutions, investment-grade marketable debt securities and trade receivables.

The Company's products are sold on an uncollateralized basis and on credit terms based upon a credit risk assessment of each customer. A portion of the Company's trade receivables to customers outside the United States includes sales to foreign distributors, who then sell to government owned or supported healthcare systems.

None of the Company's customers accounted for 10% or more of the consolidated net sales during the years ended December 31, 2019, 2018 and 2017.

RECENT ACCOUNTING PRONOUNCEMENTS

In February 2016, the FASB issued ASU No. 2016-02, *Leases (Topic 842) (the New Lease Standard)*. The New Lease Standard requires that lessees recognize virtually all of its leases on the balance sheet by recording a right-of-use asset and lease liability (other than leases that meet the definition of a "short-term lease"). This update became effective for all annual periods and interim reporting periods beginning after December 15, 2018.

The Company adopted the New Lease Standard as of January 1, 2019 using a modified retrospective transition. Under this method, financial results reported in periods prior to January 1, 2019 are unchanged. The Company elected the 'package of practical expedients' which permits the Company not to reassess the prior conclusions about lease identification, lease classification and initial direct costs under the new standard. The Company also elected the use-of-hindsight practical expedient. As most of the leases do not provide an implicit rate, the Company used the collateralized incremental borrowing rate based on the information available at the lease implementation date in determining the present value of the lease payments. The adoption of the New Lease Standard had an initial impact on the consolidated balance sheet due to the recognition of $76.4 million of lease liabilities with corresponding right-of-use assets ("ROU") of $67.3 million for operating leases. The difference between lease liabilities and right-of-use assets is primarily attributed to unamortized lease incentives which is amortized over the term of each respective lease. Refer to Note 11, *Leases and Related Party Leases* for more information.

In June 2016, the FASB issued ASU No. 2016-13, *Financial Instruments - Credit Losses (Topic 326)*: *Measurement of Credit Losses on Financial Instruments.* The ASU is intended to improve financial reporting by requiring timelier recording of credit losses on loans and other financial instruments held by financial institutions and other organizations. The ASU requires the measurement of all expected credit losses for financial assets including trade receivables held at the reporting date based on historical experience, current conditions, and reasonable and supportable forecasts. Financial institutions and other organizations will now use forward-looking information to better inform their credit loss estimates. The Company will adopt ASU 2016-13 effective January 1, 2020 utilizing a modified retrospective method of transition. The adoption of this guidance will not have a significant impact on the Company's consolidated financial statements and related disclosures.

In August 2018, the FASB issued ASU No. 2018-15, *Intangibles - Goodwill and Other - Internal-Use Software (Subtopic 350-40)*, relating to a customer's accounting for implementation, set-up, and other upfront costs incurred in a cloud computing arrangement that is hosted by a vendor (e.g., a service contract). Under the new guidance, a customer will apply the same criteria for capitalizing implementation costs as it would for an arrangement that has a software license. The new guidance also prescribes the balance sheet, income statement, and cash flow classification of the capitalized implementation costs and related amortization expense, and requires additional quantitative and qualitative disclosures. The Company will adopt ASU 2018-15 effective January 1, 2020 utilizing a prospective method of transition. The adoption of this guidance will not have a significant impact on the Company's consolidated financial statements and related disclosures.

In December 2019, the FASB issued ASU No. 2019-12, *Income Taxes: Simplifying the Accounting for Income Taxes* intended to simplify the accounting for income taxes by eliminating certain exceptions related to the approach for intraperiod tax allocation, the methodology for calculating income taxes in an interim period and the recognition of deferred tax liabilities for outside basis differences. The new guidance also simplifies aspects of the accounting for franchise taxes and enacted changes in tax laws or rates and clarifies the accounting for transactions that result in a step-up in the tax basis of goodwill. The standard is effective for annual periods beginning after December 15, 2020 and interim periods within, with early adoption permitted. Adoption of the standard requires certain changes to be made prospectively, with some changes to be made retrospectively. The Company is currently assessing the impact of this standard on the financial condition and results of operations.

There are no other recently issued accounting pronouncements that are expected to have any significant effect on the Company's financial position, results of operations or cash flows.

SUPPLEMENTAL DISCLOSURES OF CASH FLOW INFORMATION

Cash paid for interest during the years ended December 31, 2019, 2018 and 2017 was $48.9 million (net of $3.1 million that was capitalized into construction in progress), $58.3 million (net of $2.3 million that was capitalized into construction in progress) and $32.3 million (net of $1.1 million that was capitalized into construction in progress), respectively.

Cash paid for income taxes, net of refunds, for the years ended December 31, 2019, 2018 and 2017 was $16.2 million, $10.4 million and $14.6 million, respectively.

NON-CASH INVESTING AND FINANCING ACTIVITIES

During the fourth quarter of 2019, the Company achieved the first developmental milestone which triggered a $5.0 million obligation to be paid to former shareholders of Rebound. In addition, the Company recorded $5.0 million as in-process research and development expense in the consolidated statements of operations. The obligation was included in accrued liabilities at December 31, 2019 in the consolidated balance sheets. The milestone was paid during the first quarter of 2020.

Property and equipment purchases included in liabilities at December 31, 2019, 2018 and 2017 were $11.0 million, $5.4 million and $7.8 million, respectively.

During the year ended December 31, 2017, the Company issued 2.8 million shares of common stock due to the exercise of 8.7 million warrants associated with convertible notes issued in 2011.

3. REVENUES FROM CONTRACTS WITH CUSTOMERS

Summary of Accounting Policies on Revenue Recognition

Revenue is recognized upon the transfer of control of promised products or services to the customers in an amount that reflects the consideration the Company expects to receive in exchange for those products and services.

Performance Obligations

The Company's performance obligations consist mainly of transferring control of goods and services identified in the contracts, purchase orders, or invoices. The Company has no significant multi-element contracts with customers.

Significant Judgments

Usage-based royalties and licenses are estimated based on the provisions of contracts with customers and recognized in the same period that the royalty-based products are sold by the Company's strategic partners. The Company estimates and recognizes royalty revenue based upon communication with licensees, historical information, and expected sales trends. Differences between actual reported licensee sales and those that were estimated are adjusted in the period in which they become known, which is typically the following quarter. Historically, such adjustments have not been significant.

The Company estimates returns, price concessions, and discount allowances using the expected value method based on historical trends and other known factors. Rebate allowances are estimated using the most likely method based on each customer contract.

The Company's return policy, as set forth in its product catalogs and sales invoices, requires review and authorization in advance prior to the return of product. Upon the authorization, a credit will be issued for the goods returned within a set amount of days from the shipment, which is generally ninety days.

The Company disregards the effects of a financing component if the Company expects, at contract inception, that the period between the transfer and customer payment for the goods or services will be one year or less. The Company has no significant revenues recognized on payments expected to be received more than one year after the transfer of control of products or services to customers.

Contract Asset and Liability

Revenues recognized from the Company's private label business that are not invoiced to the customers as a result of recognizing revenue over time are recorded as a contract asset included in the prepaid expenses and other current assets account in the consolidated balance sheet.

Other operating revenues may include fees received under service agreements. Non-refundable fees received under multiple-period service agreements are recognized as revenue as the Company satisfies the performance obligations to the other party. A portion of the transaction price allocated to the performance obligations to be satisfied in the future periods is recognized as contract liability.

The following table summarized the changes in the contract asset and liability balances for the year ended December 31, 2019:

	Total
	(amounts in thousands)
Contract Asset	
Contract asset, January 1, 2019	$ 4,193
Transferred to trade receivable of contract asset included in beginning of the year contract asset	(4,193)
Contract asset, net of transferred to trade receivables on contracts during the period	8,680
Contract asset, December 31, 2019	$ 8,680
Contract Liability	
Contract liability, January 1, 2019	$ 12,716
Recognition of revenue included in beginning of year contract liability	(5,613)
Contract liability, net of revenue recognized on contracts during the period	4,872
Foreign currency translation	(29)
Contract liability, December 31, 2019	$ 11,946

At December 31, 2019, the short-term portion of the contract liability of 4.8 million and the long-term portion of 7.1 million were included in accrued expenses and other current liabilities and other liabilities in the consolidated balance sheet.

As of December 31, 2019, the Company is expected to recognize revenue of approximately $4.8 million in 2020, $2.8 million in 2021, $1.9 million in 2022, $0.8 million in 2023, $0.5 million in 2024, and $1.2 million thereafter.

Shipping and Handling Fees

The Company elected to account for shipping and handling activities as a fulfillment cost rather than a separate performance obligation. Amounts billed to customers for shipping and handling are included as part of the transaction price and recognized as revenue when control of underlying products is transferred to the customer. The related shipping and freight charges incurred by the Company are included in the cost of goods sold.

Product Warranties

Certain of the Company's medical devices, including monitoring systems and neurosurgical systems, are designed to operate over long periods of time. These products are sold with warranties which may extend for up to two years from the date of purchase. The warranties are not considered a separate performance obligation. The Company estimates its product warranties using the expected value method based on historical trends and other known factors. The Company includes them in accrued expenses and other current liabilities in the consolidated balance sheet.

Taxes Collected from Customers

The Company elected to exclude from the measurement of the transaction price all taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction and collected by the entity from a customer.

Disaggregated Revenue

The following table presents revenues disaggregated by the major sources of revenues for years-ended December 31, 2019, 2018 and 2017 (amounts in thousands):

	Year Ended December 31, 2019	Year Ended December 31, 2018	Year Ended December 31, 2017
	(amounts in thousands)		
Neurosurgery	707,011	684,148	446,994
Precision Tools and Instruments	289,195	$ 279,781	$ 273,307
Total Codman Specialty Surgical	996,206	963,929	720,301
Wound Reconstruction	322,739	311,565	274,398
Extremity Orthopedics	90,082	90,588	93,546
Private Label	108,530	106,359	99,991
Total Orthopedics and Tissue Technologies	521,351	508,512	467,935
Total revenue	$ 1,517,557	$ 1,472,441	$ 1,188,236

See Note 16, *Segment and Geographical Information*, for details of revenues based on the location of the customer.

Effect of Adoption of ASC Topic 606

On January 1, 2018, the Company adopted Topic 606 using the modified retrospective method. Results of operations for the reporting periods after January 1, 2018 are presented under Topic 606, while prior period amounts are not adjusted and continue to be reported in accordance with Topic 605, *Revenue Recognition*.

The adoption of Topic 606 resulted in an increase to the opening retained earnings of $1.9 million, which was recorded net of taxes as of January 1, 2018 to reflect the change in timing of the recognition of revenue related to the Company's private label business from point in time to over time during the manufacturing process and goods in transit for which control was transferred to customers at the time of shipment. Total assets and liabilities increased by $7.1 million and $5.2 million, respectively, as of January 1, 2018.

The impact of adoption of Topic 606 to the Company's consolidated statement of operations for the year ended December 31, 2018 was as follows:

	Year Ended December 31, 2018	
	As Reported	Excluding Impact of Topic 606
	(Amounts in thousands)	
Statement of Operations		
Total revenue, net	$ 1,472,441	$ 1,468,075
Cost of goods sold	571,496	570,028
Income tax benefit	(3,398)	(4,119)
Net income	60,801	58,624

4. ACQUISITIONS AND PRO FORMA RESULTS

Arkis BioSciences Inc.

On July 29, 2019, the Company acquired Arkis BioSciences Inc. ("Arkis") for an acquisition purchase price of $30.9 million (the "Arkis Acquisition") plus contingent consideration of up to $25.5 million, that may be payable based on the successful completion of certain development and commercial milestones. The contingent consideration had an acquisition date fair value of $13.1 million. Arkis was a privately-held company that marketed the CerebroFlo® external ventricular drainage (EVD) catheter with Endexo® technology, a permanent additive designed to reduce the potential for catheter obstruction due to thrombus formation.

Assets Acquired and Liabilities Assumed at Fair Value

The Arkis Acquisition has been accounted for using the acquisition method of accounting. This method requires that assets acquired and liabilities assumed in a business combination to be recognized at their fair values as of the acquisition date. As of December 31, 2019, certain amounts relating to tax related matters have not been finalized. The finalization of these matters could result in changes to goodwill.

The following table summarizes the fair values of the assets acquired and liabilities assumed at the acquisition date:

	Preliminary Valuation as of December 31, 2019	Weighted Average Life
	(Dollars in thousands)	
Cash	$ 90	
Other current assets	751	
Property, plant and equipment	159	
Deferred Tax Assets	1,535	
Intangible assets:		
CerebroFlo developed Technology	20,100	15 years
Enabling technology license	1,980	14 years
Goodwill	27,600	
Total assets acquired	52,215	
Accounts Payable, accrued expenses and other liabilities	2,926	
Contingent consideration	13,100	
Deferred tax liabilities	5,305	
Net assets acquired	$ 30,884	

Intangible Assets

The estimated fair value of the intangible assets was determined using the income approach, which is a valuation technique that provides an estimate of the fair value of an asset based on market participant expectations of the cash flows an asset would generate over its remaining useful life. Some of the more significant assumptions inherent in the development of those asset valuations include the estimated net cash flows for each year for each asset (including net revenues, cost of sales, R&D costs, selling and marketing costs, and working capital/contributory asset charges), the appropriate discount rate to select in order to

measure the risk inherent in each future cash flow stream, the assessment of each asset's life cycle, and competitive trends impacting the asset and each cash flow stream.

The Company used a discount rate of 14.5% to arrive at the present value for the acquired intangible assets to reflect the rate of return a market participant would expect to earn and incremental commercial uncertainty in the cash flow projections. No assurances can be given that the underlying assumptions used to prepare the discounted cash flow analysis will not change. For these and other reasons, actual results may vary significantly from estimated results.

Goodwill

The Company allocated goodwill related to the Arkis Acquisition to the Codman Specialty Surgical segment. Goodwill is the excess of the consideration transferred over the net assets recognized and represents the expected revenue and cost synergies of the combined company and assembled workforce. One of the key factors that contributes to the recognition of goodwill, and a driver for the Company's acquisition of Arkis, is the planned expansion of the Endexo technology with the existing products within the Codman Specialty Surgical segment. Goodwill recognized as a result of this acquisition is non-deductible for income tax purposes.

Contingent Consideration

The Company determines the acquisition date fair value of contingent consideration obligations based on a probability-weighted income approach derived from revenue estimates and a probability assessment with respect to the likelihood of achieving contingent obligations. The fair value measurement is based on significant inputs not observable in the market and thus represents a Level 3 measurement as defined using the fair value concepts in ASC 820. The resultant probability-weighted cash flows are discounted using an appropriate effective annual interest rate. At each reporting date, the contingent consideration obligation will be revalued to estimated fair value and changes in fair value will be reflected as income or expense in our consolidated statement of operations. Changes in the fair value of the contingent consideration obligations may result from changes in discount periods and rates, changes in the timing and amount of revenue estimates and changes in probability assumptions with respect to the likelihood of achieving the various contingent payment obligations. Adverse changes in assumptions utilized in the contingent consideration fair value estimates could result in an increase in the contingent consideration obligation and a corresponding charge to operating results.

As part of the acquisition, the Company is required to pay the former shareholders of Arkis up to $25.5 million based on the timing of certain development milestones of $10 million and commercial sales milestones of $15.5 million, respectively. The Company used a probability weighted income approach to calculate the fair value of the contingent consideration that considered the possible outcomes of scenarios related to each specified milestone. The Company estimated the fair value of the contingent consideration to be $13.1 million at the acquisition date. The estimated the fair value as of December 31, 2019 was $14.2 million. This amount is included in other liabilities at December 31, 2019 in the consolidated balance sheets of the Company.

Deferred Tax Liabilities

Deferred tax liabilities result from identifiable intangible assets' fair value adjustments. These adjustments create excess book basis over tax basis which is tax-effected by the statutory tax rates of applicable jurisdictions.

The pro forma results are not presented for this acquisition as they are not material.

Rebound Therapeutics Corporation

On September 9, 2019, the Company acquired Rebound Therapeutics Corporation ("Rebound"), developers of a single-use medical device known as the AURORA Surgiscope® System ("Aurora") which enables minimally invasive access, using optics and illumination, for visualization, diagnostic and therapeutic use in neurosurgery (the "Rebound transaction"). Under the terms of the Rebound transaction, the Company made an upfront payment of $67.1 million and are committed to pay up to $35.0 million of contingent development milestones upon achievement of certain regulatory milestones. The acquisition of Rebound was primarily concentrated in one single identifiable asset and thus, for accounting purposes, the Company has concluded that the acquired assets do not meet the accounting definition of a business. The initial payment was allocated primarily to Aurora, resulting in a $59.9 million in-process research and development expense. The balance of approximately $7.2 million, which included $2.1 million of cash and cash equivalents and a net deferred tax asset of $4.2 million, was allocated to the remaining net assets acquired. The deferred tax asset primarily resulted from a federal net operating loss carry forward.

During the fourth quarter of 2019, the Company achieved the first developmental milestone which triggered a $5.0 million obligation to be paid to former shareholders of Rebound. The Company recorded $5.0 million as in-process research and development expense in the consolidated statements of operations. The obligation was included in accrued expenses and other current liabilities at December 31, 2019 in the consolidated balance sheets. The milestone was paid during the first quarter of 2020.

Integrated Shoulder Collaboration, Inc.

On January 4, 2019, the Company entered into a licensing agreement with Integrated Shoulder Collaboration, Inc ("ISC"). Under the terms of the agreement, the Company paid ISC $1.7 million for the exclusive, worldwide license to commercialize its short stem and stemless shoulder system. A patent related to short stem and stemless shoulder systems was issued to ISC during the first quarter of 2019. ISC is eligible to receive royalties on sales of the short stem and stemless shoulder system. The Company has the option to acquire ISC at a date four years subsequent to the first commercial sale, which becomes mandatory upon the achievement of a certain sales thresholds of the short stem and stemless shoulder system, for an amount not to exceed $80.0 million. The transaction was accounted for as an asset acquisition as the Company concluded that it acquired primarily one asset. The total upfront payment of $1.7 million was expensed as a component of research and development expense and the future milestone and option payments will be recorded if the corresponding events become probable.

Johnson & Johnson's Codman Neurosurgery Business

On February 14, 2017, the Company entered into a binding offer letter (the “Offer Letter”) with DePuy Synthes, Inc., a Delaware corporation (“DePuy Synthes”), a wholly-owned subsidiary of Johnson & Johnson, pursuant to which Integra made a binding offer to acquire certain assets, and assume certain liabilities, of Johnson & Johnson’s Codman neurosurgery business (the “Codman Acquisition”). The assets and liabilities subject to the proposed Codman Acquisition relate to the research, development, manufacturing, marketing, distribution and sale of certain products used in connection with neurosurgery procedures. The purchase price for the Codman Acquisition was $1.014 billion.

The Codman Acquisition was accounted for using the acquisition method of business combination under ASC 805, Business Combinations. This method requires that assets acquired and liabilities assumed in a business combination be recognized at their fair values as of the acquisition date. During the third quarter of 2018, the Company completed the purchase accounting for the Codman Acquisition.

In connection with the closing of the Codman Acquisition, the Company and DePuy Synthes entered into certain additional ancillary agreements, including transition services agreements, a transition manufacturing services agreement and certain other customary agreements. Amounts accrued and due to DePuy Synthes as of December 31, 2019 and 2018 were $2.1 million and $22.8 million, respectively.

The revenue and net income or loss attributable to this acquisition cannot be identified on a stand-alone basis because it has been integrated into the Company's operations.

The following table summarizes the final fair values of the assets acquired and liabilities assumed at the acquisition date and reflects measurement period adjustments subsequent to the acquisition date:

	Final Valuation	Weighted Average Life
	(Dollars in thousands)	
Inventory	74,962	
Assets held for sale	30,813	
Other current assets	8,202	
Property, plant and equipment	41,339	
Intangible assets:		
Codman corporate trade name	162,900	Indefinite
Completed technology	375,200	22 years
Goodwill	342,322	
Total assets acquired	1,035,738	
Accrued expenses	1,730	
Pension liabilities	19,917	
Net assets acquired	$ 1,014,091	

During 2018, the Company received cash of $26.7 million from DePuy Synthes related to working capital adjustments, which was recorded within investing activities on the consolidated statements of cash flows.

The Company recorded measurement period adjustments to goodwill totaling $4.0 million. During the first half of 2018, the Company adjusted goodwill by $3.2 million because of working capital adjustments of $6.2 million that were offset by inventory adjustments of $3.0 million. During the third quarter 2018, the Company adjusted goodwill by $0.8 million after finalizing the valuation step up of property, plant and equipment of $5.5 million. The adjustment for property, plant and equipment was offset by completed technology intangible asset adjustments of $4.7 million.

During the first three quarters of 2018, the Company paid $15.9 million for inventory that was included in the initial purchase accounting. The payment was included within financing activities on the consolidated statements of cash flows.

The Company recorded $17.3 million in cost of goods sold related to fair value inventory purchase accounting adjustments for the year ended December 31, 2018.

Goodwill was allocated to the Codman Specialty Surgical segment. Goodwill is the excess of the consideration transferred over the net assets recognized and represents the expected revenue and cost synergies of the combined company and assembled workforce. Goodwill recognized as a result of the acquisition is generally deductible for income tax purposes.

In the fourth quarter of 2017, the Company wrote-off construction in progress of $6.3 million related to a project acquired from Codman Neurosurgery that the Company decided to discontinue after the Codman Acquisition.

Derma Sciences

On February 24, 2017, the Company executed the Agreement and Plan of Merger (the "Merger Agreement") under which the Company acquired all of the outstanding shares of Derma Sciences, Inc., a Delaware corporation ("Derma Sciences") for an aggregate purchase price of approximately $210.8 million, including payment of certain of Derma Sciences' closing expenses and settlement of stock-based compensation plans of $4.8 million and $4.3 million, respectively. The purchase price consisted of a cash payment to the former shareholders of Derma Sciences of approximately $201.7 million upon the closing of the transaction.

Derma Sciences is a tissue regeneration company focused on advanced wound and burn care that offers products to help manage chronic and hard-to-heal wounds, especially those resulting from diabetes and poor vascular functioning.

The revenue and net income or loss attributable to this acquisition cannot be identified on a stand-alone basis because it has been integrated into the Company's operations.

The Derma Sciences acquisition was accounted for using the acquisition method of business combination under ASC 805, Business Combinations. This method requires that assets acquired and liabilities assumed in a business combination be recognized at their fair values as of the acquisition date.

The following table summarizes the final fair values of the assets acquired and liabilities assumed at the acquisition date and reflects purchase accounting adjustments subsequent to the acquisition date:

	Final Valuation	Weighted Average Life
	(Dollars in thousands)	
Cash and cash equivalents	$ 16,512	
Short-term investments	19,238	
Accounts receivable	8,949	
Inventory	17,977	
Prepaid expenses and other current assets	4,369	
Property, plant and equipment	4,311	
Intangible assets:		
Customer relationship	78,300	14 years
Trademarks/brand names	13,500	15 years
Completed technology	11,600	14 years
Non-compete agreement	280	1 year
Goodwill	73,765	
Deferred tax assets	14,524	
Other assets	101	
Total assets acquired	263,426	
Accounts payable	4,560	
Accrued expenses and other current liabilities	7,409	
Contingent liability	37,174	
Other liabilities	3,805	
Net assets acquired	$ 210,478	

Goodwill related to the Derma Sciences acquisition was allocated to the Orthopedics and Tissue Technologies segment. Goodwill is the excess of the consideration transferred over the net assets recognized and represents the expected revenue and cost synergies of the combined company and assembled workforce. Goodwill recognized as a result of this acquisition is not deductible for income tax purposes. During the first quarter of 2018, the Company completed its purchase accounting of Derma Sciences.

Short-term Investments

Short-term investments recognized at the acquisition date of Derma Sciences are investments in equity and debt securities including certificates of deposit purchased with an original maturity greater than three months which are deposited in various U.S. financial institutions and are fully insured by the Federal Deposit Insurance Corporation. The Company considers securities with original maturities of greater than 90 days to be available for sale securities. Securities under this classification are recorded at fair value and unrealized gains and losses are recorded within accumulated other comprehensive income. The estimated fair value of the available for sale securities is determined based on quoted market prices. The Company evaluates securities with unrealized losses to determine whether such losses, if any, are other than temporary. Short-term investments are classified as Level 1 in fair value hierarchy. Fair values of short-term investments are determined using the unadjusted quoted prices in active markets for identical assets or liabilities that the Company has the ability to access at the balance sheet date.

In the second quarter of 2017, the Company sold the acquired short-term investments and recognized a realized loss of $2.3 million included in other income, net in the consolidated statement of operations.

Deferred Taxes

The acquired deferred taxes of $14.5 million include a deferred tax asset of $39.7 million related to a federal net operating loss which the Company expects to utilize against income in future periods and a deferred tax asset of $16.4 million related to intangibles acquired by Derma Sciences in previous periods, offset by a deferred tax liability of $41.1 million for new intangibles for which the Company will not receive a tax benefit and deferred tax liability $0.5 million related to various deferred items. In the second quarter of 2017, the Company decreased the preliminary estimated value of the net deferred tax assets by $1.5 million to reflect adjustments to preliminary estimated fair values of assets and liabilities acquired. In fourth quarter of 2017, the Company decreased the preliminary value of the deferred tax asset by $3.3 million to reflect returns filed for periods prior to the acquisition date and adjustments for expected effective state tax rates.

United States Food and Drug Administration ("FDA") Untitled Letter

On June 22, 2015, the FDA issued an Untitled Letter (the "Untitled Letter") alleging that BioD morselized amniotic membrane based products do not meet the criteria for regulation as human cellular tissue-based products (“HCT/Ps”) solely under Section 361 of the Public Health Service Act and that, as a result, BioD would need a biologics license to lawfully market those morselized products. Since the issuance of the Untitled Letter, BioD and more recently, the Company have been in discussion with the FDA to communicate its disagreement with the FDA’s assertion that certain products are more than minimally manipulated. The FDA has not changed its position that certain of the BioD acquired products are not eligible for marketing solely under Section 361.

In November 2017, the FDA issued the final guidance document related to human tissue titled, “Regulatory Considerations for Human Cells, Tissues, and Cellular and Tissue-Based Products: Minimal Manipulation and Homologous Use” (the “HCT/P Final Guidance”). The HCT/P Final Guidance maintains the FDA’s position that products such as the Company’s morselized amniotic membrane tissue-based products do not meet the criteria for regulation solely as HCT/Ps. In addition, the FDA articulated a risk-based approach to enforcement and, while some uses for amniotic membrane tissue-based products would enjoy as much as thirty-six months of enforcement discretion, other high risk uses could be subject to immediate enforcement action. The Company does not believe the uses for its amniotic membrane tissue-based products fall into the high-risk category. As of February 21, 2020, the Company has not received any further notice of enforcement action from the FDA regarding its morselized amniotic tissue-based products. Nonetheless, the Company can make no assurances that the FDA will continue to exercise its enforcement discretion with respect to the Company’s amniotic membrane tissue-based products, and any potential action of the FDA could have a financial impact regarding the sales of such products. The Company has been evaluating and is considering regulatory approval pathways for its morselized amniotic membrane tissue-based products.

Revenues from BioD morselized amniotic material-based products for the year ended December 31, 2019 were less than 1.0% of consolidated revenues.

Contingent Consideration

The Company assumed contingent consideration incurred by Derma Sciences, Inc. ("Derma Sciences") related to its acquisitions of BioD and the intellectual property related to Medihoney products. The Company accounted for the contingent liabilities by recording their fair value on the date of the acquisition based on a probability weighted income approach. The Company has paid $33.3 million related to the aforementioned contingent liabilities. One contingent liability remains which relates to net sales of Medihoney products exceeding certain amounts defined in the agreement between the Company and Derma Sciences. The potential maximum undiscounted payment amounts to $3.0 million. The estimated fair value as of December 31, 2019 and December 31, 2018 was $0.2 million included in other liabilities, in the consolidated balance sheets.

Pro Forma Results (unaudited)

The following unaudited pro forma financial information summarizes the results of operations for the years ended December 31, 2017 for the acquisitions of Codman Neurosurgery, Derma Sciences and divestiture to Natus, which were completed by the Company during 2017 had been completed as of the beginning of 2017. The pro forma results are based upon certain assumptions and estimates, and they give effect to actual operating results prior to the acquisitions and adjustments to reflect (i) the change in interest expense, depreciation expense, intangible asset amortization and fair value inventory step-up, (ii) timing of recognition for certain expenses that will not be recurring in the post-acquisition period, which includes $2.9 million incurred by Derma Sciences prior to acquisition and $24.9 million incurred by Integra, (iii) gain from the sale of business of $2.6 million related to the Divestiture to Natus, and (iv) income taxes at a rate consistent with the Company’s statutory rate at the date of the acquisitions. No effect has been given to other cost reductions or operating synergies. As a result, these pro forma results do not necessarily represent results that would have occurred if the acquisitions had taken place on the basis assumed above, nor are they indicative of the results of future combined operations.

	Year Ended December 31, 2017 (Pro forma) (In thousands except per share amounts)	
Total revenue from continuing operations	$	1,428,491
Net income from continuing operations	$	81,730
Basic earnings per share from continuing operations	$	1.06

Divestiture to Natus

On September 8, 2017, to facilitate the acquisition of the Codman Neurosurgery Business, the Company and certain of its subsidiaries entered into an asset purchase agreement (the “Divestiture Agreement”) with Natus Medical Incorporated (“Natus”), pursuant to which the Company agreed to divest its Camino® Intracranial Pressure monitoring and the U.S. rights to its fixed pressure shunts

businesses within its Codman Specialty Surgical segment together with certain neurosurgery assets acquired as part of the Codman Acquisition, which includes Codman U.S. dural graft implant, external ventricular drainage catheter and cerebrospinal fluid collection systems businesses (the “Divestiture”). The Divestiture Agreement was entered into in connection with the review of the Codman Acquisition by the Federal Trade Commission and the antitrust authority of Spain.

On October 6, 2017, upon the terms and subject to the conditions of the Divestiture Agreement, the Divestiture was completed and Natus paid an aggregate purchase price of $46.4 million.

Assets and liabilities divested consisted of the following as of October 6, 2017 (amounts in thousands):

Inventories	$	8,348
Prepaid expenses and other current assets		36
Assets held for sale		30,813
Property, plant and equipment, net		1,122
Goodwill		2,861
Total assets divested	$	43,180
Deferred revenue	$	1,082
Accrued compensation		209
Total liabilities divested	$	1,291

Assets held for sale includes assets and liabilities related to U.S. dural graft implant, external ventricular drainage catheters and cerebrospinal fluid collection systems businesses acquired as part of acquisition of Codman Neurosurgery.

The transitional supply agreement with Natus requires the Company to provide to Natus certain assets defined in the transitional supply agreement upon termination. The Company recognized a liability of $1.3 million, included in other liabilities in consolidated balance sheet, related to estimated cost of assets to be provided to Natus upon termination of transitional supply agreement.

The Divestiture does not represent a strategic shift that will have a major effect on the Company's operations and financial statements. Goodwill was allocated to the assets and liabilities divested using the relative fair value method. The Company recognized a gain on sale of business of $2.6 million included in other income, net in its consolidated statement of operations for the year ended December 31, 2017.

5. DEBT

Fifth Amended and Restated Senior Credit Agreement

On May 3, 2018, the Company entered into the fifth amendment and restatement (the "May 2018 Amendment") of its Senior Credit Facility (the "Senior Credit Facility") with a syndicate of lending banks with Bank of America, N.A., as Administrative Agent. The May 2018 Amendment extended the maturity date to May 3, 2023 and decreased the applicable rate, as described below. The Company continues to have the aggregate principal amount of $2.2 billion available to it through the following facilities:

i. a $900.0 million Term Loan facility; and

ii. a $1.3 billion revolving credit facility, which includes a $60.0 million sublimit for the issuance of standby letters of credit and a $60.0 million sublimit for swingline loans.

In connection with the May 2018 Amendment, the Company’s maximum consolidated total leverage ratio in the financial covenants (as defined in the Senior Credit Facility) was modified to the following:

Fiscal Quarter	Maximum Consolidated Total Leverage Ratio
Execution of May 2018 Amendment through March 31, 2019	5.50 : 1.00
June 30, 2019 through March 31, 2020	5.00 : 1.00
June 30, 2020 through March 31, 2021	4.50 : 1.00
June 30, 2021 and thereafter	4.00 : 1.00

Borrowings under the Senior Credit Facility bear interest, at the Company's option, at a rate equal to the following:

i. the Eurodollar Rate (as defined in the amendment and restatement) in effect from time to time plus the applicable rate (ranging from 1.00% to 1.75%), or

ii. the highest of:

1. the weighted average overnight Federal funds rate, as published by the Federal Reserve Bank of New York, plus 0.50%, or plus the applicable rate (ranging from 0% to 0.75%),

2. the prime lending rate of Bank of America, N.A. plus the applicable rate (ranging from 0% to 0.75%), and

3. the one-month Eurodollar Rate plus 1.00% plus the applicable rate (ranging from 0% to 0.75%).

The applicable rates are based on the Company's consolidated total leverage ratio (defined as the ratio of (a) consolidated funded indebtedness less cash that is not subject to any restriction on the use or investment thereof to (b) consolidated EBITDA at the time of the applicable borrowing).

The Company will also pay an annual commitment fee (ranging from 0.15% to 0.35%), based on the Company's consolidated total leverage ratio, on the amount available for borrowing under the revolving credit facility.

At December 31, 2019 and 2018, there was $375.0 million and $345.0 million outstanding, respectively, under the revolving portion of the Senior Credit Facility at a weighted average interest rate of 3.2% and 4.0%, respectively. At December 31, 2019 and 2018, there was $877.5 million and $900.0 million outstanding under the Term Loan component of the Senior Credit Facility at a weighted average interest rate of 3.2% and 3.9%, respectively.

The Senior Credit Facility is collateralized by substantially all of the assets of the Company's U.S. subsidiaries, excluding intangible assets. The Senior Credit Facility is subject to various financial and negative covenants and at December 31, 2019 the Company was in compliance with all such covenants. The Company capitalized $4.2 million of incremental financing costs in 2018 in connection with the modifications of the Senior Credit Facility.

Contractual repayments of the Term Loan component of Senior Credit Facility are due as follows:

Year-ended December 31, 2019	Principal Repayment
	(In thousands)
2020	$ 45,000
2021	56,250
2022	67,500
2023	708,750
	$ 877,500

The outstanding balance of revolving credit component of the Senior Credit Facility is due on May 3, 2023.

Securitization Facility

During the fourth quarter of 2018, the Company entered into an accounts receivable securitization facility (the "Securitization Facility") under which accounts receivable of certain domestic subsidiaries are sold on a non-recourse basis to a special purpose entity ("SPE"), which is a bankruptcy-remote, consolidated subsidiary of the Company. Accordingly, the assets of the SPE are not available to satisfy the obligations of the Company or any of its subsidiaries. From time to time, the SPE may finance such accounts receivable with a revolving loan facility secured by a pledge of such accounts receivable. The amount of outstanding borrowings on the Securitization Facility at any one time is limited to $150.0 million. The Securitization Facility agreement is for an initial three-year term and may be extended. The agreement governing the Securitization Facility contains certain covenants and termination events. An occurrence of an event of default or a termination event under this Securitization Facility may give rise to the right of its counterparty to terminate this facility. At December 31, 2019, the Company was in compliance with the covenants, and none of the termination events had occurred. The Company had $104.5 million and $121.2 million of outstanding borrowings under its Securitization Facility at a weighted average interest rate of 2.8% and 3.4% as of December 31, 2019 and 2018, respectively.

The fair value of outstanding borrowings of the Senior Credit Facility's revolving credit facility and Term Loan component at December 31, 2019 were approximately $381.1 million and $889.9 million, respectively. The fair value of the outstanding borrowing of the Securitization facility at December 31, 2019 was approximately $105.8 million. These fair values were determined by using a discounted cash flow model based on current market interest rates available to the Company. These inputs are corroborated by observable market data for similar liabilities and therefore classified within Level 2 of the fair value hierarchy. Level 2 inputs represent inputs that are observable for the asset or liability, either directly or indirectly and are other than active market observable inputs that reflect unadjusted quoted prices for identical assets or liabilities.

Letters of credit outstanding as of December 31, 2019 and 2018 totaled $0.8 million and $0.6 million, respectively. There were no amounts drawn as of December 31, 2019.

6. DERIVATIVE INSTRUMENTS

Interest Rate Hedging

The Company's interest rate risk relates to U.S. dollar denominated variable interest rate borrowings. The Company uses interest rate swap derivative instruments to manage earnings and cash flow exposure resulting from changes in interest rates. These interest rate swaps apply a fixed interest rate on a portion of our expected LIBOR-indexed floating-rate borrowings.

The Company held the following interest rate swaps as of December 31, 2019 (dollar amounts in thousands):

Hedged Item	Current Notional Amount	Designation Date	Effective Date	Termination Date	Fixed Interest Rate	Estimated Fair Value
						Assets (Liabilities)
3-month USD LIBOR	50,000	February 6, 2017	June 30, 2017	June 30, 2020	1.834%	(2)
1-month USD LIBOR	100,000	February 6, 2017	June 30, 2017	June 30, 2020	1.652%	12
1-month USD LIBOR	100,000	March 27, 2017	December 31, 2017	June 30, 2021	1.971%	(581)
1-month USD LIBOR	150,000	December 13, 2017	January 1, 2018	December 31, 2022	2.201%	(2,880)
1-month USD LIBOR	150,000	December 13, 2017	January 1, 2018	December 31, 2022	2.201%	(2,880)
1-month USD LIBOR	100,000	December 13, 2017	July 1, 2019	June 30, 2024	2.423%	(3,517)
1-month USD LIBOR	50,000	December 13, 2017	July 1, 2019	June 30, 2024	2.423%	(1,778)
1-month USD LIBOR	200,000	December 13, 2017	January 1, 2018	December 31, 2024	2.313%	(6,595)
1-month USD LIBOR	75,000	October 10, 2018	July 1, 2020	June 30, 2025	3.220%	(5,750)
1-month USD LIBOR	75,000	October 10, 2018	July 1, 2020	June 30, 2025	3.199%	(5,747)
1-month USD LIBOR	75,000	October 10, 2018	July 1, 2020	June 30, 2025	3.209%	(5,807)
1-month USD LIBOR	100,000	December 18, 2018	December 30, 2022	December 31, 2027	2.885%	(4,930)
1-month USD LIBOR	100,000	December 18, 2018	December 30, 2022	December 31, 2027	2.867%	(4,691)
Total interest rate derivatives designated as cash flow hedge	$ 1,325,000					(45,145)

The Company held the following interest rate swaps as of December 31, 2018 (dollar amounts in thousands):

Hedged Item	Current Notional Amount	Designation Date	Effective Date	Termination Date	Fixed Interest Rate	Estimated Fair Value
						Assets (Liabilities)
3-month USD LIBOR	50,000	June 22, 2016	December 31, 2016	June 30, 2019	1.062%	$ 410
3-month USD LIBOR	50,000	June 22, 2016	December 31, 2016	June 30, 2019	1.062%	415
1-month USD LIBOR	50,000	July 12, 2016	December 31, 2016	June 30, 2019	0.825%	418
3-month USD LIBOR	50,000	February 6, 2017	June 30, 2017	June 30, 2020	1.834%	619
1-month USD LIBOR	100,000	February 6, 2017	June 30, 2017	June 30, 2020	1.652%	1,287
1-month USD LIBOR	100,000	March 27, 2017	December 31, 2017	June 30, 2021	1.971%	1,246
1-month USD LIBOR	150,000	December 13, 2017	January 1, 2018	December 31, 2022	2.201%	1,491
1-month USD LIBOR	150,000	December 13, 2017	January 1, 2018	December 31, 2022	2.201%	1,460
1-month USD LIBOR	100,000	December 13, 2017	July 1, 2019	June 30, 2024	2.423%	418
1-month USD LIBOR	50,000	December 13, 2017	July 1, 2019	June 30, 2024	2.423%	162
1-month USD LIBOR	200,000	December 13, 2017	January 1, 2018	December 31, 2024	2.313%	2,076
1-month USD LIBOR	75,000	October 10, 2018	July 1, 2020	June 30, 2025	3.220%	(2,594)
1-month USD LIBOR	75,000	October 10, 2018	July 1, 2020	June 30, 2025	3.199%	(2,551)
1-month USD LIBOR	75,000	October 10, 2018	July 1, 2020	June 30, 2025	3.209%	(2,568)
1-month USD LIBOR	100,000	December 18, 2018	December 30, 2022	December 31, 2027	2.885%	(797)
1-month USD LIBOR	100,000	December 18, 2018	December 30, 2022	December 31, 2027	2.867%	(873)
Total interest rate derivatives designated as cash flow hedges	$ 1,475,000					$ 619

The Company has designated these derivative instruments as cash flow hedges. The Company assesses the effectiveness of these derivative instruments and has recorded the changes in the fair value of the derivative instrument designated as a cash flow hedge as unrealized gains or losses in accumulated other comprehensive loss (“AOCL”), net of tax, until the hedged item affected earnings, at which point any gain or loss was reclassified to earnings. If the hedged cash flow does not occur, or if it becomes probable that it will not occur, the Company will reclassify the remaining amount of any gain or loss on the related cash flow hedge recorded in AOCL to interest expense at that time.

During the period ended December 31, 2019, interest rate swaps with an aggregate notional amount of $150 million matured.

Foreign Currency Hedging

From time to time the Company enters into foreign currency hedge contracts intended to protect the U.S. dollar value of certain forecasted foreign currency denominated transactions. The Company assesses the effectiveness of the contracts that are designated as hedging instruments. The changes in fair value of foreign currency cash flow hedges are recorded in AOCL, net of tax, until the hedged item affects earnings. Once the related hedged item affects earnings, the Company reclassifies amounts recorded in AOCL to earnings. If the hedged forecasted transaction does not occur, or if it becomes probable that it will not occur, the Company will reclassify the amount of any gain or loss on the related cash flow hedge to earnings at that time. For contracts not designated as hedging instruments, the changes in fair value of the contracts are recognized in other income (expense), net in the consolidated statements of operation, along with the offsetting foreign currency gain or loss on the underlying assets or liabilities.

The success of the Company’s hedging program depends, in part, on forecasts of certain activity denominated in foreign currency. The Company may experience unanticipated currency exchange gains or losses to the extent that there are differences between forecasted and actual activities during periods of currency volatility. In addition, changes in currency exchange rates related to any unhedged transactions may affect earnings and cash flows.

On November 28, 2017, the Company entered into a foreign currency forward contract, with a notional amount of $8.9 million to mitigate the foreign currency exchange risk related to a certain intercompany loan denominated in Swiss Francs ("CHF"). The contract is not designated as a hedging instrument. The foreign currency forward contract was settled on September 28, 2018. For the years ended December 31, 2018 and 2017, the Company recognized a $0.2 million loss and a $0.1 million gain, respectively, from the change in fair value of the contract, which was included in other income (expense), net in the consolidated statement of operations.

Cross-Currency Rate Swaps

On October 2, 2017, the Company entered into cross currency swap agreements to convert a notional amount of $300.0 million equivalent to 291.2 million of CHF denominated intercompany loans into U.S. dollars. The CHF denominated intercompany loans were the result of the purchase of intellectual property by a subsidiary in Switzerland as part of the Codman Acquisition. The objective of these cross-currency swaps is to reduce volatility of cash flows associated with changes in the foreign currency exchange rate. Under the terms of these contracts, which have been designated as cash flow hedges, the Company will make interest payments in Swiss Francs and receive interest in U.S. dollars. Upon the maturity of these contracts, the Company will pay the principal amount of the loans in Swiss Francs and receive U.S. dollars from the counterparties.

The Company held the following cross-currency rate swaps designated as cash flow hedges as of December 31, 2019 (dollar amounts in thousands):

						2019
	Effective Date	Termination Date	Fixed Rate	Aggregate Notional Amount		Fair Value Asset (Liability)
Pay CHF	October 2, 2017	October 2, 2020	1.75%	CHF	32,355	$ (101)
Receive U.S.$			4.38%	$	33,333	
Pay CHF	October 2, 2017	October 2, 2021	1.85%	CHF	48,533	(119)
Receive U.S.$			4.46%	$	50,000	
Pay CHF	October 2, 2017	October 2, 2022	1.95%	CHF	145,598	(289)
Receive U.S.$			4.52%	$	150,000	
Total						$ (509)

During the year ended December 31, 2019, the Company settled cross-currency swaps designated as cash flow hedges of an intercompany loan with an aggregate notional amount of $66.7 million. The original maturity dates were October 2, 2020,

however, as the intercompany loan settlement was consummated, the cross-currency swap was settled simultaneously. As a result of the settlements, the Company recorded a loss of $0.4 million in other income, net in the consolidated statement of operations.

The Company held the following cross-currency rate swaps as of December 31, 2018 (dollar amounts in thousands):

	Effective Date	Termination Date	Fixed Rate	Aggregate Notional Amount	2018 Fair Value Asset (Liability)
Pay CHF	October 2, 2017	October 2, 2020	1.75%	CHF 97,065	$ (215)
Receive U.S.$			4.38%	$ 100,000	
Pay CHF	October 2, 2017	October 2, 2021	1.85%	CHF 48,533	(422)
Receive U.S.$			4.46%	$ 50,000	
Pay CHF	October 2, 2017	October 2, 2022	1.95%	CHF 145,598	(2,193)
Receive U.S.$			4.52%	$ 150,000	
Total					$ (2,830)

The cross- currency swaps are carried on the consolidated balance sheet at fair value, and changes in the fair values are recorded as unrealized gains or losses in AOCL. For the years ended December 31, 2019 and 2018, the Company recorded a loss of $4.0 million and gain $2.2 million, respectively, in other income, net related to change in fair value related to the foreign currency rate translation to offset the gains or losses recognized on the intercompany loan.

For the years ended December 31, 2019 and 2018, the Company recorded gains of $9.3 million and $9.1 million, respectively, in AOCL related to change in fair value of the cross-currency swaps.

For the years ended December 31, 2019 and 2018, the Company recorded gains of $7.0 million and $7.9 million, respectively, in other income, net included in the consolidated statements of operations related to the interest rate differential of the cross-currency swaps.

The estimated gain that is expected to be reclassified to other income, net from AOCL as of December 31, 2019 within the next twelve months is $4.9 million. As of December 31, 2019, the Company does not expect any gains or losses will be reclassified into earnings as a result of the discontinuance of these cash flow hedges because the original forecasted transaction will not occur.

Net Investment Hedges

The Company manages certain foreign exchange risks through a variety of strategies, including hedging. The Company is exposed to foreign exchange risk from its international operations through foreign currency purchases, net investments in foreign subsidiaries, and foreign currency assets and liabilities created in the normal course of business. On October 1, 2018, the Company entered into cross-currency swap agreements designated as net investment hedges to partially offset the effects of foreign currency on foreign subsidiaries.

The Company held the following cross-currency rate swaps designated as net investment hedges as of December 31, 2019 and December 31, 2018, respectively (dollar amounts in thousands):

				December 31, 2019	
	Effective Date	Termination Date	Fixed Rate	Aggregate Notional Amount	Fair Value Asset (Liability)
Pay EUR Receive U.S.$	October 3, 2018	September 30, 2021	— 3.01%	EUR 44,859 $ 52,000	2,459
Pay EUR Receive U.S.$	October 3, 2018	September 30, 2023	— 2.57%	EUR 51,760 $ 60,000	3,087
Pay EUR Receive U.S.$	October 3, 2018	September 30, 2025	— 2.19%	EUR 38,820 $ 45,000	2,032
Pay GBP Receive U.S.$	October 3, 2018	September 30, 2025	1.67% 2.71%	GBP 128,284 $ 167,500	(154)
Pay CHF Receive GBP	October 3, 2018	September 30, 2025	— 1.67%	CHF 165,172 GBP 128,284	1,221
Total					$ 8,645

				December 31, 2018	
	Effective Date	Termination Date	Fixed Rate	Aggregate Notional Amount	Fair Value Asset (Liability)
Pay EUR Receive U.S.$	October 3, 2018	September 30, 2021	— 3.01%	EUR 70,738 $ 82,000	1,359
Pay EUR Receive U.S.$	October 3, 2018	September 30, 2023	— 2.57%	EUR 51,760 $ 60,000	(421)
Pay EUR Receive U.S.$	October 3, 2018	September 30, 2025	— 2.19%	EUR 38,820 $ 45,000	(150)
Pay GBP Receive U.S.$	October 3, 2018	September 30, 2025	1.67% 2.71%	GBP 128,284 $ 167,500	2,360
Pay CHF Receive GBP	October 3, 2018	September 30, 2025	— 1.67%	CHF 165,172 GBP 128,284	(3,780)
Total					$ (632)

During the year ended December 31, 2019, the Company settled a cross-currency swap designated as a net-investment hedge of with an aggregate notional amount of $30.0 million. The original termination date was September 30, 2021. As a result of the settlement, the Company recorded a gain of $1.6 million in AOCL.

The cross-currency swaps were carried on the consolidated balance sheet at fair value, and changes in the fair values were recorded as unrealized gains or losses in AOCL. For the year ended December 31, 2019 and 2018, the Company recorded a gain of $20.5 million and $1.7 million, respectively, in AOCL related to the change in fair value of the cross-currency swaps.

For the year ended December 31, 2019 and 2018, the Company recorded a gain of $9.6 million and $2.4 million, respectively, in interest income included in the consolidated statements of operations related to the interest rate differential of the cross-currency swaps.

The estimated gain that is expected to be reclassified to interest income from AOCL as of December 31, 2019 within the next twelve months is $8.0 million.

Counterparty Credit Risk

The Company manages its concentration of counterparty credit risk on its derivative instruments by limiting acceptable counterparties to a group of major financial institutions with investment grade credit ratings, and by actively monitoring their credit ratings and outstanding positions on an ongoing basis. Therefore, the Company considers the credit risk of the counterparties to be low. Furthermore, none of the Company's derivative transactions are subject to collateral or other security arrangements, and none contain provisions that depend upon the Company's credit ratings from any credit rating agency.

Fair Value of Derivative Instruments

The Company has classified all of its derivative instruments within Level 2 of the fair value hierarchy because observable inputs are available for substantially the full term of the derivative instruments. The fair values of the interest rate swaps and cross-currency swaps were developed using a market approach based on publicly available market yield curves and the terms of the swap. The Company performs ongoing assessments of counterparty credit risk.

The following table summarizes the fair value and presentation in the consolidated balance sheet for derivatives designated as hedging instruments:

	Fair Value as of December 31,	
	2019	2018
Location on Balance Sheet [1]:	(In thousands)	
Derivatives designated as hedges — Assets:		
Prepaid expenses and other current assets		
Cash Flow Hedges		
Interest rate swap[2]	$ 12	$ 4,654
Cross-currency swap	5,032	7,615
Net Investment Hedges		
Cross-currency swap	$ 7,952	$ 8,888
Other assets		
Cash Flow Hedges		
Interest rate swap[2]	—	5,350
Net Investment Hedges		
Cross-currency swap	$ 3,465	$ 1,774
Total Derivatives designated as hedges — Assets	$ 16,461	$ 28,281
Derivatives designated as hedges — Liabilities		
Accrued expenses and other current liabilities		
Cash Flow Hedges		
Interest rate swap[2]	$ 6,635	$ —
Cross-currency swap	101	—
Other liabilities		
Cash Flow Hedges		
Interest rate swap[2]	38,522	9,385
Cross-currency swap	5,440	10,445
Net Investment Hedges		
Cross-currency swap	$ 2,772	$ 11,294
Total Derivative designated as hedges — Liabilities	$ 53,470	$ 31,124

(1) The Company classifies derivative assets and liabilities as current based on the cash flows expected to be incurred within the following 12 months.
(2) At December 31, 2019 and 2018, the total notional amounts related to the Company's interest rate swaps were $1.3 billion and $1.5 billion, respectively.

The following presents the effect of derivative instruments designated as cash flow hedges and net investment hedges on the accompanying consolidated statements of operations during the years ended December 31, 2019 and 2018:

	Balance in AOCL Beginning of Year	Amount of Gain (Loss) Recognized in AOCL	Amount of Gain (Loss) Reclassified from AOCL into Earnings	Balance in AOCL End of Year	Location in Statements of Operations
			(In thousands)		
Year Ended December 31, 2019					
Cash Flow Hedges					
Interest rate swap	$ 619	$ (43,493)	$ 2,271	$ (45,145)	Interest expense
Cross-currency swap	(6,190)	9,334	2,967	177	Other income, net
Net Investment Hedges					
Cross-currency swap	(632)	20,488	9,627	10,229	Interest income
	$ (6,203)	$ (13,671)	$ 14,865	$ (34,739)	
Year Ended December 31, 2018					
Cash Flow Hedges					
Interest rate swap	$ 592	$ 924	$ 897	$ 619	Interest expense
Cross-currency swap	(5,104)	9,062	10,148	(6,190)	Other income, net
Net Investment Hedges					
Cross-currency swap	—	1,723	2,355	(632)	Interest income
	$ (4,512)	$ 11,709	$ 13,400	$ (6,203)	

7. GOODWILL AND OTHER INTANGIBLE ASSETS

Goodwill

The Company tests goodwill for impairment by either performing a qualitative evaluation or a quantitative test.

The qualitative evaluation is an assessment of factors including reporting unit specific operating results as well as industry, market and general economic conditions, to determine whether it is more likely than not that the fair values of a reporting unit is less than its carrying amount, including goodwill. The Company may elect to bypass the qualitative assessment for its three reporting units and perform a quantitative test. The assumptions used in evaluating goodwill for impairment are subject to change and are tracked against historical results by management.

The quantitative test estimates the fair value of its three reporting units using a discounted cash flow model, which incorporates significant estimates and assumptions made by management which, by their nature, are characterized by uncertainty. Inputs used to fair value the Company's reporting units are considered inputs of the fair value hierarchy. For Level 3 measurements, significant increases or decreases in long-term growth rates or discount rates in isolation or in combination could result in a significantly lower or higher fair value measurement. The key assumptions impacting the valuation included the following:

- The reporting unit's financial projections, which are based on management's assessment of regional and macroeconomic variables, industry trends and market opportunities, and the Company's strategic objectives and future growth plans.
- The projected terminal value for the reporting unit, which represents the present value of projected cash flows beyond the last period in the discounted cash flow analysis. The terminal value reflects the Company's assumptions related to long-term growth rates and profitability, which are based on several factors, including local and macroeconomic variables, market opportunities, and future growth plans.
- The discount rate used to measure the present value of the projected future cash flows is set using a weighted-average cost of capital method that considers market and industry data as well as the Company's specific risk factors that are likely to be considered by a market participant. The weighted-average cost of capital is the Company's estimate of the overall after-tax rate of return required by equity and debt holders of a business enterprise.

The Company elected to perform a qualitative analysis for its three reporting units as of July 31, 2019. The Company determined, after performing qualitative analysis, that there was no evidence that it is more likely than not that the fair value of any identified reporting unit was less that the carrying amounts, therefore, it was not necessary to perform a quantitative impairment test.

Changes in the carrying amount of goodwill in 2019 and 2018 were as follows:

	Codman Specialty Surgical	Orthopedics and Tissue Technologies	Total
		(In thousands)	
Goodwill at January 1, 2018	$ 634,767	$ 303,138	$ 937,905
Codman acquisition measurement period adjustments	(3,964)	—	(3,964)
Foreign currency translation	(5,043)	(2,423)	(7,466)
Goodwill at December 31, 2018	$ 625,760	$ 300,715	$ 926,475
Arkis Acquisition	27,600	—	27,600
Foreign currency translation	140	65	205
Goodwill at December 31, 2019	$ 653,500	$ 300,780	$ 954,280

Other Intangible Assets

The components of the Company's identifiable intangible assets were as follows:

	Weighted Average Life	December 31, 2019		
		Cost	Accumulated Amortization	Net
		(Dollars in Thousands)		
Completed technology	19 years	$ 880,623	$ (213,702)	$ 666,921
Customer relationships	12 years	222,575	(119,393)	103,182
Trademarks/brand names	28 years	103,873	(28,514)	75,359
Codman trade name	Indefinite	163,126	—	163,126
Supplier relationships	27 years	34,721	(17,947)	16,774
All other [1]	4 years	10,869	(4,640)	6,229
		$ 1,415,787	$ (384,196)	$ 1,031,591

	Weighted Average Life	December 31, 2018		
		Cost	Accumulated Amortization	Net
		(Dollars in Thousands)		
Completed technology	19 years	$ 855,679	$ (167,384)	$ 688,295
Customer relationships	13 years	231,448	(106,859)	124,589
Trademarks/brand names	28 years	104,061	(24,764)	79,297
Codman trade name	Indefinite	162,054	—	162,054
Supplier relationships	27 years	34,721	(16,519)	18,202
All other [1]	4 years	10,958	(3,899)	7,059
		$ 1,398,921	$ (319,425)	$ 1,079,496

(1) At December 31, 2019 and 2018, all other included IPR&D of $1.0 million, which was indefinite-lived.

The company tests intangible assets with indefinite lives for impairment annually in the third quarter in accordance with ASC Topic 350. The Company elected to bypass the qualitative evaluation for its Codman tradename intangible asset and perform a quantitative test during the third quarter of 2019. In performing this test, the Company utilized a range of projected sales growth rates, a royalty rate of 5.0%, a range of tax rates between 17.4-20.7%, and a discount rate of 12.5%. The assumptions used in evaluating the Codman tradename for impairment are subject to change and are tracked against historical results by management. Based on the results of the quantitative test, the Company recorded no impairment to the Codman tradename intangible asset.

Product rights and other definite-lived intangible assets are tested periodically for impairment in accordance with ASC Topic 360 when events or changes in circumstances indicate that an asset’s carrying value may not be recoverable. The impairment testing involves comparing the carrying amount of the asset or asset group to the forecasted undiscounted future cash flows. In the event the carrying value of the asset exceeds the undiscounted future cash flows, the carrying value is considered not recoverable and an impairment exists. An impairment loss is measured as the excess of the asset’s carrying value over its fair value, calculated using discounted future cash flows. The computed impairment loss is recognized in the period that the impairment occurs.

During the second quarter of 2019, a contract manufacturing customer of the private label product line received a notification from the FDA ordering them to remove their product from the market. The Company recorded an impairment charge of $5.8 million in intangible asset amortization in the consolidated statement of operations related to the customer relationship intangible asset acquired from TEI Biosciences, Inc. and TEI Medical Inc. (collectively "TEI") due to revised future projections based on the contract termination.

During the third quarter of 2018, the Company recorded an impairment charge of $4.9 million in cost of goods sold related to completed technology assets acquired from Koby Ventures II, L.P dba Metasurg ("Metasurg Technology") due to recent contract negotiations and revised future projections. Metasurg Technology is included in the Orthopedic and Tissue Technology segment. Of the total impairment charge of $4.9 million, $2.5 million was related to an out-of-period adjustment included in the twelve months ended December 31, 2018. The out-of-period adjustment is attributed to the timing of performing the impairment test based on the contract termination associated with the intangible asset. The Company determined that the adjustment was not

material to the consolidated financial statements for any previously reported annual or interim period and the adjustment to correct the misstatements is not material to the period ended December 31, 2018.

During the third quarter of 2017, the Company recorded an impairment charge of $3.3 million in cost of goods sold related to completed technology assets acquired from Tarsus Medical, Inc. ("Tarsus Technology"), since the underlying product will no longer be sold. Tarsus Technology was included in the Orthopedic and Tissue Technology segment.

Amortization expense (including amounts reported in cost of product revenues, but excluding any possible future amortization associated with acquired IPR&D) for the years ended December 31, 2019, 2018 and 2017 was $72.8 million, $71.6 million and $52.8 million, respectively. Annual amortization expense is expected to approximate $74.6 million in 2020, $64.1 million in 2021, $60.6 million in 2022, $59.7 million in 2023, $58.9 million in 2024 and $547.7 million thereafter. Amortization of product technology based intangible assets totaled $45.8 million, $50.4 million and $35.7 million for the years ended December 31, 2019, 2018 and 2017, respectively, and is presented by the Company within cost of goods sold.

8. TREASURY STOCK

There were 2.9 million shares of treasury stock outstanding as of December 31, 2019 and 2018, with a cost of $119.9 million and $120.6 million, respectively, at a weighted average cost of $41.87 per share.

On December 11, 2018, the Board of Directors authorized the Company to repurchase up to $225 million of the Company’s common stock. The program allows the Company to repurchase its shares opportunistically from time to time. The repurchase authorization expires in December 2020. Purchases may be affected through one or more open market transactions, privately negotiated transactions, transactions structured through investment banking institutions, or a combination of the foregoing. This stock repurchase authorization replaces the previous $150.0 million stock repurchase authorization, approved by the Board in 2016.

There were no treasury stock repurchases during the years ended December 31, 2019 and 2018.

9. STOCK-BASED COMPENSATION

Stock-based compensation expense - all related to employees and members of the Board of Directors - recognized under the authoritative guidance was as follows:

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
Selling, general and administrative	$ 19,153	$ 18,721	$ 19,785
Research and development	1,785	1,609	1,273
Cost of goods sold	317	449	492
Total stock-based compensation expense	21,255	20,779	21,550
Total estimated tax benefit related to stock-based compensation expense	9,420	10,430	15,448
Net effect on net income	$ 11,835	$ 10,349	$ 6,102

EMPLOYEE STOCK PURCHASE PLAN

The purpose of the Employee Stock Purchase Plan (the “ESPP”) is to provide eligible employees of the Company with the opportunity to acquire shares of common stock at periodic intervals by means of accumulated payroll deductions. The ESPP is a non-compensatory plan. Under the ESPP, a total of 3.0 million shares of common stock are reserved for issuance. These shares will be made available either from the Company’s authorized but unissued shares of common stock or from shares of common stock reacquired by the Company as treasury stock. At December 31, 2019, 2.0 million shares remain available for purchase under the ESPP. During the years ended December 31, 2019, 2018 and 2017, the Company issued 12,531 shares, 16,721 shares and 12,168 shares under the ESPP for $0.7 million, $0.7 million and $0.6 million, respectively.

EQUITY AWARD PLANS

As of December 31, 2019, the Company had stock options, restricted stock awards, performance stock awards, contract stock awards and restricted stock unit awards outstanding under three plans, the 2000 Equity Incentive Plan (the "2000 Plan"), the 2001 Equity Incentive Plan (the "2001 Plan"), and the 2003 Equity Incentive Plan (the "2003 Plan," and collectively, (the "Plans")).

In May 2010 and May 2017, the stockholders of the Company approved amendments to the 2003 Plan to increase by 3.5 million and 1.7 million, respectively, the number of shares of common stock that may be issued under the 2003 Plan. The Company has reserved 4.0 million shares under each of the 2000 Plan and the 2001 Plan, and 14.7 million shares under the 2003 Plan. The Plans permit the Company to grant incentive and non-qualified stock options, stock appreciation rights, restricted stock, contract stock, performance stock, or dividend equivalent rights to designated directors, officers, employees and associates of the Company.

Stock options issued under the Plans become exercisable over specified periods, generally within four years from the date of grant for officers and employees, and within one year from the date of the grant for members of the Board of Directors. The awards generally expire eight years from the grant date for employees and from six to ten years for directors and certain executive officers. Restricted stock issued under the Plans vests ratably over specified periods, generally three years after the date of grant.

Stock Options

The Company values stock option grants using the binomial distribution model. Management believes that the binomial distribution model is preferable to the Black-Scholes model because it is a more flexible model that gives consideration to the impact of non-transferability and vesting provisions in valuing employee stock options.

In determining the value of stock options granted, the Company considered that it has never paid cash dividends and does not currently intend to pay cash dividends, and thus has assumed a 0% dividend yield. Expected volatilities are based on the historical volatility of the Company's stock price. The expected life of stock options is estimated based on historical data on exercise of stock options, post-vesting forfeitures and other factors to estimate the expected term of the stock options granted. The risk-free interest rates are derived from the U.S. Treasury yield curve in effect on the date of grant for instruments with a remaining term similar to the expected life of the options. The Company accounts for forfeitures as they occur.

The following weighted-average assumptions were used in the calculation of fair value:

	Years Ended December 31,		
	2019	2018	2017
Dividend yield	0%	0%	0%
Expected volatility	28%	28%	30%
Risk free interest rate	2.51%	2.79%	2.18%
Expected life of option from grant date	7 years	8 years	8 years

The following table summarizes the Company's stock option activity.

Stock Options	Shares	Weighted Average Exercise Price	Weighted Average Contractual Term in Years	Aggregate Intrinsic Value
	(In thousands)			(In thousands)
Outstanding at January 1, 2019	1,448	$ 27.91	—	—
Granted	203	55.91		
Exercised	(350)	17.83		
Forfeited or Expired	(17)	46.52		
Outstanding at December 31, 2019	1,284	$ 34.83	4.03	$ 30,128
Vested or expected to vest at December 31, 2019	1,284	$ 34.83	4.03	$ 30,128
Exercisable at December 31, 2019	961	$ 28.49	3.15	$ 28,639

The Company recognized $3.0 million, $2.6 million and $3.0 million in expense related to stock options during the years ended December 31, 2019, 2018 and 2017, respectively. The intrinsic value of options exercised for the years ended December 31, 2019, 2018 and 2017 were $14.6 million, $16.9 million and $16.2 million, respectively. The weighted average grant date fair value of options granted during the years ended December 31, 2019, 2018 and 2017 was $18.74, $21.78 and $16.95, respectively. Cash received from option exercises and employee stock purchase plan was $6.9 million, $9.4 million and $9.8 million, for the years

ended December 31, 2019, 2018 and 2017, respectively. The realized tax benefit from options exercised were $3.0 million, $3.1 million and $6.2 million for the years ended December 31, 2019, 2018 and 2017, respectively.

As of December 31, 2019, there was approximately $4.5 million of total unrecognized compensation costs related to unvested stock options. These costs are expected to be recognized over a weighted-average period of approximately two years.

Awards of Restricted Stock, Performance Stock and Contract Stock

The following table summarizes the Company's awards of restricted stock, performance stock and contract stock for the year ended December 31, 2019.

	Restricted Stock Awards		Performance Stock and Contract Stock Awards	
	Shares	Weighted Average Grant Date Fair Value Per Share	Shares	Weighted Average Grant Date Fair Value Per Share
	(In thousands)		(In thousands)	
Unvested, January 1, 2019	417	$ 48.97	85	45.56
Granted	303	55.41	157	55.86
Adjustments for performance achievement related to award target	—	—	19	50.36
Cancellations	(59)	50.31	(27)	—
Performance stock awards vested in 2018 and released in 2019	—		273	42.94
Released	(201)	46.08	(175)	56.03
Vested but not released	—	—	(140)	50.36
Unvested, December 31, 2019	460	$ 54.31	192	55.38

The Company recognized $18.1 million, $18.1 million and $18.5 million in expense related to such awards during the years ended December 31, 2019, 2018 and 2017, respectively. The total fair market value of shares vested and released in 2019, 2018 and 2017 was $21.1 million, $24.8 million and $22.2 million, respectively. Vested awards include shares that have been fully earned but had not been delivered as of December 31, 2019.

Performance stock awards have performance features associated with them. Performance stock, restricted stock and contract stock awards generally have requisite service periods of three years. The fair value of these awards is being expensed on a straight-line basis over the vesting period.

As of December 31, 2019, there was approximately $23.4 million of total unrecognized compensation costs related to unvested restricted stock, performance stock and contract stock awards. These costs are expected to be recognized over a weighted-average period of approximately two years.

At December 31, 2019, there are approximately 0.5 million vested Restricted Units and 0.1 million vested performance share units held by various employees for which the related shares have not yet been issued. The final determination of the number of shares to be issued is made by the Company's Compensation Committee of the Board of Directors which is is contingent upon achieving certain revenue and organic revenue growth performance metric.

At December 31, 2019, there were approximately 2.5 million shares available for grant under the Plans.

The Company capitalized into inventory, share based compensation costs of $0.3 million, $0.4 million and $0.5 million for the years ended December 31, 2019, 2018 and 2017, respectively. Such share-based compensation was recognized as cost of goods sold when related inventory was sold.

10. RETIREMENT BENEFIT PLANS

DEFINED BENEFIT PLANS

The Company has various defined benefit plans which covers certain employees in Austria, France, Japan, Germany and Switzerland.

Net periodic benefit costs for the Company's defined benefit pension plans for the years ended December 31, 2019 and 2018 included the following (amounts in thousands):

	Year ended December 31,	
	2019	2018
Service cost	$ 3,815	$ 2,704
Interest cost	517	351
Expected return on plan assets	(1,047)	(944)
Amortization of prior service cost (credit)	(259)	—
Recognized actuarial losses	65	8
Settlements	602	—
Net period benefit cost	**$ 3,693**	**$ 2,119**

The following weighted average assumptions were used to develop net periodic pension benefit costs and the actuarial present values of projected pension benefit obligations for the years ended December 31, 2019 and 2018, respectively:

	As of December 31,	
	2019	2018
Discount rate	0.40%	1.00%
Expected return on plan assets	3.33%	3.40%
Rate of compensation increase	2.25%	1.70%

The Company's discount rates are determined by considering current yield curves representing high quality, long-term fixed income instruments. The resulting discount rates are consistent with the duration of plan liabilities. In 2019 and 2018, the discount rates were prescribed as the current yield on corporate bonds with an average rating of AA or AAA of equivalent currency and term to the liabilities. The expected returns on plan assets represent the average rate of return expected to be earned on plan assets over the period the benefits included in the benefit obligation are to be paid. In developing the expected rates of return, the Company considers returns of historical market data as well as actual returns on the plan assets. Using this reference information, the long-term return expectations for each asset category are developed according to the allocation among those investment categories.

The assessment is determined using projections from external financial sources, long-term historical averages, actual returns by asset class and the various asset class allocations by market.

The following sets forth the change in projected benefit obligations and the change in plan assets for the years ended December 31, 2019 and 2018 and a reconciliation of the funded status at December 31, 2019 and 2018, respectively (amounts in thousands):

	Year ended December 31,	
	2019	2018
Change In Projected Benefit Obligations		
Projected benefit obligations, beginning of year	$ 52,542	$ 47,661
Interest cost	517	351
Service cost	3,815	2,704
Actuarial loss	12,188	762
Plan amendments	(3,133)	—
Plan settlements	(2,664)	—
Employee contribution	899	641
Premiums paid	(395)	—
Benefit payment	(635)	(1,483)
Plans transferred in	3,199	2,280
Effect of foreign currency exchange rates	639	(374)
Projected benefit obligations, end of year	**$ 66,972**	**$ 52,542**

	Year ended December 31,	
	2019	2018
Change In Plan Assets		
Plan assets at fair value, beginning of year	$ 31,103	$ 26,943
Actual return on plan assets	(152)	1,802
Employer contributions	2,189	1,720
Employee contributions	899	641
Plan settlements	(2,645)	—
Benefits paid	(635)	(1,463)
Premiums paid	(395)	—
Plans transferred in	—	1,589
Effect of foreign currency exchange rates	406	(129)
Plan assets at fair value, end of year	**$ 30,770**	**$ 31,103**

	Year ended December 31,	
	2019	2018
Reconciliation Of Funded Status		
Fair value of plan assets	$ 30,770	$ 31,103
Benefit obligations	66,972	52,542
Unfunded benefit obligations	**$ 36,202**	**$ 21,439**

The unfunded benefit obligations are included in other liabilities in the consolidated balance sheets at December 31, 2019 and 2018, respectively.

During the periods ended December 31, 2019 and 2018, the Company had net losses of $9.0 million and $0.6 million, respectively, recognized within accumulated other comprehensive loss that has not been recognized as a component of net periodic benefit cost. The loss recognized during the period ended December 31, 2019, is primarily attributed to a change in the discount rate used to estimate the projected benefit obligation for defined benefit plans which cover certain employees in Switzerland. The combined accumulated benefit obligations for the defined benefit plans was $61.1 million and $49.6 million as of December 31, 2019 and 2018, respectively.

Unrecognized gains and losses are amortized over the average remaining future service for each plan. For plans with no active employees, they are amortized over the average life expectancy. The amortization of gains and losses is determined by using a 10% corridor of the greater of the market value of assets or the accumulated benefit obligation. Total unamortized gains and losses in excess of the corridor are amortized over the average remaining future service.

Prior service costs/benefits for the pension plans are amortized over the average remaining future service of plan participants at the time of the plan amendment.

The net plan assets of the pension plans are invested in common trusts. Common trusts are classified as Level 2 in fair value hierarchy. The fair value of common trusts is valued at net asset value based on the fair values of the underlying investments of the trusts as determined by the sponsor of the trusts. The investment strategy of the Company's defined benefit plans is both to meet the liabilities of the plans as they fall due and to maximize the return on invested assets within appropriate risk profile.

The investment strategy for the Company’s defined benefit plans is both to meet the liabilities of the plans as they fall due and to maximize the return on invested assets within appropriate risk tolerances. The benefit plans in Austria, France and Germany had no assets at December 31, 2019.

As of December 31, 2019, no plan assets are expected to be returned to the Company in the next twelve months.

The following table is the summary of expected future benefit payments (in thousands):

2020	$	1,702
2021		1,743
2022		1,499
2023		1,650
2024		2,115
Next five years		10,157

As of December 31, 2019, contributions expected to be paid to the plan in 2020 is $2.1 million.

DEFINED CONTRIBUTION PLANS

The Company also has various defined contribution savings plans that cover substantially all employees in the United States, Belgium, Canada, France, Japan, Netherlands, the U.K. and Puerto Rico. The Company matches a certain percentage of each employee’s contributions as per the provisions of the plans. Total contributions by the Company to the plans were $8.6 million, $8.1 million and $7.2 million for the years ended December 31, 2019, 2018 and 2017, respectively.

11. LEASES AND RELATED PARTY LEASES

The Company leases administrative, manufacturing, research and distribution facilities and vehicles through operating lease agreements. The Company has no finance leases as of December 31, 2019. Many of the Company's leases include both lease (e.g., fixed payments including rent) and non-lease components (e.g., common-area or other maintenance costs). For vehicles, the Company has elected the practical expedient to group lease and non-lease components.

Most facility leases include one or more options to renew. The exercise of lease renewal options is typically at the Company's sole discretion, therefore, the majority of renewals to extend the lease terms are not included in the ROU assets and lease liabilities as they are not reasonably certain of exercise. The Company regularly evaluates renewal options and when they are reasonably certain of exercise, the renewal period is included in the lease term.

As most of the Company's leases do not provide an implicit rate, the Company uses a collateralized incremental borrowing rate based on the information available at the lease commencement date in determining the present value of the lease payments.

Total operating lease expense for the year ended December 31, 2019 was $19.6 million, which includes $0.3 million, in related party operating lease expense.

Supplemental balance sheet information related to operating leases at December 31, 2019 were as follows:

	December 31, 2019
	(In thousands, except lease term and discount rate)
ROU assets	$ 94,530
Current lease liabilities	12,253
Non-current lease liabilities	97,504
Total lease liabilities	$ 109,757
Weighted average remaining lease term (in years):	
Leased facilities	12.8 years
Leased vehicles	2.6 years
Weighted average discount rate:	
Leased facilities	5.4%
Leased vehicles	3.2%

Supplemental cash flow information related to leases was as follows for the year ended December 31, 2019 (in thousands):

	December 31, 2019
	(In thousands)
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows from operating leases	$ 11,469
ROU assets obtained in exchange for lease liabilities:	
Operating leases	41,423

Future minimum lease payments under operating leases at December 31, 2019 were as follows:

	Related Parties	Third Parties	Total
		(In thousands)	
2020	296	12,100	12,396
2021	296	12,951	13,247
2022	296	13,753	14,049
2023	296	11,386	11,682
2024	296	11,060	11,356
Thereafter	1,428	91,235	92,663
Total minimum lease payments	$ 2,908	$ 152,485	$ 155,393
Less: Imputed interest			$ 45,636
Total lease liabilities			109,757
Less: Current lease liabilities			12,253
Long-term lease liabilities			97,504

There were no future minimum lease payments under finance leases at December 31, 2019.

During 2018, the Company entered into an operating lease with a term of 18 years for a new corporate headquarters in Princeton, NJ. The lease commenced during the second quarter of 2019 and the Company recorded a ROU asset and lease liability of $35.6 million.

Future minimum lease payments under operating leases at December 31, 2018 were as follows:

	Related Parties	Third Parties	Total
		(In thousands)	
2019	$ 296	$ 16,472	$ 16,768
2020	296	13,510	13,806
2021	296	12,197	12,493
2022	296	12,937	13,233
2023	296	10,707	11,003
Thereafter	1,724	100,675	102,399
Total minimum lease payments	$ 3,204	$ 166,498	$ 169,702

Total operating lease expense for the year ended December 31, 2018 was $16.3 million and included 0.3 million, in related party lease expense.

There were no future minimum lease payments under capital leases at December 31, 2018.

Related Party Leases

The Company also leases its manufacturing facility in Plainsboro, New Jersey, from a general partnership that is 50% owned by a corporation whose shareholders are trusts, whose beneficiaries include family members of the Company's principal owner and former Chairman and director. The term of the current lease agreement is through October 31, 2032 at an annual rate of approximately $0.3 million per year. The current lease agreement also provides (i) a 5-year renewal option for the Company to extend the lease from November 1, 2032 through October 31, 2037 at the fair market rental rate of the premises, and (ii) another 5-year renewal option to extend the lease from November 1, 2037 through October 31, 2042 at the fair market rental rate of the premises.

12. INCOME TAXES

Income (Loss) before income taxes consisted of the following:

	Years Ended December 31,		
	2019	2018	2017
		(In thousands)	
United States operations	$ (38,359)	$ (21,218)	$ (32,640)
Foreign operations	98,463	78,621	44,025
Total	$ 60,104	$ 57,403	$ 11,385

The 2017 U.S. Tax Act was signed into law on December 22, 2017. The 2017 Tax Act made significant changes to the previous tax law. Included among the numerous changes were a reduction of the federal statutory rate from 35% to 21%, limitations on the deductibility of interest expense and executive compensation, and the elimination of certain tax deductions. Additionally, the 2017 Tax Act imposed a one–time repatriation tax on accumulated foreign subsidiaries' untaxed foreign earnings (the "Toll Tax").

The Toll Tax, a one–time tax on deemed repatriated foreign earnings which were not previously taxed, is paid over an eight–year period beginning in 2018. The Company's total Toll Tax liability, as finalized in 2018, was $4.5 million.

The 2017 Tax Act also implemented a territorial tax system and included base erosion provisions on non-U.S. earnings, which subjects certain foreign earnings to additional taxation as global intangible low-taxed income ("GILTI"). These provisions were effective on January 1, 2018. Upon further analysis of the 2017 Tax Act during 2018, the Company elected to account for GILTI as a period cost in the year the tax is incurred.

Deferred tax assets and liabilities are measured at the enacted tax rate expected to apply when they are realized or settled. During 2017, the Company recognized a provisional benefit of $43.4 million from the remeasurement of the Company's net deferred tax liabilities at the reduced rate of 21%. The Company finalized the remeasurement of its net deferred tax liabilities, as a result of the reduced rate, as of December 31, 2018.

The Company finalized its calculations and completed its accounting for the income tax effect of the 2017 Tax Act in December of 2018.

A reconciliation of the U.S. Federal statutory rate to the Company's effective tax rate is as follows:

	Years Ended December 31,		
	2019	2018	2017
Federal statutory rate	21.0 %	21.0 %	35.0 %
Increase (decrease) in income taxes resulting from:			
State income taxes, net of federal tax benefit	1.0 %	(0.4)%	(17.0)%
Foreign operations	(20.0)%	(21.8)%	(112.7)%
Excess tax benefits from stock compensation	(5.6)%	(7.8)%	(57.9)%
Charitable contributions	(0.6)%	(1.2)%	(10.6)%
Nondeductible meals and entertainment	1.5 %	1.6 %	8.8 %
Intercompany profit in inventory	1.2 %	6.2 %	11.6 %
Nondeductible facilitative costs	0.8 %	— %	22.5 %
Changes in valuation allowances	0.2 %	0.2 %	8.0 %
Uncertain tax positions	0.2 %	0.4 %	(4.6)%
Research and development credit	(2.9)%	(2.6)%	(13.2)%
Return to provision	1.7 %	(2.9)%	(4.3)%
Global intangible low-taxed income ("GILTI")	7.6 %	3.5 %	— %
Nondeductible executive compensation	3.0 %	1.6 %	— %
Carryback of Federal net operating loss ("NOL")	0.1 %	(3.7)%	— %
Other	0.4 %	— %	0.8 %
Swiss tax holiday	(15.7)%	— %	— %
In-process research and development	22.7 %	— %	— %
Reduction of book gain on sale of assets	— %	— %	(4.6)%
Tax reform — Toll Tax	— %	— %	48.1 %
Tax reform — remeasurement of deferred tax assets and liabilities	— %	— %	(378.6)%
Effective tax rate	16.5 %	(5.9)%	(468.7)%

Our effective tax rate was 16.5% for the year ended December 31, 2019, compared to (5.9)% for the year ended December 31, 2018. The 2019 annual effective tax rate increased over 2018 due to the acquisition of Rebound, resulting in $64.9 million of non-deductible in–process research and development expense, which had a $13.6 million tax effect on the U.S. federal rate. This increase in the annual rate was offset by a tax benefit of $9.4 million ($0.11 per share) related to a federal tax holiday in Switzerland, which was finalized during 2019. Additionally, 2018 had $1.1 million of additional benefit pertaining to excess stock–based compensation deductions and $2.1 million of benefit from a federal net operating loss carryback, which does not repeat in 2019.

During 2019, the Company's foreign operations generated a $5.7 million decrease in income tax expense when compared with 2018, because of geographic and business mix of taxable earnings and losses, among other factors. The 2019 foreign effective tax rate is 3.5%, compared to 11.6% in 2018. The Company's foreign tax rate is primarily based upon statutory rates and is also impacted by the tax holiday in Switzerland, described below.

During 2019, the Company finalized negotiations related to tax holidays in Switzerland, on a federal, cantonal, and communal level. The Company received a federal tax credit in Switzerland of $12.1 million ($0.14 per share), which may be used over a seven-year period, ending in 2024. The Company also received a reduction in its rate for the cantonal and communal level taxes during the third quarter of 2019, pursuant to tax reform in Switzerland.

During 2018, the Company's foreign operations generated a $3.1 million increase in income tax expense when compared with 2017, because of the geographic and business mix of taxable earnings and losses, among other factors. The 2018 foreign effective tax rate is 11.6%, a decrease of approximately 2.0% over the rate in 2017. The Company's foreign tax rate is primarily based upon statutory rates.

The provision for income taxes consisted of the following:

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
Current:			
Federal	$ 14,597	$ (3,880)	$ 6,644
State	3,447	1,609	1,233
Foreign	10,905	7,057	6,069
Total current	$ 28,949	$ 4,786	$ 13,946
Deferred:			
Federal	(10,889)	(7,202)	(66,466)
State	(666)	(3,048)	(758)
Foreign	(7,491)	2,066	(80)
Total deferred	$ (19,046)	$ (8,184)	$ (67,304)
Provision for income taxes	$ 9,903	$ (3,398)	$ (53,358)

The income tax effects of significant temporary differences that give rise to deferred tax assets and liabilities, shown before jurisdictional netting, are presented below:

	December 31,	
	2019	2018
	(In thousands)	
Assets:		
Doubtful accounts	$ 2,426	$ 1,507
Inventory related items	39,548	28,245
Tax credits	19,134	9,072
Accrued vacation	3,206	2,761
Accrued bonus	6,017	5,515
Stock compensation	8,347	10,093
Deferred revenue	1,805	2,173
Net operating loss carryforwards	37,418	33,350
Capitalization of research and development expenses	9,781	—
Unrealized foreign exchange loss	8,105	1,405
Charitable contributions carryforward	235	1,994
Others	5,900	8,835
Total deferred tax assets	141,922	104,950
Less valuation allowance	(9,865)	(6,973)
Deferred tax assets after valuation allowance	$ 132,057	$ 97,977
Liabilities:		
Intangible and fixed assets	(150,879)	(144,861)
Others	(5,108)	(4,089)
Total deferred tax liabilities	$ (155,987)	$ (148,950)
Total net deferred tax liabilities	$ (23,930)	$ (50,973)

The deferred tax assets and liabilities are measured based on the enacted tax rates that apply in years in which the temporary differences are expected to be realized or incurred. The Company remeasured its deferred tax assets and liabilities as a result of the 2017 Tax Act, using a provisional estimate under SAB No. 118 during 2017. The primary impact of the re-measurement was a decrease in the net deferred tax liability for the reduction of the U.S. statutory income tax rate from 35.0% to 21.0%. There were no material changes to the provisional amounts when the amounts were finalized in December of 2018.

At December 31, 2019, the Company had net operating loss carryforwards of $130.1 million for federal income tax purposes, $37.5 million for foreign income tax purposes and $42.8 million for state income tax purposes to offset future taxable income. The majority of the federal net operating loss carryforwards expire through 2037, while $18.9 million have an indefinite carry forward period. For foreign net operating loss carryforwards, $1.3 million expire through 2024, $0.9 million expire through 2025, and the remaining $35.3 million have an indefinite carry forward period. The state net operating loss carryforwards expire through 2036.

A valuation allowance of $9.9 million, $7.0 million and $8.0 million is recorded against the Company's gross deferred tax assets of $141.9 million, $105.0 million, and $96.5 million recorded at December 31, 2019, 2018 and 2017, respectively.

The valuation allowance relates to deferred tax assets for certain items that will be deductible for income tax purposes under very limited circumstances and for which the Company believes it will not satisfy the more likely than not threshold for realization of the associated tax benefit. In the event that the Company determines that it would be able to realize more or less than the recorded amount of net deferred tax assets, an adjustment to the deferred tax asset valuation allowance would be recorded in the period such a determination is made.

The Company's valuation allowance increased by $2.9 million, decreased by $1.0 million and increased by $4.4 million at December 31, 2019, 2018 and 2017, respectively. The 2019 overall increase in the valuation allowance primarily resulted from certain assets from the Rebound and Arkis acquisitions.

As of December 31, 2019, the Company has not provided deferred income taxes on unrepatriated earnings from foreign subsidiaries as they are deemed to be indefinitely reinvested. Such taxes would primarily be attributable to foreign withholding taxes and local income taxes when such earnings are distributed. As such, the Company has determined the tax impact of repatriating these earnings would not be material as of December 31, 2019.

A reconciliation of the beginning and ending amount of uncertain tax benefits is as follows:

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
Balance, beginning of year	$ 676	$ 424	$ 754
Gross increases:			
Current year tax positions	53	273	402
Prior years' tax positions	—	—	—
Gross decreases:			
Prior years' tax positions	—	—	(777)
Statute of limitations lapses	—	(21)	(17)
Other	(53)	—	62
Balance, end of year	$ 676	$ 676	$ 424

Approximately $0.7 million of the balance at December 31, 2019 relates to uncertain tax positions that, if recognized, would affect the annual effective tax rate. There are no amounts within the balance of uncertain tax positions at December 31, 2019 related to tax positions for which it is reasonably possible that the amounts could be reduced during the twelve months following December 31, 2019.

The Company recognizes interest and penalties relating to uncertain tax positions in income tax expense. The Company recognized a minimal benefit for the years ended December 31, 2019, 2018 and 2017. The Company had minimal interest and penalties accrued for the years ended December 31, 2019 and 2018 and 2017.

The Company files Federal income tax returns, as well as multiple state, local and foreign jurisdiction tax returns. The Company is no longer subject to examinations of its U.S. consolidated Federal income tax returns by the IRS through fiscal year 2015. All significant state and local matters have been concluded through fiscal 2014. All significant foreign matters have been settled through fiscal 2012.

13. NET INCOME PER SHARE

Basic and diluted net income per share was as follows:

	Years Ended December 31,		
	2019	2018	2017
	(In thousands, except per share amounts)		
Basic net income per share:			
Net income	$ 50,201	$ 60,801	$ 64,743
Weighted average common shares outstanding	85,637	82,857	76,897
Basic net income per common share	$ 0.59	$ 0.73	$ 0.84
Diluted net income per share:			
Net income	$ 50,201	$ 60,801	$ 64,743
Weighted average common shares outstanding — Basic	85,637	82,857	76,897
Effect of dilutive securities:			
Warrants	—	—	971
Stock options and restricted stock	857	1,142	1,253
Weighted average common shares for diluted earnings per share	86,494	83,999	79,121
Diluted net income per common share	$ 0.58	$ 0.72	$ 0.82

Common stock of approximately 0.4 million shares at December 31, 2019, and 2018 that are issuable through exercise of dilutive securities were not included in the computation of diluted net income per share because their effect would have been anti-dilutive.

Performance Shares and Restricted Units that entitle the holders to approximately 0.5 million shares of common stock are included in the basic and diluted weighted average shares outstanding calculation from their date of issuance because no further consideration is due related to the issuance of the underlying common shares.

14. ACCUMULATED OTHER COMPREHENSIVE LOSS

Changes in accumulated other comprehensive loss by component between December 31, 2019 and 2018 are presented in the table below, net of tax:

	Gains and Losses on Derivatives	Defined Benefit Pension Items	Foreign Currency Items	Total
		(In thousands)		
Balance at December 31, 2018	$ (4,813)	$ (736)	$ (39,894)	$ (45,443)
Other comprehensive loss, net	(10,420)	(8,973)	(174)	(19,567)
Less: Amounts reclassified from accumulated other comprehensive income, net	11,392	—	—	11,392
Net current-period other comprehensive loss	(21,812)	(8,973)	(174)	(30,959)
Balance at December 31, 2019	$ (26,625)	$ (9,709)	$ (40,068)	$ (76,402)

For the year ended December 31, 2019, the Company reclassified gains of $2.3 million, $7.4 million and $1.7 million from AOCL to other income, net, interest income, and interest expense, respectively.

15. COMMITMENTS AND CONTINGENCIES

In consideration for certain technology, manufacturing, distribution, and selling rights and licenses granted to the Company, the Company has agreed to pay royalties on sales of certain products that it sells. The royalty payments that the Company made under these agreements were not significant for any of the periods presented.

The Company is subject to various claims, lawsuits and proceedings in the ordinary course of the Company's business, including claims by current or former employees, distributors and competitors and with respect to its products and product liability claims, lawsuits and proceedings, some of which have been settled by the Company. In the opinion of management, such claims are either adequately covered by insurance or otherwise indemnified, or are not expected, individually or in the aggregate, to result in a material, adverse effect on the Company's financial condition. However, it is possible that the Company's results of operations, financial position and cash flows in a particular period could be materially affected by these contingencies.

The Company accrues for loss contingencies when it is deemed probable that a loss has been incurred and that loss is estimable. The amounts accrued are based on the full amount of the estimated loss before considering insurance proceeds and do not include an estimate for legal fees expected to be incurred in connection with the loss contingency. The Company consistently accrues legal fees expected to be incurred in connection with loss contingencies as those fees are incurred by outside counsel as a period cost.

Contingent Consideration

The Company determined the fair value of contingent consideration during the twelve-month period ended December 31, 2019 and 2018 to reflect the change in estimate, additions, payments, transfers and the time value of money during the period.

A reconciliation of the opening balances to the closing balances of these Level 3 measurements for the year ended December 31, 2019 and 2018 is as follows (in thousands):

Year Ended December 31, 2019	Contingent Consideration Liability Related to Acquisition of Arkis (See Note 4)	Contingent Consideration Liability Related to Acquisition of Derma Sciences (See Note 4)	Location in Financial Statements
	Long-term	Long-term	
Balance as of January 1, 2019	$ —	$ 230	
Additions from acquisition of Arkis	13,100	—	
Payments	—	—	
Loss from change in fair value of contingent consideration liabilities	1,110	—	Research and development
Balance as of December 31, 2019	$ 14,210	$ 230	

Year Ended December, 2018	Contingent Consideration Liabilities Related to Acquisition of Derma Sciences (See Note 4)		Contingent Consideration Liability Related to Acquisition of Confluent Surgical, Inc.	Location in Financial Statements
	Short-term	Long-term	Short-term	
Balance as of January 1, 2018	$ 315	$ 1,387	$ 22,478	
Transfers from long-term to current portion	1,387	(1,387)	—	
Payments	(2,000)	—	(24,000)	
Loss from change in fair value of contingent consideration liabilities	298	230	1,522	Selling, general and administrative
Balance as of December 31, 2018	$ —	$ 230	$ —	

Confluent Surgical

On January 15, 2014, the Company acquired all outstanding shares of Confluent Surgical, Inc., ("Confluent Surgical"). The purchase price included contingent consideration. The potential maximum undiscounted contingent consideration of $30.0 million consisted of $25.0 million upon obtaining certain U.S. governmental approvals (the "U.S. Contingent Consideration") and $5.0 million upon obtaining certain European governmental approvals, both related to the completion of the transition of the Confluent Surgical business. The fair values of contingent consideration related to the acquisition of Confluent Surgical were estimated using a discounted cash flow model using a discount rate of 2.2%. During the first quarter of 2018, the Company received the U.S. governmental approvals and adjusted the related contingent consideration liability to $19.0 million, which the Company paid in April 2018. During the third quarter of 2018, the Company received certain European governmental approvals. The Company paid the remaining $5.0 million of contingent consideration related to Confluent Surgical in October of 2018.

16. SEGMENT AND GEOGRAPHIC INFORMATION

The Company internally manages two global reportable segments and reports the results of its businesses to its chief operating decision maker. The two reportable segments and their activities are described below.

- The Codman Specialty Surgical segment includes (i) the Neurosurgery business, which sells a full line of products for neurosurgery and neuro critical care such as tissue ablation equipment, dural repair products, cerebral spinal fluid management devices, intracranial monitoring equipment, and cranial stabilization equipment and (ii) the precision tools and instruments business, which sells more than 40,000 instrument patterns and surgical and lighting products to hospitals, surgery centers, dental, podiatry, and veterinary offices.

- The Orthopedics and Tissue Technologies segment includes such offerings as skin and wound repair, bone and joint fixation implants in the upper and lower extremities, bone grafts, and nerve and tendon repair products.

The Corporate and other category includes (i) various executive, finance, human resource, information systems and legal functions, (ii) brand management, and (iii) share-based compensation costs.

The operating results of the various reportable segments as presented are not comparable to one another because (i) certain operating segments are more dependent than others on corporate functions for unallocated general and administrative and/or operational manufacturing functions, and (ii) the Company does not allocate certain manufacturing costs and general and administrative costs to the operating segment results. Net sales and profit by reportable segment for the years ended December 31, 2019, 2018 and 2017 are as follows:

	Years Ended December 31,		
	2019	2018	2017
	(In thousands)		
Segment Net Sales			
Codman Specialty Surgical	$ 996,206	$ 963,929	$ 720,301
Orthopedics and Tissue Technologies	521,351	508,512	467,935
Total revenues	$ 1,517,557	$ 1,472,441	$ 1,188,236
Segment Profit			
Codman Specialty Surgical	$ 395,019	$ 363,336	$ 292,971
Orthopedics and Tissue Technologies	144,638	149,510	129,697
Segment profit	539,657	512,846	422,668
Amortization	(27,028)	(21,160)	(20,370)
Corporate and other	(418,869)	(380,688)	(357,494)
Operating income	$ 93,760	$ 110,998	$ 44,804

The Company does not allocate any assets to the reportable segments. No asset information is reported to the chief operating decision maker and disclosed in the financial information for each segment.

The Company attributes revenue to geographic areas based on the location of the customer. Total revenue, net and long-lived assets (tangible) by major geographic area are summarized below:

	United States*	Europe	Asia Pacific	Rest of the World	Consolidated
			(In thousands)		
Total revenue, net:					
2019	$ 1,077,379	$ 197,468	$ 157,391	$ 85,319	$ 1,517,557
2018	1,045,887	201,354	144,253	80,947	1,472,441
2017	894,260	150,147	80,636	63,193	1,188,236
Total long-lived assets:					
2019	$ 383,652	$ 47,325	$ 8,598	$ 7,143	$ 446,718
2018	280,382	32,679	3,765	3,203	320,029

* Includes long-lived assets in Puerto Rico.

17. SUBSEQUENT EVENTS

Sixth Amended and Restated Senior Credit Agreement

On February 3, 2020, the Company entered into an the sixth amendment and restatement (the "February 2020 Amendment") of its credit agreement with a syndicate of lending banks. The sixth amended and restated credit agreement makes an aggregate principal amount of up to approximately $2.2 billion available to the Company through the following facilities: (i) a $877.5 million term loan facility (decreased from $900 million), and (ii) a $1.3 billion revolving credit facility, which includes a $60 million sublimit for the issuance of standby letters of credit and a $60 million sublimit for swingline loans. The sixth amendment and restatement extends the credit facility's maturity date from May 3, 2023 to February 3, 2025. The first mandatory repayment under the term loan portion of the sixth amended and restated credit agreement is due June 30, 2021.

In connection with the February 2020 Amendment, the Company's maximum consolidated total leverage ratio in the financial covenants was modified to the following:

Fiscal Quarter	Maximum Consolidated Total Leverage Ratio
First fiscal quarter ending after the Closing Date through June 30, 2022	5.00 to 1.00
September 30, 2022 through June 30, 2023	4.50 to 1.00
September 30, 2023 and the last day of each fiscal quarter thereafter	4.00 to 1.00

Convertible Notes

On February 4, 2020, the Company offered and sold in a private placement $575.0 million of 0.5% convertible notes due in 2025. Upon conversion, the Notes may be settled in shares of Company's common stock, cash or a combination of cash and shares of the common stock, at the election of the Company. The initial conversion rate is 13.5739 shares of common stock per $1,000 principal amount of Notes. In connection with the offering of the Notes, the Company entered into privately negotiated convertible note hedge transactions. These transactions are expected generally to reduce potential dilution to the Company's common stock upon conversion of the Notes. The Company also entered into warrant transactions with the option counterparties. The warrant transactions could separately have a dilutive effect on the Company's common stock if the market price exceeds the strike price of the warrants. The Company intends to use:

- Approximately $59.7 million of the net proceeds from the offering to pay the cost of the convertible note hedge transactions (after such cost is partially offset by the proceeds from the sale of the warrant transactions).

- $100.0 million of the net proceeds from the offering to repurchase shares of the Company's stock. This includes up to approximately $7.6 million from certain purchasers of the convertible notes in conjunction with the closing of the offering. $92.4 million of the proceeds will be used to repurchase shares through an accelerated share repurchase transaction ("ASR"). Total shares repurchased through February 21, 2020 were 1,438,615.

- The remainder of the net proceeds for general corporate purposes, which may include repayment of a portion of the indebtedness under the Company's Senior Credit Facility. On February 10, 2020, the Company repaid $315.0 million of principal on the revolving portion of its Senior Credit Facility.

18. SELECTED QUARTERLY INFORMATION - UNAUDITED

(In thousands, except per share data)

Quarter	Total revenue, net	Gross margin	Net income (loss)	Per Share - Basic (1)	Per Share - Diluted (1)
2019					
First	359,690	230,778	32,756	$ 0.38	$ 0.38
Second	383,645	239,974	29,736	0.35	0.34
Third	379,095	236,459	(27,610)	(0.32)	(0.32)
Fourth	395,127	245,665	15,319	0.18	0.18
	1,517,557	952,876	50,201		
2018					
First	$ 357,082	$ 212,860	$ 10,992	$ 0.14	$ 0.14
Second	366,190	228,625	11,376	0.14	0.14
Third	365,854	222,609	13,295	0.16	0.15
Fourth	383,315	236,851	25,138	0.29	0.29
	$ 1,472,441	$ 900,945	$ 60,801		

(1) Per common share amounts for the quarters and full years have been calculated separately. Accordingly, quarterly amounts do not necessarily add to the annual amount because of differences in the weighted average common shares outstanding during each period principally due to the effect of the Company’s issuing shares of its common stock during the year.

SCHEDULE II — VALUATION AND QUALIFYING ACCOUNTS

Description	Balance at Beginning of Period	Charged to Costs and Expenses	Other	Deductions	Balance at End of Period
			(In thousands)		
Year ended December 31, 2019					
Allowance for doubtful accounts	3,719	2,126	—	(1,542) (2)	4,303
Deferred tax assets valuation allowance	6,973	3,848	1,291 (4)	(43)	12,069
Year ended December 31, 2018					
Allowance for doubtful accounts	$ 8,882	$ 557	$ (4,649) (3)	$ (1,071) (2)	$ 3,719
Deferred tax assets valuation allowance	7,961	(894)	—	(94)	6,973
Year ended December 31, 2017					
Allowance for doubtful accounts and sales returns and allowances	$ 6,319	$ 4,920	$ 1,518 (1)	(3,875) (2)	$ 8,882
Deferred tax assets valuation allowance	3,604	740	3,617 (1)	—	7,961

(1) The above amounts primarily relate to amounts acquired through acquisition of Derma Sciences and effect of foreign currency translations.

(2) Deductions primarily relates to allowance for doubtful accounts written off during the year, net of recoveries and other adjustments.

(3) The Company transferred sales returns and allowances from accounts receivable, net to accrued expenses and other current liabilities upon adopting Topic 606 on January 1, 2018 using the modified retrospective method.

(4) The above amount primarily relates to amounts acquired through the acquisition of Arkis and a charge recorded in 2019 to valuation allowance related to the non-deductibility of executive compensation.

Exhibit 4.13

Description of the Company's Common Stock Registered Under Section 12 of the Exchange Act

The following is a description of the common stock of Integra LifeSciences Holdings Corporation (the "Company"). The description does not purport to be complete and is subject to and qualified in its entirety by reference to the Company's amended and restated certificate of incorporation and its amended and restated by-laws, each of which are filed as exhibits to this Annual Report on Form 10-K, and to the provisions of the Delaware General Corporation Law ("DGCL").

General Matters

Authorized Shares

The Company's authorized capital stock consists of 255,000,000 shares of stock, of which 240,000,000 shares are designated as common stock, par value $0.01 per share, and 15,000,000 shares are designated as preferred stock, no par value. As of December 31, 2019, we had 85,870,260 shares of common stock outstanding (excluding treasury stock) and no shares of preferred stock outstanding.

Dividends

Subject to preferences that may apply to shares of preferred stock outstanding at the time, the holders of outstanding shares of common stock are entitled to receive dividends out of assets legally available therefor at such times and in such amounts as the board of directors may from time to time determine. However, our senior credit facility limits the amount of dividends that we may pay. Any future determinations to pay cash dividends on our common stock will be at the discretion of our board of directors and will depend upon our financial condition, results of operations, cash flows and other factors that our board of directors deems relevant.

Voting Rights

Each stockholder is entitled to one vote in person or by proxy for each share of the capital stock having voting power held by such stockholder. Stockholders do not have cumulative voting rights. The Company's board of directors is not classified and each director is elected annually. The voting standard for the election of directors is a majority of votes cast in uncontested elections. In contested elections where the number of nominees exceeds the number of directors to be elected, the vote standard is a plurality of the votes cast. Holders of a majority of the outstanding shares of common stock entitled to vote in any election of directors may elect all of the directors standing for election.

Preemptive or Similar Rights

Our common stock is not entitled to preemptive rights and is not subject to conversion or redemption.

Right to Receive Liquidation Distributions

Upon the occurrence of a liquidation, dissolution or winding-up, the holders of shares of common stock would be entitled to share ratably in the distribution of all of our assets remaining available for distribution after satisfaction of all its liabilities and the payment of the liquidation preference of any outstanding preferred stock.

Stock Exchange

Our common stock is traded on the Nasdaq Global Select Market under the symbol "IART".

Preferred Stock

The Company's Board of Directors has the authority to issue up to 15,000,000 shares of Preferred Stock from time to time in one or more series and with such rights and preferences as determined by the Board with respect to each series. The issuance of preferred stock could have the effect of decreasing the market price of our common stock and could adversely affect the voting and other rights of holders of common stock.

Anti-Takeover Effects of Delaware Law

We are subject to the provisions of Section 203 of the DGCL. Under Section 203, we would generally be prohibited from engaging in any business combination with any interested stockholder for a period of three years following the time that this stockholder became an interested stockholder unless:

- prior to this time, the board of directors of the corporation approved either the business combination or the transaction that resulted in the stockholder becoming an interested stockholder;
- upon consummation of the transaction that resulted in the stockholder's becoming an interested stockholder, the interested stockholder owned at least 85% of the voting stock of the corporation outstanding at the time the transaction commenced, excluding shares owned by persons who are directors and also officers, and by employee stock plans in which employee participants do not have the right to determine confidentially whether shares held subject to the plan will be tendered in a tender or exchange offer; or
- at or subsequent to such time, the business combination is approved by the board of directors and authorized at an annual or special meeting of stockholders, and not by written consent, by the affirmative vote of at least 66 2⁄3% of the outstanding voting stock that is not owned by the interested stockholder.

Under Section 203, a "business combination" includes:

- any merger or consolidation involving the corporation and the interested stockholder;
- any sale, transfer, pledge or other disposition of 10% or more of the assets of the corporation involving the interested stockholder;
- any transaction that results in the issuance or transfer by the corporation of any stock of the corporation to the interested stockholder, subject to limited exceptions;
- any transaction involving the corporation that has the effect of increasing the proportionate share of the stock of any class or series of the corporation beneficially owned by the interested stockholder; or
- the receipt by the interested stockholder of the benefit of any loans, advances, guarantees, pledges or other financial benefits provided by or through the corporation

In general, Section 203 defines an interested stockholder as an entity or person beneficially owning 15% or more of the outstanding voting stock of the corporation and any entity or person affiliated with or controlling or controlled by such entity or person.

EXHIBIT 21

Subsidiaries of Integra LifeSciences Holdings Corporation

Name of Subsidiary		State or Country of Incorporation or Organization
Arkis Biosciences Inc.		Delaware
Ascension Orthopedics Limited		United Kingdom
Ascension Orthopedics, Inc.		Delaware
BIMECO, Inc.		Florida
BioD, LLC		Delaware
BioDlogics, LLC		Delaware
BioRecovery, LLC		Delaware
CardioDyne, Inc.		Massachusetts
Cathtec, Incorporated		Massachusetts
Caveangle Limited		United Kingdom
Confluent Surgical, Inc.		Delaware
Derma First Aid Products, Inc.		Pennsylvania
Derma Sciences Canada, Inc.		Canada
Derma Sciences Europe, Ltd.		United Kingdom
Derma Sciences, Inc.		Delaware
EndoSolutions, Inc.		Delaware
Fiber Imaging Technologies, Inc.		Massachusetts
GMS, Gesellschaft für medizinische Sondentechnik mbH		Germany
ILS Financing (Ireland) Limited		Ireland
ILS Financing Corporation		Delaware
ILS Services Switzerland Ltd.		Switzerland
INS Sweden AB		Sweden
Integra Burlington MA, Inc. (formerly known as Integra Radionics, Inc.)		Delaware
Integra Canada ULC (formerly known as Canada Microsurgical ULC)		Canada
Integra CI, Inc.		Cayman Islands
Integra Euro Holdings, Inc.		Delaware
Integra France Holdings SAS		France
Integra German Holdings GmbH		Germany
Integra GmbH		Germany
Integra Japan K.K.		Japan
Integra LifeSciences (Canada) Holdings, Inc.		Delaware
Integra LifeSciences (Ireland) Limited		Ireland
Integra LifeSciences (Shanghai) Co., Ltd.		China
Integra LifeSciences Austria GmbH		Austria
Integra LifeSciences Brazil Ltda.		Brazil
Integra LifeSciences Corporation		Delaware
Integra LifeSciences Italy S.r.l.		Italy
Integra LifeSciences Middle East FZ-LLC		Dubai
Integra LifeSciences NR Ireland Limited		Ireland
Integra LifeSciences Production Corporation		Delaware
Integra LifeSciences Sales LLC (f/k/a Integra Healthcare Products LLC)		Delaware
Integra LifeSciences Services (France) SAS		France
Integra LifeSciences Shared Services (Ireland) Limited		Ireland
Integra LifeSciences Singapore Pte. Ltd.		Singapore
Integra LifeSciences Spain, S.L.		Spain
Integra LifeSciences Switzerland Sárl		Switzerland
Integra LS (Benelux) NV		Belgium
Integra LS Mexico, S. DE R. L. DE C.V.		Mexico
Integra Luxtec, Inc.		Massachusetts

Integra ME GmbH		Germany
Integra MicroFrance SAS		France
Integra NeuroSciences (International), Inc.		Delaware
Integra NeuroSciences Holdings (UK) Limited		United Kingdom
Integra NeuroSciences Holdings B.V.		Netherlands
Integra NeuroSciences Implants (France) SAS		France
Integra NeuroSciences Limited		United Kingdom
Integra Neurosciences Pty Ltd. (AUS)		Australia
Integra Neurosciences Pty Ltd. (NZ)		New Zealand
Integra Receivables LLC		Delaware
Integra Sales, Inc.		Delaware
Integra Selector Corporation		Delaware
Integra York PA, Inc. (formerly known as Miltex, Inc.)		Delaware
Integrated Shoulder Collaboration, Inc.		Delaware
IsoTis NV		Netherlands
IsoTis T.E. Facility B.V.		Netherlands
J. Jamner Surgical Instruments, Inc.		Delaware
Jarit GmbH		Germany
LXU Healthcare, Inc. - Medical Specialty Products		Delaware
MedEfficiency, Inc.		Delaware
Minnesota Scientific, Inc.		Minnesota
Nantong Derma Medical Products Co., Ltd.		China
Newdeal SAS		France
Newdeal, Inc.		Texas
Precise Dental Holding Corp.		New Jersey
Precise Dental Internacional, S.A. de C.V.		Mexico
Precise Dental Products, Ltd.		California
Precision Dental International, Inc.		California
Rebound Therapeutics Corporation		Delaware
Spembly Cryosurgery Limited		United Kingdom
Spembly Medical Limited		United Kingdom
Tarsus Medical Inc.		Delaware
TEI Biosciences (UK) Limited		United Kingdom
TEI Biosciences Inc.		Delaware
TEI Medical Inc.		Delaware
TGX Medical Systems, LLC		Delaware

EXHIBIT 23

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We hereby consent to the incorporation by reference in the Registration Statements on Form S-8 (Nos. 333-231709, 333-221210, 333-216212, 333-170210, 333-155263, 333-127488, 333-109042, 333-73512, 333-58235, and 333-06577) of Integra LifeSciences Holdings Corporation of our report dated February 21, 2020 relating to the financial statements, financial statement schedule and the effectiveness of internal control over financial reporting, which appears in this Form 10-K.

/s/ PricewaterhouseCoopers LLP

Florham Park, New Jersey
February 21, 2020

Exhibit 31.1

Certification of Principal Executive Officer
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Peter J. Arduini, certify that:

1. I have reviewed this annual report on Form 10-K of Integra LifeSciences Holdings Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13 a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and we have:
    (a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    (b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
    (c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    (d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
    (a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
    (b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 21, 2020

/s/ Peter J. Arduini

Peter J. Arduini

President and Chief Executive Officer

Exhibit 31.2

Certification of Principal Financial Officer
Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002

I, Carrie L. Anderson, certify that:

1. I have reviewed this annual report on Form 10-K of Integra LifeSciences Holdings Corporation;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13 a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and we have:
    (a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
    (b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, 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;
    (c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
    (d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
    (a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
    (b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 21, 2020

/s/ Carrie L. Anderson

Carrie L. Anderson

Corporate Vice President and Chief Financial Officer

Exhibit 32.1

Certification of Principal Executive Officer
Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

I, Peter J. Arduini, President and Chief Executive Officer of Integra LifeSciences Holdings Corporation (the "Company"), hereby certify that, to my knowledge:

1. The Annual Report on Form 10-K of the Company for the year ended December 31, 2019 (the "Report") fully complies with the requirement of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 21, 2020

/s/ Peter J. Arduini

Peter J. Arduini

President and Chief Executive Officer

Exhibit 32.2

Certification of Principal Financial Officer
Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002

I, Carrie L. Anderson, Corporate Vice President and Chief Financial Officer of Integra LifeSciences Holdings Corporation (the "Company"), hereby certify that, to my knowledge:

1. The Annual Report on Form 10-K of the Company for the year ended December 31, 2019 (the "Report") fully complies with the requirement of Section 13(a) or Section 15(d), as applicable, of the Securities Exchange Act of 1934, as amended; and

2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: February 21, 2020

/s/ Carrie L. Anderson

Carrie L. Anderson

Corporate Vice President and Chief Financial Officer