UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549
FORM 10-K

(Mark One)

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

For the fiscal year ended December 31, 2016

OR

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from to

Commission file number: **001-33137**

EMERGENT BIOSOLUTIONS INC.
(Exact Name of Registrant as Specified in Its Charter)

Delaware	**14-1902018**
(State or Other Jurisdiction of Incorporation or Organization)	(IRS Employer Identification No.)
400 Professional Drive, Gaithersburg , Maryland	**20879**
(Address of Principal Executive Offices)	(Zip Code)

Registrant's Telephone Number, Including Area Code: (240) 631-3200
Securities registered pursuant to Section 12(b) of the Act:

Title of Each Class	Name of Each Exchange on Which Registered
Common stock, $0.001 par value per share	**New York Stock Exchange**

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

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

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

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

Indicate by check mark whether the registrant has submitted electronically and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted pursuant Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☐ No ☐

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

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company.

See definitions of "large accelerated filer," "accelerated filer," and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (Check one):

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

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

The aggregate market value of voting and non-voting common equity held by non-affiliates of the registrant as of June 30, 2016 was approximately $920 million based on the price at which the registrant's common stock was last sold on that date as reported on the New York Stock Exchange.

As of February 17, 2017, the registrant had 40,687,639 shares of common stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's definitive proxy statement for its 2017 annual meeting of stockholders scheduled to be held on May 25, 2017, which is expected to be filed with the Securities and Exchange Commission not later than 120 days after the end of the registrant's fiscal year ended December 31, 2016, are incorporated by reference into Part II, Item 5. and Part III of this annual report on Form 10-K. With the exception of the portions of the registrant's definitive proxy statement for its 2017 annual meeting of stockholders that are expressly incorporated by reference into this annual report on Form 10-K, such proxy statement shall not be deemed filed as part of this annual report on Form 10-K.

EMERGENT BIOSOLUTIONS INC.
ANNUAL REPORT ON FORM 10-K
FOR THE FISCAL YEAR ENDED DECEMBER 31, 2016

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CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This annual report on Form 10-K and the documents we incorporate by reference include forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. All statements, other than statements of historical fact, including statements regarding the future earnings and performance of Emergent BioSolutions, Inc. or any of its businesses, our strategy, future operations, future financial position, future revenues, projected costs, prospects, plans and objectives of management, are forward-looking statements. We generally identify forward-looking statements by using words like "believes," "expects," "anticipates," "intends," "plans," "forecasts," "estimates" and similar expressions in conjunction with, among other things, discussions of financial performance or financial condition, growth strategy, product sales, manufacturing capabilities, product development, regulatory approvals or expenditures. These forward-looking statements are based on our current intentions, beliefs and expectations regarding future events. We cannot guarantee that any forward-looking statement will be accurate. You should realize that if underlying assumptions prove inaccurate or unknown risks or uncertainties materialize, actual results could differ materially from our expectations. You are, therefore, cautioned not to place undue reliance on any forward-looking statement. Any forward-looking statement speaks only as of the date on which such statement is made, and, except as required by law, we do not undertake to update any forward-looking statement to reflect new information, events or circumstances.

There are a number of important factors that could cause our actual results to differ materially from those indicated by such forward-looking statements, including, among others:

- § appropriations for the procurement of BioThrax® (Anthrax Vaccine Adsorbed) and our other countermeasure products;
- § our ability to obtain a BioThrax procurement contract from BARDA under the Sole Source Notification;
- § our ability to perform under our contracts with the U.S. government related to BioThrax, including the timing of deliveries;
- § our ability to obtain Emergency Use Authorization pre-approval for NuThrax from the FDA;
- § the availability of funding for our U.S. government grants and contracts;
- § our ability to successfully execute our growth strategy and achieve our financial and operational goals;
- § our ability to successfully integrate and develop the products or product candidates, programs, operations and personnel of any entities or businesses that we acquire;
- § our ability to utilize the full manufacturing capacity of Building 55, our large-scale vaccine manufacturing facility in Lansing, Michigan;
- § whether the operational, marketing and strategic benefits of the spin-off of our biosciences business can be achieved and the timing of any such benefits;
- § our ability to identify and acquire companies or in-license products or late-stage product candidates that satisfy our selection criteria;
- § our ability to realize synergies and benefits from acquisitions or in-licenses within expected time periods or at all;
- § our ability to successfully identify and respond to new development contracts with the U.S. government, as well as successfully maintain, through achievement of development milestones, current development contracts with the U.S. government;
- § our ability to obtain and maintain intellectual property protection for our products and product candidates;
- § our ability and plans to expand our manufacturing facilities and capabilities;
- § our ability and the ability of our contractors and suppliers to maintain compliance with cGMP and other regulatory obligations;
- § the results of regulatory inspections;
- § the operating and financial restrictions placed on us and our subsidiaries under our senior secured credit facility;
- § the outcome of the purported class action lawsuit filed against us and possible other future material legal proceedings;
- § the rate and degree of market acceptance and clinical utility of our products;
- § the success of our ongoing and planned development programs, non-clinical activities and clinical trials of our product candidates;
- § our ability to obtain and maintain regulatory approvals for our product candidates and the timing of any such approvals;
- § the success of our commercialization, marketing and manufacturing capabilities and strategy; and
- § the accuracy of our estimates regarding future revenues, expenses, capital requirements and needs for additional financing.

The foregoing sets forth many, but not all, of the factors that could cause actual results to differ from our expectations in any forward-looking statement. New factors emerge from time to time and it is not possible for management to predict all such factors, nor can it assess the impact of any such factor on the business or the extent to which any factor, or combination of factors, may cause results to differ materially from those contained in any forward-looking statement. You should consider this cautionary statement, the risk factors identified in the section entitled "Risk Factors" in this annual report on Form 10-K and the risk factors identified in our periodic reports filed with the Securities and Exchange Commission when evaluating our forward-looking statements.

PART I
ITEM 1. BUSINESS

OVERVIEW

Emergent BioSolutions Inc. is a global life sciences company seeking to protect and enhance life by focusing on providing specialty products for civilian and military populations that address accidental, intentional and naturally emerging public health threats.

We were incorporated in the State of Michigan in May 1998 and subsequently reorganized as a Delaware corporation in June 2004. Our common stock is traded on the New York Stock Exchange under the ticker symbol "EBS." Our principal executive offices are located at 400 Professional Drive, Suite 400, Gaithersburg, Maryland 20879. Our telephone number is (240) 631-3200, and our website address is www.emergentbiosolutions.com.

Our company is focused on developing, manufacturing and commercializing medical countermeasures, or MCM, that address public health threats, or PHTs. The PHTs we are addressing fall into two categories: Chemical, Biological, Radiological and Nuclear, or CBRN, as well as explosive-related threats; and emerging infectious diseases, or EID. We have a portfolio of six revenue-generating products as well as a pipeline of various investigational stage product candidates addressing select aspects of CBRN and EID threats. The U.S. government is the primary purchaser of our products and provides us with substantial funding for the development of many of our product candidates.

We report our financial results under one business segment. To execute on our business strategy, in 2017 we are organizing our business into four business units:

- Vaccines and Anti-infectives;
- Antibody Therapeutics;
- Devices; and
- Contract Manufacturing.

Vaccines and Anti-infectives

Our Vaccines and Anti-infectives business unit consists of BioThrax® (Anthrax Vaccine Adsorbed), the only vaccine licensed by the U.S. Food and Drug Administration, or the FDA, for the general use prophylaxis and post-exposure prophylaxis of anthrax disease. BioThrax is also licensed by the Paul-Ehrlich-Institut of the German Federal Ministry of Health and the Health Sciences Authority of the Ministry of Health in Singapore for general use prophylaxis of anthrax disease.

Our Vaccines and Anti-infectives business unit is also currently developing:

- NuThrax™ (anthrax vaccine adsorbed with CPG 7909 adjuvant), a next generation anthrax vaccine;

Within our Vaccines and Anti-Infectives business unit, we are leveraging our proprietary, broad-spectrum anti-viral and broad-spectrum antibiotic platforms to advance the development of potential dual-market molecules to address current and emerging public health threats, including the following investigational stage product candidates:

- UV-4B, a novel anti-viral therapeutic being developed as an oral treatment for dengue and influenza infections; and
- GC-072, the lead compound in the EV-035 series of broad-spectrum antibiotics, being developed as an oral and intravenous treatment for *Burkholderia pseudomallei* infection.

Antibody Therapeutics

Our Antibody Therapeutics business unit consists of the following marketed products:

- Anthrasil® [Anthrax Immune Globulin Intravenous (Human)], the only polyclonal antibody therapeutic licensed by the FDA for the treatment of inhalational anthrax;
- BAT® [Botulism Antitoxin Heptavalent (A,B,C,D,E,F,G)-(Equine)], the only heptavalent therapeutic licensed by the FDA and Health Canada for the treatment of botulinum disease; and
- VIGIV [Vaccinia Immune Globulin Intravenous (Human)] the only therapeutic licensed by the FDA and Health Canada to address certain complications from smallpox vaccination.

Within our Antibody Therapeutics business unit, we are leveraging our proprietary, hyperimmune platform technology to address current and emerging public health threats, including the following investigational stage product candidates:

- FLU-IG (NP025), a human polyclonal antibody therapeutic being developed to treat seasonal influenza;
- ZIKA-IG (NP024), a human polyclonal antibody therapeutic being developed as a prophylaxis and treatment for Zika infections; and
- FILOV (NP026), an equine polyclonal antibody therapeutic being developed to treat hemorrhagic fever caused by Filoviruses (Ebola, Marburg and Sudan).

Devices

Our Devices business unit consists of the following marketed products:

- RSDL® (Reactive Skin Decontamination Lotion Kit), the only device cleared by the FDA to remove or neutralize chemical warfare agents and T-2 toxins from the skin; and
- Trobigard™ (atropine sulfate, obidoxime chloride), an auto-injector device designed for intramuscular self-injection of atropine sulfate and obidoxime chloride, a nerve agent countermeasure. This product has not been approved by the FDA or any other regulatory agency, is not

promoted or distributed in the U.S., and is only sold to non-U.S. authorized government buyers.

Within our Devices business unit, we are leveraging our proprietary, auto-injector platform to develop several investigational stage product candidates, including a device filled with pralidoxime chloride and atropine sulphate, which is designed for intramuscular use as an adjunct to atropine in the treatment of poisoning by nerve agents having anticholinesterase activity.

Contract Manufacturing

Our Contract Manufacturing business unit consists of contract manufacturing services to third-party customers. These services, which are performed at our facilities located at sites in Baltimore, Maryland and Winnipeg, Manitoba, Canada, include pharmaceutical product development, manufacturing, filling services for injectable and other sterile products, process design, technical transfer, manufacturing validations, laboratory support, aseptic filling, lyophilization, final packaging and accelerated and ongoing stability studies. We manufacture both vial and pre-filled syringe formats and we produce bulk drug product and finished units of clinical and commercial drugs. We provide these services for a wide variety of drug products – small molecule, biological, and blood products – in all stages of development and commercialization, including over 20 licensed products, which are currently sold in approximately 50 countries, and our customers range from small biopharmaceutical companies to major multinationals. Our fill/finish facility in Baltimore, Maryland is an approved or inspected manufacturing facility under the regulatory regimes in the United States, Canada, Japan, Brazil, the Middle East and several countries in the European Union. We also seek to market the available biologics bulk product manufacturing capability (small- and large-scale) out of certain facilities located at our site in Lansing, Michigan.

For information regarding revenue, profit and loss, total assets and other information concerning our results of operations for our reporting segment for each of the last three fiscal years, please refer to our consolidated financial statements and the accompanying notes to the consolidated financial statements in Part II, Item 8 of this Annual Report on Form 10-K and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in Part II, Item 7 of this Annual Report on Form 10-K.

STRATEGY

Our growth strategy is centered on our core business focus of medical countermeasures addressing public health threats and emerging infectious diseases. This growth strategy contemplates that we:

- § expand our leadership position in the public health threats market;
- § develop and manufacture innovative products in partnership with governments and non-governmental organizations;
- § grow organically and through acquisition of revenue-generating and accretive products and businesses
- § expand our portfolio of best in class/only in class medical countermeasures and services;
- § establish dual-market international marketing and sales capabilities; and
- § enhance our culture to create a sustainable competitive advantage.

In executing on our growth strategy, we are leveraging our core competencies. These competencies are:

- § government relations and contracting;
- § medical countermeasure development and commercialization;
- § quality manufacturing using multiple platform technologies;
- § business and product acquisitions; and
- § financial discipline.

COMPLETED SPIN-OFF OF BIOSCIENCES BUSINESS

On August 1, 2016, we completed a tax-free spin-off of our biosciences business into a separate, stand-alone publicly-traded company, Aptevo Therapeutics Inc. As part of the spin-off transaction, the assets that were a part of our former biosciences business segment were transferred to Aptevo. These assets included our former biosciences commercial products IXINITY [coagulation factor IX (recombinant)], WinRho® SDF [(Rho(D) Immune Globulin Intravenous (Human)], HepaGam B® [Hepatitis B Immune Globulin Intravenous (Human)] and VARIZIG® [Varicella Zoster Immune Globulin (Human)] as well as our former oncology and hematology therapeutics assets. In connection with the closing of the spin-off, we completed an initial $45 million cash contribution to Aptevo, and in January 2017, we completed payment of our remaining $20 million financial contribution to Aptevo under the terms of a promissory note in connection with the spin-off, for a total cash contribution of $65 million under the terms of our separation arrangements.

MARKETED PRODUCT PORTFOLIO

VACCINES AND ANTI-INFECTIVES UNIT		
Product	**Indication(s)**	**Regulatory Approvals**
BioThrax® (Anthrax Vaccine Adsorbed)	GUP - General use prophylaxis of anthrax disease; and PEP - Post-exposure prophylaxis of anthrax disease in combination with appropriate antibacterial drugs	United States – GUP and PEP Germany - GUP Singapore - GUP
ANTIBODY THERAPEUTICS UNIT		
Product	**Indication(s)**	**Regulatory Approvals**
Anthrasil® [Anthrax Immune Globulin Intravenous (Human)]	Treatment of inhalational anthrax in adult and pediatric patients in combination with appropriate antibacterial drugs	United States
BAT® [Botulism Antitoxin Heptavalent (A,B,C,D,E,F,G)-(Equine)]	Comprised of purified polyclonal equine immune globulins indicated for the treatment of symptomatic botulism following documented or suspected exposure to botulinum neurotoxin serotypes A, B, C, D, E, F, or G in adults and pediatric patients	United States Canada
VIGIV [Vaccinia Immune Globulin Intravenous (Human)]	Treatment of complications due to vaccinia vaccination, including: • Eczema vaccinatum • Progressive vaccinia • Severe generalized vaccinia • Aberrant infections induced by vaccinia virus (except in cases of isolated keratitis)	United States Canada
DEVICES UNIT		
Product	**Indication(s)**	**Regulatory Approvals**

RSDL® (Reactive Skin Decontamination Lotion Kit)	RSDL to remove or neutralize chemical warfare agents and T-2 toxin from the skin	United States 510(k) Australia Canada Israel
Trobigard™ (atropine sulfate, obidoxime chloride)	A auto-injector device designed for intramuscular self-injection of atropine sulfate and obidoxime chloride.	This product has not been approved by the FDA or any other regulatory agency, is not promoted or distributed in the U.S., and is only sold to non-U.S. authorized government buyers.

Vaccines and Anti-infectives

Marketed Products

BioThrax® (Anthrax Vaccine Adsorbed). BioThrax is the only vaccine licensed by the FDA for the general use prophylaxis, or GUP, of anthrax disease. In April 2014, the FDA granted Orphan Drug designation to BioThrax for the PEP indication. In November 2015, the FDA approved our supplemental Biologics License Application to expand the BioThrax label to include the post-exposure prophylaxis, or PEP, indication for BioThrax administered in combination with antimicrobial therapy. Anthrax is a potentially fatal disease caused by the spore forming bacterium, *Bacillus anthracis*. Inhalational anthrax is the most lethal form of anthrax. Death due to inhalational anthrax infection often occurs within 24-36 hours of the onset of advanced respiratory complications. BioThrax is administered in a GUP setting by intramuscular injection in a three-dose primary series over an initial six-month period. The vaccine is protective after completion of this three-dose primary series. After the primary series, two additional doses are given one each at 12 and 18 months, with booster doses annually thereafter. BioThrax is administered in a PEP setting in conjunction with recommended antibacterial drugs following suspected or confirmed *Bacillus anthracis* exposure. The vaccination schedule for PEP consists of three doses of BioThrax administered subcutaneously at 0, 2, and 4 weeks post-exposure combined with antimicrobial therapy. In the fourth quarter of 2016, we completed final delivery of BioThrax doses under our previous 44.75 million dose procurement contract with the Centers for Disease Control and Prevention, or CDC, an agency within the U.S. Department of Health and Human Services, or HHS. In December 2016, we signed a follow-on contract with the CDC for the supply of up to approximately 29.4 million doses of BioThrax for delivery into the Strategic National Stockpile, or SNS, over a five-year period ending in September 2021. The potential value of this contract is approximately $911 million, if all procurement options are exercised. As of December 31, 2016, we have recognized revenue of approximately $15 million under this contract.

Also in December 2016, the Biomedical Advanced Research and Development Authority, or BARDA, filed a Sole Source Notification to separately procure approximately $100 million of BioThrax for delivery into the SNS within 24 months from the date of contract award. It is our intent to negotiate and enter into this contract in the first half of 2017 with deliveries beginning thereafter.

In August 2016, the FDA licensed Building 55, our large-scale manufacturing facility in Lansing, Michigan, for the manufacture of BioThrax. This facility has the potential to manufacture up to 20 to 25 million doses of BioThrax annually on a single manufacturing train.

Product Candidates

NuThrax™ (anthrax vaccine adsorbed with CPG 7909 adjuvant). We are developing NuThrax, an anthrax vaccine product candidate based on BioThrax combined with CPG 7909, an adjuvant that we license from Pfizer Inc. We are developing NuThrax, in part with funding from the National Institute of Allergy and Infectious Diseases, or NIAID, and BARDA, to potentially elicit a more rapid onset of immune response using fewer doses than BioThrax while still providing protective immunity in patients. Using funds from our 2010 development contract with NIAID, in October 2014, we completed a Phase 2 safety, immunogenicity and dose ranging clinical trial of NuThrax in which all endpoints were successfully met, including requiring a fewer two-dose regimen than the BioThrax three-dose regimen and may shorten the recommended antibiotic (60-day) regimen for anthrax post-exposure prophylaxis. In September 2014, we also obtained additional funding for this product through a five-year development contract with NIAID of up to $29 million to support the development of a dry formulation of NuThrax, including: manufacturing, assay development and non-clinical activities through the preparation of an Investigational New Drug application to the FDA. The dry formulation of NuThrax is intended to increase stability of the vaccine candidate at ambient and higher temperatures, with the objective of eliminating the need for cold chain during shipping and storage. In March 2015, we signed a contract with BARDA valued at $31 million to develop NuThrax for post-exposure prophylaxis of anthrax disease. In September, 2016, we signed a contract with BARDA for up to approximately $1.6 billion, including a five-year base period of performance valued at approximately $200 million to develop NuThrax for post-exposure prophylaxis of anthrax disease and to deliver to the SNS an initial two million doses following Emergency Use Authorization, or EUA, pre-approval by the FDA. We anticipate that the FDA could grant EUA designation to NuThrax as early as 2018, triggering the initial two million dose delivery of NuThrax into the SNS in 2019. The contract also includes procurement options for the delivery of an additional 7.5 million to 50 million doses of NuThrax into the SNS, valued from approximately $255 million to up to $1.4 billion, respectively, and options for an additional clinical study and post-marketing commitments valued at $48 million, which if both were to be exercised in full, could increase the total contract value to up to approximately $1.6 billion.

Within our Vaccines and Anti-Infectives business unit, we are leveraging our proprietary, broad-spectrum anti-viral and broad-spectrum antibiotic platforms to advance the development of potential dual-market molecules to address current and emerging public health threats, including the following investigational stage product candidates:

UV-4B. We are developing UV-4B, a novel anti-viral targeting host alpha-glucosidases as a potential oral treatment for dengue and influenza infections. This work is being conducted under a six-year, cost-plus fixed fee contract with NIAID that was awarded in 2011. These options include a base period and options supporting non-clinical influenza testing, reprotoxicity studies, manufacturing, and Phase 1 a/b and Phase 2a trials. Completed work to date has included successful production of GMP material, a successful Phase 1a trial completed in 2016 in which UV-4B demonstrated good safety and tolerability in humans, and studies which demonstrated UV-4B has worked against influenza in non-clinical proof of concept models. In February 2017, we initiated a Phase 1b multiple ascending dose study, which is fully-funded under our development contract with NIAID, to evaluate the safety and tolerability of UV-4B as a potential oral treatment for dengue viral infection.UV-4B is part of a broader iminosugar small molecule series, which includes hundreds of novel compounds. We are currently conducting medicinal chemistry on this platform to explore and expand other novel uses for these analogues.

GC-072. We are developing GC-072, a member of the EV-035 family of novel bacterial type II topoisomerase inhibitors, belonging to the chemical class of 4-oxoquinolizine as a potential oral treatment for *Burkholderia pseudomallei*. This work is being conducted under a three-year contract with the Defense Threat Reduction Agency, or DTRA that was awarded in 2014. GC-072 has demonstrated protection *in vivo* from lethal *B. pseudomallei* infection when administered orally, and it shows activity not only on drug-sensitive strains, but also on clinical isolates resistant to marketed antibiotics (including quinolones). EV-035 molecules have also demonstrated broad-spectrum activity against pathogens such as *S. aureus, S. pneumoniae, E. faecalis, E. coli, P. aeruginosa, A. baumannii and H. influenzae*, as well as several potential biodefense pathogens such as *B. pseudomallei*, *B. anthracis, F. tularensis*, and *Y. pestis*.

Antibody Therapeutics

Marketed Products

Anthrasil® [Anthrax Immune Globulin Intravenous (Human)]. Anthrasil is the only polyclonal antibody therapeutic licensed by the FDA for the treatment of inhalational anthrax. Anthrasil is comprised of purified human polyclonal immune globulin G, or IgG, containing polyclonal antibodies directed to the anthrax toxins of *Bacillus anthracis*, the bacteria that causes anthrax disease, and is prepared using plasma collected from healthy, screened donors who have been immunized with our BioThrax vaccine. Anthrasil was licensed by the FDA in March 2015 for the treatment of suspected or documented

inhalational anthrax in combination with appropriate antibacterial drugs. Simultaneous with FDA approval in 2015, Anthrasil also received orphan drug designation, giving it market exclusivity in the United States until March 2022. To date, the principal customer for Anthrasil has been the U.S. government, specifically HHS. Anthrasil is procured by BARDA for delivery into the SNS. We have two contracts with BARDA. The first is a development and procurement contract that expires in April 2021. Our second contract with BARDA is a multiple award, indefinite delivery/indefinite quantity contract for the collection of anti-anthrax plasma, as well as the manufacture of such plasma into bulk drug substance and finished drug product and delivery of finished product into the SNS over a five-year period through September 2018. BARDA issued one task order under this contract for the collection of anti-anthrax plasma, which was completed in 2015. In addition to domestic government sales, Anthrasil has been sold to several foreign governments.

BAT® [Botulism Antitoxin Heptavalent (A,B,C,D,E,F,G)-(Equine)]. BAT is the only heptavalent antibody therapeutic licensed by the FDA and Health Canada for botulinum disease. BAT is comprised of purified polyclonal equine immune globulins (antibodies) directed to the seven toxins (A through G) produced by *Clostridium botulinum.* BAT was approved in the United States in March 2013 for the treatment of suspected or documented exposure to botulinum neurotoxin A, B, C, D, E, F or G. It was also approved in Canada pursuant to Health Canada's Extraordinary Use New Drug, or EUND, regulations in December of 2016. Simultaneous with FDA approval in 2013, BAT also received Orphan Drug exclusive approval, giving it market exclusivity in the United States until March 2020. BAT is the only heptavalent botulism antitoxin available in the United States or Canada for treating naturally occurring botulism in adults or pediatric patients. Botulinum toxin is a nerve toxin produced by the bacterium *Clostridium botulinum* that causes botulism, a serious paralytic illness. Naturally occurring cases are mainly seen in infants or in adults who have consumed improperly processed foods. Botulinum toxin can also be used as a bioterrorism agent and has been identified in the United States as one of the highest priority bioterrorism threats. To date, the principal customer for BAT has been the U.S. government, specifically HHS. We are currently operating under a procurement contract with BARDA, which requires delivery of up to 200,000 doses of BAT into the SNS through May 2018. The total contract term is through May 2026, primarily to support stability testing. In addition to domestic government sales, BAT has been sold to several foreign governments.

VIGIV [Vaccinia Immune Globulin Intravenous (Human)]. VIGIV is the only polyclonal antibody therapeutic licensed by the FDA to address certain complications from smallpox vaccination. VIGIV is comprised of purified polyclonal human immune globulins (antibodies) directed to vaccinia virus, the virus that is used in ACAM2000, (Smallpox (Vaccinia) Vaccine, Live), a product owned by Sanofi Pasteur Biologics, LLC, and which is currently being procured and delivered into the SNS. Vaccinia is not the virus that causes smallpox, but it is similar enough to elicit a protective immune response when used as a smallpox vaccine. Individuals who are susceptible to vaccinia may develop an infection from ACAM2000. These patients benefit from treatment with VIGIV. VIGIV was licensed by the FDA in May 2005 and by Health Canada in May 2007 for counteracting certain complications that can be associated with ACAM2000. To date, the principal customer for VIGIV has been the U.S. government, specifically HHS. We are currently operating under a procurement contract with the CDC, which requires us to maintain FDA licensure of VIGIV, as well as to collect plasma, manufacturing activities and product delivery of VIGIV into the SNS. The contract term is over a five-year period through August 2017, after which we anticipate negotiating a new contract or contract modification. In August 2016, the CDC exercised options for the manufacturing of plasma into final product and delivery of that product into the SNS, as well as continued stability testing and FDA licensure maintenance activities.

Product Candidates

Within our Antibody Therapeutics business unit, we are leveraging our proprietary, hyperimmune platform technology to address current and emerging public health threats, including the following investigational stage product candidates:

FLU-IG (NP025). We are utilizing our hyperimmune platform to develop NP025, a human polyclonal antibody therapeutic enriched with influenza antibodies for the treatment of seasonal influenza. Pre-clinical studies are currently ongoing and we are targeting commencement of a Phase 2 clinical trial in 2017.

ZIKA-IG (NP024). We are utilizing our hyperimmune platform to develop NP024, a human polyclonal antibody therapeutic enriched with Zika antibodies for the prevention and treatment of Zika infection. Pre-clinical studies are currently ongoing and we are targeting commencement of a Phase 1 clinical trial in 2017.

FILOV (NP026). In 2016, we signed an exclusive license agreement with Integrated BioTherapeutics, Inc., or IBT, to use IBT's proprietary vaccine antigens and know-how in the development of equine-based antibody therapeutics for the treatment of hemorrhagic fever caused by Filoviruses (*i.e.*, Ebola Zaire, Ebola Sudan and Marburg). Pre-clinical studies are currently ongoing.

Devices

Marketed Products

RSDL® (Reactive Skin Decontamination Lotion Kit). RSDL is the only medical device cleared by the FDA that is intended to remove or neutralize chemical warfare agents and T-2 toxin (a myco toxin capable of being weaponized) from the skin. RSDL has been cleared as a medical device by the FDA and Health Canada, has a current European Conformity (CE) mark under European Directives, and is licensed by the Israel Ministry of Health and by Australia's Therapeutics Goods Administration. To date, the principal customers for RSDL have been agencies of the U.S. government, including the Department of Defense, or DoD, the Department of State and the National Guard. Our current contract with the DoD is a five-year indefinite delivery/indefinite quantity contract, including option years, that expires in June 2017, after which we anticipate negotiating a new contract or contract modification. In addition to domestic government sales, we have also sold to 35 foreign countries since the device was cleared in 2003. Our strategy is to continue working with U.S. government agencies and the DoD and to identify new markets where RSDL can be promoted and sold under its current FDA clearance.

Trobigard™ (Atropine Sulfate/Obidoxime Chloride autoinjector). Trobigard auto-injector is designed to deliver obidoxime chloride and atropine sulfate for emergency treatment of organophosphate nerve agent or insecticide poisoning. This product has not been approved by the FDA or any other regulatory agency, is not promoted or distributed in the U.S., and is only sold to non-U.S. authorized government buyers.

Product Candidates

Our Devices business unit is leveraging our auto-injector platform to develop several investigational stage product candidates, including devices filled with pralidoxime chloride, atropine, and other organophosphate poisoning antidotes. These product candidates are being developed in partnership with the DoD and partially funded through U.S. government contracts administered by Battelle Memorial Institute.

Contract Manufacturing

Our Contract Manufacturing business unit, which is based on our established manufacturing infrastructure and expertise, consists of a broad range of contract manufacturing services to third-party customers. These services include pharmaceutical product development, manufacturing, filling services for injectable and other sterile products, process design, technology transfer, manufacturing validations, laboratory support, aseptic filling, lyophilization, final packaging and accelerated and ongoing stability studies. We manufacture both vial and pre-filled syringe formats and we produce bulk drug product and finished units of clinical and commercial drugs. We provide these services for a wide variety of drug products – small molecule, biological, and blood products – in all stages of development. We perform work for this business unit at facilities located at the following sites:

- *Camden (Baltimore, Maryland).* Primarily supporting our Contract Manufacturing business unit, our Camden facility located in Baltimore, Maryland has provided manufacturing services to more than 50 domestic and international customers and has manufactured over 20 commercial

products distributed in approximately 50 countries. This facility offers customers a broad portfolio of capabilities essential to their product development and commercialization efforts.

- *Bayview (Baltimore, Maryland).* Our Bayview facility, also located in Baltimore, Maryland, was designated by the HHS, as a Center for Innovation in Advanced Development and Manufacturing, or CIADM, through a contract with BARDA in June 2012. Through this contract, we have responded to four Task Order Requests issued by BARDA for the development and manufacture of product candidates primarily addressing EID threats of high priority to the U.S. government, including Zika and Viral Hemorrhagic Fevers such as Ebola. In support of our Contract Manufacturing business unit, our Bayview facility also has the capability to provide manufacturing services to non-U.S. Government partners and customers.
- *Lansing, Michigan.* Our Lansing campus is our primary manufacturing location servicing our Vaccines and Anti-Infectives business unit. Our Lansing facilities also provide our Contract Manufacturing business unit with capability for both small- and large- scale biologics bulk product manufacturing. We have initiated Contract Manufacturing Organization, or CMO, activities in our small-scale facility, Building 12, and we seek to market our available capacity in Lansing to enhance overall facility utilization.
- *Winnipeg, Manitoba, Canada.* Our facility in Winnipeg is the primary location for product development and manufacturing in support of our Antibody Therapeutics business unit. This facility also supports our Contract Manufacturing business unit through product development and manufacturing support to a number of customers.

Research and Development

Our company is engaged in research and development and has incurred substantial expenses for these activities. These expenses generally include the cost of acquiring or inventing new technologies and products, as well as development work on new product candidates (or label expansions of existing marketed products). To offset these expenditures, we actively seek, and historically have been successful in obtaining, contract and grant awards for development funding from a variety of U.S. government sub-agencies within both HHS and DoD. Gross research and development expenses and net research and development expense (income) are as follows:

	December 31,		
in millions	**2016**	**2015**	**2014**
Research and development expense	$ 108.3	$ 119.2	$ 104.7
less: Contracts and grants	(143.4)	(117.4)	(91.7)
Net research and development expense (income)	$ (35.1)	$ 1.8	$ 13.0

Marketing and Sales

For our Vaccines and Anti-infectives, Antibody Therapeutics and Devices business units we market and sell our products primarily to the U.S. government and domestic non-government organizations. These business units share a small, specialized marketing and sales group comprised of Emergent employees. We intend to use a similar approach to the marketing and sales of other product candidates that we either successfully develop or acquire. In addition to domestic sales, we have established a marketing and sales capability targeting sales of our products to allied foreign governments as well as non-governmental organizations in foreign jurisdictions. For such non-U.S. sales we are using a combination of Emergent employees as well as third-party marketing distributors and representatives to identify potential opportunities to sell our products in key international markets, including Europe, the Middle East, Asia and the Pacific Rim. We anticipate engaging additional representatives as interest in countermeasures addressing PHTs increases outside the U.S.

Our Contract Manufacturing business unit is supported by a dedicated group of business development professionals qualified to represent the full spectrum of contract product development and manufacturing services that we offer.

Competition

Our products and product candidates intended for the treatment or prevention of CBRN, explosive and EID threats face significant competition. Our products and any product or product candidate that we acquire or successfully develop and commercialize are likely to compete with currently marketed products and product candidates that are in development for the same indications. Specifically, the competition for our products and product candidates includes the following:

- ***BioThrax and NuThrax.*** Although BioThrax is the only vaccine licensed by the FDA for the prevention of anthrax disease, we face potential future competition for the supply of anthrax vaccines to the U.S. government. PharmAthene, Inc., PaxVax Inc., Altimmune, Inc., Pfenex Inc., Soligenix, Inc., Immunovaccine Inc. and NanoBio Corporation are each currently developing anthrax vaccine product candidates.

- ***Anthrasil***. Although Anthrasil is the only polyclonal antibody therapeutic licensed by the FDA for the treatment of toxemia resulting from inhalational anthrax, GlaxoSmithKline plc has obtained FDA licensure for ABthrax™ (raxibacumab), an anthrax monoclonal antibody therapeutic. Elusys Therapeutics, Inc. also has obtained FDA approval for Anthim® (obiltoxaximab) injection, indicated for the treatment and prophylaxis of inhalational anthrax.

- ***BAT***. Our botulinum immune globulin product is the only heptavalent therapeutic licensed by the FDA and Health Canada for the treatment of botulinum disease and has Orphan Drug Status. Other companies may be developing therapies aimed at treating or preventing botulism infections, however, direct competition is currently limited.

- ***VIGIV***. Our VIGIV product is the only therapeutic licensed by the FDA and Health Canada to address adverse events from smallpox vaccination with ACAM2000. Other companies may be developing therapies aimed at treating or preventing vaccinia infections; however, direct competition is currently limited. SIGA Technologies, Inc. is developing Tecovirimat (Arestvyr™, ST-26), an oral therapy that targets orthopox viruses such as vaccinia and potentially smallpox.

- ***RSDL***. In the United States, RSDL is the only FDA-cleared chemical warfare agent decontamination device for use on the skin. Internationally, various Ministries of Defense have procured Fullers Earth, Dutch Powder and French Powder as a preparedness countermeasure for liquid chemical weapons.

- ***Trobigard***. Trobigard auto-injector delivers obidoxime chloride and atropine sulfate for emergency treatment of organophosphate nerve agent or insecticide poisoning. Meridian Medical Technologies, a subsidiary of Pfizer, is currently the sole provider of FDA-approved nerve agent antidote auto-injector devices to the U.S. government and many international allied governments. Internationally, the remaining market is fragmented and served by regional or national-based defense product manufacturers.

- ***Contract Manufacturing Services Business***. We compete for contract manufacturing service business with a number of biopharmaceutical product development organizations, contract manufacturers of biopharmaceutical products and university research laboratories, including, among others: Lonza Group Ltd., OSO BioPharmaceuticals Manufacturing, LLC, Par Pharmaceutical Companies, Inc., Jubilant Hollister-Stier Laboratories LLC (a subsidiary of Jubilant Life Sciences Limited), Patheon Inc., Hospira Inc., Ajinomoto Althea, Inc. (a subsidiary of Ajinomoto Co., Inc.) Cook Pharmica LLC (a subsidiary of Cook Group Inc.), and Albany Molecular Research, Inc. We also compete with in-house research, development and support service departments of other biopharmaceutical companies.

Customer Reliance

For the years ended December 31, 2016, 2015 and 2014, the Company's revenues from the United States comprised 96%, 98% and 96%, respectively, of total revenues. For the years ended December 31, 2016, 2015 and 2014, revenues from HHS and HHS agencies comprised 83%, 86% and 83%, respectively, of total revenues. For the years ended December 31, 2016, 2015 and 2014, product revenues from BioThrax comprised approximately 80%, 89% and 87%, respectively, of total product revenues.

Historically, we have derived substantially all of our product revenues from sales to the U.S. government, specifically HHS and DoD. We expect that this will continue for the foreseeable future. In 2016, product revenues were $296.3 million, consisting of $285.8 million from sales to the U.S. and $10.5 million from international sales. In 2015, product revenues were $328.9 million, consisting of $320.0 million from sales to the U.S. and $8.9 million from international sales. In 2014, product revenues were $281.8 million, consisting of $267.4 million from sales to the U.S. and $14.4 million from international sales.

A second significant source of revenue for our company is our contracts and grants, which represents development funding primarily from the U.S. government, specifically HHS and DoD for our various investigational product candidates. We expect that this will continue to be a significant source of revenue for the foreseeable future. Contracts and grants revenue was $143.4 million in 2016, $117.4 million in 2015 and $91.7 million in 2014. These revenues substantially offset our costs in developing our product candidates.

A third and growing source of revenue for our company is from contract manufacturing. Contract manufacturing revenue was $49.1 million in 2016, $43.0 million in 2015 and $30.9 million in 2014.

MANUFACTURING

Our Lansing, Michigan site is a vertically-integrated manufacturing facility and the location of our BioThrax manufacturing operations. Located within the Lansing site is Building 55, our large-scale manufacturing facility, which was licensed by the FDA in August 2016 for the manufacture of BioThrax. This facility has the potential to manufacture up to 20 to 25 million doses of BioThrax annually on a single manufacturing train. The manufacturing capabilities of Building 55 are central to our Vaccines and Anti-infectives business unit. Our Lansing site also comprises biologics bulk product manufacturing capability (large- and small-scale), which we also seek to market to CMO customers.

Our manufacturing facilities located at our Winnipeg, Manitoba, Canada site are actively engaged in plasma-derived hyperimmune therapeutics manufacturing, chromatography-based plasma fractionation, downstream processing, aseptic filling, packaging and warehousing, quality assurance and control, and include development laboratories and office space. At these facilities, we manufacture and fill our hyperimmune specialty plasma products, including BAT, VIGIV and Anthrasil, and we conduct bulk manufacture of RSDL lotion. Also at these facilities, we manufacture other marketed hyperimmune products for contract manufacturing customers. The facilities at this site will play a key role in executing both product development and manufacturing activities in support of our Antibody Therapeutics and Contract Manufacturing business units.

Our contract fill/finish services facility is located in Baltimore, Maryland and is referred to as our "Camden Site." The Camden Site provides pharmaceutical product development and filling services for injectable and other sterile products, as well as process design, technical transfer, manufacturing validations, laboratory support, aseptic filling, lyophilization, final packaging and accelerated and ongoing stability studies support. This facility is an approved manufacturing facility under the regulatory regimes in the United States, Canada, Japan, Brazil, the Middle East and several countries in the European Union. The facility includes warehousing space used for cold-storage and freezer capacity to support contract manufacturing customers. Additionally, we intend for this facility to provide fill/finish services to many of our business units for our development and commercial stage products.

Our manufacturing facility focused on disposable manufacturing for viral and non-viral products is located in Baltimore, Maryland, and is referred to as our "Bayview Site." This facility was designed to take advantage of single-use bioreactor technology and is designed to be capable of manufacturing several different products, including products derived from cell culture or microbial systems. In June 2012, we entered into a contract with BARDA, which established our Bayview Site as a Center for Innovation in Advanced Development and Manufacturing, or CIADM. We envision this facility supporting future CIADM development and manufacturing activities for CBRN threat countermeasures, as well as our current and future non-CIADM product development and manufacturing needs. Additionally, and in support of the Contracting Manufacturing business unit, the capabilities of this facility have been and will continue to be marketed to non-U.S. government clients in need of bulk manufacturing services.

We also currently lease a packaging facility in Hattiesburg, Mississippi at the University of Southern Mississippi's Accelerator, a technology innovation and commercialization center. This facility is equipped to package RSDL. RSDL bulk lotion that is manufactured in Winnipeg is shipped to Hattiesburg, Mississippi for combination with RSDL sponges, which are further manufactured, packaged, and then released for sale. All RSDL packets are packaged at this facility.

Supplies and Raw Materials

We currently rely on contract manufacturers and other third parties to manufacture some of the supplies we require for pre-clinical studies and clinical trials, as well as supplies and raw materials used in the production of our products. Typically we acquire these supplies and raw materials on a purchase order basis and, when possible, in quantities we believe adequate to meet our needs. We obtain Alhydrogel® adjuvant 2%, used to manufacture BioThrax and NuThrax, from a single-source supplier for which we have no alternative source of supply. However, we maintain stored supplies of this adjuvant sufficient to meet our expected manufacturing needs for these products. We also utilize a single-source supplier for the following other raw materials for our other products: the sponge applicator device and the active ingredient used to make RSDL and limited-source suppliers for various types of hyperimmune specialty plasmas used to manufacture our hyperimmune specialty plasma products, such as BAT, Anthrasil and VIGIV.

INTELLECTUAL PROPERTY

We actively seek to protect the intellectual property that arises from our activities. It is our policy to respect the intellectual property rights of others. In general and where practicable, we pursue patent protection for new and innovative processes and products that we develop. The term of protection for

various patents associated with and expected to be associated with our marketed products and product candidates extend for varying periods of time depending on the date of filing of the patent application or the date of patent issuance and the legal term of patents in the countries in which they are obtained. The protection afforded by a patent varies on a product-by-product basis and country-to-country basis and depends upon many factors, including the type of patent, the scope of its coverage, the availability of regulatory-related extensions, the availability of legal remedies in a particular country and the validity and enforceability of the patents. In some cases, we may decide that the best way to protect the intellectual property is to retain proprietary information as trade secrets and confidential information rather than to apply for patents, which would involve disclosure of proprietary information to the public. We take a number of measures to protect our trade secrets and confidential information, including entering into confidentiality agreements with employees and third parties. In general and where practicable, we also pursue registered trademarks for our product candidates and marketed products. We are a party to a number of license agreements under which we license patents, patent applications and other intellectual property. We enter into these agreements to augment our own intellectual property and to secure freedom to operate where necessary. These agreements impose various commercial diligence and financial payment obligations on us. We expect to continue to enter into these types of agreements in the future.

REGULATION

Regulations in the United States and other countries have a significant impact on our product development, manufacturing and marketing activities.

Government Contracting

Our status as a U.S. government contractor means that we are subject to various statutes and regulations, including:

- the Federal Acquisition Regulation, or FAR, and agency-specific regulations supplemental to FAR, which comprehensively regulate the award, formation, administration and performance of government contracts;
- the Defense Federal Acquisition Regulations, or DFARs, and agency-specific regulations supplemental to DFARs, which comprehensively regulate the award, formation, administration and performance of DoD government contracts;
- business ethics and public integrity obligations, which govern conflicts of interest and the hiring of former government employees, restrict the granting of gratuities and funding of lobbying activities and incorporate other requirements such as the Anti-Kickback Act, the Procurement Integrity Act, the False Claims Act and the Foreign Corrupt Practices Act;
- export and import control laws and regulations, including but not limited to ITAR (International Traffic in Arms Regulations); and
- laws, regulations and executive orders restricting the use and dissemination of information classified for national security purposes and the exportation of certain products and technical data.

U.S. government agencies routinely audit and investigate government contractors for compliance with applicable laws and standards. These regulations can impose stricter penalties than those normally applicable to commercial contracts, such as criminal and civil liability and suspension and debarment from future government contracting. In addition, pursuant to various regulations, our government contracts can be subject to unilateral termination or modification by the government for convenience, detailed auditing and accounting systems requirements, statutorily controlled pricing, sourcing and subcontracting restrictions, and statutorily mandated processes for adjudicating contract disputes.

Project BioShield. The Project BioShield Act of 2004, or Project BioShield, provides expedited procedures for bioterrorism-related procurement and the awarding of research grants, making it easier for HHS to rapidly commit funds to countermeasure projects. Project BioShield relaxes procedures under the FAR for procuring property or services used in performing, administering or supporting biomedical countermeasure research and development. In addition, if the Secretary of HHS deems that there is a pressing need, Project BioShield authorizes the Secretary to use an expedited award process, rather than the normal peer review process, for grants, contracts and cooperative agreements related to biomedical countermeasure research and development activity. Under Project BioShield, in limited specified circumstances, HHS can contract to purchase unapproved countermeasures for the SNS and authorize the emergency use of medical products that have not yet been approved by the FDA.

First Responders Act. The First Responder Anthrax Preparedness Act of 2016 directs the Secretary of Homeland Security, in consultation with the Secretary of Health and Human Services, to establish a pilot program to provide short-dated vaccines from the SNS to emergency response providers on a voluntary basis.

Product Development for Therapeutics

Pre-Clinical Testing. Before beginning testing of any compounds in human subjects in the United States, stringent government requirements for pre-clinical data must be satisfied. Pre-clinical testing includes both *in vitro*, or in an artificial environment outside of a living organism, and *in vivo*, or within a living organism, laboratory evaluation and characterization of the safety and efficacy of a drug and its formulation. We perform pre-clinical testing on all of our product candidates before we initiate any human trials.

Investigational New Drug Application. Before clinical testing may begin, the results of pre-clinical testing, together with manufacturing information, analytical data and any other available clinical data or literature, must be submitted to the FDA as part of an Investigational New Drug Application, or IND. The sponsor must also include an initial protocol detailing the first phase of the proposed clinical investigation. The pre-clinical data must provide an adequate basis for evaluating both the safety and the scientific rationale for the initial clinical studies in human volunteers. The IND automatically becomes effective 30 days after receipt by the FDA, unless the FDA imposes a clinical hold within that 30-day time period.

Clinical Trials. Clinical trials involve the administration of the product candidate to healthy human volunteers or to patients under the supervision of a qualified physician (also called an investigator) pursuant to an FDA-reviewed protocol. Human clinical trials typically are conducted in three sequential phases, although the phases may overlap with one another. Clinical trials must be conducted under protocols that detail the objectives of the study, the parameters to be used to monitor safety and the efficacy criteria, if any, to be evaluated. Each protocol must be submitted to the FDA as part of the IND.

- Phase 1 clinical trials test for safety, dose tolerance, absorption, bio-distribution, metabolism, excretion and clinical pharmacology and, if possible, for early evidence regarding efficacy.
- Phase 2 clinical trials involve a small number of patients with the target disease or disorder and seek to assess the efficacy of the drug for specific indications to determine dose response and the optimal dose range and to gather additional information relating to safety and potential adverse effects.
- Phase 3 clinical trials consist of expanded, large-scale studies of patients with the target disease or disorder to obtain definitive statistical evidence of the efficacy and safety of the proposed product candidate using a specific dosing regimen. The safety and efficacy data generated from Phase 3 clinical trials typically form the basis for FDA approval of the product candidate.

- Phase 4 clinical trials are sometimes conducted after a product has been approved. These trials can be conducted for a number of purposes, including to collect long-term safety information or to collect additional data about a specific patient population. As part of a product approval, the FDA may require that certain Phase 4 studies, which are sometimes called post-marketing commitment studies, be conducted post-approval.

Good Clinical Practice. All of the phases of clinical studies must be conducted in conformance with the FDA's bioresearch monitoring regulations and Good Clinical Practices, or GCP, which are ethical and scientific quality standards for conducting, recording and reporting clinical trials to assure that the data and reported results are credible and accurate and that the rights, safety and well-being of trial participants are protected.

Animal Rule. For product candidates that are intended to treat or prevent infection from rare life-threatening diseases, conducting controlled clinical trials with human patients to determine efficacy may be unethical or unfeasible. Under regulations issued by the FDA in 2002, often referred to as "the Animal Rule," under some circumstances, approval of such product candidates can be based on clinical data from trials in healthy subjects that demonstrate adequate safety, immunogenicity and efficacy data from adequate and well-controlled animal studies. Among other requirements, the animal studies must establish that the drug or biological product is reasonably likely to produce clinical benefit in humans. Because the FDA must agree that data derived from animal studies may be extrapolated to establish safety and efficacy in humans, these studies add complexity and uncertainty to the testing and approval process. In addition, products approved under the Animal Rule are subject to additional requirements, including post-marketing study requirements, restrictions imposed on marketing or distribution or requirements to provide information to patients.

Marketing Approval – Biologics and Drugs

Biologics License Application/New Drug Application. All data obtained from a comprehensive development program, including research and product development, manufacturing, pre-clinical and clinical trials, labeling and related information are submitted in a Biologics License Application, or BLA, to the FDA and in similar regulatory filings with the corresponding agencies in other countries for review and approval. For small molecule drugs, this information is submitted in a filing called a New Drug Application, or NDA. The submission of an application is not a guarantee that the FDA will find the application complete and accept it for filing. The FDA may refuse to file the application and request additional information rather than accept the application for filing, in which case the application must be resubmitted with the supplemental information. Once an application is accepted for filing, the Prescription Drug User Fee Act, or PDUFA, requires the FDA to review the application within 10 months of its 60-day filing date, although in practice, longer review times may occur.

In addition, under the Pediatric Research Equity Act of 2003, or PREA, BLAs, NDAs and certain supplements must contain data to assess the safety and efficacy of the drug for the claimed indications in all relevant pediatric subpopulations and to support dosing and administration for each pediatric subpopulation for which the product is safe and effective. The FDA may grant deferrals for submission of data or full or partial waivers. Unless otherwise required by regulation, PREA does not apply to any drug or biologic for an indication for which orphan designation has been granted.

In reviewing a BLA or NDA, the FDA may grant approval, deny the application if it determines the application does not provide an adequate basis for approval or again request additional information. Even if such additional information and data are submitted, the FDA may ultimately decide that the BLA or NDA does not satisfy the criteria for approval. The receipt of regulatory approval often takes many years, involving the expenditure of substantial financial resources. The speed with which approval is granted often depends on a number of factors, including the severity of the disease in question, the availability of alternative treatments and the risks and benefits of the product candidate as demonstrated in clinical trials. The FDA may also impose conditions upon approval. For example, it may require a Risk Evaluation and Mitigation Strategy, or REMS, for a product. This can include various required elements, such as publication of a medication guide, patient package insert, a communication plan to educate health care providers of the drug's risks and/or restrictions on distribution and use such as limitations on who may prescribe or dispense the drug. The FDA may also significantly limit the indications approved for a given product and/or require, as a condition of approval, enhanced labeling, special packaging or labeling, post-approval clinical trials, expedited reporting of certain adverse events, pre-approval of promotional materials or restrictions on direct-to-consumer advertising, any of which could negatively impact the commercial success of a product.

Fast Track Designation. The FDA may designate a product as a fast track drug if it is intended for the treatment of a serious or life-threatening disease or condition and demonstrates the potential to address unmet medical needs for this disease or condition. Sponsors granted a fast track designation for a drug are granted more opportunities to interact with the FDA during the approval process and are eligible for FDA review of the application on a rolling basis, before the application has been completed. The FDA granted fast track status to NuThrax in June 2011.

Orphan Drugs. Under the Orphan Drug Act, an applicant can request the FDA to designate a product as an "orphan drug" in the United States if the drug is intended to treat an orphan, or rare, disease or condition. A disease or condition is considered orphan if it affects fewer than 200,000 people in the United States. Orphan Drug designation must be requested before submitting a BLA or NDA. Products designated as orphan drugs are eligible for special grant funding for research and development, FDA assistance with the review of clinical trial protocols, potential tax credits for research, reduced filing fees for marketing applications and a special seven-year period of market exclusivity after marketing approval. Orphan drug exclusivity (afforded to the first applicant to receive approval for an orphan designated drug) prevents FDA approval of applications by others for the same drug for the designated orphan disease or condition. The FDA may approve a subsequent application from another applicant if the FDA determines that the application is for a different drug or different use, or if the FDA determines that the subsequent product is clinically superior, or that the holder of the initial orphan drug approval cannot assure the availability of sufficient quantities of the drug to meet the public's need. A grant of an orphan designation is not a guarantee that a product will be approved.

Our products with current Orphan Drug exclusivity include the following:

- BioThrax for post-exposure prophylaxis of disease following suspected or confirmed *B. anthracis* exposure, when administered in conjunction with recommended antibacterial drugs, with exclusivity though November 2022;
- Anthrasil for the treatment of toxemia associated with inhalational anthrax in adult and pediatric patients in combination with appropriate antibacterial drugs, with exclusivity through 2022; and
- BAT with exclusivity through March 2020 for treatment of suspected or documented exposure to botulinum neurotoxin A, B, C, D, E, F or G.

Post-Approval Requirements. Any drug, biologic or medical device product for which we receive FDA approval will be subject to continuing regulation by the FDA, including, among other things, record keeping requirements, reporting of adverse experiences, providing the FDA with updated safety and efficacy information, product sampling and distribution requirements, current good manufacturing practices, or cGMP, and restrictions on advertising and promotion. Adverse events that are reported after marketing approval can result in additional limitations being placed on the product's distribution or use and, potentially, withdrawal or suspension of the product from the market. In addition, the FDA has post-approval authority to require post-approval clinical trials and/or safety labeling changes if warranted by the appearance of new safety information. In certain circumstances, the FDA may impose a REMS after a product has been approved. Facilities involved in the manufacture and distribution of approved products are required to register their facility with the FDA and certain state agencies and are subject to periodic unannounced inspections by the FDA for compliance with cGMP and other laws. The FDA also closely monitors advertising and promotional materials we may disseminate for our products for compliance with restrictions on off-label promotion and other laws. We may not promote our products for conditions of use that are not included in the approved package inserts for our products. Certain additional restrictions on advertising and promotion exist for products that have so-called "black box warnings" in their approved package inserts, such as Anthrasil and VIGIV in the U.S.

Vaccine and Immune Globulin Product Lot Release and FDA Review. Because the manufacturing process for biological products is very complex, the FDA requires for many biologics, including most vaccines and immune globulin products, that each product lot undergo thorough testing for purity,

potency, identity and sterility. Before a lot of BioThrax, Anthrasil or VIGIV can be used, we must submit a sample of the vaccine lot and/or a lot release protocol to the FDA. The lot release protocol documents reflect the results of our tests for potency, safety, sterility, any additional assays mandated by our BLA for BioThrax, Anthrasil and VIGIV and a summary of relevant manufacturing details. The FDA reviews the manufacturing and testing information provided in the lot release protocol and may elect to perform confirmatory testing on lot samples that we submit. We cannot distribute a lot of BioThrax, Anthrasil or VIGIV until the FDA releases it. The length of the FDA review process depends on a number of factors, including reviewer questions, license supplement approval, reviewer availability and whether our internal testing of product samples is completed before or concurrently with FDA testing. Health Canada has similar lot release requirements for immune globulin products. Before a lot of BAT or VIG can be used, we must submit samples of the products and a lot release protocol to Health Canada. The length of the Health Canada review process depends on a number of factors, including reviewer questions, license supplement approval, reviewer availability and whether our internal testing of product samples is completed before or concurrently with Health Canada testing.

Priority Review Vouchers. In 2007, the Food and Drug Administration Amendments Act added Section 524 to the Food, Drug, and Cosmetic Act and established the Neglected Tropical Disease Priority Review Voucher, or PRV, program. In December 2016, the 21st Century Cures Act established a PRV program within the FDA for medical countermeasures for chemical, biological, radiological or nuclear threats, and those vaccines, therapeutics and other medical countermeasures, or MCM, that prevent or treat material threat agents as identified in the Public Health Service Act. Recipients of a PRV may transfer that voucher to another party for consideration. We believe that UV-4B, an antiviral therapeutic being developed as an oral treatment for dengue viral infection, and ZIKA-IG (NP024), a human polyclonal antibody therapeutic being developed as a prophylaxis and treatment for Zika infection, may each have the potential for a PRV under the Neglected Tropical Disease PRV program. We believe that GC-072, the lead compound in the EV-035 series of broad-spectrum antibiotics being developed as an oral and intravenous treatment for *Burkholderia pseudomallei* infection, may have potential for a PRV under the MCM PRV program. We believe that FILOV (NP026), an equine polyclonal antibody therapeutic being developed to treat hemorrhagic fever caused by Filoviruses (Ebola, Marburg and Sudan), may have potential for a PRV under either the Neglected Tropical Disease PRV program or the MCM PRV program.

Marketing Approval – Devices

Devices may fall within the definition of a Medical Device or may be a Combination Product including both a device for delivery of a drug product and the drug product itself. Medical Devices are also subject to FDA clearance or approval and extensive regulation under the U.S. Food, Drug and Cosmetic Act, or FDCA. Under the FDCA, medical devices are classified into one of three classes: Class I, Class II or Class III. The classification of a device generally depends on the degree of risk associated with the medical device and the extent of control needed to ensure safety and effectiveness. RSDL is regulated as a Class II medical device. Our auto-injector has not been cleared by the FDA or any other regulatory agency, is not promoted or distributed in the U.S., and is only sold to non-U.S. authorized government buyers.

- Class I devices are those for which safety and effectiveness can be assured by adherence to a set of general controls. These general controls include compliance with the applicable portions of the FDA's Quality System Regulation, or QSR, which sets forth requirements for manufacturing practices, record keeping, reporting of adverse medical events, labeling and promotion only for cleared or approved intended uses.

- Class II devices are also subject to these general controls and to any other special controls as deemed necessary by the FDA to ensure the safety and effectiveness of the device. Review and clearance by the FDA for these devices is typically accomplished through the 510(k) pre-market notification procedure. When 510(k) clearance is sought, a sponsor must submit a pre-market notification demonstrating that the proposed device is substantially equivalent to a device approved by the FDA after May 28, 1976. This previously-cleared device is called the predicate device. If the FDA agrees that the proposed device is substantially equivalent to the predicate device, then 510(k) clearance to market will be granted. After a device receives 510(k) clearance, any modification that could significantly affect its safety or effectiveness, or that would constitute a major change in its intended use, requires a new 510(k) clearance or could require pre-market approval. If a proposed device is substantially equivalent to a predicate device that was cleared prior to May 28, 1976, the proposed device is cleared based on a pre-amendment and is cleared as an unclassified device.

- A Class III device requires approval of a pre-market application, or PMA, which is an expensive, lengthy and uncertain process requiring many years to complete. Clinical trials are almost always required to support a PMA. These trials generally require submission of an application for an investigational device exemption, or IDE. An IDE must be supported by pre-clinical data, such as animal and laboratory testing results, which show that the device is safe to test in humans and that the study protocols are scientifically sound. The IDE must be approved in advance by the FDA for a specified number of patients, unless the product is deemed a non-significant risk device and is eligible for more abbreviated investigational device exemption requirements.

Both before and after a medical device is commercially distributed, manufacturers and marketers of the device have ongoing responsibilities under FDA regulations. The FDA reviews design and manufacturing practices, record keeping, reports of adverse events, labeling and other information to identify potential problems with marketed medical devices. Device manufacturers are subject to periodic and unannounced inspection by the FDA for compliance with cGMP requirements that govern the methods used in, and the facilities and controls used for, the design, manufacture, packaging, servicing, labeling, storage, installation and distribution of all finished medical devices intended for human use. If the FDA finds that a manufacturer has failed to comply or that a medical device is ineffective or poses an unreasonable health risk, it can institute or seek a wide variety of enforcement actions and remedies, ranging from a public warning letter to more severe actions, including:

- fines, injunctions, and civil penalties;
- recall or seizure of products;
- operating restrictions, partial suspension or total shutdown of production;
- refusal of requests for 510(k) clearance or PMA approval of new products;
- withdrawal of 510(k) clearance or PMA approvals already granted; and
- criminal prosecution.

The FDA also has the authority to require repair, replacement or refund of the cost of any medical device. The FDA also administers certain controls over the export of medical devices from the United States, as international sales of medical devices that have not received FDA approval are subject to FDA export requirements.

Combination Products, of the type described above, are subject to the BLA/NDA regulatory regime. Our auto-injector is a combination product and has not been approved by the FDA or any other regulatory agency, is not promoted or distributed in the U.S., and is only sold to non-U.S. authorized government buyers.

Foreign Regulation

Currently, we maintain a commercial presence in the United States and Canada as well as select foreign countries. In the future, we may further expand our commercial presence to additional foreign countries and territories. In the European Union, medicinal products are authorized following a process

similarly demanding as the process required in the United States. Medicinal products must be authorized in one of two ways, either through the decentralized procedure, which provides for the mutual recognition procedure of national approval decisions by the competent authorities of the EU Member States or through the centralized procedure by the European Commission, which provides for the grant of a single marketing authorization that is valid for all EU member states. The authorization process is essentially the same irrespective of which route is used. We are also subject to many of the same continuing post-approval requirements in the EU as we are in the United States (*e.g.*, good manufacturing practices). Additionally, each foreign country subjects such medical devices to its own regulatory requirements. In the European Union, a harmonized medical device directive legislates approval requirements. Within this framework, the CE Mark, an attestation of conformity with the essential health, safety and environmental requirements and compliance with relevant European Union legislation, allows for the legal marketing of the product in all European Economic Area member states.

Anti-Corruption Laws

As part of the Affordable Care Act, the federal government enacted the Physician Payment Sunshine Act. Manufacturers of drugs are required to publicly report payments and transfers of value made to physicians and teaching hospitals. This information is posted on a public website. Failure to timely and accurately submit required information could subject us to civil penalties.

Our operations are also subject to compliance with the Foreign Corrupt Practices Act, or FCPA, which prohibits corporations and individuals from paying, offering to pay, or authorizing the payment of anything of value to any foreign government official, government staff member, political party or political candidate in an attempt to obtain or retain business or to otherwise influence a person working in an official capacity. We also may be implicated under the FCPA by the activities of our partners, collaborators, contract research organizations, vendors or other agents. As a public company, the FCPA also requires us to make and keep books and records that accurately and fairly reflect all of our transactions and to devise and maintain an adequate system of internal accounting controls. Our operations are also subject to compliance with the U.K. Bribery Act, which applies to bribery activities both in the public and private sector, Canada's Corruption of Foreign Public Officials Act and similar laws in other countries.

Other Regulation

Our present and future business has been and will continue to be subject to various other laws and regulations. Various laws, regulations and recommendations relating to the use of data, safe working conditions, laboratory practices, the experimental use of animals, and the purchase, storage, movement, import, export, use and disposal of hazardous or potentially hazardous substances, including radioactive compounds and infectious disease agents used in connection with our product development, are or may be applicable to our activities.

EMPLOYEES

As of February 17, 2017, we had 1,098 full-time employees. We believe that our future success will depend in part on our continued ability to attract, hire and retain qualified personnel. None of our employees is represented by a labor union or covered by collective bargaining agreements. We believe that our relations with our employees are good.

AVAILABLE INFORMATION

We maintain a website at www.emergentbiosolutions.com. We make available, free of charge on our website, our annual report on Form 10-K, quarterly reports on Form 10-Q, current reports on Form 8-K and all amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Securities Exchange Act of 1934, or the Exchange Act, as soon as reasonably practicable after we electronically file those reports with, or furnish them to, the Securities and Exchange Commission, or SEC.

We also make available, free of charge on our website, the reports filed with the SEC by our executive officers, directors and 10% stockholders pursuant to Section 16 under the Exchange Act as soon as reasonably practicable after copies of those filings are provided to us by those persons. In addition, we intend to make available on our website all disclosures that are required to be posted by applicable law, the rules of the SEC or the New York Stock Exchange listing standards regarding any amendment to, or waiver of, our code of business conduct and ethics. We have included our website address as an inactive textual reference only. The information contained on, or that can be accessed through, our website is not a part of, or incorporated by reference into, this Annual Report on Form 10-K.

ITEM 1A. RISK FACTORS

You should carefully consider, among other matters, the following risk factors in addition to the other information in this Annual Report on Form 10-K when evaluating our business because these risk factors may have a significant impact on our business, financial condition, operating results or cash flow. If any of the risks described below or in subsequent reports we file with the SEC actually occur, they may materially harm our business, financial condition, operating results or cash flow. Additional risks and uncertainties that we have not yet identified or that we presently consider to be immaterial may also materially harm our business, financial condition, operating results or cash flow.

GOVERNMENT CONTRACTING RISKS

We currently derive the majority of our revenue from sales of BioThrax to our principal customer, the U.S. government. If the U.S. government's demand for and funding for procurement of BioThrax is substantially reduced, our business, financial condition, operating results and cash flow could be materially harmed.

We have derived, and expect for the foreseeable future to derive, the majority of our revenue from sales of BioThrax, our anthrax vaccine licensed by the U.S. Food and Drug Administration, or the FDA, to the U.S. government. On December 8, 2016, we signed a follow-on contract with the Centers for Disease Control and Prevention, or the CDC, for the delivery of approximately 29.4 million doses of BioThrax for placement into the Strategic National Stockpile, or the SNS, over a five-year period ending in September 2021. The potential value of this contract is approximately $911 million, if all procurement options are exercised.

On December 8, 2016, we also received a notice of intent from the Biomedical Advanced Research and Development Authority, or BARDA, a division within the Office of the Assistant Secretary of Preparedness and Response at the U.S. Department of Health and Human Services, or HHS, to procure approximately $100 million of BioThrax for delivery into the SNS within 24 months from the date of contract award. If awarded, this contract would be separate from and in addition to the follow-on procurement contract with CDC. If we fail to secure this anticipated procurement contract from BARDA, our business, financial condition, operating results and cash flows could be materially harmed.

The procurement of doses of BioThrax by the CDC and BARDA is subject to the availability of funding. We have no certainty that funding will be made available for the procurement of doses under both the contract with the CDC and the anticipated contract with BARDA. If the SNS priorities change, funding to procure doses of BioThrax may be limited or not available, and our business, financial condition and operating results would be materially harmed. The success of our business and our operating results for the foreseeable future are significantly dependent on funding for the procurement of BioThrax and the terms of our BioThrax sales to the U.S. government, including the price per dose, the number of doses and the timing of deliveries.

Our submission of NuThrax for Emergency Use Authorization pre-approval and eventual FDA licensure may not be approved by the FDA in a timely manner or at all. Delays in our ability to achieve such pre-approval and licensure could prevent us from realizing the full potential value of our BARDA contract for the advanced development and delivery of NuThrax.

On September 30, 2016, we entered into a contract with HHS through BARDA for the advanced development and delivery of NuThrax, our next generation anthrax vaccine candidate. The contract, valued at up to approximately $1.6 billion, consists of a five-year base period of performance valued at approximately $200 million, which provides funding to develop NuThrax for post-exposure prophylaxis of anthrax disease and to deliver to the SNS an initial two million doses, following receipt of Emergency Use Authorization, or EUA, pre-approval by the FDA. Although there can be no assurances, we currently anticipate that the FDA could authorize NuThrax for emergency use as early as 2018, triggering deliveries of NuThrax to the SNS in 2019. The contract also includes options for the delivery of an additional 7.5 million to 50 million doses of NuThrax to the SNS, valued from approximately $255 million to up to $1.4 billion, respectively, and options for an additional clinical study and post-marketing commitments valued at approximately $48 million, which, if both were to be exercised in full, would increase the potential total contract value to up to approximately $1.6 billion.

We intend to submit an application in 2018 with the FDA for EUA pre-approval, so that NuThrax may be delivered to the SNS for use in an emergency situation as early as 2019. However, the FDA does not have review deadlines with respect to such submissions and, therefore, the timing of any approval of an EUA pre-approval submission is uncertain. We cannot guarantee that the FDA will review our data in a timely manner, or that the FDA will accept the data when reviewed. The FDA may decide that our data are insufficient for EUA pre-approval and require additional pre-clinical, clinical or other studies and refuse to approve our application. If we are unsuccessful in obtaining EUA pre-approval for NuThrax and eventual FDA licensure in a timely manner or at all, we may not be able to realize the full potential value of the contract, which could have a material adverse effect on our future business, financial condition, operating results and cash flow.

In addition, if the SNS priorities change, funding to procure any future doses of NuThrax may be limited or not available, and our future business, financial condition and operating results could be materially harmed.

Our U.S. government procurement and development contracts require ongoing funding decisions by the U.S. government. Reduced or discontinued funding of these contracts could cause our business, financial condition, operating results and cash flow to suffer materially.

Our principal customer for BioThrax, BAT, Anthrasil, VIGIV and RSDL and our primary source of funds for the development of our NuThrax product candidate is the U.S. government. We anticipate that the U.S. government will also be a principal customer for our other public health threat-focused medical countermeasures within our existing product portfolio as well as those we successfully acquire or develop. Additionally, a significant portion of our revenue comes from U.S. government development contracts and grants. Over its lifetime, a U.S. government procurement or development program may be implemented through the award of many different individual contracts and subcontracts. The funding for such government programs is subject to Congressional appropriations, generally made on a fiscal year basis, even for programs designed to continue for several years. For example, sales of BioThrax to be supplied under our follow-on procurement contract with the CDC are subject to the availability of funding, mostly from annual appropriations. These appropriations can be subject to political considerations and stringent budgetary constraints. For example, in April 2016, we were notified by BARDA that, after prioritization of its development funding, BARDA would not be exercising the clinical trial option for our PreviThrax rPA vaccine program. As a consequence of this decision, we determined to cease further development work on our PreviThrax vaccine product candidate. Additionally, our government-funded development contracts typically give the U.S. government the right, exercisable in its sole discretion, to extend these contracts for successive option periods following a base period of performance. The value of the services to be performed during these option periods may constitute the majority of the total value of the underlying contract. For example, the September 2016 contract award from BARDA for the development and delivery to the SNS of NuThrax for post-exposure prophylaxis of anthrax disease consists of a five-year base period of performance valued at approximately $200 million. The base period funding will support both the development through to licensure of NuThrax as well as the delivery to the SNS of an initial two million doses, following receipt of EUA pre-approval by the FDA. The contract award also includes options for the delivery of an additional 7.5 million to 50 million doses of NuThrax to the SNS, valued from approximately $255 million to up to $1.4 billion, respectively, and options for an additional clinical study and post-marketing commitments valued at $48 million, which if both were to be exercised in full, would increase the total contract value to up to $1.6 billion. If levels of government expenditures and authorizations for public health countermeasure preparedness decrease or shift to programs in areas where we do not offer products or are not developing product candidates, or if the U.S. government otherwise declines to exercise its options under our existing contracts, our business, revenues and operating results would suffer.

The government contracting process is typically a competitive bidding process and involves unique risks and requirements.

Our business involves government contracts and grants, which may be awarded through competitive bidding. Competitive bidding for government contracts presents a number of risks and requirements, including:

- the commitment of substantial time and attention of management and key employees to the preparation of bids and proposals for contracts that may not be awarded to us;
- the need to accurately estimate the resources and cost structure that will be required to perform any contract that we might be awarded;
- the possibility that we may be ineligible to respond to a request for proposal issued by the government;
- the submission by third parties of protests to our responses to requests for proposal that could result in delays or withdrawals of those requests for proposal; and
- in the event our competitors protest or challenge contract or grant awards made to us pursuant to competitive bidding, the potential that we may incur expenses or delays, and that any such protest or challenge would result in the resubmission of bids based on modified specifications, or in the termination, reduction or modification of the awarded contract.

The U.S. government may choose not to award us future contracts for either the development of our new product candidates or for the procurement of our existing products addressing public health threats, and may instead award such contracts to our competitors. If we are unable to secure particular contracts, we may not be able to operate in the market for products that are provided under those contracts. Additionally, if we are unable to consistently win new contract awards over an extended period, or if we fail to anticipate all of the costs or resources that we will be required to secure and, if applicable, perform under such contract awards, our growth strategy and our business, financial condition and operating results could be materially and adversely affected.

Laws and regulations affecting government contracts make it more costly and difficult for us to successfully conduct our business. Failure to comply with these laws could result in significant civil and criminal penalties and materially damage our relationship with the U.S. government.

As a manufacturer and supplier of medical countermeasures addressing public health threats to the U.S. government, we must comply with numerous laws and regulations relating to the procurement, formation, administration and performance of government contracts. Among the most significant government contracting regulations that affect our business are:

- the Federal Acquisition Regulation, or FAR, and agency-specific regulations supplemental to FAR, which comprehensively regulate the award, formation, administration and performance of government contracts;
- the Defense Federal Acquisition Regulations, or DFARs, and agency-specific regulations supplemental to DFARs, which comprehensively regulate the award, formation, administration and performance of U.S. Department of Defense, or DoD, government contracts;
- business ethics and public integrity obligations, which govern conflicts of interest and the hiring of former government employees, restrict the granting of gratuities and funding of lobbying activities and incorporate other requirements such as the Anti-Kickback Act, the Procurement Integrity Act, the False Claims Act and the Foreign Corrupt Practices Act;
- export and import control laws and regulations, including but not limited to ITAR (International Traffic in Arms Regulations); and
- laws, regulations and executive orders restricting the use and dissemination of information classified for national security purposes and the exportation of certain products and technical data.

U.S. government agencies routinely audit and investigate government contractors for compliance with applicable laws and standards. If we are audited and such audit were to uncover improper or illegal activities, we could be subject to civil and criminal penalties, administrative sanctions, including suspension or debarment from government contracting and significant reputational harm.

The amount we are paid under our fixed price government procurement contracts is based on estimates we have made of the time, resources and expenses required for us to perform under those contracts. If our actual costs exceed our estimates, we may not be able to earn an adequate return or may incur a loss under these contracts, which could harm our operating results and materially reduce our net income.

Some of our current procurement contracts with HHS and the DoD are fixed price contracts. We expect that future procurement contracts we successfully secure with the U.S. government would also be fixed price contracts. Under a fixed price contract, we are required to deliver our products at a fixed price regardless of the actual costs we incur. Estimating costs that are related to performance in accordance with contract specifications is difficult, particularly where the period of performance is over several years. Our failure to anticipate technical problems, estimate costs accurately or control costs during performance of a fixed price contract could reduce the profitability of such a contract or cause a loss, which could harm our operating results and materially reduce our net income.

Unfavorable provisions in government contracts, some of which may be customary, may subject our business to material limitations, restrictions and uncertainties and may have a material adverse impact on our financial condition and operating results.

Government contracts customarily contain provisions that give the U.S. government substantial rights and remedies, many of which are not typically found in commercial contracts, including provisions that allow the U.S. government to:

- § terminate existing contracts, in whole or in part, for any reason or no reason;
- § unilaterally reduce or modify contracts or subcontracts, including by imposing equitable price adjustments;
- § cancel multi-year contracts and related orders, if funds for contract performance for any subsequent year become unavailable;
- § decline, in whole or in part, to exercise an option to purchase product under a procurement contract or to fund additional development under a development contract;
- § decline to renew a procurement contract;
- § claim rights to facilities or to products, including intellectual property, developed under the contract;
- § require repayment of contract funds spent on construction of facilities in the event of contract default;
- § take actions that result in a longer development timeline than expected;
- § direct the course of a development program in a manner not chosen by the government contractor;
- § suspend or debar the contractor from doing business with the government or a specific government agency;
- § pursue civil or criminal remedies under acts such as the False Claims Act and False Statements Act; and
- § control or prohibit the export of products.

Generally, government contracts contain provisions permitting unilateral termination or modification, in whole or in part, at the U.S. government's convenience. Under general principles of government contracting law, if the U.S. government terminates a contract for convenience, the government contractor may recover only its incurred or committed costs, settlement expenses and profit on work completed prior to the termination. If the U.S. government terminates a contract for default, the government contractor is entitled to recover costs incurred and associated profits on accepted items only and may be liable for excess costs incurred by the government in procuring undelivered items from another source. All of our contracts, both development and procurement, with the U.S. government, are terminable at the U.S. government's convenience with these potential consequences.

In addition, our U.S. government contracts grant the U.S. government the right to use technologies developed by us under the government contract or the right to share data related to our technologies, for or on behalf of the U.S. government. Under our U.S. government contracts, we might not be able to prohibit third parties, including our competitors, from accessing such technology or data, including intellectual property, in providing products and services to the U.S. government.

COMMERCIALIZATION RISKS

We face substantial competition, which may result in others developing or commercializing products before or more successfully than we do.

The development and commercialization of new biopharmaceutical products is highly competitive and subject to rapid technological advances. We may face future competition with respect to our products, any products that we acquire, our current product candidates and any products we may seek to develop or commercialize in the future from other companies and governments, universities and other non-profit research organizations. Our competitors may develop products that are safer, more effective, more convenient or less costly than any products that we may develop or market. Our competitors may devote greater resources to market or sell their products, adapt more quickly to new technologies, scientific advances or patient preferences and needs, initiate or withstand substantial price competition more successfully than we can, or more effectively negotiate third-party licensing and collaborative arrangements.

There are a number of companies with products or product candidates addressing public health threat preparedness and therefore are competing with us for both U.S. government procurement and development resources.

Any reduction in demand for our products as a result of a competing product could lead to reduced revenues, reduced margins, reduced levels of profitability and loss of market share for our products. These competitive pressures could adversely affect our business and operating results.

Our Biologic Products may face risks of competition from biosimilar manufacturers.

Competition for BioThrax, BAT, Anthrasil, and VIGIV or our "Biologic Products," may be affected by follow-on biologics, or "biosimilars" in the United States and other jurisdictions. Regulatory and legislative activity in the United States and other countries may make it easier for generic drug manufacturers to manufacture and sell biological drugs similar or identical to our Biologic Products, which might affect the profitability or commercial viability of our Biologic Products. Under the Biologics Price Competition and Innovation Act of 2010, the FDA cannot approve a biosimilar application until the 12-year exclusivity period for the innovator biologic has expired. Regulators in the European Union and in other foreign jurisdictions have already approved biosimilars, although the European Medicines Agency has expressly excluded blood or plasma-derived products and their recombinant alternatives from the biosimilar pathway for a period of time. Vaccine and allergen products are considered on a case-by-case basis. The specific regulatory framework for this new approval pathway, whether the FDA will permit biosimilars for blood products and vaccines, and the extent to which an approved biosimilar would be substituted for the innovator biologic, are not yet clear and will depend on many factors that are currently unknown. If a biosimilar version of one of our Biologic Products were approved, it could have a material adverse effect on the sales and gross profits of the affected Biologic Product and could adversely affect our business and operating results.

Political or social factors may delay or impair our ability to market our products and may require us to spend significant management time and financial resources to address these issues.

Products developed to counter the potential impact of Chemical, Biological, Radiological and Nuclear, or CBRN, threats, Explosives and Emerging Infectious Diseases, or EID, are subject to changing political and social environments. The political responses and social awareness of the risks of these threats on military personnel or civilians may vary over time. If the threat of terrorism were to decline, then the public perception of the risk on public health and safety may be reduced. This perception, as well as political or social pressures, could delay or cause resistance to bringing our products to market or limit pricing or purchases of our products, any of which could negatively affect our revenues.

In addition, substantial delays or cancellations of purchases could result from protests or challenges from third parties. Lawsuits brought against us by third parties or activists, even if not successful, could require us to spend significant management time and financial resources defending the related litigation and could potentially damage the public's perception of us and our products. Any publicity campaigns or other negative publicity may adversely affect the degree of market acceptance of our public health threat countermeasures and thereby limit the demand for our products, which would adversely affect our business and operating results.

REGULATORY AND COMPLIANCE RISKS

Our long-term success depends, in part, upon our ability to develop, receive regulatory approval for and commercialize product candidates and, if we are not successful, our business and operating results may suffer.

Our product candidates and the activities associated with their development, including testing, manufacture, recordkeeping, storage and approval, are subject to comprehensive regulation by the FDA and other regulatory agencies in the United States and by comparable authorities in other countries. Except under limited circumstances related to certain government sales, failure to obtain regulatory approval for a product candidate will prevent us from commercializing the product candidate. We have limited experience in preparing, filing and prosecuting the applications necessary to gain regulatory approvals and expect to rely on third-party contract research organizations and consultants to assist us in this process.

In the United States, to obtain approval from the FDA to market any of our future biologic products, we will be required to submit a biologics license application, or BLA, to the FDA. Ordinarily, the FDA requires a sponsor to support a BLA with substantial evidence of the product's safety and efficacy in treating the targeted indication based on data derived from adequate and well-controlled clinical trials, including Phase III safety and efficacy trials conducted in patients with the disease or condition being targeted.

However, NuThrax or any of our medical countermeasure product candidates, for example, is subject to a different regulatory approval pathway. Specifically, in the case of anthrax-related product development, because humans are rarely exposed to anthrax toxins under natural conditions, and cannot be intentionally exposed, statistically significant efficacy for these product candidates cannot be demonstrated in humans. Instead, efficacy must be demonstrated, in part, by utilizing animal models rather than testing in humans. This is known as the FDA's "Animal Rule." We cannot guarantee that the FDA will permit us to proceed with licensure of NuThrax or any of our public health threat countermeasure candidates under the Animal Rule. Even if we are able to proceed pursuant to the Animal Rule, the FDA may decide that our data are insufficient to support approval and require additional preclinical, clinical or other studies, refuse to approve our products, or place restrictions on our ability to commercialize those products. Furthermore, products approved under the Animal Rule are subject to certain additional post-marketing requirements. For example, to the extent feasible and ethical, manufacturers of products approved pursuant to the Animal Rule must conduct post-marketing studies, such as field studies, to verify and describe the product candidate's clinical benefit and to assess its safety when used as indicated. We cannot guarantee that we will be able to meet this regulatory requirement even if one or more of our product candidates are approved under the Animal Rule.

The process of obtaining these regulatory approvals is expensive, often takes many years if approval is obtained at all, and can vary substantially based upon the type, complexity and novelty of the product candidate involved. Changes in the regulatory approval process during the development period, changes in or the enactment of additional statutes or regulations, or changes in the regulatory review process may cause delays in the approval or rejection of an application.

The FDA has substantial discretion in the approval process and may refuse to accept any application or may decide that our data are insufficient to support approval and require additional preclinical, clinical or other studies. In addition, varying interpretations of the data obtained from preclinical and clinical testing could delay, limit or prevent regulatory approval of a product candidate.

Even after regulatory approval is received, if we fail to comply with regulatory requirements, or if we experience unanticipated problems with our approved products, they could be subject to restrictions, penalties or withdrawal from the market.

Any vaccine, therapeutic product or medical device for which we obtain marketing approval, along with the manufacturing processes, post-approval clinical data, labeling, advertising and promotional activities for such product, will be subject to continual requirements of and review by the FDA and other regulatory bodies. Our approved products are subject to these requirements and ongoing review. These requirements include submissions of safety and other post-marketing information and reports, registration requirements, current good manufacturing practices, or cGMP, requirements relating to quality control, quality assurance, restrictions on advertising and promotion, import and export restrictions and recordkeeping requirements. In addition, various state laws require that companies that manufacture and/or distribute drug products within the state obtain and maintain a manufacturer or distributor license, as appropriate. Because of the breadth of these laws, it is possible that some of our business activities could be subject to challenge under one or more of such laws.

Our regulators enforce cGMP and other requirements through periodic unannounced inspections of manufacturing facilities. The FDA is authorized to inspect domestic manufacturing facilities without prior notice at reasonable times and in a reasonable manner. Health Canada may conduct similar inspections of our facilities where Canadian marketed products are produced, or related formulation and filling operations are conducted. The FDA, Health Canada, and other world regulatory agencies conduct periodic inspections of our facilities. For example, our Lansing Building 55 facility was inspected most recently by the FDA in June 2016, our Lansing Building 12 facility was inspected most recently by the FDA in April 2016, our Winnipeg manufacturing facility was inspected most recently by the FDA in January 2015 and Health Canada in November 2016, and our Baltimore (Camden) facility was most recently inspected by Health Canada in October 2016 and the FDA in January 2017. Following several of these inspections, both the FDA and Health Canada have issued inspectional observations, some of which were significant, but all of which are being, or have been, addressed through corrective actions. If, in connection with any future inspection, the FDA or Health Canada find that we are not in substantial compliance with cGMP requirements, or if they are not satisfied with the corrective actions we take, our regulators may undertake enforcement action against us, which may include:

- warning letters and other communications;
- product seizure or withdrawal of the product from the market;
- restrictions on the marketing or manufacturing of a product;
- suspension or withdrawal of regulatory approvals or refusal to approve pending applications or supplements to approved applications;
- fines or disgorgement of profits or revenue; and
- injunctions or the imposition of civil or criminal penalties.

Similar action may be taken against us should we fail to comply with regulatory requirements, or later discover previously unknown problems with our products or manufacturing processes. Even if regulatory approval of a product is granted, the approval may be subject to limitations on the indicated uses for which the product may be marketed or to the conditions of approval, or contain requirements for costly post-marketing testing and surveillance to monitor the safety or efficacy of the product. If we experience any of these post-approval events, our business, financial condition and operating results could be materially and adversely affected.

Failure to obtain or maintain regulatory approval in international jurisdictions could prevent us from marketing our products abroad and could limit the growth of our business.

We intend to sell certain of our products outside the United States. To market our products in the European Union and many other foreign jurisdictions, we may need to obtain separate regulatory approvals and comply with numerous and varying regulatory requirements. Approval by the FDA does not ensure approval by foreign regulatory authorities. The approval procedures in foreign jurisdictions can vary widely and can involve additional clinical trials and data review. We and our collaborators may not be able to obtain foreign regulatory approvals on a timely basis, if at all, and therefore we may be unable to commercialize our products internationally.

Our international operations increase our risk of exposure to potential claims of bribery and corruption.

As we expand our commercialization activities outside of the United States, we are subject to an increased risk of inadvertently conducting activities in a manner that violates the U.S. Foreign Corrupt Practices Act, or FCPA, the U.K. Bribery Act, Canada's Corruption of Foreign Public Officials Act, or other similar foreign laws, which prohibit corporations and individuals from paying, offering to pay, or authorizing the payment of anything of value to any foreign government official, government staff member, political party, or political candidate in an attempt to obtain or retain business or to otherwise influence a person working in an official capacity. In the course of establishing and expanding our commercial operations and seeking regulatory approvals outside of the United States, we will need to establish and expand business relationships with various third parties and will interact more frequently with foreign officials, including regulatory authorities and physicians employed by state-run healthcare institutions who may be deemed to be foreign officials under the FCPA or similar foreign laws. If our business practices outside the United States are found to be in violation of the FCPA or similar foreign laws, we and our senior management may be subject to significant civil and criminal penalties, potential debarment from public procurement and reputational damage, which could have a material adverse effect on our business, financial condition, results of operations and growth prospects.

MANUFACTURING RISKS

Disruption at, damage to or destruction of our manufacturing facilities could impede our ability to manufacture BioThrax, which would harm our business, financial condition and operating results.

Now that we have completed the transition of BioThrax manufacturing from our Building 12 facility on our Lansing, Michigan campus to Building 55, our recently FDA-approved large-scale manufacturing facility also on our Lansing, Michigan campus, we are focused on the consistent operation of the Building 55 plant under cGMP guidelines. Any interruption in manufacturing operations at Building 55 could result in our inability to produce BioThrax for delivery to satisfy the product demands of our customers in a timely manner, which would reduce our revenues and materially harm our business, financial condition, operating results and cash flow. A number of factors could cause interruptions, including:

- § equipment malfunctions or failures;
- § technology malfunctions;
- § cyber-attacks;
- § work stoppages or slow-downs;
- § protests, including by animal rights activists;
- § injunctions or the imposition of civil or criminal penalties.
- § damage to or destruction of the facility; or
- § product contamination or tampering.

Providers of public health threat countermeasures could be subject to an increased risk of terrorist activities. The U.S. government has designated both our Lansing, Michigan and our bulk manufacturing facility in Baltimore, Maryland as facilities requiring additional security. Although we continually evaluate and update security measures, there can be no assurance that any additional security measures would protect our facilities from terrorist efforts determined to disrupt our manufacturing activities.

The factors listed above could also cause disruptions at our other facilities, including our manufacturing facility in Winnipeg, Manitoba, Canada. Any such disruption, damage, or destruction of these facilities could impede our ability to manufacture our biologic products, our product candidates and our ability to produce products for external customers, result in losses and delays, including delay in the performance of our contractual obligations or delay in our clinical trials, any of which could be costly to us and materially harm our business, financial condition and operating results.

We may not be able to utilize the full manufacturing capacity of Building 55, which could impact our future revenues and materially harm our business, financial condition, operating results and cash flows.

On August 15, 2016, we received FDA approval for the manufacture of BioThrax in Building 55, our large-scale manufacturing facility at our Lansing, Michigan campus and have transitioned BioThrax manufacturing to Building 55, which significantly increases our BioThrax manufacturing capacity compared to the capacity of our Building 12 licensed facility. Despite this recent success with FDA approval and the initiation of manufacturing of BioThrax in Building 55, we may not secure procurement contracts for BioThrax or other products or product candidates sufficient to utilize its full manufacturing capacity. On December 8, 2016, we entered into a follow-on contract with the CDC for the procurement of approximately 29.4 million doses of BioThrax for delivery into the SNS over a five-year period of performance. In addition, on December 8, 2016, BARDA issued a notice of intent to procure approximately $100 million of BioThrax for delivery into the SNS within 24 months from the date of contract award. There can be no assurances that BARDA will enter into this contract with us under this notice of intent. Even if we enter into this procurement contract with BARDA, we may be unable to utilize the full manufacturing capacity of Building 55. An inability to utilize the full manufacturing capacity of Building 55 could impact our future revenues and materially harm our business, financial condition, operating results and cash flows.

Our biologic products and product candidates are complex to manufacture and ship, which could cause us to experience delays in product manufacturing or development and resulting delays in revenues.

BioThrax, BAT, Anthrasil, VIGIV, and many of our current product candidates, including NuThrax, are biologics. Manufacturing biologic products, especially in large quantities, is complex. The products must be made consistently and in compliance with a clearly defined manufacturing process. Problems may arise during manufacturing for a variety of reasons, including problems with raw materials, equipment malfunction and failure to follow specific protocols and procedures. In addition, slight deviations anywhere in the manufacturing process, including obtaining materials, maintaining master seed or cell banks and preventing genetic drift, seed or cell growth, fermentation, contamination including from, among other things, particulates, filtration, filling, labeling, packaging, storage and shipping, and quality control testing, may result in lot (as defined below) failures or manufacturing shut-down, delays in the release of lots, product recalls, spoilage or regulatory action. Such deviations may require us to revise manufacturing processes or change manufacturers. Additionally, as our equipment ages, it will need to be replaced. Replacement of equipment has the potential to introduce variations in the manufacturing process that may result in lot failures or manufacturing shut-down, delay in the release of lots, product recalls, spoilage or regulatory action. Success rates can also vary dramatically at different stages of the manufacturing process, which can reduce yields and increase costs. From time to time, we may experience deviations in the manufacturing process that may take significant time and resources to resolve and, if unresolved, may affect manufacturing output and could cause us to fail to satisfy customer orders or contractual commitments, lead to a termination of one or more of our contracts, lead to delays in our clinical trials, result in litigation or regulatory action against us, including warning letters and other restrictions on the marketing or manufacturing of a product, or cause the FDA to cease releasing product until the deviations are explained and corrected, any of which could be costly to us, damage our reputation and negatively impact our business.

For example, FDA approval is required for the release of each lot of BioThrax. A "lot" is approximately 186,000 doses. We are not able to sell any lots that fail to satisfy the release testing specifications. For example, we must provide the FDA with the results of certain tests, including potency tests, before lots are released for sale. Potency testing of each lot of BioThrax is performed against a qualified control lot that we maintain. We have one mechanism for conducting this potency testing that is reliant on a unique animal strain for which we currently have no alternative. We continually monitor the status of our control lot and periodically produce and qualify a new control lot to replace the existing control lot. If we are not able to produce and qualify a new control lot or otherwise satisfy the FDA's requirements for release of BioThrax, our ability to sell BioThrax would be impaired until such time as we become able to meet the FDA's requirements, which would significantly impact our revenues, require us to utilize our cash balances to help fund our ongoing operations and otherwise harm our business.

We are contractually required to ship our biologic products at a prescribed temperature range and variations from that temperature range could result in loss of product and could significantly impact our revenues. Delays, lot failures, shipping deviations, spoilage or other loss during shipping could cause us to fail to satisfy customer orders or contractual commitments, lead to a termination of one or more of our contracts, lead to delays in potential clinical trials or result in litigation or regulatory action against us, any of which could be costly to us and otherwise harm our business.

If we are unable to obtain supplies for the manufacture of our marketed products and product candidates in sufficient quantities and at an acceptable cost, our ability to manufacture or to develop and commercialize our marketed products and product candidates could be impaired, which could harm our revenues, lead to a termination of one or more of our contracts, lead to delays in clinical trials or otherwise harm our business.

We depend on certain single-source suppliers for key materials and services necessary for the manufacture of BioThrax and our other products and product candidates. For example, we rely on a single-source supplier to provide us with Alhydrogel in sufficient quantities to meet our needs to manufacture BioThrax and NuThrax. We also rely on single-source suppliers for the sponge applicator device and the active ingredient used to make RSDL as well as the

specialty plasma in our hyperimmune specialty plasma products. A disruption in the availability of such materials or services from these suppliers could require us to qualify and validate alternative suppliers. If we are unable to locate or establish alternative suppliers, our ability to manufacture our products and product candidates could be adversely affected and could harm our revenues, cause us to fail to satisfy contractual commitments, lead to a termination of one or more of our contracts or lead to delays in our clinical trials, any of which could be costly to us and otherwise harm our business, financial condition and operating results.

Our operations, including our use of hazardous materials, chemicals, bacteria and viruses, require us to comply with regulatory requirements and expose us to significant potential liabilities.

Our operations involve the use of hazardous materials, including chemicals, bacteria and viruses, and may produce dangerous waste products. Accordingly, we, along with the third parties that conduct clinical trials and manufacture our products and product candidates on our behalf, are subject to federal, state, local and foreign laws and regulations that govern the use, manufacture, distribution, storage, handling, exposure, disposal and recordkeeping with respect to these materials. Under the Federal Select Agent Program, pursuant to the Public Health Security and Bioterrorism Preparedness and Response Act, we are required to register with and be inspected by the CDC and the Animal and Plant Health Inspection Service if we have in our possession, or if we use or transfer, select biological agents or toxins that could pose a threat to public health and safety, to animal or plant health or to animal or plant products. This legislation requires stringent safeguards and security measures for these select agents and toxins, including controlled access and the screening of entities and personnel and establishes a comprehensive national database of registered entities. We are also subject to a variety of environmental and occupational health and safety laws. Compliance with current or future laws and regulations can require significant costs and we could be subject to substantial fines and penalties in the event of noncompliance. In addition, the risk of contamination or injury from these materials cannot be completely eliminated. In such event, we could be held liable for substantial civil damages or costs associated with the cleanup of hazardous materials. From time to time, we have been involved in remediation activities and may be so involved in the future. Any related cost or liability might not be fully covered by insurance, could exceed our resources and could have a material adverse effect on our business. In addition to complying with environmental and occupational health and safety laws, we must comply with special regulations relating to biosafety administered by the CDC, HHS, U.S. Department of Agriculture and the DoD, as well as regulatory authorities in Canada.

PRODUCT DEVELOPMENT RISKS

Our business depends on our success in developing and commercializing our product candidates. If we are unable to commercialize these product candidates, or experience significant delays or unanticipated costs in doing so, our business would be materially and adversely affected.

We have invested significant effort and financial resources in the development of our vaccines, therapeutics and medical device product candidates and the acquisition of additional product candidates. In addition to our product sales, our ability to generate revenue is dependent on a number of factors, including the success of our development programs, the U.S. government's interest in providing development funding for or procuring certain of our product candidates, and the commercial viability of our acquired or developed product candidates. The commercial success of our product candidates will depend on many factors, including accomplishing the following in an economical manner:

- § successful development, formulation and cGMP scale-up of manufacturing that meets FDA requirements;
- § successful program partnering;
- § successful completion of clinical or non-clinical development, including toxicology studies and studies in approved animal models;
- § receipt of marketing approvals from the FDA and equivalent foreign regulatory authorities;
- § establishment of commercial manufacturing processes and product supply arrangements;
- § training of a commercial sales force for the product, whether alone or in collaboration with others;
- § successful registration and maintenance of relevant patent and/or other proprietary protection; and
- § acceptance of the product by potential government customers.

Clinical trials of product candidates are expensive and time-consuming, and their outcome is uncertain. We must invest substantial amounts of time and financial resources in these trials, which may not yield viable products.

Before obtaining regulatory approval for the sale of our product candidates, we and our collaborative partners where applicable must conduct extensive preclinical studies and clinical trials to establish proof of concept and demonstrate the safety and efficacy of our product candidates. Preclinical and clinical testing is expensive, difficult to design and implement, can take many years to complete and is uncertain as to outcome. Success in preclinical testing and early clinical trials does not ensure that later clinical trials or animal efficacy studies will be successful, and interim results of a clinical trial or animal efficacy study do not necessarily predict final results. An unexpected result in one or more of our clinical trials can occur at any stage of testing.

For certain of our product candidates addressing CBRN threats, we expect to rely on the Animal Rule to obtain regulatory approval. The Animal Rule permits, in certain limited circumstances, the use of animal efficacy studies, together with human clinical safety and immunogenicity trials, to support an application for marketing approval. For a product approved under the Animal Rule, certain additional post-marketing requirements apply. For example, to the extent feasible and ethical, applicants must conduct post-marketing studies, such as field studies, to verify and describe the drug's clinical benefit and to assess its safety when used as indicated. We have limited experience in the application of these rules to the product candidates that we are developing. It is possible that results from these animal efficacy studies may not be predictive of the actual efficacy of our product candidates in humans. Under the Project BioShield Act of 2004, or Project BioShield, the Secretary of HHS can contract to purchase countermeasures for the SNS prior to FDA approval of the countermeasure in specified circumstances. Project BioShield also allows the FDA commissioner to authorize the emergency use of medical products that have not yet been approved by the FDA under an Emergency Use Authorization. If our product candidates are not selected under this Project BioShield authority, they generally will have to be approved by the FDA through traditional regulatory mechanisms.

We may experience unforeseen events or issues during, or as a result of, preclinical testing, clinical trials or animal efficacy studies. These issues and events, which could delay or prevent our ability to receive regulatory approval for a product candidate, include, among others:

- § our inability to manufacture sufficient quantities of materials for use in trials;
- § the unavailability or variability in the number and types of subjects for each study;
- § safety issues or inconclusive or incomplete testing, trial or study results;
- § drug immunogenicity;
- § lack of efficacy of product candidates during the trials;
- § government or regulatory restrictions or delays; and
- § greater than anticipated costs of trials.

We depend on third parties to conduct our clinical and non-clinical trials. If these third parties do not perform as contractually required or as we expect, we may not be able to obtain regulatory approval for or commercialize our product candidates and, as a result, our business may suffer.

We do not have the ability to independently conduct the clinical and non-clinical trials required to obtain regulatory approval for our product candidates. We depend on third parties, such as independent clinical investigators, contract research organizations and other third-party service providers to conduct the clinical and non-clinical trials of our product candidates and expect to continue to do so. We rely heavily on these third parties for successful execution of our clinical and non-clinical trials, but do not exercise day-to-day control over their activities. Our reliance on these service providers does not relieve us of our regulatory responsibilities, including ensuring that our trials are conducted in accordance with good clinical practice regulations and the plan and protocols contained in the relevant regulatory application. In addition, these organizations may not complete these activities on our anticipated or desired timeframe. We also may experience unexpected cost increases that are beyond our control. Problems with the timeliness or quality of the work of a contract research organization may lead us to seek to terminate the relationship and use an alternative service provider, which may prove difficult, costly and result in a delay of our trials. Any delay in or inability to complete our trials could delay or prevent the development, approval and commercialization of our product candidates.

In certain cases, government entities and non-government organizations conduct studies of our product candidates, and we may seek to rely on these studies in applying for marketing approval for certain of our product candidates. These government entities and non-government organizations have no obligation or commitment to us to conduct or complete any of these studies or clinical trials and may choose to discontinue these development efforts at any time. Furthermore, government entities depend on annual Congressional appropriations to fund their development efforts.

If we are unable to obtain any necessary third-party services on acceptable terms or if these service providers do not successfully carry out their contractual duties or meet expected deadlines, our efforts to obtain regulatory approvals for our product candidates may be delayed or prevented.

We may fail to select or capitalize on the most scientifically, clinically or commercially promising or profitable product candidates.

We continue to evaluate our business strategy and, as a result, may modify our strategy in the future. In this regard, we may, from time to time, focus our product development efforts on different product candidates or may delay or halt the development of various product candidates. For example, in April 2016, we were notified by BARDA that, after prioritization of its development funding, BARDA would not be exercising the clinical trial option for our PreviThrax rPA vaccine program. As a consequence of this decision, we determined to cease further development work on our PreviThrax vaccine product candidate. As a result of changes in our strategy or in government development funding decisions, we may change or refocus our existing product development, commercialization and manufacturing activities. This could require changes in our facilities and our personnel. Any product development changes that we implement may not be successful. In particular, we may fail to select or capitalize on the most scientifically, clinically or commercially promising or profitable product candidates. Our decisions to allocate our research and development, management and financial resources toward particular product candidates or therapeutic areas may not lead to the development of viable commercial products and may divert resources from better opportunities. Similarly, our decisions to delay or terminate product development programs may also prove to be incorrect and could cause us to miss valuable opportunities.

INTELLECTUAL PROPERTY RISKS

If we are unable to protect our proprietary rights, our business could be harmed.

Our success, particularly with respect to our small molecule product candidates, will depend, in large part, on our ability to obtain and maintain protection in the United States and other countries for the intellectual property covering or incorporated into our technology, products and product candidates. Obtaining and maintaining this protection is very costly. The patentability of technology in the biopharmaceutical field generally is highly uncertain and involves complex legal and scientific questions.

We may not be able to obtain additional issued patents relating to our technology or products. Even if issued, patents may inadvertently lapse or be challenged, narrowed, invalidated or circumvented, which could limit our ability to stop competitors from marketing similar products or limit the duration of patent protection we may have for our products. In the past, we have abandoned the prosecution and/or maintenance of patent applications related to patent families in the ordinary course of business. In the future we may choose to abandon such prosecution and/or maintenance in a similar fashion. If these patent rights are later determined to be valuable or necessary to our business, our competitive position may be adversely affected. Changes in patent laws or administrative patent office rules or changes in interpretations of patent laws in the United States and in other countries may diminish the value of our intellectual property or narrow the scope of our patent protection, or result in costly defensive measures.

The cost of litigation to uphold the validity of patents to prevent infringement or to otherwise protect or enforce our proprietary rights could be substantial and, from time to time, our patents are subject to opposition proceedings. Some of our competitors may be better able to sustain the costs of complex patent litigation because they may have substantially greater financial resources. Intellectual property lawsuits are expensive and unpredictable and would consume management's time and attention and other resources, even if the outcome were successful. In addition, there is a risk that a court would decide that our patents are not valid and that we do not have the right to stop the other party from using the inventions covered by or incorporating them. There is also a risk that, even if the validity of a patent were upheld, a court would refuse to stop the other party from using the invention(s), including on the grounds that its activities do not infringe the patent. If any of these events were to occur, our business, financial condition and operating results could be materially and adversely affected.

Our collaborators and licensors may not adequately protect our intellectual property rights. These third parties may have the first right to maintain or defend intellectual property rights in which we have an interest and, although we may have the right to assume the maintenance and defense of such intellectual property rights if these third parties do not do so, our ability to maintain and defend such intellectual property rights may be compromised by the acts or omissions of these third parties. For example, we license from Pfizer, Inc. an oligonucleotide adjuvant, CPG 7909, for use in our anthrax vaccine product candidate NuThrax.

We also will rely on current and future trademarks to establish and maintain recognized brands. If we fail to acquire and protect such trademarks, our ability to market and sell our products, and therefore our business, financial condition and operating results, could be materially and adversely affected.

Third parties may choose to file patent infringement claims against us; defending ourselves from such allegations would be costly, time-consuming, distracting to management and could materially affect our business.

Our development and commercialization activities, as well as any product candidates or products resulting from these activities, may infringe or be claimed to infringe patents and other intellectual property rights of third parties under which we do not hold sufficient licenses or other rights. Additionally, third parties may be successful in obtaining patent protection for technologies that cover development and commercialization activities in which we are already engaged. Third parties may own or control these patents and intellectual property rights in the United States and abroad. These third parties may have substantially greater financial resources than us and could bring claims against us that could cause us to incur substantial expenses to defend against these claims and, if successful against us, could cause us to pay substantial damages. Further, if a patent infringement or other similar suit were brought against us, we could be forced to stop or delay development, manufacturing or sales of the product or product candidate that is the subject of the suit. Intellectual property litigation in the biopharmaceutical industry is common, and we expect this trend to continue.

As a result of patent infringement or other similar claims, or to avoid potential claims, we may choose or be required to seek a license from the third party and be required to pay license fees or royalties or both. These licenses may not be available on acceptable terms, or at all. Even if we were able to obtain a license, the rights may be non-exclusive, which could result in our competitors gaining access to the same intellectual property. Ultimately, we could be prevented from commercializing a product, or be forced to cease some aspect of our business operations, if, as a result of actual or threatened patent infringement claims, we are unable to enter into licenses on acceptable terms, if at all, or if an injunction is granted against us, which could harm our business significantly.

If we fail to comply with our obligations in our intellectual property licenses with third parties, we could lose license rights that are important to our business.

We are a party to a number of license agreements and expect to enter into additional license agreements in the future. Our existing licenses impose, and we expect future licenses will impose, various diligence, milestone payment, royalty, insurance and other obligations on us. If we fail to comply with these obligations, the licensor may have the right to terminate the license and/or sue us for breach, which could cause us to not be able to market any product that is covered by the licensed patents and may be subject to damages.

If we are unable to protect the confidentiality of our proprietary information and know-how, the value of our technology and products could be adversely affected.

In addition to patented technology, we rely upon unpatented proprietary technology, processes and know-how, particularly as to our proprietary manufacturing processes. Because we do not have patent protection for any of our current products, our only intellectual property protection for these products, other than trademarks, is confidentiality regarding our manufacturing capability and specialty know-how, such as techniques, processes and unique starting materials. However, these types of trade secrets can be difficult to protect. We seek to protect this confidential information, in part, through agreements with our employees, consultants and third parties as well as confidentiality policies and audits, although these may not be successful in protecting our trade secrets and confidential information.

These agreements may be breached, and we may not have adequate remedies for any such breach. In addition, our trade secrets may otherwise become known, including through a potential cyber security breach, or may be independently developed by competitors. If we are unable to protect the confidentiality of our proprietary information and know-how, competitors may be able to use this information to develop products that compete with our products, which could adversely impact our business.

RISKS RELATED TO STRATEGIC ACQUISITIONS AND COLLABORATIONS

Our strategy of generating growth through acquisitions may not be successful.

Our business strategy includes growing our business through acquisition and in-licensing transactions. We may not be successful in identifying, effectively evaluating, structuring, acquiring or in-licensing, and developing and commercializing additional products on favorable terms, or at all. Competition for attractive product opportunities is intense and may require us to devote substantial resources, both managerial and financial, to an acquisition opportunity. A number of more established companies are also pursuing strategies to acquire or in-license products in the biopharmaceutical field. These companies may have a competitive advantage over us due to their size, cash resources, cost of capital, effective tax rate and greater clinical development and commercialization capabilities.

Acquisition efforts can consume significant management attention and require substantial expenditures, which could detract from our other programs. In addition, we may devote significant resources to potential acquisitions that are never completed. Even if we are successful in acquiring a company or product, it may not result in a successfully developed or commercialized product or, even if an acquired product is commercialized, competing products or technologies could render a product noncompetitive, uneconomical or obsolete. Moreover, the cost of acquiring other companies or in-licensing products could be substantial, and in order to acquire companies or new products, we may need to incur substantial debt or issue dilutive securities. For example, in part to fund our acquisition of Cangene Corporation, we issued $250 million of senior convertible notes in January 2014. If we are unsuccessful in our efforts to acquire other companies or in-license and develop additional products, or if we acquire or in-license unproductive assets, it could have a material adverse effect on the growth of our business, and we could be compelled to record significant impairment charges to write-down the carrying value of our acquired intangible assets, which could materially harm our financial results.

Our failure to successfully integrate acquired assets into our operations could adversely affect our ability to realize the benefits of such acquisitions and, therefore, to grow our business.

We may not be able to integrate any acquired business successfully or operate any acquired business profitably. In addition, cost synergies, if achieved at all, may be less than we expect, or may take greater time to achieve than we anticipate.

Issues that could delay or prevent successful integration or cost synergies of an acquired business include, among others:

- § retaining existing customers and attracting new customers;
- § retaining key employees;
- § diversion of management attention and resources;
- § conforming internal controls, policies and procedures, business cultures and compensation programs;
- § consolidating corporate and administrative infrastructures;
- § consolidating sales and marketing operations;
- § identifying and eliminating redundant and underperforming operations and assets;
- § assumption of known and unknown liabilities;
- § coordinating geographically dispersed organizations; and
- § managing tax costs or inefficiencies associated with integrating operations.

If we are unable to successfully integrate future acquisitions with our existing businesses, or operate any acquired business profitably, we may not obtain the advantages that the acquisitions were intended to create, which may materially adversely affect the growth of our business.

FINANCIAL RISKS

Servicing our debt requires a significant amount of cash, and we may not have sufficient cash flow from our operations to pay our substantial debt.

As of December 31, 2016, our total consolidated indebtedness was $253 million, including $250 million of obligations under our senior convertible notes. Our ability to make scheduled payments of the principal of, to pay interest on or to refinance our indebtedness, including the senior convertible notes, depends on our future performance, which is subject to economic, financial, competitive and other factors beyond our control. Our business may not continue to generate cash flow from operations in the future sufficient to service our debt and make necessary capital expenditures. If we are unable to generate such cash flow, we may be required to adopt one or more alternatives, such as selling assets, restructuring debt or obtaining additional equity capital on terms that may be onerous or highly dilutive. Our ability to refinance our indebtedness will depend on the capital markets and our financial condition at such time. We may not be able to engage in any of these activities or engage in these activities on desirable terms, which could result in a default on our debt obligations.

Our current indebtedness and any additional debt financing may restrict the operation of our business and limit the cash available for investment in our business operations.

In addition to our current debt, we also have a senior secured revolving credit facility with available capacity of up to $100 million, effective until December 11, 2018 (or such earlier date to the extent required by the terms of this facility). We may seek additional debt financing to support our ongoing activities or to provide additional financial flexibility. Debt financing could have significant adverse consequences for our business, including:

- § requiring us to dedicate a substantial portion of any cash flow from operations to payment on our debt, which would reduce the amounts available to fund other corporate initiatives;
- § increasing the amount of interest that we have to pay on debt with variable interest rates, if market rates of interest increase;
- § subjecting us, as under our senior secured revolving credit facility, to restrictive covenants that may reduce our ability to take certain corporate actions, acquire companies, products or technology, or obtain further debt financing;
- § requiring us to pledge our assets as collateral, which could limit our ability to obtain additional debt financing;
- § limiting our flexibility in planning for, or reacting to, general adverse economic and industry conditions; and
- § placing us at a competitive disadvantage compared to our competitors that have less debt, better debt servicing options or stronger debt servicing capacity.

We may not have sufficient funds or be able to obtain additional financing to pay the amounts due under our indebtedness. In addition, failure to comply with the covenants under our debt instruments could result in an event of default under those instruments. An event of default could result in the acceleration of amounts due under a particular debt instrument and a cross default and acceleration under other debt instruments, and we may not have sufficient funds or be able to obtain additional financing to make any accelerated payments. Under these circumstances, our lenders could seek to enforce security interests, if any, in our assets securing our indebtedness.

We may require significant additional funding and may be unable to raise capital when needed or on acceptable terms, which would harm our ability to grow our business, results of operations and financial condition.

We may require significant additional funding to grow our business, including efforts to acquire other companies or products, in-license and develop additional products, enhance our manufacturing capacity, support commercial marketing activities or otherwise provide additional financial flexibility. We may also require additional funding to support our ongoing operations in the event that our ability to sell BioThrax to the U.S. government is interrupted for an extended period of time, reducing our BioThrax revenues and decreasing our cash balances.

As of December 31, 2016, we had approximately $271.5 million of cash and cash equivalents. Our future capital requirements will depend on many factors, including, among others:

- § the level, timing and cost of product sales;
- § the extent to which we acquire or invest in and integrate companies, businesses, products or technologies;
- § the acquisition of new facilities and capital improvements to new or existing facilities;
- § the payment obligations under our indebtedness;
- § the scope, progress, results and costs of our development activities;
- § our ability to obtain funding from government entities for our development programs; and
- § the costs of commercialization activities, including product marketing, sales and distribution.

If our capital resources are insufficient to meet our future capital requirements, we will need to finance our cash needs through public or private equity or debt offerings, bank loans or collaboration and licensing arrangements. In May 2015, we filed an automatic shelf registration statement, which immediately became effective under SEC rules. For so long as we continue to satisfy the requirements to be deemed a "well-known seasoned issuer" under SEC rules, this shelf registration statement, effective until May 2018, allows us to issue an unrestricted amount of equity, debt and certain other types of securities through one or more future primary or secondary offerings. If we raise funds by issuing equity securities, our stockholders may experience dilution. Public or bank debt financing, if available, may involve agreements that include covenants, like those contained in our senior secured revolving credit facility, limiting or restricting our ability to take specific actions, such as incurring additional debt, making capital expenditures, pursuing acquisition opportunities or declaring dividends. If we raise funds through collaboration and licensing arrangements with third parties, it may be necessary to relinquish valuable rights to our technologies or product candidates or grant licenses on terms that may not be favorable to us. We are not restricted under the terms of the indenture governing our senior convertible notes from incurring additional debt, securing existing or future debt, recapitalizing our debt or taking a number of other actions that could have the effect of diminishing our ability to make payments on our indebtedness. However, our credit facility restricts our ability to incur additional indebtedness, including secured indebtedness.

Current economic conditions may make it difficult to obtain financing on attractive terms, or at all. If financing is unavailable or lost, our business, results of operations and financial condition would be adversely affected and we could be forced to delay, reduce the scope of or eliminate many of our planned activities.

We may not maintain profitability in future periods or on a consistent basis.

Although we have been profitable for each of the last five fiscal years, we have not been profitable for every quarter during that time. For example, we incurred a net loss in the second quarter of 2016 and in each of the first quarters of 2015, 2014, 2013 and 2012. Our profitability has been substantially dependent on BioThrax product sales, which historically have fluctuated significantly from quarter to quarter, and we expect that they will continue to fluctuate significantly based primarily on the timing of our fulfillment of orders from the U.S. government. We may not be able to achieve consistent profitability on a quarterly basis or sustain or increase profitability on an annual basis.

THE SPIN-OFF OF OUR BIOSCIENCES BUSINESS

We may not realize some or all of the anticipated benefits of the spin-off of Aptevo due to a number of factors.

On August 1, 2016, we completed the spin-off of Aptevo Therapeutics Inc. Aptevo is now an independent public company trading under the symbol "APVO" on the NASDAQ Global Select Market. We may not realize some or all of the anticipated strategic, financial or other benefits from the spin-off. We are now smaller, less diversified with a narrower business focus and may be more vulnerable to changing market conditions, which could materially and adversely affect our business, financial condition and results of operations.

If our distribution on August 1, 2016 of all of the outstanding shares of Aptevo common stock to our stockholders, together with certain related transactions, does not qualify as a tax-free transaction for U.S. federal income tax purposes, we and our stockholders could be subject to significant tax liabilities.

It is intended that our distribution on August 1, 2016 of all of the outstanding shares of Aptevo common stock to our stockholders, or the Distribution, together with certain related transactions, qualify as a tax-free transaction described under Sections 355 and 368(a)(1)(D) of the Internal Revenue Code of 1986, as amended, or the Code. In anticipation of the Distribution, we received a favorable private letter ruling from the Internal Revenue Service, or the IRS, regarding certain U.S. federal income tax matters relating to the Distribution and certain related transaction and an opinion of counsel substantially to the effect that, for U.S. federal income tax purposes, the Distribution, together with certain related transactions, will qualify as a transaction described under Sections 355 and 368(a)(1)(D) of the Code. A "private letter ruling," is a written statement issued to a taxpayer by an Associate Chief Counsel Office of the Office of Chief Counsel that interprets and applies the tax laws to a specific set of facts. Our private letter ruling is based on certain facts and representations submitted by us to the IRS and the opinion of counsel was based upon and relied on, among other things, the IRS private letter ruling and certain facts and assumptions, as well as certain representations and covenants of Emergent and Aptevo contained in a tax matters agreement and certain representations contained in representation letters provided by Emergent, Aptevo and certain stockholders to such counsel, including representations and covenants relating to the past and future conduct of Emergent, Aptevo and such stockholders. If any of these facts, assumptions, representations, or covenants are, or become, inaccurate or incomplete, the IRS private letter ruling and/or the opinion of counsel may be invalid and the conclusions reached therein could be jeopardized and, as a result, the Distribution, together with certain related transactions, could fail to qualify as a tax-free transaction described under Sections 355 and 368(a)(1)(D) of the Code for U.S. federal income tax purposes.

In addition, the IRS private letter ruling only addresses certain limited matters relevant to determining whether the Distribution, together with certain related transactions, qualifies as a transaction described under Sections 355 and 368(a)(1)(D) of the Code, and the opinion of counsel only represents the judgment of such counsel, which is not binding on the IRS or any court. Accordingly, notwithstanding the IRS private letter ruling and the opinion of counsel, there can be no assurance that the IRS will not assert that the Distribution, together with certain related transactions, should be treated as a taxable transaction for U.S. federal income tax purposes or that a court would not sustain such a challenge.

If the Distribution, together with certain related transactions, fails to qualify as a tax-free transaction described under Sections 355 and 368(a)(1)(D) of the Code, for U.S. federal income tax purposes, in general, (i) we would recognize taxable gain on the Distribution equal to the amount by which the fair market value of the Aptevo shares distributed to our shareholders exceeded our tax basis in the Aptevo shares and (ii) each of our shareholders who received Aptevo shares in the Distribution would be treated as receiving a taxable distribution equal to the fair market value of the Aptevo shares received by such shareholder.

Under the tax matters agreement that we entered into with Aptevo in connection with the spin-off, Aptevo may be required to indemnify us against any tax liabilities and related expenses resulting from the failure of the Distribution, together with certain related transactions, to qualify as a transaction described under Sections 355 and 368(a)(1)(D) of the Code to the extent that the failure to so qualify is attributable to actions, events or transactions relating to Aptevo's stock, assets or business, or a breach of the relevant representations or covenants made by Aptevo in the tax matters agreement or the IRS private letter ruling or in the representation letters provided to our counsel for purposes of their opinion. Any such indemnity obligations could be material, and there can be no assurance that Aptevo will be able to pay any such indemnification.

To preserve the tax-free treatment of the Distribution, together with certain related transactions, and in addition to Aptevo's indemnity obligation, the tax matters agreement restricts Aptevo from taking any action that prevents such transactions from being tax-free for U.S. federal income tax purposes. In particular, for the two-year period following the Distribution, Aptevo is restricted from taking certain actions (including restrictions on share issuances, business combinations, sales of assets, amendments to organizational documents and similar transactions) that could cause the Distribution, together with certain related transactions, to fail to qualify as a tax-free transaction for U.S. federal income tax purposes. There can be no assurance that Aptevo will comply with these restrictions. Failure of Aptevo to satisfy its obligations could have a substantial impact on our tax obligations, consolidated financial condition and cash flows.

OTHER BUSINESS RISKS

Pending litigation and legal proceedings and the impact of any finding of liability or damages could adversely impact the company and its financial condition and results of operations.

From time to time, we may be named as a defendant in various legal actions or other proceedings. Certain of these actions include and future actual or threatened legal actions may include, claims for substantial and indeterminate amounts of damages, or may result in other results adverse to us.

For example, as more fully described under Part I, "ITEM 3 – LEGAL PROCEEDINGS," on July 19, 2016, a purported class action lawsuit was filed against us and several of our senior officers and directors in the United States District Court for the District of Maryland seeking unspecified damages on behalf of a putative class of persons who purchased or otherwise acquired our common stock between January 11, 2016 and June 21, 2016. The complaint, as amended on December 27, 2016, alleges, among other things, that we made false and misleading statements about the government's demand for BioThrax and expectations that our five-year exclusive procurement contract with HHS would be renewed.

The results of this lawsuit and possible other future legal proceedings cannot be predicted with certainty. Accordingly, we cannot determine whether our insurance coverage would be sufficient to cover the costs or potential losses, if any. Regardless of merit, litigation may be both time-consuming and disruptive to our operations and cause significant expense and diversion of management attention. If we do not prevail in the purported class action lawsuit or in other future legal proceedings, we may be faced with significant monetary damages or injunctive relief against us that may adversely affect our business, financial condition and results of operations, possibly materially.

We face product liability exposure, which could cause us to incur substantial liabilities and negatively affect our business, financial condition and results of operations.

We face an inherent risk of product liability exposure related to the sale of our products, any other products that we successfully acquire or develop and the testing of our product candidates in clinical trials.

One measure of protection against such lawsuits is coverage under the Public Readiness and Emergency Preparedness Act, or PREP Act, which was signed into law in December 2005. The PREP Act creates immunity for manufacturers of biodefense countermeasures when the Secretary of HHS issues a declaration for their manufacture, administration or use. A PREP Act declaration is meant to provide immunity from all claims under federal or state law for loss arising out of the administration or use of a covered countermeasure. The Secretary of HHS has issued PREP Act declarations identifying BioThrax, BAT, Anthrasil and VIGIV as covered countermeasures. These declarations expire in 2022. Manufacturers are not entitled to protection under the PREP Act in cases of willful misconduct. We cannot predict whether the Secretary of HHS will renew the declarations when they expire, whether Congress will fund the relevant PREP Act compensation programs, or whether the necessary prerequisites for immunity would be triggered with respect to our products or product candidates.

Additionally, BioThrax and RSDL are certified anti-terrorism products covered under the protections of the Support Anti-Terrorism by Fostering Effective Technology Act of 2002, or SAFETY Act. The SAFETY Act creates product liability limitations for qualifying anti-terrorism technologies for claims arising from or related to an act of terrorism. Although we are entitled to the benefits of the SAFETY Act for BioThrax and RSDL, the SAFETY Act may not provide adequate protection from claims made against us.

If we cannot successfully defend ourselves against future claims that our products or product candidates caused injuries and if we are not entitled to indemnity by the U.S. government, or the U.S. government does not honor its obligations to us under the PREP Act or SAFETY Act, or if the indemnification under the PREP Act and SAFETY Act is not adequate to cover all claims, we may incur substantial liabilities. Regardless of merit or eventual outcome, product liability claims may result in:

- decreased demand or withdrawal of a product;
- injury to our reputation;
- withdrawal of clinical trial participants;
- costs to defend the related litigation;
- substantial monetary awards to trial participants or patients;
- loss of revenue; and
- an inability to commercialize products that we may develop.

The amount of insurance that we currently hold may not be adequate to cover all liabilities that may occur. Further product liability insurance may be difficult and expensive to obtain. We may not be able to maintain insurance coverage at a reasonable cost and we may not be able to obtain insurance coverage that will be adequate to satisfy all potential liabilities. For example, we may not have sufficient insurance against potential liabilities associated with a possible large scale deployment of BioThrax as a countermeasure to a bioterrorism threat. We rely on PREP Act protection for BioThrax, BAT, Anthrasil and VIGIV and SAFETY Act protection for BioThrax and RSDL in addition to our insurance coverage to help mitigate our product liability exposure for these products. Claims or losses in excess of our product liability insurance coverage could have a material adverse effect on our business, financial condition and results of operations.

The accuracy of our financial reporting depends on the effectiveness of our internal control over financial reporting. If we identify a material weakness in our internal control over financial reporting, it could have an adverse effect on our business and financial results and our ability to meet our reporting obligations could be negatively affected, each of which could negatively affect the trading price of our common stock.

Internal control over financial reporting can provide only reasonable assurance with respect to the preparation and fair presentation of financial statements and may not prevent or detect misstatements. A material weakness is a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis. Failure to maintain effective internal control over financial reporting, or lapses in disclosure controls and procedures, could impact our financial information and disclosures, require significant resources to remediate the lapse or deficiency, and expose us to legal or regulatory proceedings.

We regularly review and update our internal controls and disclosure controls and procedures. In addition, we are required under the Sarbanes-Oxley Act of 2002 to report annually on our internal control over financial reporting. Our system of internal controls, however well-designed, can provide only reasonable, not absolute, assurances that the objectives of the system are met. If we, or our independent registered public accounting firm, determine that our internal controls over financial reporting are not effective, or we discover areas that need improvement in the future, these shortcomings could have an adverse effect on our business and financial reporting, and the price of our common stock could be negatively affected.

We rely significantly on information technology systems and any failure, inadequacy, interruption or security lapse of that technology, including any cyber security incidents, could harm our ability to operate our business effectively or result in data leakage of proprietary and confidential business and employee information.

Our business is increasingly dependent on critical, complex and interdependent information technology systems, including Internet-based systems, to support business processes as well as internal and external communications. The size and complexity of our computer systems make them potentially vulnerable to interruption, invasion, computer viruses, destruction, malicious intrusion and additional related disruptions, which may result in the impairment of production and key business processes.

In addition, our systems are potentially vulnerable to data security breaches—whether by employee error, malfeasance or other disruption—which may expose sensitive data to unauthorized persons. Such data security breaches could lead to the loss of trade secrets or other intellectual property, or could lead to the public exposure of personal information, including sensitive personal information, of our employees, clinical trial patients, customers and others.

A significant business disruption or a breach in security resulting in misappropriation, theft or sabotage with respect to our proprietary and confidential business and employee information could result in financial, legal, business or reputational harm to us, any of which could adversely affect our business, financial condition and operating results.

Our success is dependent on our continued ability to attract, motivate and retain key personnel, and any failure to attract or retain key personnel may negatively affect our business.

Because of the specialized scientific nature of our business, our ability to develop products and to compete with our current and future competitors largely depends upon our ability to attract, retain and motivate highly qualified managerial and key scientific and technical personnel. If we are unable to retain the services of one or more of the principal members of senior management or other key employees, our ability to implement our business strategy could be materially harmed. We face intense competition for qualified employees from biopharmaceutical companies, research organizations and academic institutions. Attracting, retaining or replacing these personnel on acceptable terms may be difficult and time-consuming given the high demand in our industry for similar personnel. We believe part of being able to attract, motivate and retain personnel is our ability to offer a competitive compensation package, including equity incentive awards. If we cannot offer a competitive compensation package to attract and retain the qualified personnel necessary for the continued development of our business, we may not be able to maintain our operations or grow our business.

RISKS RELATED TO OWNERSHIP OF OUR COMMON STOCK

Fuad El-Hibri, executive chairman of our Board of Directors, has significant influence over us through his substantial beneficial ownership of our common stock, including an ability to influence the election of the members of our Board of Directors, or delay or prevent a change of control of us.

Mr. El-Hibri has the ability to significantly influence the election of the members of our Board of Directors due to his substantial beneficial ownership of our common stock. As of February 17, 2017, Mr. El-Hibri was the beneficial owner of approximately 14% of our outstanding common stock. As a result, Mr. El-Hibri could delay or prevent a change of control of us that may be favored by other directors or stockholders and otherwise exercise substantial influence over all corporate actions requiring board or stockholder approval, including any amendment of our certificate of incorporation or by-laws. The control by Mr. El-Hibri may prevent other stockholders from influencing significant corporate decisions. In addition, Mr. El-Hibri's significant beneficial ownership of our shares could present the potential for a conflict of interest.

Provisions in our certificate of incorporation and by-laws and under Delaware law may discourage acquisition proposals, delay a change in control or prevent transactions that stockholders may consider favorable.

Provisions in our certificate of incorporation and by-laws may discourage, delay or prevent a merger, acquisition or other changes in control that stockholders may consider favorable, including transactions in which stockholders might otherwise receive a premium for their shares. These provisions may also prevent or frustrate attempts by our stockholders to replace or remove our management.

These provisions include:

- the classification of our directors;
- limitations on changing the number of directors then in office;
- limitations on the removal of directors;
- limitations on filling vacancies on the board;
- limitations on the removal and appointment of the chairman of our Board of Directors;
- advance notice requirements for stockholder nominations of candidates for election to the Board of Directors and other proposals;
- the inability of stockholders to act by written consent;
- the inability of stockholders to call special meetings; and
- the ability of our Board of Directors to designate the terms of and issue a new series of preferred stock without stockholder approval.

The affirmative vote of holders of our capital stock representing at least 75% of the voting power of all outstanding stock entitled to vote is required to amend or repeal the above provisions of our certificate of incorporation. The affirmative vote of either a majority of the directors present at a meeting of our Board of Directors or holders of our capital stock representing at least 75% of the voting power of all outstanding stock entitled to vote is required to amend or repeal our by-laws.

In addition, we are subject to Section 203 of the Delaware General Corporation Law, or Section 203. In general and subject to certain exceptions, Section 203 prohibits a publicly-held corporation from engaging in a business combination with an interested stockholder, generally a person which, together with its affiliates, owns or within the last three years has owned 15% or more of the corporation's voting stock, for a period of three years after the date of the transaction in which the person became an interested stockholder, unless the business combination is approved in a prescribed manner. Accordingly, Section 203 may discourage, delay or prevent a change in control of us.

Our Board of Directors may reinstate our stockholder rights plan or implement a new stockholder rights plan without stockholder approval, which could prevent a change in control of us in instances in which some stockholders may believe a change in control is in their best interests.

Our Board of Directors may implement a stockholder rights plan without stockholder approval. We previously implemented a stockholder rights plan, which expired on November 14, 2016. Under our prior stockholder rights plan, we issued to each of our stockholders one preferred stock purchase right for each outstanding share of our common stock. Each right, when exercisable, would have entitled its holder to purchase from us a unit consisting of one one-thousandth of a share of series A junior participating preferred stock at a purchase price of $150 in cash, subject to adjustments. Our stockholder rights plan was intended to protect stockholders in the event of an unfair or coercive offer to acquire us and to provide our Board of Directors with adequate time to evaluate unsolicited offers.

Our Board of Directors may reinstate the prior stockholder rights plan or implement a new stockholder rights plan, which may have anti-takeover effects, potentially preventing a change in control of us in instances in which some stockholders may believe a change in control is in their best interests. This could cause substantial dilution to a person or group that attempts to acquire us on terms that our Board of Directors does not believe are in our best interests or those of our stockholders and may discourage, delay or prevent a merger or acquisition that stockholders may consider favorable, including transactions in which stockholders might otherwise receive a premium for their shares.

Our stock price is volatile and purchasers of our common stock could incur substantial losses.

Our stock price has been, and is likely to continue to be, volatile. The market price of our common stock could fluctuate significantly for many reasons, including in response to the risks described in this "Risk Factors" section, or for reasons unrelated to our operations, such as reports by industry analysts, investor perceptions or negative announcements by our customers, competitors or suppliers regarding their own performance, as well as industry conditions and general financial, economic and political instability. From November 15, 2006, when our common stock first began trading on the New York Stock Exchange, through February 17, 2016, our common stock has traded as high as $44.38 per share and as low as $4.40 per share. The stock market in general as well as the market for biopharmaceutical companies in particular has experienced extreme volatility that has often been unrelated to the operating performance of particular companies. The market price of our common stock may be influenced by many factors, including, among others:

- contracts, decisions and procurement policies by the U.S. government affecting BioThrax and our other biodefense products and product candidates;
- the success of competitive products or technologies;
- results of clinical and non-clinical trials of our product candidates;
- announcements of acquisitions, financings or other transactions by us;
- announcements relating to litigation or legal proceedings;

- § public concern as to the safety of our products;
- § termination or delay of a development program;
- § the recruitment or departure of key personnel;
- § variations in our product revenue and profitability; and
- § the other factors described in this "Risk Factors" section.

Because we currently do not pay dividends, investors will benefit from an investment in our common stock only if it appreciates in value.

We currently do not pay dividends on our common stock. Our senior secured credit facility and any future debt agreements that we enter into may limit our ability to pay dividends. As a result, capital appreciation, if any, of our common stock will be the sole source of gain for our stockholders for the foreseeable future.

A significant portion of our shares may be sold into the market at any time. This could cause the market price of our common stock to drop significantly.

Sales of a substantial number of shares of our common stock in the public market could occur at any time. These sales or the perception in the market that the holders of a large number of shares intend to sell shares could reduce the market price of our common stock. Moreover, holders of an aggregate of approximately 6 million shares of our common stock outstanding as of February 17, 2017, have the right to require us to register these shares of common stock under specified circumstances. In May 2015, we filed an automatic shelf registration statement, which immediately became effective under SEC rules. For so long as we continue to satisfy the requirements to be deemed a "well-known seasoned issuer" under SEC rules, this shelf registration statement, effective until May 2018, would provide for a secondary offering of these shares from time to time.

ITEM 1B. UNRESOLVED STAFF COMMENTS

Not applicable.

ITEM 2. PROPERTIES

The following table sets forth general information regarding our materially important properties:

Location	Use	Approximate square feet Owned/leased	Owned/leased
Lansing, Michigan	Manufacturing operations facilities, office space and laboratory space	336,000	Owned
Winnipeg, Manitoba, Canada	Manufacturing operations facilities, office space and laboratory space	315,000	Owned
Gaithersburg, Maryland	Office space/rental real estate	130,000	Owned
Baltimore, Maryland (Camden)	Manufacturing facilities and office and laboratory space	70,000	Owned
Baltimore, Maryland (Bayview)	Manufacturing facilities and office and laboratory space	56,000	Owned
Gaithersburg, Maryland	Office and laboratory space	48,000	Owned
Hattiesburg, Mississippi	Manufacturing facilities	9,000	Lease expires 2026

Lansing, Michigan. We own a multi-building campus on approximately 12.5 acres in Lansing, Michigan that includes facilities for bulk manufacturing of BioThrax, including fermentation, filtration and formulation, as well as for raw material storage and in-process and final product warehousing.

Winnipeg, Manitoba, Canada. We operate facilities in Winnipeg, Manitoba, Canada including a manufacturing facility focused primarily on plasma-derived hyperimmune therapeutics and a manufacturing facility focused primarily on bacterial fermentation.

Gaithersburg, Maryland. We own a 130,000 square foot building in Gaithersburg, Maryland, a portion of which we utilize as our corporate headquarters, while continuing to rent a portion of the remainder of the space to third parties.

Baltimore, Maryland (Camden). We own a manufacturing facility focused on pharmaceutical product development and filling services for injectable and other sterile products, as well as process design, technical transfer, manufacturing validations, laboratory support, aseptic filling, lyophilization, final packaging and accelerated and ongoing stability studies.

Baltimore, Maryland (Bayview). We own a 56,000 square foot manufacturing facility in Baltimore, Maryland. We are using this facility to support our future product development and manufacturing needs, including those of our pipeline product candidates, as well as to meet the requirements under the Center for Innovation in Advanced Development and Manufacturing contract. The future use of this facility will be dependent on the progress of our existing development programs, the success of our contract manufacturing business and the outcome of our efforts to acquire new product candidates.

Gaithersburg, Maryland. We own a facility in Gaithersburg, Maryland that is approximately 48,000 square feet and contains a combination of laboratory and office space.

Hattiesburg, Mississippi. We lease a manufacturing and packaging facility at The University of Southern Mississippi's Accelerator, a technology innovation and commercialization center. This facility is equipped to manufacture and package RSDL.

ITEM 3. LEGAL PROCEEDINGS

From time to time, we may be involved in various legal proceedings and claims that arise in or outside the ordinary course of our business. We believe that the outcome of these pending legal proceedings in the aggregate is unlikely to have a material adverse effect on our business, financial condition or results of operations.

Purported Shareholder Class Action Lawsuit Filed July 19, 2016

On July 19, 2016, Plaintiff William Sponn, or Sponn, filed a putative class action complaint in the United States District Court for the District of Maryland on behalf of purchasers of our common stock between January 11, 2016 and June 21, 2016, inclusive, or the Class Period, seeking to pursue remedies under the Securities Exchange Act of 1934 against us and certain of our senior officers and directors, collectively, the Defendants. The complaint alleges, among other things, that we made materially false and misleading statements about the government's demand for BioThrax and expectations that our five-year exclusive procurement contract with HHS would be renewed and omitted certain material facts. Sponn is seeking unspecified damages, including legal costs. On October 25, 2016, the Court added City of Cape Coral Municipal Firefighters' Retirement Plan and City of Sunrise Police Officers' Retirement Plan as plaintiffs and appointed them Lead Plaintiffs and Robins Geller Rudman & Dowd LLP as Lead Counsel. On December 27, 2016, the plaintiffs filed an amended complaint that cites the same class period, names the same defendants and makes similar allegations to the original complaint. We filed a Motion to Dismiss on February 27, 2017. The Defendants believe that the allegations in the complaint are without merit and intend to defend themselves vigorously against those claims.

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 and Holders

Our common stock trades on the New York Stock Exchange under the symbol "EBS". The following table sets forth the high and low sales prices per share of our common stock during each quarter of the years ended December 31, 2016 and December 31, 2015:

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Year Ended December 31, 2016				
High	$ 39.29	$ 44.38	$ 34.10	$ 36.64
Low	$ 31.26	$ 27.01	$ 26.12	$ 24.47
Year Ended December 31, 2015				
High	$ 30.96	$ 33.84	$ 36.20	$ 40.49
Low	$ 25.97	$ 28.33	$ 27.82	$ 27.68

As of February 17, 2017, the closing price per share of our common stock on the New York Stock Exchange was $30.39 and we had 23 holders of record of our common stock. This number does not include beneficial owners whose shares are held by nominees in street name.

Dividend Policy

We have not declared or paid any cash dividends on our common stock since becoming a publicly traded company in November 2006. We currently intend to retain all of our future earnings to finance the growth and development of our business.

Recent Sales of Unregistered Securities

None.

Use of Proceeds

Not applicable.

Purchases of Equity Securities

On July 14, 2016, our board of directors authorized management to repurchase, from time to time, up to an aggregate of $50 million of our common stock under a board-approved share repurchase program. The timing, amount, and price of any repurchases will be made pursuant to one or more 10b5-1 plans. The term of the board authorization of the repurchase program is until December 31, 2017. The plan will permit shares to be repurchased when we might otherwise be precluded from doing so under insider trading laws. The repurchase program may be suspended or discontinued at any time. Any repurchased shares will be available for use in connection with our stock plans and for other corporate purposes. As of December 31, 2016, we neither implemented a repurchase plan nor repurchased any shares under this program.

ITEM 6. SELECTED CONSOLIDATED FINANCIAL DATA

You should read the following selected consolidated financial data together with our consolidated financial statements and the related notes included in this annual report on Form 10-K and the "Management's Discussion and Analysis of Financial Condition and Results of Operations" section of this annual report.

We have derived the consolidated statement of operations data for the years ended December 31, 2016, 2015, and 2014 and the consolidated balance sheet data as of December 31, 2016, and 2015 from our audited consolidated financial statements, which are included in this annual report on Form 10-K. 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 3, "Discontinued operations" in the Notes to consolidated financial statements in Item 8 of this Form 10-K for additional information on discontinued operations. Our historical results for any prior period are not necessarily indicative of results to be expected in any future period.

	Year Ended December 31,				
(in thousands, except share and per share data)	**2016**	**2015**	**2014**	**2013**	**2012**
Statements of operations data:					
Revenues:					
Product sales	$ 296,278	$ 328,969	$ 281,845	$ 257,922	$ 215,879
Contract manufacturing	49,138	42,968	30,944	-	-
Contracts and grants	143,366	117,394	91,677	54,823	62,083
Total revenues	488,782	489,331	404,466	312,745	277,962
Operating expenses:					
Cost of product sales and contract manufacturing	131,284	107,486	101,963	62,127	46,077
Research and development	108,290	119,186	104,721	81,759	96,442
Selling, general & administrative	143,686	121,145	108,594	86,844	74,883
Total operating expenses	383,260	347,817	315,278	230,730	217,402
Income from operations	105,522	141,514	89,188	82,015	60,560
Other income (expense):					
Interest income	1,053	572	320	139	133
Interest expense	(7,617)	(6,523)	(8,240)	-	(6)
Other income (expense), net	263	153	2,926	409	1,943
Total other income (expense)	(6,301)	(5,798)	(4,994)	548	2,070
Income from continuing operations before provision for income taxes	99,221	135,716	84,194	82,563	62,630
Provision for income taxes	36,697	44,300	29,928	12,270	9,834
Net income from continuing operations	62,524	91,416	54,266	70,293	52,796
Net loss attributable to noncontrolling interest	-	-	-	876	5,381
Net income attributable to Emergent BioSolutions Inc. from continuing operations	62,524	91,416	54,266	71,169	58,177
Net loss from discontinued operations	(10,748)	(28,546)	(17,525)	(40,034)	(34,653)
Net income	$ 51,776	$ 62,870	$ 36,741	$ 31,135	$ 23,524
Net income per share from continuing operations-basic	$ 1.56	$ 2.37	$ 1.45	$ 1.97	$ 1.61
Net loss per share from discontinued operations-basic	(0.27)	(0.74)	(0.47)	(1.11)	(0.96)
Net income per share-basic	$ 1.29	$ 1.63	$ 0.98	$ 0.86	$ 0.65
Net income per share from continuing operations-diluted	$ 1.35	$ 2.02	$ 1.26	$ 1.94	$ 1.60
Net loss per share from discontinued operations-diluted	(0.22)	(0.61)	(0.38)	(1.09)	(0.95)
Net income per share-diluted (1)	$ 1.13	$ 1.41	$ 0.88	$ 0.85	$ 0.65
Weighted average number of shares — basic	40,184,159	38,595,435	37,344,891	36,201,283	36,080,495
Weighted average number of shares — diluted	49,335,112	47,255,842	45,802,807	36,747,556	36,420,662

	As of December 31,				
(in thousands)	**2016**	**2015**	**2014**	**2013**	**2012**
Balance Sheet Data:					
Cash and cash equivalents	$ 271,513	$ 308,304	$ 276,786	$ 179,338	$ 141,666
Working capital	404,362	425,865	312,767	284,652	250,962
Total assets	970,111	931,836	815,611	521,898	486,509
Total long-term liabilities	268,050	274,622	281,472	83,853	59,324
Total stockholders' equity	596,205	574,951	454,495	482,395	406,512

(1) See Note 15 "Earnings per share" for details on calculation.

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

You should read the following discussion and analysis of our financial condition and results of operations together with our financial statements and the related notes and other financial information included elsewhere in this annual report on Form 10-K. Some of the information contained in this discussion and analysis or set forth elsewhere in this annual report on Form 10-K, including information with respect to our plans and strategy for our business and financing, includes forward-looking statements that involve risks and uncertainties. You should carefully review the "Special Note Regarding Forward-Looking Statements" and "Risk Factors" sections of this annual report on Form 10-K for a discussion of important factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis.

Overview

Product Portfolio

We are a global life sciences company seeking to protect and enhance life by focusing on providing specialty products for civilian and military populations that address accidental, intentional and naturally emerging public health threats. Our company is focused on developing, manufacturing and commercializing medical countermeasures, or MCM, that address public health threats, or PHTs. The PHTs we are addressing fall into two categories: Chemical, Biological, Radiological and Nuclear, or CBRN, as well as explosive-related threats; and emerging infectious diseases, or EID. We have a portfolio of six revenue-generating products, as well as a pipeline of various investigational stage product candidates addressing select aspects of CBRN and EID threats. The U.S. government is the primary purchaser of our products and provides us with substantial funding for the development of many of our product candidates.

Our marketed products are:

- BioThrax® (Anthrax Vaccine Adsorbed), the only vaccine licensed by the U.S. Food and Drug Administration, or the FDA, for the general use prophylaxis and post-exposure prophylaxis of anthrax disease. BioThrax is also licensed by the Paul-Ehrlich-Institut of the German Federal Ministry of Health for general use prophylaxis of anthrax disease;
- Anthrasil® [Anthrax Immune Globulin Intravenous (Human)], the only polyclonal antibody therapeutic licensed by the FDA for the treatment of inhalational anthrax;
- BAT® [Botulism Antitoxin Heptavalent (A,B,C,D,E,F,G)- (Equine)], the only heptavalent therapeutic licensed by the FDA and Health Canada for the treatment of botulinum disease;
- VIGIV [Vaccinia Immune Globulin Intravenous (Human)], the only therapeutic licensed by the FDA to address certain complications from smallpox vaccination;
- RSDL® (Reactive Skin Decontamination Lotion Kit), the only device cleared by the FDA intended to remove or neutralize chemical warfare agents and T-2 toxin from the skin; and
- Trobigard™ (atropine sulfate, obidoxime chloride), an auto-injector device designed for intramuscular self-injection of atropine sulfate and obidoxime chloride, a nerve agent countermeasure. This product has not been approved by the FDA or any other regulatory agency, is not promoted or distributed in the U.S., and is only sold to non-U.S. authorized government buyers.

Our investigational stage product candidates are:

- NuThrax™ (anthrax vaccine adsorbed with CPG 7909 adjuvant), a next generation anthrax vaccine;
- UV-4B, a novel antiviral being developed for dengue and influenza infections;
- GC-072, the lead compound in the EV-035 series of broad spectrum antibiotics, being developed for *Burkholderia pseudomallei*;
- FLU-IG (NP025), a human polyclonal antibody therapeutic being developed to treat seasonal influenza;
- ZIKA-IG (NP024), a human polyclonal antibody therapeutic being developed as a prophylaxis for Zika infections; and
- FILOV (NP026), an equine polyclonal antibody therapeutic being developed to treat Ebola infections.

A unique attribute of our investigational stage product portfolio is that many of our candidates are under an active development contract with significant funding from the U.S. government.

We also have programs that leverage our proven manufacturing infrastructure and expertise. We have responded to specific Task Order Requests issued by Biomedical Advanced Research and Development Authority, or BARDA, for the development and manufacture of specific countermeasures as part of our Center for Innovation in Advanced Development and Manufacturing, or CIADM, program focused on imminent public health threats, including a Zika vaccine and an Ebola monoclonal therapeutic.

In addition, we provide contract manufacturing services to third-party customers. The majority of these services are performed at our facilities located in Baltimore, Maryland. At these facilities we perform pharmaceutical product development and filling services for injectable and other sterile products, as well as process design, technical transfer, manufacturing validation, laboratory support, aseptic filling, lyophilization, final packaging and accelerated and ongoing stability studies. We manufacture both vial and pre-filled syringe formats for a wide variety of drug products - small molecule and biological - in all stages of development and commercialization, including 20 licensed products, which are currently sold in more than 50 countries. This facility produces finished units of clinical and commercial drugs for a variety of customers ranging from small biopharmaceutical companies to major multinationals. The facility is an approved or inspected manufacturing facility under the regulatory regimes in the United States, Canada, Japan, Brazil, the Middle East and several countries in the European Union.

Contracts and Grants

We seek to advance development of our product candidates through external funding arrangements. We may slow down development programs or place them on hold during periods that are not covered by external funding. We have received funding from the U.S. government for a number of our development programs. We continue to actively pursue additional government sponsored development contracts and grants and commercial collaborative relationships. Both governmental agencies and philanthropic organizations may provide development funding or conduct clinical studies of our product candidates.

Manufacturing Infrastructure

Our Lansing, Michigan, manufacturing location is a vertically-integrated manufacturing facility and the location of our BioThrax manufacturing operations. Building 55 is our large-scale manufacturing facility, which was licensed by the FDA in August 2016 for the manufacture of BioThrax. This facility has the potential to manufacture up to 20 to 25 million doses of BioThrax annually on a single manufacturing train.

Our manufacturing facilities in Winnipeg, Manitoba, Canada are actively engaged in plasma-derived hyperimmune therapeutics manufacturing, chromatography-based plasma fractionation, bacterial fermentation, downstream processing, aseptic filling, packaging and warehousing, quality assurance and control, and include development laboratories and office space. Bulk manufacture of RSDL lotion also occurs in Winnipeg. At these facilities, we manufacture our hyperimmune specialty plasma products, including BAT, VIGIV and Anthrasil. We also manufacture other marketed hyperimmune products for contract manufacturing customers at these facilities.

Our contract fill/finish services facility is located in Baltimore, Maryland, and is referred to as our "Camden Site." The Camden Site provides pharmaceutical product development and filling services for injectable and other sterile products, as well as process design, technical transfer, manufacturing validations, laboratory support, aseptic filling, lyophilization, final packaging and accelerated and ongoing stability studies support. This facility is an approved or inspected manufacturing facility under the regulatory regimes in the United States, Canada, Japan, Brazil, the Middle East and several countries in the European Union. The facility includes warehousing space used for cold-storage and freezer capacity to support contract manufacturing customers.

Our manufacturing facility focused on disposable manufacturing for viral and non-viral products is located in Baltimore, Maryland, and is referred to as our "Bayview Site." This facility was designed to take advantage of single-use bioreactor technology and is capable of manufacturing several different products, including products derived from cell culture or microbial systems. In June 2012, we entered into a contract with BARDA, which established our Bayview Site as a Center for Innovation in Advanced Development and Manufacturing, or CIADM. We envision this facility supporting future CIADM development and manufacturing activities for chemical, biological, radiological, and nuclear threat countermeasures, as well as our current and future non-CIADM product development and manufacturing needs.

Aptevo Spin-off

On August 1, 2016, we completed the spin-off of Aptevo Therapeutics Inc., or Aptevo. As a result of the spin-off, the operating results of Aptevo have been reflected as discontinued operations for the years ended December 31, 2016, 2015 and 2014. See Note 3. "Discontinued operations" for further details regarding the spin-off. Unless otherwise stated, financial results herein reflect continuing operations.

Litigation

On July 19, 2016, Plaintiff William Sponn, or Sponn, filed a putative class action complaint in the United States District Court for the District of Maryland, or the Court, on behalf of purchasers of our common stock between January 11, 2016 and June 21, 2016, inclusive, or the Class Period, seeking to pursue remedies under the Securities Exchange Act of 1934 against us and certain of our senior officers and directors, collectively, the Defendants. The complaint alleges, among other things, that we made materially false and misleading statements about the government's demand for BioThrax and expectations that our five-year exclusive procurement contract with HHS would be renewed and omitted certain material facts. Sponn is seeking unspecified damages, including legal costs. On October 25, 2016 the Court added City of Cape Coral Municipal Firefighters' Retirement Plan and City of Sunrise Police Officers' Retirement Plan as plaintiffs and appointed them Lead Plaintiffs and Robins Geller Rudman & Dowd LLP as Lead Counsel. On December 27, 2016, the plaintiffs filed an amended complaint that cites the same class period, names the same defendants and makes similar allegations to the original complaint. We filed a Motion to Dismiss on February 27, 2017.

Critical Accounting Policies and Estimates

Our discussion and analysis of our financial condition and results of operations are based on our financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses.

On an ongoing basis, we evaluate our estimates and judgments, including those related to accrued expenses, income taxes, stock-based compensation, inventory, in-process research and development and goodwill. We base our estimates on historical experience and on various other assumptions that we believe to be reasonable under the circumstances, the results of which form the basis for making judgments about the carrying values of assets and liabilities and the reported amounts of revenues and expenses that are not readily apparent from other sources. Actual results may differ from these estimates under different assumptions or conditions.

We believe the following critical accounting policies affect the more significant judgments and estimates used in the preparation of our financial statements.

Revenue Recognition

We recognize revenues from product sales and contract manufacturing if four basic criteria have been met:

- there is persuasive evidence of an arrangement;
- delivery has occurred or title has passed to our customer based on contract terms;
- the fee is fixed or determinable; and
- collectability is reasonably assured.

We have generated BioThrax sales revenues under U.S. government contracts with U.S. Department of Health and Human Services, or HHS and the Centers for Disease Control and Prevention, or the CDC. Under our current contract with the CDC, we invoice the CDC and recognize the related revenues upon acceptance by the government. At the delivery site the title to the product passes to the CDC.

From time to time, we are awarded reimbursement contracts and grants for development services by government entities and philanthropic organizations. Under these contracts, we typically are reimbursed for our costs as we perform specific development activities, and we may also be entitled to additional fees. Revenue on our reimbursable contracts is recognized as costs are incurred, generally based on the allowable costs incurred during the period, plus any recognizable earned fee. The amounts that we receive under these contracts vary greatly from quarter to quarter, depending on the scope and nature of the work performed. We record the reimbursement of our costs and any associated fees as contracts and grants revenue and the associated costs as research and development expense.

Contracts and grants revenues are subject to the estimation processes to the extent that the reimbursable costs underlying these revenues are incurred but not billed and agreed to on a timely basis, and are subject to change in future periods when actual costs are known. To date we have not made material adjustments to these estimates.

We analyze our multiple element revenue-generating arrangements to determine whether the elements can be separated and accounted for individually as separate units of accounting. An item can generally be considered a separate unit of accounting if both of the following criteria are met: (1) the delivered item(s) has value to the customer on a stand-alone basis and (2) if the arrangement includes a general right of return and delivery or performance of the undelivered item(s) is considered probable and substantially in our control. Items that cannot be divided into separate units are combined with other units of accounting, as appropriate. Consideration received is allocated among the separate units based on the unit's relative selling price and is recognized in full when the appropriate revenue recognition criteria are met. We deem services to be rendered if no continuing obligation exists on our part.

Revenue associated with non-refundable upfront license fees that can be treated as a single unit of accounting is recognized when all ongoing obligations have been delivered. Revenue associated with non-refundable upfront license fees under arrangements where the license fees and any research and development activities cannot be accounted for as separate units of accounting is deferred and recognized as revenue either on a straight-line basis over our continued involvement in the research and development process or based on the proportional performance of our expected future obligation under the contract. Revenues from the achievement of research and development milestones, if deemed substantive, are recognized as revenue when the milestones are achieved, and the milestone payments are due and collectible. If not deemed substantive, we recognize such milestone as revenue on a straight-line basis over the remaining expected term of continued involvement in the research and development process or based on the proportional performance of our expected future obligations under the contract.

In May 2014, the Financial Accounting Standards Board, or the FASB, issued Accounting Standards Update, or ASU, No. 2014-09, *Summary and Amendments That Create Revenue from Contracts with Customers (Topic 606) and Other Assets and Deferred Costs—Contracts with Customers (Subtopic 340-40) (*"ASU No. 2014-09"). ASU No. 2014-09 supersedes the revenue recognition requirements in Topic 605, Revenue Recognition, as well as most industry-specific guidance, and significantly enhances comparability of revenue recognition practices across entities and industries by providing a principles-based, comprehensive framework for addressing revenue recognition issues. In order for a provider of promised goods or services to recognize as revenue the consideration that it expects to receive in exchange for the promised goods or services, the provider should apply the following five steps: (1) identify the contract with a customer(s); (2) identify the performance obligations in the contract; (3) determine the transaction price; (4) allocate the transaction price to the performance obligations in the contract; and (5) recognize revenue when (or as) the entity satisfies a performance obligation. ASU No. 2014-09 also specifies the accounting for some costs to obtain or fulfill a contract with a customer and provides enhanced disclosure requirements. The standard will be effective for annual reporting periods beginning after December 15, 2017, including interim periods within that reporting period, which for the Company will be its 2018 first quarter. We are permitted to use either the retrospective or the modified retrospective method when adopting ASU No. 2014-09. We have begun an initial assessment of the potential impact that ASU No. 2014-09 will have on our financial statements and disclosures and believes that there could be changes to the revenue recognition related to our multiple element contracts, primarily those with the U.S. government.

Mergers and Acquisitions

In a business combination, the acquisition method of accounting requires that the assets acquired and liabilities assumed be recorded as of the date of the merger or acquisition at their respective fair values with limited exceptions. Assets acquired and liabilities assumed in a business combination that arise from contingencies are recognized at fair value if fair value can reasonably be estimated. If the acquisition date fair value of an asset acquired or liability assumed that arises from a contingency cannot be determined, the asset or liability is recognized if probable and reasonably estimable; if these criteria are not

met, no asset or liability is recognized. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Accordingly, we may be required to value assets at fair value measures that do not reflect our intended use of those assets. Any excess of the purchase price (consideration transferred) over the estimated fair values of 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 our consolidated financial statements after the date of the merger or acquisition. If we determine the assets acquired do not meet the definition of a business under the acquisition method of accounting, the transaction will be accounted for as an acquisition of assets rather than a business combination and, therefore, no goodwill will be recorded. The fair values of intangible assets, including acquired in-process research and development, or IPR&D, are determined utilizing information available near the merger or acquisition date based on expectations and assumptions that are deemed reasonable by management. Given the considerable judgment involved in determining fair values, we typically obtain assistance from third-party valuation specialists for significant items. Amounts allocated to acquired IPR&D are capitalized and accounted for as indefinite-lived intangible assets. Upon successful completion of each project, we will make a separate determination as to the then useful life of the asset and begin amortization. The judgments made in determining estimated fair values assigned to assets acquired and liabilities assumed in a business combination, as well as asset lives, can materially affect our results of operations.

The fair values of identifiable intangible assets related to currently marketed products and product rights are primarily determined by using an "income approach" through which fair value is estimated based on each asset's discounted projected net cash flows. Our estimates of market participant net cash flows take into consideration the following factors: historical and projected pricing, margins and expense levels, the performance of competing products where applicable, relevant industry and therapeutic area growth drivers and factors, current and expected trends in technology and product life cycles, the time and investment that will be required to develop products and technologies, the ability to obtain marketing and regulatory approvals, the ability to manufacture and commercialize the products, the extent and timing of potential new product introductions by our competitors, and the life of each asset's underlying patent, if any. The net cash flows are then probability-adjusted where appropriate to consider the uncertainties associated with the underlying assumptions, as well as the risk profile of the net cash flows utilized in the valuation. The probability-adjusted future net cash flows of each product are then discounted to present value utilizing an appropriate discount rate.

The fair values of identifiable intangible assets related to IPR&D are determined using an income approach, through which fair value is estimated based on each asset's probability-adjusted future net cash flows, which reflect the different stages of development of each product and the associated probability of successful completion. The net cash flows are then discounted to present value using an appropriate discount rate. Intangible assets are tested for impairment whenever events or changes in circumstances indicate that its carrying amount may not be recoverable.

Contingent Consideration

We record contingent consideration associated with both (a) sales based royalties and (b) development and regulatory milestones at fair value. The fair value model used to calculate this obligation is based on the income approach (a discounted cash flow model) that has been risk adjusted based on the probability of achievement of net sales and achievement of the milestones. The inputs we use for determining the fair value of the contingent consideration associated with sales based royalties and development and regulatory milestones are Level 3 fair value measurements. We re-evaluate the fair value on a quarterly basis. Changes in the fair value can result from adjustments to the discount rates and updates in the assumed timing of or achievement of net sales. Any future increase in the fair value of the contingent consideration associated with sales based royalties along with development and regulatory milestones are based on an increased likelihood that the underlying net sales or milestones will be achieved.

The associated payment or payments which will therefore become due and payable for sales based royalties associated with marketed products will result in a charge to cost of product sales and contract manufacturing in the period in which the increase is determined. Similarly, any future decrease in the fair value of contingent consideration associated with sales based royalties will result in a reduction in cost of product sales and contract manufacturing. The changes in fair value for potential future sales based royalties associated with product candidates in development will result in a charge to selling, general and administrative expense in the period in which the increase is determined. Similarly, any future decrease in the fair value of contingent consideration associated with potential future sales based royalties for products candidates will result in a reduction in selling, general and administrative expense.

The associated payment or payments which will therefore become due and payable for development and regulatory milestones will result in a charge to research and development expense in the period in which the increase is determined. Similarly, any future decrease in the fair value for development and regulatory milestones will result in a reduction in research and development expense.

Income Taxes

Under the asset and liability method of income tax accounting, deferred tax assets and liabilities are determined based on the differences between the financial reporting and the tax basis of assets and liabilities and are measured using the tax rates and laws that are expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. A net deferred tax asset or liability is reported on the balance sheet. Our deferred tax assets include the unamortized portion of in-process research and development expenses, the anticipated future benefit of net operating losses and other timing differences between the financial reporting and tax basis of assets and liabilities.

We have historically incurred net operating losses for income tax purposes in some states and foreign jurisdictions. The amount of the deferred tax assets on our balance sheet reflects our expectations regarding our ability to use our net operating losses and research and development tax credit carryforwards, to offset future taxable income. The applicable tax rules in particular jurisdictions limit our ability to use net operating losses and research and development tax credit carryforwards as a result of ownership changes.

We review our deferred tax assets on an annual basis to assess our ability to realize the benefit from these deferred tax assets. If we determine that it is more likely than not that the amount of our expected future taxable income will not be sufficient to allow us to fully utilize our deferred tax assets, we increase our valuation allowance against deferred tax assets by recording a provision for income taxes on our income statement, which reduces net income or increases net loss for that period and reduces our deferred tax assets on our balance sheet. If we determine that the amount of our expected future taxable income will allow us to utilize net operating losses in excess of our net deferred tax assets, we reduce our valuation allowance by recording a benefit from income taxes on our income statement, which increases net income or reduces net loss for that period and increases our deferred tax assets on our balance sheet.

Uncertainty in income taxes is accounted for using a recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return. We recognize in our financial statements the impact of a tax position if that position is more likely than not of being sustained on audit, based on the technical merits of the position.

Financial Operations Overview

Revenues

We have derived a majority of our historical product sales revenues from BioThrax sales to the U.S. government. We are focused on increasing the sales of our products to U.S. government customers and expanding the market for our product portfolio to other customers domestically and internationally. We were a party to a contract with the CDC, an operating division of the HHS, to supply up to approximately 44.75 million, doses of BioThrax to Strategic National Stockpile, or SNS, deliveries under this contract were complete in October 2016. On December 8, 2016, we signed a follow-on contract with the CDC, valued at up to $911 million, to supply approximately 29.4 million doses of BioThrax to the SNS, through September 2021. Also, BARDA issued a notice of intent to procure approximately $100 million of BioThrax for delivery into the SNS within 24 months from the date of contract award, which we anticipate will be in the first half of 2017. This contract will be separate from and in addition to the follow-on procurement contract with CDC. Our total revenues from BioThrax sales were $237.0 million, $293.9 million and $245.9 million for the years ended December 31, 2016, 2015 and 2014, respectively. For at least the next two to three years, we expect to continue to derive a majority of our product sales revenues from sales of BioThrax to the U.S. government.

On September 30, 2016, we were awarded a multi-year contract with BARDA for the advanced development and delivery of NuThrax. The contract, valued at up to approximately $1.6 billion, consists of a five-year base period of performance valued at approximately $200 million to develop NuThrax for post-exposure prophylaxis of anthrax disease and to deliver to the SNS an initial two million doses following Emergency Use Authorization, or EUA, pre-approval by the FDA. We anticipate that the FDA could authorize NuThrax for emergency use as early as 2018, triggering deliveries of NuThrax to the SNS

in 2019. The contract also includes procurement options for the delivery of an additional 7.5 million to 50 million doses of NuThrax to the SNS, valued from approximately $255 million to up to $1.4 billion, respectively, and options for an additional clinical study and post-marketing commitments valued at $48 million, which if both were to be exercised in full, would increase the total contract value to up to $1.6 billion.

We have received development funding from BARDA, the CDC, Defense Threat Reduction Agency, or DTRA, and National Institute of Allergy and Infectious Diseases, or NIAID, for the following development programs:

Development Programs	Funding Source	Award Date	Performance Period
Anthrasil	BARDA	Sep-05	9/2005 — 4/2021
	BARDA	Sep-13	9/2013 — 9/2018
BAT	BARDA	May-06	5/2006 — 5/2026
CIADM	BARDA	Jun-12	6/2012 — 6/2037
GC-072	DTRA	Aug-14	8/2014 — 8/2017
Large-scale manufacturing for BioThrax	BARDA	Jul-10	7/2010 — 7/2017
NuThrax	NIAID	Aug-14	8/2014 — 10/2019
	BARDA	Mar-15	3/2015 — 8/2017
	BARDA	Sep-16	9/2016 — 9/2021
UV-4B	NIAID	Sep-11	9/2011 — 9/2017
VIGIV	CDC	Aug-12	8/2012 — 8/2017
Zika	BARDA	Jun-16	6/2016 — 12/2018

Our revenue, operating results and profitability have varied, and we expect that they will continue to vary on a quarterly basis, primarily due to the timing of our fulfilling orders for BioThrax and work done under new and existing grants and development contracts.

Cost of Product Sales and Contract Manufacturing

The primary expense that we incur to deliver to our customers our marketed vaccines and therapeutics and to perform for our customers our contract manufacturing operations is manufacturing costs consisting of fixed and variable costs. Variable manufacturing costs consist primarily of costs for materials and personnel-related expenses for direct and indirect manufacturing support staff, contract manufacturing and filling operations, and sales-based royalties. Fixed manufacturing costs include facilities, utilities and amortization of intangible assets. We determine the cost of product sales for products sold during a reporting period based on the average manufacturing cost per unit in the period those units were manufactured. In addition to the fixed and variable manufacturing costs described above, the cost of product sales depends on utilization of available manufacturing capacity.

The primary expense that we incur to deliver our medical devices to our customers is the cost per unit of production from our third-party contract manufacturers, costs for materials and personnel-related expenses for direct and indirect manufacturing support staff along with facilities and utilities costs. Other associated expenses include sales-based royalties (which includes fair value adjustments associated with contingent consideration), amortization of intangible assets, shipping, and logistics.

Research and Development Expenses

We expense research and development costs as incurred. Our research and development expenses consist primarily of:

- personnel-related expenses;
- fees to professional service providers for, among other things, analytical testing, independent monitoring or other administration of our clinical trials and obtaining and evaluating data from our clinical trials and non-clinical studies;
- costs of contract manufacturing services for clinical trial material; and
- costs of materials used in clinical trials and research and development.

We intend to focus our product development efforts on promising late-stage candidates that we believe satisfy well-defined criteria and seek to utilize collaborations or non-dilutive funding. We plan to seek funding for development activities from external sources and third parties, such as governments and non-governmental organizations, or through collaborative partnerships. We expect our research and development spending will be dependent upon such factors as the results from our clinical trials, the availability of reimbursement of research and development spending, the number of product candidates under development, the size, structure and duration of any clinical programs that we may initiate, the costs associated with manufacturing our product candidates on a large-scale basis for later stage clinical trials, and our ability to use or rely on data generated by government agencies, such as studies involving BioThrax conducted by the CDC.

Selling, General and Administrative Expenses

Selling, general and administrative expenses consist primarily of personnel-related costs and professional fees in support of our executive, sales and marketing, business development, government affairs, finance, accounting, information technology, legal and human resource functions. Other costs include facility costs not otherwise included in cost of product sales and contract manufacturing or research and development expense.

Results of Operations

Year Ended December 31, 2016 Compared to Year Ended December 31, 2015

Revenue

(in thousands)	Year ended December 31, 2016	2015	Change	% Change
Product sales:				
BioThrax	$ 237,030	$ 293,921	$ (56,891)	(19%)
Other	59,248	35,048	24,200	69%
Total product sales	296,278	328,969	(32,691)	(10%)
Contract manufacturing	49,138	42,968	6,170	14%
Contracts and grants	143,366	117,394	25,972	22%
Total revenues	$ 488,782	$ 489,331	$ (549)	0%

Product sales:

The decrease in BioThrax sales was primarily due to the timing of deliveries under our contracts with the CDC, principally due to reduced deliveries in the fourth quarter of 2016 related to the timing of signing our new contract with CDC in December 2016. The increase in other product sales was primarily due to the timing of BAT and VIGIV sales to the SNS, as well as RSDL sales to the Department of Defense, or DoD. BioThrax product sales revenues during the year ended December 31, 2016 consisted of sales to the CDC of $235.8 million and aggregate international and other sales of $1.2 million. BioThrax product sales revenues during the year ended December 31, 2015 consisted primarily of BioThrax sales to the CDC of $292.8 million and aggregate international and other sales of $1.1 million.

Contract manufacturing:

The increase in Contract manufacturing revenues was primarily due to the increase of fill/finish services from our facility in Baltimore and our plasma based manufacturing facility in Winnipeg, partially offset by a decrease in contract manufacturing revenue related to the production of an MVA Ebola vaccine candidate in 2015.

Contracts and grants:

The increase in Contracts and grants revenues was primarily due to the following:

§ increased development funding of $39.1 million related to our CIADM program, including $17.1 million from new CIADM task orders;
§ increased development funding of $29.9 million for VIGIV related to plasma collection; and
§ increased development funding of $9.4 million related for NuThrax related to preparation for a Phase III clinical trial.

These increases were partially offset by decreases in development funding for:

§ the Anthrasil program of approximately $37.6 million related to the timing of plasma collection;
§ PreviThrax of approximately $8.9 million due to reduced interest by the U.S. government for this product candidate; and
§ Large-scale manufacturing of BioThrax of approximately $6.1 million due to completion of the program and FDA licensure of building 55 in August 2016.

Cost of Product Sales and Contract Manufacturing

Cost of product sales and contract manufacturing increased by $23.8 million, or 22%, to $131.3 million for 2016 from $107.5 million for 2015. The increase was attributable to an increase in the BioThrax cost per dose sold associated with lower production yield in the period in which the doses sold were produced along with increased costs associated with the increase Other product sales, partially offset by a decrease in BioThrax sales to the SNS.

Research and Development Expense

Research and development expenses decreased by $10.9 million, or 9%, to $108.3 million for 2016 from $119.2 million for 2015. This decrease primarily reflects lower contract service costs. Net of contracts and grants revenues, our research and development expenses were fully funded during 2016, resulting in a net contribution from funded development programs of $35.1 million. Net of contracts and grants revenues, we incurred net research and development expenses of $1.8 million during 2015.

Our principal research and development expenses for 2016 and 2015 are shown in the following table:

	Year ended December 31,			
(in thousands)	**2016**	**2015**	**Change**	**% Change**
Large-scale manufacturing for BioThrax	$ 6,104	$ 9,911	$ (3,807)	(38%)
BioThrax related programs	3,069	3,511	(442)	(13%)
PreviThrax	1,324	7,152	(5,828)	(81%)
NuThrax	22,478	12,560	9,918	79%
Pandemic influenza	1,710	6,583	(4,873)	(74%)
Anthrasil	1,279	25,986	(24,707)	(95%)
BAT	3,904	4,867	(963)	(20%)
EV-035 series of molecules	326	6,801	(6,475)	(95%)
CIADM task orders	13,955	2,957	10,998	372%
VIGIV	12,019	3,060	8,959	293%
Emergard	9,000	4,643	4,357	94%
Other	33,122	31,155	1,967	6%
Total	$ 108,290	$ 119,186	$ (10,896)	(9%)

The decrease in expense for large-scale manufacturing of BioThrax was primarily due to the timing of manufacturing development activities and due to the successful licensure of the large-scale manufacturing facility in August 2016. The decrease in spending for BioThrax related programs was primarily related to the timing of clinical studies to support applications for label expansion for BioThrax. The decrease in expense for PreviThrax was primarily due to the timing of non-clinical studies, and in light of reduced funding by the U.S. government for this product candidate, we determined to cease further development work on our PreviThrax vaccine and expect the spending for PreviThrax will be minimal in the future. The increase in expense for NuThrax was primarily due to the timing of non-clinical animal studies and manufacturing activities. The decrease in spending for Pandemic influenza was primarily due to a $5.0 million milestone payment to VaxInnate Corporation in the third quarter of 2015. The decrease in expense for our Anthrasil program was primarily due to the timing of plasma collection services. The decrease in expense for our BAT program was primarily related to stability testing and plasma collection. The decrease in expense for EV-035 series of molecules was primarily due to pharmacologic and formulation activities and a third quarter 2015 non-cash impairment charge of $9.8 million due to toxicity related issues, partially offset by a net decrease of $3.3 million (2016 vs. 2015) for the contingent consideration associated with the estimated timing and probability of achievement for certain development and regulatory milestones. The increase in expense for CIADM task orders awarded was primarily due to manufacturing development of Ebola monoclonal antibodies. The increase in expense for VIGIV was primarily due to the timing of plasma collection. The increase in expense for Emergard was primarily for device and cartridge supply development. The decrease in spending for our Other activities was primarily for manufacturing development activities.

Selling, General and Administrative Expenses

Selling, general and administrative expenses increased by $22.6 million, or 19%, to $143.7 million for 2016 from $121.1 million for 2015. The increase includes costs associated with the restructuring activities at our Lansing, Michigan site, increased professional services to support our strategic growth initiatives, and increased information technology investments.

Total Other Expense

Total net other expense increased by $0.5 million, or 9%, to $6.3 million for 2016 from $5.8 million for 2015. The increase was primarily attributable to a $0.5 million payment to the Internal Revenue Service for interest related to the audit of 2009 and 2010 federal income tax returns.

Income Taxes

Provision for income taxes decreased by $7.6 million, or 17%, to $36.7 million for 2016 from $44.3 million for 2015. The provision for income taxes for 2016 resulted primarily from our income before provision for income taxes of $99.2 million and an effective annual tax rate of approximately 37%. The provision for income taxes for 2015 resulted primarily from our income before provision for income taxes of $135.7 million and an effective annual tax rate of approximately 33%. The provision for income taxes for 2016 and 2015 reflects net tax credits associated with research and developments activities of $1.6 million and $4.8 million, respectively. The increase in the effective annual tax rate is primarily related to tax on the sale, within our consolidated group, of assets from Canadian subsidiaries to U.S. subsidiaries in preparation of the spin-off of Aptevo, and a valuation allowance charge recorded in its continuing operations related to Aptevo deferred tax assets prior to the distribution. We determined that upon spin-off, the deferred tax assets of Aptevo would be

unrealizable. The increase in the effective annual tax rate as a result of the above was partially offset by a release of valuation allowances associated with Canadian Scientific Research and Experimental Development tax credits.

Year Ended December 31, 2015 Compared to Year Ended December 31, 2014

Revenues

(in thousands)	Year ended December 31, 2015	2014	Change	% Change
Product sales:				
BioThrax	$ 293,921	$ 245,905	$ 48,016	20%
Other	35,048	35,940	(892)	(2%)
Total product sales	328,969	281,845	47,124	17%
Contract manufacturing	42,968	30,944	12,024	39%
Contracts and grants	117,394	91,677	25,717	28%
Total revenues	$ 489,331	$ 404,466	$ 84,865	21%

Product sales:

The increase in BioThrax sales was primarily due to the timing of deliveries under our contract with the CDC. BioThrax product sales revenues during the year ended December 31, 2015 consisted of sales to the CDC of $292.8 million and aggregate international and other sales of $1.1 million. BioThrax product sales revenues during the year ended December 31, 2014 consisted primarily of BioThrax sales to the CDC of $242.2 million and aggregate international and other sales of $3.7 million.

Contract manufacturing:

The increase in contract manufacturing revenues was primarily due to a full year of revenues from our fill/finish facility in Baltimore and our plasma based manufacturing facility in Winnipeg, both of which we acquired in February 2014. In addition, contract manufacturing revenue increased by $3.8 million due to services related to the production of an MVA Ebola vaccine candidate.

Contracts and grants:

The increase in Contracts and grants revenues was primarily due to the following:

§ increased development funding of $11.0 million for our Anthrasil program, related to plasma collection;
§ increased development funding of $9.4 million related to our CIADM program, including a $5.0 million milestone payment from BARDA and $3.0 million from new CIADM task orders; and
§ increased development funding of $4.3 million for VIGIV related to plasma collection.

Cost of Product Sales and Contract Manufacturing

Cost of product sales and contract manufacturing increased by $5.5 million, or 5%, to $107.5 million for 2015 from $102.0 million for 2014. Cost of product sales and contract manufacturing increased primarily due to an increase in the number of BioThrax doses delivered to the CDC, partially offset by decreased costs from RSDL due primarily to the related decrease in sales revenue.

Research and Development Expense

Research and development expenses increased by $14.5 million, or 14%, to $119.2 million for 2015 from $104.7 million for 2014. This increase primarily reflects higher contract service costs. Net of contracts and grants revenues, we incurred research and development expenses of $1.8 million and $13.0 million, during 2015 and 2014, respectively.

Our principal research and development expenses for 2015 and 2014 are shown in the following table:

(in thousands)	Year ended December 31, 2015	2014	Change	% Change
Large-scale manufacturing for BioThrax	$ 9,911	$ 13,625	$ (3,714)	(27%)
BioThrax related programs	3,511	7,157	(3,646)	(51%)
PreviThrax	7,152	10,737	(3,585)	(33%)
NuThrax	12,560	9,428	3,132	33%
Pandemic influenza	6,583	469	6,114	1,304%
Anthrasil	25,986	19,513	6,473	33%
BAT	4,867	7,351	(2,484)	(34%)
EV-035 series of molecules	6,801	-	6,801	N/A
CIADM task orders	2,957	-	2,957	N/A
VIGIV	3,060	737	2,323	315%
Emergard	4,643	-	4,643	N/A
Other	31,155	35,704	(4,549)	(13%)
Total	$ 119,186	$ 104,721	$ 14,465	14%

The decrease in expense for large-scale manufacturing for BioThrax was primarily due to the timing of manufacturing development activities. The decrease in expense for BioThrax related programs primarily reflects the timing of clinical studies to support applications for label expansion for BioThrax. The decrease in expense for PreviThrax was primarily due to the timing of non-clinical studies and in light of reduced funding by the U.S. government for this product candidate, we determined to cease further development work on our PreviThrax vaccine and expect the spending for PreviThrax will be minimal in the future. The increase in expense for NuThrax was primarily due to increased clinical trial activities. The increase in expense for Pandemic influenza was primarily due to a milestone payment to VaxInnate Corporation. The increase in expense for our Anthrasil program was primarily due to plasma collection services. The decrease in expense for our Botulinum antitoxin program was primarily for stability testing and the timing of plasma collection. The expense for MVA Ebola was primarily due to process development. The expense for EV-035 series of molecules, acquired in December 2014, was primarily due to

pharmacologic and formulation activities and a non-cash impairment charge of $9.8 million due to toxicity related issues, partially offset by a $6.3 million reduction of future contingent consideration payable, associated with the estimated timing and probability of achievement for certain development and regulatory milestones, and reduced projected future sales of EV-035. The expense for CIADM task orders awarded in 2015 was primarily due to manufacturing development for a monoclonal antibody. The increase in expense for VIGIV was primarily for plasma collection and stability testing. The expense for Emergard was primarily for device and cartridge supply development. The decrease in spending for our Other activities was primarily due to decreased expense related to our funded pre-clinical product candidates and manufacturing development activities.

Selling, General and Administrative Expenses

Selling, general and administrative expenses increased by $12.5 million, or 12%, to $121.1 million for 2015 from $108.6 million for 2014. The increase includes additional post-acquisition selling, general and administrative costs associated with the operations acquired through the acquisition of Cangene in February 2014, along with increased professional services to support our strategic growth initiatives.

Total Other Expense

Total net other expense increased by $0.8 million, or 16%, to $5.8 million for 2015 from $5.0 million for 2014. The increase was primarily attributable to a $2.7 million decrease in rental income partially offset by a $1.8 million charge for debt issuance costs associated with the termination of our $125 million term loan facility in 2014.

Income Taxes

Provision for income taxes increased by $14.4 million, or 48%, to $44.3 million for 2015 from $29.9 million for 2014. The provision for income taxes for 2015 resulted primarily from our income before provision for income taxes of $135.7 million and an effective annual tax rate of approximately 33%. The provision for income taxes for 2014 resulted primarily from our income before provision for income taxes of $84.2 million and an effective annual tax rate of approximately 36%. The provision for income taxes for 2015 and 2014 reflects net tax credits associated with research and developments activities of $4.8 million and $6.0 million, respectively.

Liquidity and Capital Resources

Sources of Liquidity

From inception through 2016, we have funded our cash requirements principally with a combination of revenues from sales of BioThrax, debt financing, development funding from government entities, non-government and philanthropic organizations, and collaborative partners, the net proceeds from our initial public offering and the sale of our common stock upon exercise of stock options. We have operated profitably for each of the five years ended December 31, 2016. As of December 31, 2016, we had cash and cash equivalents of $271.5 million.

At the closing of the spin-off of Aptevo, we provided to Aptevo cash of $45 million from our cash reserves, along with a commitment in the form of a promissory note to provide another $20 million in funding, which we paid in January 2017.

Cash Flows

The following table provides information regarding our cash flows for the years ended December 31, 2016, 2015 and 2014.

	Year ended December 31,		
(in thousands)	**2016**	**2015**	**2014**
Net cash provided by (used in):			
Operating activities(1)	$ 53,616	$ 44,309	$ 112,339
Investing activities	(76,257)	(45,462)	(210,052)
Financing activities	(18,641)	33,449	198,874
Net (decrease) increase in cash and cash equivalents	$ (41,282)	$ 32,296	$ 101,161

(1) Includes the effect of exchange rate changes on cash and cash equivalents.

Net cash provided by operating activities of $53.6 million in 2016 was primarily due to our net income of $51.8 million, non-cash charges of $38.2 million for depreciation and amortization and $18.5 million for stock-based compensation, partially offset by an increase in accounts receivable of $22.4 million related to the timing of collection of amounts billed primarily to the CDC, a decrease in accounts payable of $14.8 million due to unpaid balances associated with ADM and a $9.0 million increase in inventory primarily due to an increase in BioThrax inventory.

Net cash provided by operating activities of $44.3 million in 2015 was primarily due to our net income of $62.9 million, non-cash charges of $35.3 million for depreciation and amortization, $15.8 million for stock-based compensation and an increase in accounts payable of $4.7 million associated with increased infrastructure activities and spin-off related liabilities, partially offset by an increase in accounts receivable of $64.4 million related to the timing of collection of amounts billed primarily to the CDC and a $11.3 million increase in inventory due to raw material purchases for RSDL.

Net cash provided by operating activities of $112.3 million in 2014 was primarily due to our net income of $36.7 million, a decrease in accounts receivable of $21.4 million related to the timing of collection of amounts billed primarily to the CDC, along with the effect of non-cash charges of $12.8 million for stock-based compensation and $32.5 million for depreciation and amortization.

Net cash used in investing activities of $76.3 million in 2016 was primarily due to our expansion at Bayview CIADM site along with software, infrastructure and equipment investments.

Net cash used in investing activities of $45.5 million in 2015 was primarily due to software, infrastructure and equipment investments.

Net cash used in investing activities of $210.1 million in 2014 was primarily due to the acquisition of Cangene for $177.9 million, which is net of $43.6 million of acquired cash, and capital expenditures of $30.7 million for infrastructure and equipment investments.

Net cash used by financing activities of $18.6 million in 2016 was primarily due to $45.0 million in cash provided to Aptevo on date of distribution, August 1, 2016 that is partially offset by $17.1 million in proceeds from the issuance of common stock pursuant to employee equity plans and $10.6 million in excess tax benefits from exercise of stock options.

Net cash provided by financing activities of $33.4 million in 2015 was primarily due to $26.0 million in proceeds from the issuance of common stock pursuant to employee equity plans, $11.3 million in excess tax benefits from the exercise of stock options and $2.0 million in proceeds from long-term indebtedness, partially offset by $5.7 million in contingent obligation payments.

Net cash provided by financing activities of $198.9 million in 2014 was primarily due to net proceeds from our Notes of $241.6 million, $14.1 million in proceeds from the issuance of common stock pursuant to employee equity plans and $6.0 million in excess tax benefits from the exercise of stock options, partially offset by a principal payment on indebtedness of $62.0 million under our revolving credit facility.

Contractual Obligations

The following table summarizes our contractual obligations at December 31, 2016:

	Payments due by period				
(in thousands)	Total	Less than 1 year	1 to 3 Years	3 to 5 Years	More than 5 years
Contractual obligations:					
2.875% Convertible Senior Notes due 2021 (Notes)	$ 250,000	$ -	$ -	$ 250,000	$ -
Contractual interest due on Notes	29,048	7,188	14,376	7,484	-
Long-term indebtedness (excluding Notes)	3,000	-	-	-	3,000
Purchase commitments	3,000	3,000	-	-	-
Total contractual obligations	$ 285,048	$ 10,188	$ 14,376	$ 257,484	$ 3,000

There are a number of uncertainties that we face in the development of new product candidates that prevent us from making a reasonable estimate of the cash obligations under our material license agreements. Because of these uncertainties, the preceding table excludes contingent contractual payments that we may become obligated to make under such agreements. These agreements typically provide for the payment of milestone fees upon achievement of specified research, development and commercialization milestones, such as the commencement of clinical trials, the receipt of funding awards, the receipt of regulatory approvals, and the achievement of sales milestones. The amount of contingent contractual milestone payments that we may become obligated to make is variable based on the actual achievement and timing of the applicable milestones and the characteristics of any products or product candidates that are developed, including factors such as number of products or product candidates developed, type and number of components of each product or product candidate, ownership of the various components and the specific markets affected. The aggregate payments could be as much as approximately $155 million. The success of our efforts to commercialize our product candidates is highly uncertain and depends on many factors, including those set forth in "*Risk Factors —Our business depends on our success in developing and commercializing our product candidates. If we are unable to commercialize these product candidates, or experience significant delays or unanticipated costs in doing so, our business would be materially and adversely affected."* Even if these efforts are successful, the timing of success is highly unpredictable and variable. The same is true for any contingent contractual royalty payments that we may be obligated to make upon successful commercialization of these product candidates. We do not expect that any such payments would have an adverse effect on our financial position, operations and capital resources because, if payable, we expect that the benefits associated with the achievement of the relevant milestones or the achievement of revenue would offset the burden of making these payments. We are not obligated to pay any minimum royalties under our existing contracts. Deferred income taxes and liabilities for unrecognized income tax benefits are excluded from the above table since they are not contractually fixed as to timing and amount.

Debt Financing

On January 29, 2014, the Company issued $250.0 million aggregate principal amount of 2.875% Convertible Senior Notes due 2021 (the "Notes"). The Notes mature on January 15, 2021, unless earlier purchased by the Company or converted. The original conversion rate was equal to 30.8821 shares of common stock per $1,000 principal amount of notes (which is equivalent to a conversion price of approximately $32.38 per share of common stock). The conversion rate is subject to adjustment upon the occurrence of certain specified events but will not be adjusted for accrued and unpaid interest. As of August 1, 2016, certain conversion features were triggered due to the completion of the Aptevo spin-off. The conversion rate under the Notes was adjusted in accordance with the terms of the indenture. Effective August 12, 2016, the conversion rate was adjusted to 32.3860 shares of common stock per $1,000 principal amount of notes (which is equivalent to a conversion price of approximately $30.88 per share of common stock).

On December 11, 2013, we entered into a senior secured credit agreement, or the Credit Agreement, with the three lending financial institutions. The Credit Agreement provides for a revolving credit facility of up to $100.0 million through December 11, 2018, or such earlier date required by the terms of the Credit Agreement. As of December 31, 2016 and 2015, no amounts were drawn under the revolving credit facility.

Our payment obligations under the Credit Agreement are secured by a lien on substantially all of our assets, including the stock of all of the our subsidiaries, and the assets of the subsidiary guarantors, including mortgages over certain of their real properties, including our large-scale vaccine manufacturing facility in Lansing, Michigan and our CIADM facility in Baltimore, Maryland. Under the Credit Agreement, we are required to make quarterly interest payments calculated using a combination of conventional base-rate measures plus a margin over those rates. The base rates consist of LIBOR rates and prime rates. The actual rates will depend on the level of these underlying rates plus a margin based on our leverage, on a consolidated basis, from quarter to quarter.

The Credit Agreement, as amended, contains affirmative and negative covenants customary for financings of this type. Negative covenants in the Credit Agreement, among other things, limit our ability to incur indebtedness and liens; dispose of assets; make investments including loans, advances or guarantees; and enter into certain mergers or similar transactions. The Credit Agreement also contains financial covenants, tested quarterly and in connection with any triggering events under the Credit Agreement: (1) a minimum consolidated debt service coverage ratio of 2.50 to 1.00, (2) a maximum consolidated leverage ratio of 3.50 to 1.00 and (3) a minimum liquidity requirement of $50.0 million. Upon the occurrence and continuance of an event of default under the Credit Agreement, the commitments of the lenders to make loans under the Credit Agreement may be terminated and our payment obligations under the Credit Agreement may be accelerated. The events of default under the Credit Agreement include, among others, subject in some cases to specified cure periods, payment defaults; inaccuracy of representations and warranties in any material respect; defaults in the observance or performance of covenants; bankruptcy and insolvency related defaults; the entry of a final judgment in excess of a threshold amount; change of control; and the invalidity of loan documents relating to the Credit Agreement.

Funding Requirements

We expect to continue to fund our anticipated operating expenses, capital expenditures, debt service requirements and any future repurchase of our common stock from the following sources: existing cash and cash equivalents; revenues from product sales; development contracts and grants funding; contract manufacturing services and our revolving credit facility and any other lines of credit we may establish from time to time. There are numerous risks and uncertainties associated with product sales and with the development and commercialization of our product candidates. We may seek additional external financing to provide additional financial flexibility. Our future capital requirements will depend on many factors, including (but not limited to):

- our ability to deliver doses under our new BioThrax procurement contract;
- the level, timing and cost of product sales;
- the extent to which we acquire or invest in and integrate companies, businesses, products or technologies;
- the acquisition of new facilities and capital improvements to new or existing facilities;
- the payment obligations under our indebtedness;
- the scope, progress, results and costs of our development activities;
- our ability to obtain funding from collaborative partners, government entities and non-governmental organizations for our development programs;
- the extent to which we repurchase our common stock under our share repurchase program; and
- the costs of commercialization activities, including product marketing, sales and distribution.

If our capital resources are insufficient to meet our future capital requirements, we will need to finance our cash needs through public or private equity or debt offerings, bank loans or collaboration and licensing arrangements. In May 2015, we filed an automatic shelf registration statement, which immediately became effective under SEC rules. For so long as we continue to satisfy the requirements to be deemed a "well-known seasoned issuer" under SEC rules, this shelf registration statement, effective until May 2018, allows us to issue an unrestricted amount of equity, debt and certain other types of securities through one or more future primary or secondary offerings. If we raise funds by issuing equity securities, our stockholders may experience dilution. Public or bank debt financing, if available, may involve agreements that include covenants, like those contained in our senior secured revolving credit facility, which could limit or restrict our ability to take specific actions, such as incurring additional debt, making capital expenditures, pursuing acquisition

opportunities, buying back shares or declaring dividends. If we raise funds through collaboration and licensing arrangements with third parties, it may be necessary to relinquish valuable rights to our technologies or product candidates or grant licenses on terms that may not be favorable to us.

We are not restricted under the terms of the indenture governing our senior convertible notes from incurring additional debt, securing existing or future debt, recapitalizing our debt or taking a number of other actions that are not limited by the terms of the indenture governing our notes that could have the effect of diminishing our ability to make payments on our indebtedness. However, our credit facility restricts our ability to incur additional indebtedness, including secured indebtedness.

Current economic conditions may make it difficult to obtain financing on attractive terms, or at all. If financing is unavailable or lost, our business, results of operations and financial condition would be adversely affected and we could be forced to delay, reduce the scope of or eliminate many of our planned activities.

Share Repurchase Program

On July 14, 2016, our board of directors authorized our management to repurchase, from time to time, up to an aggregate of up to $50 million of our common stock under a board-approved share repurchase program. The timing, amount, and price of any repurchases will be made pursuant to one or more 10b5-1 plans. The term of the board authorization of the repurchase program is until December 31, 2017. The plan will permit shares to be repurchased when we might otherwise be precluded from doing so based upon insider trading laws. The repurchase program may be suspended or discontinued at any time. Any repurchased shares will be available for use in connection with our stock plans and for other corporate purposes. As of December 31, 2016, we have neither implemented a repurchase plan nor repurchased any shares under this program.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Our exposure to market risk is currently confined to our cash and cash equivalents. We currently do not hedge interest rate exposure or foreign currency exchange exposure, and the movement of foreign currency exchange rates could have an adverse or positive impact on our results of operations. We have not used derivative financial instruments for speculation or trading purposes. Because of the short-term maturities of our cash and cash equivalents, we believe that an increase in market rates would likely not have a significant impact on the realized value of our investments, but any increase in market rates would likely increase the interest expense associated with our debt.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTRY DATA

Report of Ernst & Young LLP,
Independent Registered Public Accounting Firm,
on the Audited Consolidated Financial Statements

The Board of Directors and Stockholders of Emergent BioSolutions Inc. and subsidiaries

We have audited the accompanying consolidated balance sheets of Emergent BioSolutions Inc. and subsidiaries as of December 31, 2016 and 2015, 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, 2016. Our audits also included the financial statement schedule listed in the Index at Item 15(a). These financial statements and schedule are the responsibility of the Company's management. Our responsibility is to express an opinion on these financial statements and schedule based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Emergent BioSolutions Inc. and subsidiaries at December 31, 2016 and 2015, and the consolidated results of their operations and their cash flows for each of the three years in the period ended December 31, 2016, in conformity with U.S. generally accepted accounting principles. Also, in our opinion, the related financial statement schedule, when considered in relation to the basic financial statements taken as a whole, presents fairly in all material respects the information set forth therein.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), Emergent BioSolutions Inc. and subsidiaries' internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control-Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 27, 2017 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

McLean, Virginia
February 27, 2017

Emergent BioSolutions Inc. and Subsidiaries
Consolidated Balance Sheets
(in thousands, except share and per share data)

	December 31, 2016	December 31, 2015
ASSETS		
Current assets:		
Cash and cash equivalents	$ 271,513	$ 308,304
Accounts receivable, net	138,478	113,906
Inventories	74,002	60,887
Income tax receivable, net	9,996	6,573
Prepaid expenses and other current assets	16,229	18,458
Current assets of discontinued operations	-	29,282
Total current assets	510,218	537,410
Property, plant and equipment, net	376,448	327,808
In-process research and development	-	701
Intangible assets, net	33,865	40,758
Goodwill	41,001	41,001
Deferred tax assets, net	6,096	11,286
Other assets	2,483	2,155
Non-current assets of discontinued operations	-	76,365
Total assets	$ 970,111	$ 1,037,484
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 34,649	$ 37,970
Accrued expenses and other current liabilities	6,368	6,207
Accrued compensation	34,537	31,998
Notes payable	20,000	-
Contingent consideration, current portion	3,266	2,109
Deferred revenue, current portion	7,036	3,979
Current liabilities of discontinued operations	-	17,348
Total current liabilities	105,856	99,611
Contingent consideration, net of current portion	9,919	23,046
Long-term indebtedness	248,094	246,892
Deferred revenue, net of current portion	8,433	3,426
Other liabilities	1,604	1,258
Non-current liabilities of discontinued operations	-	3,234
Total liabilities	373,906	377,467
Commitments and contingencies		
Stockholders' equity:		
Preferred stock, $0.001 par value; 15,000,000 shares authorized, 0 shares issued and outstanding at both December 31, 2016 and December 31, 2015	-	-
Common stock, $0.001 par value; 200,000,000 shares authorized, 40,996,890 shares issued and 40,574,060 shares outstanding at December 31, 2016; 100,000,000 shares authorized, 39,829,408 shares issued and 39,406,578 shares outstanding at December 31, 2015	41	40
Treasury stock, at cost, 422,830 common shares at both December 31, 2016 and 2015	(6,420)	(6,420)
Additional paid-in capital	352,435	317,971
Accumulated other comprehensive loss	(4,331)	(2,713)
Retained earnings	254,480	351,139
Total stockholders' equity	596,205	660,017
Total liabilities and stockholders' equity	$ 970,111	$ 1,037,484

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

Emergent BioSolutions Inc. and Subsidiaries
Consolidated Statements of Operations
(in thousands, except share and per share data)

	Year Ended December 31,		
	2016	**2015**	**2014**
Revenues:			
Product sales	$ 296,278	$ 328,969	$ 281,845
Contract manufacturing	49,138	42,968	30,944
Contracts and grants	143,366	117,394	91,677
Total revenues	488,782	489,331	404,466
Operating expenses:			
Cost of product sales and contract manufacturing	131,284	107,486	101,963
Research and development	108,290	119,186	104,721
Selling, general and administrative	143,686	121,145	108,594
Income from operations	105,522	141,514	89,188
Other income (expense):			
Interest income	1,053	572	320
Interest expense	(7,617)	(6,523)	(8,240)
Other income (expense), net	263	153	2,926
Total other expense, net	(6,301)	(5,798)	(4,994)
Income from continuing operations before provision for income taxes	99,221	135,716	84,194
Provision for income taxes	36,697	44,300	29,928
Net income from continuing operations	62,524	91,416	54,266
Net loss from discontinued operations	(10,748)	(28,546)	(17,525)
Net income	$ 51,776	$ 62,870	$ 36,741
Net income per share from continuing operations-basic	$ 1.56	$ 2.37	$ 1.45
Net loss per share from discontinued operations-basic	(0.27)	(0.74)	(0.47)
Net income per share-basic	$ 1.29	$ 1.63	$ 0.98
Net income per share from continuing operations-diluted	$ 1.35	$ 2.02	$ 1.26
Net loss per share from discontinued operations-diluted	(0.22)	(0.61)	(0.38)
Net income per share-diluted (1)	$ 1.13	$ 1.41	$ 0.88
Weighted-average number of shares - basic	40,184,159	38,595,435	37,344,891
Weighted-average number of shares - diluted	49,335,112	47,255,842	45,802,807

(1) See Note 15 "Earnings per share" for details on calculation.

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

Emergent BioSolutions Inc. and Subsidiaries
Consolidated Statements of Comprehensive Income
(in thousands)

	December 31,		
	2016	**2015**	**2014**
Net income	$ 51,776	$ 62,870	$ 36,741
Foreign currency translations, net of tax	(1,618)	295	457
Comprehensive income	$ 50,158	$ 63,165	$ 37,198

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

Emergent BioSolutions Inc. and Subsidiaries
Consolidated Statements of Cash Flows
(in thousands)

	Year Ended December 31,		
	2016	2015	2014
Cash flows from operating activities:			
Net income	$ 51,776	$ 62,870	$ 36,741
Adjustments to reconcile to net cash provided by (used in) operating activities:			
Stock-based compensation expense	18,477	15,848	12,829
Depreciation and amortization	38,229	35,335	32,453
Income taxes	5,190	3,464	16,493
Change in fair value of contingent obligations	(10,838)	(10,599)	3,133
Write off of debt issuance costs	-	-	1,831
Impairment of intangible assets (including IPR&D)	701	9,827	-
Impairment and abandonment of long-lived assets	5,569	1,147	-
Bad debt expense	-	3,481	-
Excess tax benefits from stock-based compensation	(10,619)	(11,281)	(5,987)
Other	452	271	1,284
Changes in operating assets and liabilities:			
Accounts receivable	(22,446)	(64,351)	21,405
Inventories	(9,026)	(11,262)	4,229
Income taxes	(4,560)	(3,550)	(4,711)
Prepaid expenses and other assets	(2,089)	2,319	(8,472)
Accounts payable	(14,791)	4,749	(9,279)
Accrued expenses and other liabilities	624	45	2,685
Accrued compensation	2,236	2,680	4,539
Provision for chargebacks	-	(8)	299
Deferred revenue	4,602	3,474	2,846
Net cash provided by operating activities	53,487	44,459	112,318
Cash flows from investing activities:			
Purchases of property, plant and equipment	(76,257)	(44,812)	(30,673)
Acquisitions, net of acquired cash	-	(650)	(179,379)
Net cash used in investing activities	(76,257)	(45,462)	(210,052)
Cash flows from financing activities:			
Proceeds from convertible debenture, net of bank fees	-	-	241,588
Proceeds from long-term debt obligations	-	2,000	1,000
Issuance of common stock upon exercise of stock options	17,125	25,961	14,078
Excess tax benefits from stock-based compensation	10,619	11,281	5,987
Principal payments on long-term indebtedness	-	-	(62,000)
Distribution to Aptevo	(45,000)	-	-
Contingent obligation payments	(1,385)	(5,693)	(1,579)
Purchase of treasury stock	-	(100)	(200)
Net cash (used in) provided by financing activities	(18,641)	33,449	198,874
Effect of exchange rate changes on cash and cash equivalents	129	(150)	21
Net (decrease) increase in cash and cash equivalents	(41,282)	32,296	101,161
Cash and cash equivalents at beginning of year	312,795	280,499	179,338
Cash and cash equivalents at end of year	$ 271,513	$ 312,795	$ 280,499
Supplemental disclosure of cash flow information:			
Cash paid during the year for interest	$ 8,210	$ 7,751	$ 3,761
Cash paid during the year for income taxes	$ 10,081	$ 28,271	$ 4,711
Supplemental information on non-cash investing and financing activities:			
Purchases of property, plant and equipment unpaid at year end	$ 13,459	$ 4,379	$ 5,394

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

Emergent BioSolutions Inc. and Subsidiaries
Consolidated Statement of Changes in Stockholders' Equity
(in thousands, except share and per share data)

	$0.001 Par Value Common Stock		Additional Paid-In	Treasury Stock		Accumulated Other Comprehensive	Noncontrolling Interest	Retained	Total Stockholders'
	Shares	Amount	Capital	Shares	Amount	Loss	in Subsidiary	Earnings	Equity
Balance at December 31, 2013	37,036,996	$ 37	$ 247,637	(412,953)	$ (6,119)	$ (3,465)	$ (453)	$ 251,528	$ 489,165
Employee equity award plans activity	1,092,876	1	26,585	-	-	-	-	-	26,586
Non-cash development expenses from joint venture	-	-	-	-	-	-	453	-	453
Treasury stock	-	-	-	(7,236)	(201)	-	-		(201)
Net income	-	-	-	-	-	-	-	36,741	36,741
Foreign currency translation, net of tax	-	-	-	-	-	457	-	-	457
Balance at December 31, 2014	38,129,872	$ 38	$ 274,222	(420,189)	$ (6,320)	$ (3,008)	$ -	$ 288,269	$ 553,201
Employee equity award plans activity	1,699,536	2	43,749			-	-	-	43,751
Treasury stock	-	-	-	(2,641)	(100)	-	-		(100)
Net income	-	-	-	-	-	-	-	62,870	62,870
Foreign currency translation, net of tax	-	-	-	-	-	295	-	-	295
Balance at December 31, 2015	39,829,408	$ 40	$ 317,971	(422,830)	$ (6,420)	$ (2,713)	$ -	$ 351,139	$ 660,017
Employee equity award plans activity	1,167,482	1	34,464	-	-	-	-	-	34,465
Separation of Aptevo	-	-	-	-	-	-	-	(148,435)	(148,435)
Treasury stock	-	-	-	-	-	-	-		-
Net income	-	-	-	-	-	-	-	51,776	51,776
Foreign currency translation, net of tax	-	-	-	-	-	(1,618)	-	-	(1,618)
Balance at December 31, 2016	40,996,890	$ 41	$ 352,435	(422,830)	$ (6,420)	$ (4,331)	$ -	$ 254,480	$ 596,205

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

Emergent BioSolutions Inc. and Subsidiaries
Notes to consolidated financial statements

1. Nature of the business and organization

Organization and business

Emergent BioSolutions Inc. (the "Company" or "Emergent") is a global life sciences company seeking to protect and enhance life by focusing on providing specialty products for civilian and military populations that address accidental, intentional and naturally emerging public health threats. The Company is focused on developing, manufacturing and commercializing medical countermeasures, or MCM, that address public health threats, or PHTs. The PHTs that the Company is addressing fall into two categories: Chemical, Biological, Radiological and Nuclear, or CBRN, as well as explosive-related threats; and emerging infectious diseases, or EID.

We have a portfolio of six revenue-generating products, as well as a pipeline of various investigational stage product candidates addressing select aspects of CBRN and EID threats. The U.S. government is the primary purchaser of our products and provides us with substantial funding for the development of many of our product candidates. A unique attribute of our investigational stage product portfolio is that many of our candidates are under an active development contract with significant funding from the U.S. government.

Our marketed products are:

- § BioThrax® (Anthrax Vaccine Adsorbed), the only vaccine licensed by the U.S. Food and Drug Administration, or the FDA, for the general use prophylaxis and post-exposure prophylaxis of anthrax disease in combination with appropriate anti-bacterial drugs. BioThrax is also licensed in Singapore and by the Paul-Ehrlich-Institut of the German Federal Ministry of Health for general use prophylaxis of anthrax disease;
- § Anthrasil® [Anthrax Immune Globulin Intravenous (Human)], the only polyclonal antibody therapeutic licensed by the FDA for the treatment of inhalational anthrax;
- § BAT® [Botulism Antitoxin Heptavalent (A,B,C,D,E,F,G)- (Equine)], the only heptavalent therapeutic licensed by the FDA and Health Canada for the treatment of botulinum disease;
- § VIGIV [Vaccinia Immune Globulin Intravenous (Human)], the only therapeutic licensed by the FDA to address certain complications from smallpox vaccination;
- § RSDL® (Reactive Skin Decontamination Lotion Kit), the only device cleared by the FDA to remove or neutralize chemical warfare agents and T-2 toxins from the skin; and
- § Trobigard™ (atropine sulfate, obidoxime chloride), an auto-injector device designed for intramuscular self-injection of atropine sulfate and obidoxime chloride, a nerve agent countermeasure. This product has not been approved by the FDA or any other regulatory agency, is not promoted or distributed in the U.S., and is only sold to non-U.S. authorized government buyers.

We also provide contract manufacturing services to third-party customers. We perform pharmaceutical product development and filling services for injectable and other sterile products, as well as process design, technical transfer, manufacturing validation, laboratory support, aseptic filling, lyophilization, final packaging and accelerated and ongoing stability studies.

Aptevo spin-off

On August 6, 2015, the Company announced its plan to separate into two independent publicly-traded companies. On August 1, 2016, the Company accomplished this plan through the completion of the spin-off of Aptevo Therapeutics Inc. ("Aptevo"), a biotechnology company focused on novel oncology and hematology therapeutics to meaningfully improve patients' lives.

2. Summary of significant accounting policies

Basis of presentation and consolidation

The accompanying consolidated financial statements include the accounts of Emergent and its wholly owned and majority owned subsidiaries. All significant intercompany accounts and transactions have been eliminated in consolidation.

In anticipation of the spin-off, the Company realigned certain components of its biosciences business to the new Aptevo segment to be consistent with how the Company's chief operating decision maker ("CODM") allocates resources and makes decisions about the operations of the Company. Effective January 1, 2016, the Company changed its segment presentation to reflect this new structure, and recast all prior periods presented to conform to the new presentation. On August 1, 2016, the Company completed the spin-off of Aptevo. As of December 31, 2016, the results of operations and financial position of Aptevo are reflected as discontinued operations for all periods presented through the date of the spin-off. The historical financial statements and footnotes have been revised accordingly. See Note 3. "Discontinued operations" for further details regarding the spin-off. For periods following the spin-off, the Company reports financial results under one business segment.

Use of estimates

The preparation of financial statements in conformity with accounting principles generally accepted in the United States requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

Cash and cash equivalents

Cash equivalents are highly liquid investments with a maturity of 90 days or less at the date of purchase and consist of time deposits and investments in money market funds with commercial banks and financial institutions. Also, the Company maintains cash balances with financial institutions in excess of insured limits. The Company does not anticipate any losses with such cash balances.

Fair value of measurements

The Company measures and records cash equivalents and investment securities considered available-for-sale at fair value in the accompanying financial statements. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability, an exit price, in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Valuation techniques used to measure fair value must maximize the use of observable inputs and minimize the use of unobservable inputs. The three-tier fair value hierarchy, which prioritizes the inputs used in measuring fair value include:

Level 1 —	Observable inputs for identical assets or liabilities such as quoted prices in active markets;
Level 2 —	Inputs other than quoted prices in active markets that are either directly or indirectly observable; and
Level 3 —	Unobservable inputs in which little or no market data exists, which are therefore developed by the Company using estimates and assumptions that reflect those that a market participant would use.

The carrying amounts of the Company's short-term financial instruments, which include cash and cash equivalents, accounts receivable and accounts payable, approximate their fair values due to their short maturities.

Significant customers and accounts receivable

The Company has derived a majority of its revenue from sales of BioThrax under contracts with the U.S. government. The Company's current Centers for Disease Control ("CDC"), an operating division of the U.S. Department of Health and Human Services ("HHS"), contract does not necessarily increase the likelihood that it will secure future comparable contracts with the U.S. government. The Company expects that a significant portion of the business that it will seek in the near future, in particular for BioThrax, will be under government contracts that present a number of risks that are not typically present in the commercial contracting process. U.S. government contracts for BioThrax are subject to unilateral termination or modification by the government. The Company may fail to achieve significant sales of BioThrax to customers in addition to the U.S. government, which would harm its growth opportunities. The Company may not be able to sustain or increase profitability. The Company may not be able to manufacture BioThrax consistently in accordance with FDA specifications.

For the years ended December 31, 2016, 2015 and 2014, the Company's primary customer was the HHS. For the years ended December 31, 2016, 2015 and 2014, revenues from HHS and HHS agencies comprised 83%, 86% and 83%, respectively, of total revenues. As of December 31, 2016 and 2015, the Company's accounts receivable balances were comprised of 83% and 83%, respectively, from this customer. The overall increase in the percentage of accounts receivable attributed to HHS was due primarily to the timing of payments received for BioThrax product sales under the Company's contract with the CDC. As of December 31, 2016 and 2015, unbilled accounts receivable, which is included in accounts receivable, were $48.0 million and $18.2 million, respectively. Unbilled accounts receivable relates to various service contracts for which work has been performed, though invoicing has not yet occurred. Accounts receivable are stated at invoice amounts and consist primarily of amounts due from the U.S. government, as well as amounts due under reimbursement contracts with other government entities and non-government organizations. If necessary, the Company records a provision for doubtful receivables to allow for any amounts which may be unrecoverable. This provision is based upon an analysis of the Company's prior collection experience, customer creditworthiness and current economic trends.

Concentrations of credit risk and uncertainties

Financial instruments that potentially subject the Company to concentrations of credit risk consist primarily of cash and cash equivalents and accounts receivable. The Company places its cash and cash equivalents with high quality financial institutions. Management believes that the financial risks associated with its cash and cash equivalents are minimal. Because accounts receivable consist primarily of amounts due from the U.S. government for product sales and from government agencies under government grants and development contracts, management deems there to be minimal credit risk.

Inventories

Inventories are stated at the lower of cost or net realizable value with cost being determined using a standard cost method, which approximates average cost. Average cost consists primarily of material, labor and manufacturing overhead expenses (including fixed production-overhead costs) and includes the services and products of third party suppliers. The Company analyzes its inventory levels quarterly and writes down, in the applicable period, inventory that has become obsolete, inventory that has a cost basis in excess of its expected net realizable value and inventory in excess of expected customer demand. The Company also writes off, in the applicable period, the costs related to expired inventory. Costs of purchased inventories are recorded using weighted-average costing. The Company determines normal capacity for each production facility and allocates fixed production-overhead costs on that basis.

Property, plant and equipment

Property, plant and equipment are stated at cost. Depreciation is computed using the straight-line method over the following estimated useful lives:

Buildings	31-39 years
Building improvements	10-39 years
Furniture and equipment	3-15 years
Software	3-7 years or product life
Leasehold improvements	Lesser of the asset life or lease term

Upon retirement or sale, the cost of assets disposed of and the related accumulated depreciation are removed from the accounts and any resulting gain or loss is credited or charged to operations. Repairs and maintenance costs are expensed as incurred.

The Company capitalizes internal-use software when both (a) the software is internally developed, acquired, or modified solely to meet the entity's internal needs and (b) during the software's development or modification, no substantive plan either exists or is being developed to market the software externally. Capitalization of qualifying internal-use software costs begins when the preliminary project stage is completed, management with the relevant authority, implicitly or explicitly, authorizes and commits to the funding of the software project, and it is probable that the project will be completed and the software will be used to perform the function intended.

Income taxes

Income taxes are accounted for using the liability method. Deferred tax assets and liabilities are recognized for future tax consequences attributable to differences between financial statement carrying amounts of existing assets and liabilities and their respective tax bases and net operating loss and research and development tax credit carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the year in which those temporary differences are expected to be recovered or settled.

The Company's ability to realize deferred tax assets depends upon future taxable income as well as the limitations discussed below. For financial reporting purposes, a deferred tax asset must be reduced by a valuation allowance if it is more likely than not that some portion or all of the deferred tax assets will not be realized prior to expiration. The Company considers future taxable income and ongoing tax planning strategies in assessing the need for valuation allowances. In general, if the Company determines that it is more likely than not to realize more than the recorded amounts of net deferred tax assets in the future, the Company will reverse all or a portion of the valuation allowance established against its deferred tax assets, resulting in a decrease to the provision for income taxes in the period in which the determination is made. Likewise, if the Company determines that it is not more likely than not to realize all or part of the net deferred tax asset in the future, the Company will establish a valuation allowance against deferred tax assets, with an offsetting increase to the provision for income taxes, in the period in which the determination is made.

Under sections 382 and 383 of the Internal Revenue Code, if an ownership change occurs with respect to a "loss corporation", as defined, there are annual limitations on the amount of net operating losses and deductions that are available. The Company believes the use of net operating losses and research and development tax credits acquired in the Trubion acquisition will not be significantly limited. Due to the acquisition of Microscience in 2005 and the Company's initial public offering, the Company believes the use of the operating losses incurred prior to 2005 will be significantly limited.

Because tax laws are complex and subject to different interpretations, significant judgment is required. As a result, the Company makes certain estimates and assumptions, in (1) calculating the Company's income tax expense, deferred tax assets and deferred tax liabilities, (2) determining any valuation allowance recorded against deferred tax assets and (3) evaluating the amount of unrecognized tax benefits, as well as the interest and penalties related to such uncertain tax positions. The Company's estimates and assumptions may differ significantly from tax benefits ultimately realized.

Revenue recognition

The Company recognizes revenues from product sales and contract manufacturing if four basic criteria have been met:

- there is persuasive evidence of an arrangement;
- delivery has occurred or title has passed to the Company's customer;
- the fee is fixed or determinable; and
- collectability is reasonably assured.

Under the Company's contracts with the CDC, the Company invoices the CDC and recognizes the related revenue upon acceptance by the government at delivery site, at which time title to the product passes to the CDC.

Agreements with multiple components ("deliverables" or "items") are evaluated to determine if the deliverables can be divided into more than one unit of accounting. An item can generally be considered a separate unit of accounting if both of the following criteria are met:

(1) the delivered item or items have value to the customer on a standalone basis. The item or items have value on a standalone basis if they are sold separately by any vendor or the customer could resell the delivered item(s) on a standalone basis. In the context of a customer's ability to resell the delivered item(s), this criterion does not require the existence of an observable market for the deliverable(s); and

(2) if the arrangement includes a general right of return relative to the delivered item(s), delivery or performance of the undelivered item(s) is considered probable and substantially in control of the Company. Items that cannot be divided into separate units are combined with other units of accounting, as appropriate. Consideration received is allocated among the separate units based on the relative selling price of each deliverable. The Company deems service to have been rendered if no continuing obligation exists on the part of the Company.

The Company's contract with the Biomedical Advanced Research and Development Authority ("BARDA") to establish a Center for Innovation in Advanced Development and Manufacturing ("CIADM") is a service arrangement that includes multiple elements. The CIADM contract requires the Company to provide a flexible infrastructure to supply medical countermeasures to the U.S. government over the contract period and includes such items as construction and facility design, workforce development and licensure of a pandemic flu vaccine. Since none of the individual elements by themselves satisfy the purpose of the contract, the Company has concluded that the CIADM contract elements cannot be separated as they do not have stand-alone value to the U.S. government. Therefore, the Company has concluded that there is a single unit of accounting associated with the CIADM contract. The Company recognizes revenue under the CIADM contract on a straight-line basis, based upon its estimate of the total payments to be received under the contract. The Company analyzes the estimated payments to be received on a quarterly basis to determine if an adjustment to revenue is required. Changes in estimates attributed to modifications in the estimate of total payments to be received are recorded prospectively.

The Company's BAT contract with BARDA is a service arrangement that includes multiple elements. The deliverables to BARDA include the supply product to the SNS, perform stability testing for the product, achievement of extended product expiry dating, maintenance of horse populations and plasma extraction. The Company has determined that each of the deliverables above represents a separate units of accounting as they have standalone value to the U.S. government. The Company allocated the value of the contract to the undelivered elements based on best estimate of selling price ("BESP"). BESP methodology for the deliverables, excluding the product sales, was developed using a cost build-up for internal and external costs, plus a specified mark-up. The allocation of value to the product sales was based on the remaining unallocated value. The Company intends to complete the final delivery of the BAT product in 2017. The Company recognizes revenue for:

- § BAT product sales upon delivery to the SNS;
- § stability testing based on the required testing schedule of the product;
- § extended product expiry based on achievement of the extension;
- § horse maintenance based on a per horse basis; and
- § plasma collection on a per liter basis.

The Company's contracts for VIGIV with the CDC and for Anthrasil with BARDA are service arrangements that include multiple elements. The deliverables to BARDA include to supply product to the SNS, perform stability testing for the product, achievement of extended product expiry dating and plasma extraction. The Company has determined that each of the deliverables above represents separate units of accounting as they have standalone value to the U.S. government. The Company allocated the value of the contract to the undelivered elements based on best estimate of selling price ("BESP"). BESP methodology for the deliverables, excluding the product sales, was developed using a cost build-up for internal and external costs, plus a specified mark-up. The allocation of value to the product sales was based on the remaining unallocated value. The Company recognizes revenue for:

- § VIGIV and Anthrasil product sales upon delivery to the CDC;
- § stability testing based on the required testing schedule of the product;
- § extended product expiry based on achievement of the extension; and
- § plasma collection on a per liter basis.

The Company's contract for the NuThrax product candidate with BARDA, which was entered into on September 30, 2016 is a service arrangement that includes multiple elements. The deliverables to BARDA are the completion of development for NuThrax and the procurement of product for the SNS. The Company has determined that each of the deliverables above are a separate unit of accounting as they have standalone value to the U.S. government. The Company allocated the value of the contract to the undelivered elements based on best estimate of selling price ("BESP"). BESP methodology for the development deliverable was developed using a cost build-up for internal and external costs, plus a specified mark-up. The allocation of value to the product sales was based on the remaining unallocated value.

Revenue associated with non-refundable upfront license fees under arrangements where the license fees and research and development activities cannot be accounted for as separate units of accounting is deferred and recognized as revenue either on a straight-line basis over the Company's continued involvement in the research and development process or based on the proportional performance of the Company's expected future obligation under the contract. Revenues from the achievement of research and development milestones, if deemed substantive, are recognized as revenue when the milestones are achieved, and the milestone payments are due and collectible. If not deemed substantive, the Company recognizes such milestone as revenue on a straight-line basis over the remaining expected term of continued involvement in the research and development process.

Milestones are considered substantive if all of the following conditions are met: (1) the milestone is non-refundable, (2) achievement of the milestone was not reasonably assured at the inception of the arrangement, (3) substantive effort is involved to achieve the milestone, and (4) the amount of the milestone appears reasonable in relation to the effort expended. Payments received in advance of work performed are recorded as deferred revenue.

The Company generates contracts and grants revenue from cost-plus-fee contracts. Revenues from reimbursable contracts are recognized as costs are incurred, generally based on allowable costs incurred during the period, plus any recognizable earned fee. The Company considers fixed fees under cost-plus-fee contracts to be earned in proportion to the allowable costs incurred in performance of the contract. The Company analyzes costs for contracts and reimbursable grants to ensure reporting of revenues gross versus net is appropriate. For each of the three years in the period ended December 31, 2016, the costs incurred under the contracts and grants approximated the revenue earned.

Research and development

We expense research and development costs as incurred. Our research and development expenses consist primarily of:

- § personnel-related expenses;
- § fees to professional service providers for, among other things, analytical testing, independent monitoring or other administration of our clinical trials and obtaining and evaluating data from our clinical trials and non-clinical studies;
- § costs of contract manufacturing services for clinical trial material; and
- § costs of materials used in clinical trials and research and development.

We intend to focus on developing innovative products based on our platforms with a focus on third-party funding. We plan to seek funding for development activities from external sources and third parties, such as governments and non-governmental organizations, or through collaborative partnerships. We expect our research and development spending will be dependent upon such factors as the results from our clinical trials, the availability of reimbursement of research and development spending, the number of product candidates under development, the size, structure and duration of any clinical

programs that we may initiate, the costs associated with manufacturing our product candidates on a large-scale basis for later stage clinical trials, and our ability to use or rely on data generated by government agencies, such as studies involving BioThrax conducted by the CDC.

Mergers and Acquisitions

In a business combination, the acquisition method of accounting requires that the assets acquired and liabilities assumed be recorded as of the date of the merger or acquisition at their respective fair values with limited exceptions. Assets acquired and liabilities assumed in a business combination that arise from contingencies are recognized at fair value if fair value can reasonably be estimated. If the acquisition date fair value of an asset acquired or liability assumed that arises from a contingency cannot be determined, the asset or liability is recognized if probable and reasonably estimable; if these criteria are not met, no asset or liability is recognized. Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. Accordingly, the Company may be required to value assets at fair value measures that do not reflect the Company's intended use of those assets. Any excess of the purchase price (consideration transferred) over the estimated fair values of 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 Company's consolidated financial statements after the date of the merger or acquisition. If the Company determines the assets acquired do not meet the definition of a business under the acquisition method of accounting, the transaction will be accounted for as an acquisition of assets rather than a business combination and, therefore, no goodwill will be recorded.

The fair values of intangible assets, including acquired in-process research and development ("IPR&D"), are determined utilizing information available at or near the merger or acquisition date based on expectations and assumptions that are deemed reasonable by management. Given the considerable judgment involved in determining fair values, the Company typically obtains assistance from third-party valuation specialists for significant items. Amounts allocated to acquired IPR&D are capitalized and accounted for as indefinite-lived intangible assets. Upon successful completion of each project, the Company will make a separate determination as to the remaining useful life of the asset and begin amortization. The judgments made in determining estimated fair values assigned to assets acquired and liabilities assumed in a business combination, as well as asset lives, can materially affect the Company's results of operations.

The fair values of identifiable intangible assets related to currently marketed products and product rights are primarily determined by using an "income approach" through which fair value is estimated based on each asset's discounted projected net cash flows. The Company's estimates of market participant net cash flows consider historical and projected pricing, margins and expense levels, the performance of competing products where applicable, relevant industry and therapeutic area growth drivers and factors, current and expected trends in technology and product life cycles, the time and investment that will be required to develop products and technologies, the ability to obtain marketing and regulatory approvals, the ability to manufacture and commercialize the products, the extent and timing of potential new product introductions by the Company's competitors, and the life of each asset's underlying patent, if any. The net cash flows are then probability-adjusted where appropriate to consider the uncertainties associated with the underlying assumptions, as well as the risk profile of the net cash flows utilized in the valuation. The probability-adjusted future net cash flows of each product are then discounted to present value utilizing an appropriate discount rate.

The fair values of identifiable intangible assets related to IPR&D are determined using an income approach, through which fair value is estimated based on each asset's probability-adjusted future net cash flows, which reflect the different stages of development of each product and the associated probability of successful completion. The net cash flows are then discounted to present value using an appropriate discount rate. Indefinite-lived intangible assets are tested for impairment annually or whenever events or changes in circumstances indicate that its carrying amount may not be recoverable.

In process research and development and long-lived assets

The Company assesses IPR&D assets for impairment on an annual basis or more frequently if indicators of impairment are present. The Company's annual assessment includes a comparison of the fair value of IPR&D assets to existing carrying value, and recognizes an impairment when the carrying value is greater than the determined fair value. The Company believes that the assumptions used in valuing the intangible and IPR&D assets are reasonable and are based upon its best estimate of likely outcomes of sales and clinical development. The underlying assumptions and estimates used to value these assets are subject to change in the future, and actual results may differ significantly from the assumptions and estimates. The Company has selected October 1 as its annual impairment test date for indefinite-lived intangible assets.

The Company assesses the recoverability of its long-lived assets or asset groups for which an indicator of impairment exists by determining whether the carrying value of such assets can be recovered through undiscounted future operating cash flows. If the Company concludes that the carrying value will not be recovered, the Company measures the amount of such impairment by comparing the fair value to the carrying value of the assets or asset groups.

Goodwill

The Company assesses the carrying value of goodwill on an annual basis, or whenever events or changes in circumstances indicate the carrying value of goodwill may not be recoverable, to determine whether any impairment in this asset may exist and, if so, the extent of such impairment. The provisions of the relevant accounting guidance require that the Company perform a two-step impairment test. In the first step, the Company compares the fair value of its reporting unit to the carrying value of the reporting unit. If the carrying value of the reporting unit exceeds the fair value of the reporting unit, then the second step of the impairment test is performed in order to determine the implied fair value of the reporting unit's goodwill. If the carrying value of the reporting unit's goodwill exceeds its implied fair value, an impairment loss equal to the difference is recognized. The Company calculates the fair value of the reporting unit utilizing the income approach. The income approach utilizes a discounted cash flow model, using a discount rate based on the Company's estimated weighted average cost of capital. The Company also evaluates goodwill for all reporting units using the qualitative assessment method, which permits companies to qualitatively assess whether it is more-likely-than-not that the fair value of a reporting unit is less than its carrying amount. The Company considers developments in its operations, the industry in which it operates and overall macroeconomic factors that could have affected the fair value of the reporting unit since the date of the most recent quantitative analysis of a reporting unit's fair value.

The determination of the fair value of a reporting unit is judgmental in nature and involves the use of significant estimates and assumptions. The estimates and assumptions used in calculating fair value include identifying future cash flows, which requires that the Company makes a number of critical legal, economic, market and business assumptions that reflect best estimates as of the testing date. The Company's assumptions and estimates may differ significantly from actual results, or circumstances could change that would cause the Company to conclude that an impairment now exists or that it previously understated the extent of impairment. The Company selected October 1 as its annual impairment test date.

Contingent Consideration

The Company records contingent consideration associated with (a) sales based royalties and (b) development and regulatory milestones at fair value. The fair value model used to calculate this obligation is based on the income approach (a discounted cash flow model) that has been risk adjusted based on the probability of achievement of net sales and achievement of the milestones. The inputs the Company uses for determining the fair value of the contingent consideration associated with sales based royalties and development and regulatory milestones are Level 3 fair value measurements. The Company re-evaluates the fair value on a quarterly basis. Changes in the fair value can result from adjustments to the discount rates and updates in the assumed timing of or achievement of net sales. Any future increase in the fair value of the contingent consideration associated with sales based royalties along with development and regulatory milestones are based on an increased likelihood that the underlying net sales or milestones will be achieved.

The associated payment or payments which will become due and payable for sales based royalties associated with marketed products will result in a charge to cost of product sales and contract manufacturing in the period in which the increase is determined. Similarly, any future decrease in the fair value of contingent consideration associated with sales based royalties will result in a reduction in cost of product sales and contract manufacturing. The changes in fair value for potential future sales based royalties associated with product candidates in development will result in a charge to selling, general and administrative expense in the period in which the increase is determined. Similarly, any future decrease in the fair value of contingent consideration associated with potential future sales based royalties for products candidates will result in a reduction in selling, general and administrative expense.

The associated payment or payments which will become due and payable for development and regulatory milestones will result in a charge to research and development expense in the period in which the increase is determined. Similarly, any future decrease in the fair value for development and

regulatory milestones will result in a reduction in research and development expense.

Earnings per share

The Company calculates basic earnings per share by dividing net income by the weighted average number of shares of common stock outstanding during the period.

For the years ended December 31, 2016, 2015 and 2014, the Company calculated diluted earnings per share using the if-converted method by dividing the adjusted net income by the adjusted weighted average number of shares of common stock outstanding during the period. The adjusted net income is adjusted for interest expense and amortization of debt issuance cost, both net of tax, associated with the Company's 2.875% Convertible Senior Notes due 2021 (the "Notes"). The weighted average number of diluted shares is adjusted for the potential dilutive effect of the exercise of stock options and the vesting of restricted stock units along with the assumption of the conversion of the Notes, each at the beginning of the period.

Accounting for stock-based compensation

The Company has two stock-based employee compensation plans, the Fourth Amended and Restated Emergent BioSolutions Inc. 2006 Stock Incentive Plan (the "2006 Plan") and the Emergent BioSolutions Employee Stock Option Plan (the "2004 Plan" and together with the 2006 Plan, the "Emergent Plans"). The Company has granted options to purchase shares of common stock under the Emergent Plans and has granted restricted stock units under the 2006 Plan. The Emergent Plans have both incentive and non-qualified stock option features. The Company no longer grants equity awards under the 2004 Plan.

As of December 31, 2016, an aggregate of 18.9 million shares of common stock were authorized for issuance under the 2006 Plan, of which a total of approximately 6.1 million shares of common stock remain available for future awards to be made to plan participants. The exercise price of each option must be not less than 100% of the fair market value of the shares underlying such option on the date of grant. Awards granted under the 2006 Plan have a contractual life of no more than 10 years. The terms and conditions of equity awards (such as price, vesting schedule, term and number of shares) under the Emergent Plans are determined by the compensation committee of the Company's board of directors, which administers the Emergent Plans. Each equity award granted under the Emergent Plans vests as specified in the relevant agreement with the award recipient and no option can be exercised after ten years from the date of grant.

The Company determines the fair value of restricted stock units using the closing market price of the Company's common stock on the day prior to the date of grant. The Company utilizes the Black-Scholes valuation model for estimating the fair value of all stock options granted. Set forth below are the assumptions used in valuing the stock options granted and a discussion of the Company's methodology for developing each of the assumptions used:

	Year Ended December 31,		
	2016	2015	2014
Expected dividend yield	0%	0%	0%
Expected volatility	31-33%	34-35%	35-38%
Risk-free interest rate	0.93-1.22%	1.27-1.61%	1.14-1.65%
Expected average life of options	4.3 years	4.3 years	4.5 years

- Expected dividend yield — the Company does not pay regular dividends on its common stock and does not anticipate paying any dividends in the foreseeable future.
- Expected volatility — a measure of the amount by which a financial variable, such as share price, has fluctuated (historical volatility) or is expected to fluctuate (implied volatility) during a period. The Company analyzed its own historical volatility to estimate expected volatility over the same period as the expected average life of the options.
- Risk-free interest rate — the range of U.S. Treasury rates with a term that most closely resembles the expected life of the option as of the date on which the option is granted.
- Expected average life of options — the period of time that options granted are expected to remain outstanding, based primarily on the Company's expectation of optionee exercise behavior subsequent to vesting of options.

Comprehensive income

Comprehensive income is comprised of net income and other changes in equity that are excluded from net income. The Company includes translation gains and losses incurred when converting its subsidiaries' financial statements from their functional currency to the U.S. dollar in accumulated other comprehensive income.

Foreign currencies

Except for the Company's Canadian subsidiaries, the local currency is the functional currency for the Company's foreign subsidiaries and, as such, assets and liabilities are translated into U.S. dollars at year-end exchange rates. Income and expense items are translated at average exchange rates during the year. Translation adjustments resulting from this process are charged or credited to other comprehensive income. The Company's Canadian subsidiaries functional currency is U.S. dollars due primarily to a significant amount of the transactions of the subsidiaries being denominated in U.S. dollars.

Capitalized interest

The Company capitalizes interest based on the cost of major ongoing capital projects which have not yet been placed in service. For the years ended December 31, 2016, 2015 and 2014, the Company incurred interest of $8.3 million, $7.8 million and $7.5 million, respectively. Of these amounts, the Company capitalized $2.2 million, $2.9 million and $2.5 million, respectively.

Recently issued and adopted accounting standards

In April 2014, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2014-08, *Presentation of Financial Statements (Topic 205) and Property, Plant, and Equipment (Topic 360): Reporting Discontinued Operations and Disclosures of Disposals of Components of an Entity* ("ASU No. 2014-08"). ASU No. 2014-08 limits discontinued operations reporting to disposals of components of an entity that represent strategic shifts that have (or will have) a major effect on an entity's operations and financial results. ASU No. 2014-08 also requires expanded disclosures for discontinued operations and disposals of individually significant components of an entity that do not qualify for discontinued operations reporting. ASU No. 2014-08 was effective for disposals and components classified as held-for-sale that occurred within annual periods beginning on or after December 15, 2014, and interim periods within those years. Early adoption was permitted. The new guidance is effective for the Company prospectively for all disposals of components of an entity that occurred after January 1, 2015. The spin-off of Aptevo by the Company on August 1, 2016 meets the definition of a discontinued operation under the new guidance and, as a result, the Company reflected the provisions of the new guidance for the years ended December 31, 2016, 2015 and 2014.

In May 2014, the FASB issued ASU No. 2014-09, *Summary and Amendments That Create Revenue from Contracts with Customers (Topic 606) and Other Assets and Deferred Costs—Contracts with Customers (Subtopic 340-40) (*"ASU No. 2014-09"). ASU No. 2014-09 supersedes the revenue recognition requirements in Topic 605, Revenue Recognition, as well as most industry-specific guidance, and significantly enhances comparability of revenue recognition practices across entities and industries by providing a principles-based, comprehensive framework for addressing revenue recognition issues. In order for a provider of promised goods or services to recognize as revenue the consideration that it expects to receive in exchange for the promised goods or services, the provider should apply the following five steps: (1) identify the contract with a customer(s); (2) identify the performance obligations in the contract; (3)

determine the transaction price; (4) allocate the transaction price to the performance obligations in the contract; and (5) recognize revenue when (or as) the entity satisfies a performance obligation. ASU No. 2014-09 also specifies the accounting for some costs to obtain or fulfill a contract with a customer and provides enhanced disclosure requirements. The standard will be effective for annual reporting periods beginning after December 15, 2017, including interim periods within that reporting period, which for the Company will be its 2018 first quarter. The Company is permitted to use either the retrospective or the modified retrospective method when adopting ASU No. 2014-09. The Company has begun an initial assessment of the potential impact that ASU No. 2014-09 will have on its financial statements and disclosures and believes that there could be changes to the revenue recognition related to the Company's multiple element contracts, primarily those with the U.S. government.

In August 2014, the FASB issued ASU No. 2014-15, *Presentation of Financial Statements - Going Concern (Subtopic 205-40): Disclosure of Uncertainties about an Entity's Ability to Continue as a Going Concern ("*ASU No. 2014-15"). The amendment requires management to evaluate, for each annual and interim reporting period, whether there are conditions and events, considered in the aggregate, that raise substantial doubt about an entity's ability to continue as a going concern within one year after the date the financial statements are issued or are available to be issued. If substantial doubt is raised, additional disclosures around management's plan to alleviate these doubts are required. This update was effective for all annual periods and interim reporting periods ending after December 15, 2016. As of December 31, 2016, the Company adopted this guidance and it did not have a material impact on the current disclosures in the financial statements.

In April 2015, the FASB issued ASU No. 2015-03, *Interest - Imputation of Interest (Subtopic 835-30) ("*ASU No. 2015-03"), which simplifies the presentation of debt issuance costs. ASU No. 2015-03 requires that debt issuance costs related to a recognized debt liability be presented in the balance sheet as a direct deduction from the carrying amount of that debt liability, consistent with debt discounts. Prior to the issuance of ASU 2015-03, debt issuance costs were required to be presented as an asset on the balance sheet. ASU No. 2015-03 is effective for interim and annual periods beginning after December 15, 2015. During 2016, the Company adopted and applied the guidance on the consolidated financial statements and related disclosures on a retrospective basis.

In March 2016, the FASB issued ASU No. 2016-09, *Compensation - Stock Compensation (Topic 718) ("*ASU No. 2016-09"). ASU No. 2016-09 simplifies several aspects of the accounting for share-based payment award transactions, including: (1) the income tax consequences, (2) classification of awards as either equity or liabilities, and (3) classification on the statement of cash flows. ASU No. 2016-09 is effective for the annual reporting period beginning after December 15, 2016, including interim periods within that reporting period, with early adoption permitted. The Company is currently evaluating the impact that the adoption of ASU No. 2016-09 will have on the consolidated financial statements and related disclosures.

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

3. Discontinued operations

On August 1, 2016, the Company completed the spin-off of Aptevo through the distribution of 100% of the outstanding shares of common stock of Aptevo to the Company's shareholders (the "Distribution"). The Distribution was made to the Company's shareholders of record as of the close of business on July 22, 2016 (the "Record Date"), who received one share of Aptevo common stock for every two shares of Emergent common stock held as of the Record Date. The Distribution was intended to qualify as a tax-free distribution for federal income tax purposes in the United States. In the aggregate, approximately 20.2 million shares of Aptevo common stock were distributed to the Company's shareholders of record as of the Record Date in the Distribution. After the Distribution, the Company no longer holds shares of Aptevo's common stock. In addition, on August 1, 2016, the Company entered into a non-negotiable, unsecured promissory note with Aptevo to provide an additional $20 million in funding, which the Company paid in January 2017.

The historical balance sheet and statements of operations of Aptevo have been presented as discontinued operations in the consolidated financial statements and prior periods have been restated. Discontinued operations include results of Aptevo's business except for certain allocated corporate overhead costs and certain costs associated with transition services provided by the Company to Aptevo. These allocated costs remain part of continuing operations. Due to differences between the basis of presentation for discontinued operations and the basis of presentation as a stand-alone company, the financial results of Aptevo included within discontinued operations for the Company may not be indicative of actual financial results of Aptevo.

In conjunction with the spin-off, the Company entered into a Separation and Distribution Agreement with Aptevo to effect the separation of Aptevo from the Company (the "Separation"). The Company also entered into various other agreements to provide a framework for its relationship with Aptevo after the Separation, including a manufacturing services agreement, transition services agreement, a tax matters agreement and an employee matters agreement.

The Separation and Distribution Agreement with Aptevo sets forth, among other things, the assets that were transferred, the liabilities assumed, and the contracts that were assigned to each of Aptevo and the Company as part of the Separation of the Company into two companies, and provided for when and how these transfers, assumptions and assignments were to occur.

Under the terms of the manufacturing services agreement, the Company agreed to provide contract manufacturing services for certain of Aptevo's products commencing on the date of the Distribution. The contract has a term of ten years. As of December 31, 2016, approximately $0.8 million of contract manufacturing services revenue is associated with the provision of services to Aptevo.

Under the terms of the transition services agreement, the Company agreed to provide on an interim, transitional basis, various services, including, but not limited to, accounts payable administration, information technology services, regulatory and clinical support, general administrative services and other support services commencing on the date of the Distribution and terminating up to two years following the date of the Distribution. During the year ended December 31, 2016, approximately $1.1 million of transition services revenue has been recorded in contracts and grants.

The tax matters agreement governs the respective rights, responsibilities and obligations of Aptevo and the Company with respect to taxes (including taxes arising in the ordinary course of business and taxes, if any, incurred as a result of any failure of the Distribution and certain related transactions to qualify as tax-free for U.S. federal income tax purposes), tax attributes, tax returns, tax proceedings and certain other tax matters.

The employee matters agreement governs certain compensation and employee benefit obligations and allocates liabilities and responsibilities relating to employment matters, employee compensation and benefit plans and programs and other related matters, including the transfer or assignment of employees from the Company to Aptevo.

The following table represents the carrying value of Aptevo's assets and liabilities distributed as part of the Separation on August 1, 2016:

(in thousands)	**August 1, 2016**
Assets:	
Cash and cash equivalents	$ 45,000
Accounts receivable, net	4,465
Inventories	11,959
Note receivable	20,000
Other current assets	4,870
Current assets of discontinued operations	86,294
Property, plant and equipment, net	6,128
In-process research and development	41,800
Intangible assets, net	15,402
Goodwill	13,902
Non-current assets of discontinued operations	77,232

Total assets of discontinued operations	$ 163,526
Liabilities:	
Accounts payable	$ 6,285
Accrued expenses and other current liabilities	64
Accrued compensation	2,456
Contingent consideration	191
Provisions for chargebacks	2,341
Deferred revenue, current portion	433
Current liabilities of discontinued operations	11,770
Deferred revenue, net of current portion	3,232
Other liabilities	91
Non-current liabilities of discontinued operations	3,323
Total liabilities of discontinued operations	$ 15,093

The following table represents Aptevo's assets and liabilities presented as discontinued operations and classified as held-for-disposition as of December 31, 2015:

(in thousands)	**December 31, 2015**
Assets:	
Cash and cash equivalents	$ 4,492
Accounts receivable, net	6,861
Inventories	16,049
Prepaid expenses and other current assets	1,880
Current assets of discontinued operations	29,282
Property, plant and equipment, net	4,046
In-process research and development	41,800
Intangible assets, net	16,617
Goodwill	13,902
Non-current assets of discontinued operations	76,365
Total assets of discontinued operations	$ 105,647
Liabilities:	
Accounts payable	$ 8,134
Accrued expenses and other current liabilities	22
Accrued compensation	2,684
Contingent consideration, current portion	306
Provisions for chargebacks	2,238
Deferred revenue, current portion	3,964
Current liabilities of discontinued operations	17,348
Deferred revenue, net of current portion	3,163
Other liabilities	71
Non-current liabilities of discontinued operations	3,234
Total liabilities of discontinued operations	$ 20,582

The following table summarizes results from discontinued operations of Aptevo included in the consolidated statements of operations:

	Years ended December 31,		
(in thousands)	**2016**	**2015**	**2014**
Revenues:			
Product sales	$ 21,183	$ 27,947	$ 30,036
Collaborations	187	5,511	15,636
Total revenues	21,370	33,458	45,672
Operating expense:			
Cost of product sales	11,556	16,809	16,449
Research and development	18,024	34,811	46,108
Selling, general and administrative	23,792	27,313	14,248
Loss from operations	(32,002)	(45,475)	(31,133)
Other income (expense), net:	(41)	(472)	-
Loss from discontinued operations before benefit from income taxes	(32,043)	(45,947)	(31,133)
Benefit from income taxes	(21,295)	(17,401)	(13,608)
Net loss from discontinued operations	$ (10,748)	$ (28,546)	$ (17,525)

The following table summarizes the cash flows of Aptevo included in the years ended December 31**,** 2016, 2015 and 2014 consolidated statements of cash flows:

	Years ended December 31,

(in thousands)	2016	2015	2014
Net cash (used in) provided by operating activities	$ (10,299)	$ (12,716)	$ (14,683)
Net cash used in investing activities	(1,926)	(1,518)	(48,822)
Net cash provided by (used in) financing activities	7,733	15,012	67,219
Net increase (decrease) in cash and cash equivalents	$ (4,492)	$ 778	$ 3,714

4. Fair value measurements

The following table represents the Company's fair value hierarchy for its financial assets and liabilities measured at fair value on a recurring basis:

	December 31, 2016			
(in thousands)	Level 1	Level 2	Level 3	Total
Assets:				
Investment in money market funds (1)	$ 10	$ -	$ -	$ 10
Total assets	$ 10	$ -	$ -	$ 10
Liabilities:				
Contingent consideration	$ -	$ -	$ 13,185	$ 13,185
Total liabilities	$ -	$ -	$ 13,185	$ 13,185

	December 31, 2015			
(in thousands)	Level 1	Level 2	Level 3	Total
Assets:				
Investment in money market funds (1)	$ 3,323	$ -	$ -	$ 3,323
Total assets	$ 3,323	$ -	$ -	$ 3,323
Liabilities:				
Contingent price consideration	$ -	$ -	$ 25,155	$ 25,155
Total liabilities	$ -	$ -	$ 25,155	$ 25,155

(1) Included in cash and cash equivalents in accompanying consolidated balance sheets.

As of December 31, 2016 and 2015, the Company did not have any transfers between Level 1 and Level 2 assets or liabilities.

For the year ended December 31, 2016 and 2015, the contingent consideration obligation associated with the EV-035 series of molecules and the broad spectrum antiviral platform program decreased by $5.4 million and $9.4 million, respectively. These changes are primarily due to the estimated timing and probability of success for certain development and regulatory milestones and the estimated timing and volume of potential future sales of the EV-035 series of molecules and the broad spectrum antiviral platform, which are inputs that have no observable market (Level 3), along with the novation of the Defense Threat Reduction Agency ("DTRA") contract for the EV-035 series of molecules. These decreases in the contingent consideration were classified in the Company's statement of operations as both selling, general and administrative expense and research and development expense. During 2015, the Company received novation of the DTRA contract and paid the $4.0 million milestone to Evolva in the second quarter of 2015.

For the years ended December 31, 2016 and 2015, the contingent consideration obligations associated with RSDL decreased by $5.4 million and $1.5 million, respectively. The fair value of the RSDL contingent consideration obligations decreased as a result of management's assessment of the assumed and actual achievement of future net sales, which are inputs that have no observable market (Level 3). These changes are classified in the Company's statement of operations as cost of product sales and contract manufacturing.

The following table is a reconciliation of the beginning and ending balance of the liabilities measured at fair value using significant unobservable inputs (Level 3) during the years ended December 31, 2016 and 2015.

(in thousands)	
Balance at December 31, 2014	$ 40,037
(Income) expense included in earnings	(10,884)
Settlements	(4,803)
Purchases, sales and issuances	805
Transfers in/(out) of Level 3	-
Balance at December 31, 2015	$ 25,155
(Income) expense included in earnings	(10,857)
Settlements	(1,113)
Purchases, sales and issuances	-
Transfers in/(out) of Level 3	-
Balance at December 31, 2016	$ 13,185

Separate disclosure is required for assets and liabilities measured at fair value on a recurring basis from those measured at fair value on a non-recurring basis. As of December 31, 2016, there were no assets or liabilities measured at fair value on a non-recurring basis. As of December 31, 2015, the in-process research and development asset for the EV-035 series of molecules was measured at fair value on a non-recurring basis.

5. Accounts receivable

Accounts receivable consist of the following:

	December 31,	
(in thousands)	2016	2015
Billed	$ 90,439	$ 95,735
Unbilled	48,039	18,171
Total	$ 138,478	$ 113,906

Unbilled accounts receivable has increased by $29.9 million due to the timing of billings to under our contract with the U.S. government related to construction activities at our Bayview site and development work associated with Ebola.

6. Inventories

Inventories consist of the following:

(in thousands)	December 31, 2016	2015
Raw materials and supplies	$ 30,687	$ 21,275
Work-in-process	19,821	32,709
Finished goods	23,494	6,903
Total inventories	$ 74,002	$ 60,887

7. Property, plant and equipment

Property, plant and equipment consist of the following:

(in thousands)	December 31, 2016	2015
Land and improvements	$ 20,340	$ 16,520
Buildings, building improvements and leasehold improvements	147,130	108,908
Furniture and equipment	190,157	129,933
Software	52,564	39,683
Construction-in-progress	77,813	126,531
	488,004	421,575
Less: Accumulated depreciation and amortization	(111,556)	(93,767)
Total property, plant and equipment, net	$ 376,448	$ 327,808

For the year ended December 31, 2016, construction-in-progress primarily includes costs related to the build out of the Company's CIADM manufacturing facility. For the year ended December 31, 2015, construction-in-progress primarily included costs related to Building 55, the Company's large-scale manufacturing facility which was placed in service in June 2016.

Depreciation and amortization expense was $28.0 million, $23.7 million and $22.3 million for the years ended December 31, 2016, 2015 and 2014, respectively.

8. Intangible assets, in-process research and development and goodwill

As of October 1, 2016, the Company performed a qualitative assessment of goodwill associated with the Therapeutics and Vaccines reporting unit, Contract Manufacturing reporting unit, and the Medical Devices reporting unit. The Company completed its annual impairment assessments for its IPR&D assets and goodwill as of October 1, 2015 and determined that the fair value of the Company's IPR&D assets and reporting units was significantly in excess of carrying value. As of October 1, 2015, the Company performed a qualitative assessment of goodwill associated with the Therapeutics and Vaccines reporting unit, Contract Manufacturing reporting unit, and the Medical Devices reporting unit.

Intangible assets consisted of the following:

(in thousands)	Total
Cost basis	
Balance at December 31, 2015	$ 57,099
Additions	-
Balance at December 31, 2016	$ 57,099
Accumulated amortization	
Balance at December 31, 2015	$ (16,341)
Amortization	(6,893)
Balance at December 31, 2016	$ (23,234)
Net book value at December 31, 2016	$ 33,865

For the years ended December 31, 2016, 2015 and 2014, the Company recorded amortization expense of $6.9 million, $7.4 million and $7.0 million, respectively, for intangible assets, which has been recorded in operating expenses, specifically selling, general and administrative and cost of product sales and contract manufacturing. As of December 31, 2016, the weighted average amortization period remaining for intangible assets is 75 months.

Future amortization expense as of December 31, 2016 is as follows:

(in thousands)	
2017	$ 6,217
2018	6,217
2019	5,738
2020	5,657
2021 and beyond	10,036
Total remaining amortization	$ 33,865

The following table is a summary of changes in goodwill by reporting unit:

(in thousands)	Therapeutics and vaccines	Contract manufacturing	Medical devices	Total

Cost Basis				
Balance at December 31, 2015	$ 24,349	$ 6,736	$ 9,916	$ 41,001
Additions	-	-	-	-
Balance at December 31, 2016	$ 24,349	$ 6,736	$ 9,916	$ 41,001

In September 2015, the Company received data for the leading molecule in the EV-035 series of molecules, GC-072, that indicated a potential toxicity issue. The Company considered this information an indicator of impairment of the related EV-035 series of molecules IPR&D asset, and completed an impairment assessment of this asset. Based on this assessment, the Company recorded a non-cash impairment charge of $9.8 million, which is included in the Company's statement of operations as research and development expense. The remaining carrying value of the EV-035 series of molecules IPR&D asset was $0.7 million as of December 31, 2015. This remaining amount was impaired during the year ended December 31, 2016 based upon delays in the development time line. The impairment assessment was performed using the income approach which discounts expected future cash flows to present value. The projected cash flows for the EV-035 series of molecules were based on key assumptions including: estimates of revenues and operating profits considering its stage of development, the time and resources needed to complete the development and approval of the product candidate, the life of the potential commercialized product and associated risks, including the inherent difficulties and uncertainties in developing a product candidate, such as obtaining marketing approval from the FDA and other regulatory agencies, and risks related to the viability of and potential for alternative treatments in any future target markets.

As a result of the impairment of the EV-035 series of molecules IPR&D asset, the Company also performed an interim goodwill qualitative impairment assessment of the Vaccines and Therapeutics reporting unit, which contained $22.0 million of the goodwill reported on the Company's consolidated balance sheets as of September 30, 2015. Based on the assessment, the Company concluded that the goodwill was not impaired.

9. Long-term debt

On January 29, 2014, the Company issued $250.0 million aggregate principal amount of 2.875% Convertible Senior Notes due 2021 (the "Notes"). The Notes bear interest at a rate of 2.875% per year, payable semi-annually in arrears on January 15 and July 15 of each year. The Notes mature on January 15, 2021, unless earlier purchased by the Company or converted. The original conversion rate is equal to 30.8821 shares of common stock per $1,000 principal amount of notes (which is equivalent to a conversion price of approximately $32.38 per share of common stock). The conversion rate is subject to adjustment upon the occurrence of certain specified events but will not be adjusted for accrued and unpaid interest. The Company incurred approximately $8.3 million in debt issuance costs associated with the Notes, which has been capitalized on the consolidated balance sheets and is being amortized over seven years. As of August 1, 2016, certain conversion features were triggered due to the completion of the Aptevo spin-off. The conversion rate under the Notes was adjusted in accordance with the terms of the indenture. Effective August 12, 2016, the conversion rate was adjusted to 32.3860 shares of common stock per $1,000 principal amount of notes (which is equivalent to a conversion price of approximately $30.88 per share of common stock).

On December 11, 2013, the Company entered into a senior secured credit agreement (the "Credit Agreement") with three lending financial institutions. The Credit Agreement provided for a revolving credit facility of up to $100.0 million through December 11, 2018 (or such earlier date required by the terms of the Credit Agreement). Under the revolving credit facility, the Company is required to pay an unused fee of approximately 0.5% annually, on a quarterly basis. In addition, during the year ended December 31, 2014, the Company expensed $1.8 million of debt issuance cost associated with the term loan facility. As of December 31, 2016 and 2015, no amounts were drawn under the revolving credit facility.

The Company's payment obligations under the Credit Agreement are secured by a lien on substantially all of the Company's assets, including the stock of all of the Company's subsidiaries, and the assets of the subsidiary guarantors, including mortgages over certain of their real properties, including the Company's large-scale vaccine manufacturing facility in Lansing, Michigan and the Company's product development and manufacturing facility in Baltimore, Maryland.

The Credit Agreement, as amended, contains affirmative and negative covenants customary for financings of this type. Negative covenants in the Credit Agreement limit the Company's ability to, among other things: incur indebtedness (other than the issuance of the Notes) and liens; dispose of assets; make investments including loans, advances or guarantees; and enter into certain mergers or similar transactions. The Credit Agreement also contains financial covenants, tested quarterly and in connection with any triggering events under the Credit Agreement that include the maintenance of: (1) a minimum consolidated debt service coverage ratio of 2.50 to 1.00, (2) a maximum consolidated leverage ratio for the period ending on or prior to September 30, 2014 of 4.00 to 1.00, for the measurement period ending December 31, 2014 of 3.75 to 1.00, and thereafter of 3.50 to 1.00, and (3) a minimum liquidity requirement of $50.0 million. Upon the occurrence and continuance of an event of default under the Credit Agreement, the commitments of the lenders to make loans under the Credit Agreement may be terminated and the Company's payment obligations under the Credit Agreement may be accelerated. The events of default under the Credit Agreement include, among others, subject in some cases to specified cure periods: payment defaults; inaccuracy of representations and warranties in any material respect; defaults in the observance or performance of covenants; bankruptcy and insolvency related defaults; the entry of a final judgment in excess of a threshold amount; change of control; and the invalidity of loan documents relating to the Credit Agreement. The Company was in compliance with these covenants as of December 31, 2016 and 2015.

As of December 31, 2015, the Company reclassified debt issuance costs of $1.2 million and $4.9 million from prepaid expenses and other current assets and other assets, respectively, as a reduction to long-term debt as a result of the adoption of ASU No. 2015-03.

10. Stockholders' equity

Preferred stock

The Company is authorized to issue up to 15.0 million shares of preferred stock, $0.001 par value per share ("Preferred Stock"). Any Preferred Stock issued may have dividend rights, voting rights, conversion privileges, redemption characteristics, and sinking fund requirements as approved by the Company's board of directors.

Common stock

The Company currently has one class of common stock, $0.001 par value per share common stock ("Common Stock"), authorized and outstanding. The Company is authorized to issue up to 200.0 million shares of Common Stock. Holders of Common Stock are entitled to one vote for each share of Common Stock held on all matters, except as may be provided by law.

Stock options and restricted stock units

As of December 31, 2016, the Company has two stock-based employee compensation plans, the Fourth Amended and Restated Emergent BioSolutions Inc. 2006 Stock Incentive Plan (the "2006 Plan") and the Emergent BioSolutions Employee Stock Option Plan (the "2004 Plan"). The Company refers to both plans together as the "Emergent Plans." On May 19, 2016, the Company's shareholders approved the Fourth Amended and Restated Emergent BioSolutions Inc. 2006 Stock Incentive Plan, and the issuance of 3.8 million shares thereunder. In addition, the Company's shareholders approved an increase in the number of authorized shares of common stock to 200.0 million shares from 100.0 million shares.

In connection with the Separation on August 1, 2016 and in accordance with the employee matters agreement and the Emergent Plans, the Company made certain adjustments to the exercise price and number of equity awards. Continuing Emergent employees with equity awards issued prior to Distribution received an equitable adjustment reflecting a revised exercise price and number of equity awards granted. Continuing Aptevo employees who had been granted Emergent equity awards had their grants canceled and reissued as Aptevo equity awards with an adjusted exercise price.

The following is a summary of option award activity under the Emergent Plans:

	2006 Plan		2004 Plan		
	Number of	Weighted-	Number of	Weighted-	Aggregate

	Shares	Average Exercise Price	Shares	Average Exercise Price	Intrinsic Value
Outstanding at December 31, 2015	2,964,237	$ 22.73	29,699	$ 10.28	$ 52,119,607
Granted	411,698	33.61	-	-	
Exercised	(809,638)	19.41	(29,699)	10.28	
Forfeited	(96,293)	26.67	-	-	
Cancelled	(146,986)	28.33	-	-	
Equitable adjustment	236,313	22.90	-	-	
Outstanding at December 31, 2016	2,559,331	$ 22.94	-	$ -	$ 25,348,245
Exercisable at December 31, 2016	1,504,855	$ 19.59	-	$ -	$ 19,938,451
Options expected to vest at December 31, 2016	849,184	$ 27.46	-	$ -	$ 4,565,548

The following is a summary of restricted stock unit award activity under the 2006 Plan:

	Number of Shares	Weighted-Average Grant Price	Aggregate Intrinsic Value
Outstanding at December 31, 2015	889,004	$ 26.86	$ 35,569,048
Granted	515,782	34.00	
Vested	(420,599)	24.68	
Forfeited	(80,428)	29.40	
Cancelled	(107,514)	30.90	
Equitable adjustment	79,339	28.86	
Outstanding at December 31, 2016	875,584	$ 28.94	$ 28,754,179

The weighted average remaining contractual term of options outstanding as of December 31, 2016 and 2015 was 4.0 years and 4.4 years, respectively. The weighted average remaining contractual term of options exercisable as of December 31, 2016 and 2015 was 3.2 years and 3.4 years, respectively.

The weighted average grant date fair value of options granted during the years ended December 31, 2016, 2015 and 2014 was $9.24, $8.66 and $8.84, respectively. The total intrinsic value of options exercised during the years ended December 31, 2016, 2015 and 2014 was $15.6 million, $20.2 million and $7.5 million, respectively. The total fair value of awards vested during 2016, 2015 and 2014 was $16.9 million, $14.4 million and $12.3 million, respectively. As of the year ended December 31, 2016, the total compensation cost and weighted average period over which total compensation is expected to be recognized related to unvested equity awards was $18.0 million and 1.86 years, respectively.

On July 14, 2016, the Company's board of directors authorized management to repurchase, from time to time, up to an aggregate of $50 million of the Company's common stock under a board-approved share repurchase program. The timing, amount, and price of any repurchases will be made pursuant to one or more 10b5-1 plans. The term of the board authorization of the repurchase program is until December 31, 2017. The program will permit shares to be repurchased when the Company might otherwise be precluded from doing so under insider trading laws. The repurchase program may be suspended or discontinued at any time. Any repurchased shares will be available for use in connection with the Company's stock plans and for other corporate purposes. As of December 31, 2016, the Company has neither implemented a repurchase plan nor repurchased any shares under this program.

Stock-based compensation expense was recorded in the following financial statement line items:

	Years ended December 31,		
(in thousands)	2016	2015	2014
Cost of product sales	$ 997	$ 1,183	$ 1,145
Research and development	2,297	2,324	2,779
Selling, general and administrative	14,062	11,234	7,830
Continuing operations	17,356	14,741	11,754
Discontinued operations	1,121	1,107	1,075
Total stock-based compensation expense	$ 18,477	$ 15,848	$ 12,829

11. Income taxes

Significant components of the provisions for income taxes attributable to operations consist of the following:

	Year ended December 31,		
(in thousands)	2016	2015	2014
Current			
Federal	$ 29,244	$ 38,957	$ 22,988
State	2,331	2,221	959
International	1,002	2,029	828
Total current	32,577	43,207	24,775
Deferred			
Federal	9,979	(119)	3,332
State	(272)	(111)	209
International	(5,587)	1,323	1,612
Total deferred	4,120	1,093	5,153
Total provision for income taxes	$ 36,697	$ 44,300	$ 29,928

The Company's net deferred tax asset (liability) consists of the following:

	December 31,	
(in thousands)	2016	2015
Federal losses carryforward	$ 4,130	$ 5,394
State losses carryforward	13,682	12,751
Research and development carryforward	3,647	3,545

Scientific research and experimental development credit carryforward	16,594	25,771
Intangible assets	-	5,792
Stock compensation	8,389	9,391
Foreign deferrals	58,647	80,920
Inventory reserves	2,273	3,754
Other	5,569	8,484
Deferred tax asset	112,931	155,802
Fixed assets	(30,728)	(31,925)
Intangible assets	(5,882)	(4,760)
Other	(16,047)	(17,192)
Deferred tax liability	(52,657)	(53,877)
Valuation allowance	(54,178)	(90,639)
Net deferred tax (liabilities)/ asset	$ 6,096	$ 11,286

As of December 31, 2016, the Company currently has approximately $11.8 million ($4.1 million tax effected) in net operating loss carryforwards along with $3.7 million in research and development tax credit carryforwards for U.S. federal tax purposes that will begin to expire in 2026 and 2023, respectively. The U.S. federal tax carryforwards are recorded with no valuation allowance. The Company has $255.1 million ($13.7 million tax effected) in state net operating loss carryforwards, primarily in Maryland, that will begin to expire in 2018. The U.S. state tax loss carryforwards are recorded with a valuation allowance of $191.7 million ($10.3 million tax effected). The Company has approximately $170.3 million ($43.9 million tax effected) in net operating losses from foreign jurisdictions (excluding Canada) that will have an indefinite life unless the foreign entities have a change in the nature or conduct of the business in the three years following a change in ownership. A valuation allowance in respect to these foreign losses has been recorded in the amount of $43.9 million. The Company has approximately $43.6 million ($11.7 million tax effected) in Canadian loss carryforwards which are recorded with no valuation allowance. The Company currently has approximately $0.5 million of Canadian federal scientific research and experimental development credit carryforwards that will begin to expire in 2027. In addition, the Company has approximately $16.1 million in Manitoba scientific research and experimental development credit carryforwards that will begin to expire in 2024. The use of any of these net operating losses and research and development tax credit carryforwards may be restricted due to changes in the Company's ownership.

The provision for income taxes differs from the amount of taxes determined by applying the U.S. federal statutory rate to loss before provision for income taxes as a result of the following:

	Year ended December 31,		
(in thousands)	**2016**	**2015**	**2014**
US	$ 63,330	$ 117,385	$ 76,909
International	35,891	18,331	7,285
Earnings before taxes on income	99,221	135,716	84,194
Federal tax at statutory rates	$ 34,738	$ 47,475	$ 29,468
State taxes, net of federal benefit	529	852	650
Impact of foreign operations	(9,937)	(1,640)	(1,176)
Change in valuation allowance	10,458	(950)	1,091
Effect of foreign rates	(720)	-	-
Tax credits	(1,572)	(2,088)	(1,743)
Other differences	1,823	733	126
Permanent differences	1,378	(82)	1,512
Provision for income taxes	$ 36,697	$ 44,300	$ 29,928

The effective annual tax rate for the years ended December 31, 2016, 2015 and 2014 was 37%, 33% and 36%, respectively.

The increase in the effective annual tax rate in 2016 is primarily related to tax on the sale, within the Company's consolidated group, of assets from Canadian subsidiaries to U.S. subsidiaries in preparation of the spin-off of Aptevo, and a valuation allowance charge recorded in its continuing operations related to Aptevo deferred tax assets prior to the distribution. The Company determined that upon spin-off, the deferred tax assets of Aptevo would be unrealizable. The increase in the effective annual tax rate as a result of the above was partially offset by a release of valuation allowances associated with Canadian Scientific Research and Experimental Development tax credits. Finally, the Company had a shift in the jurisdictional mix of earnings in the current year which contributed to the change in the effective annual tax rate.

The Company recognizes interest in interest expense and recognizes potential penalties related to unrecognized tax benefits in selling, general and administrative expense. Of the total unrecognized tax benefits recorded at December 31, 2016 and 2015, $0.5 million and $0.3 million, respectively, is classified as a current liability and $1.3 million and $1.1 million, respectively, is classified as a non-current liability on the balance sheet.

The table below presents the gross unrecognized tax benefits activity for 2016, 2015 and 2014:

(in thousands)	
Gross unrecognized tax benefits at December 31, 2013	$ 1,121
Increases for tax positions for prior years	150
Decreases for tax positions for prior years	-
Increases for tax positions for current year	102
Settlements	-
Lapse of statute of limitations	(125)
Gross unrecognized tax benefits at December 31, 2014	1,248
Increases for tax positions for prior years	150
Decreases for tax positions for prior years	-
Increases for tax positions for current year	59
Settlements	-
Lapse of statute of limitations	-
Gross unrecognized tax benefits at December 31, 2015	1,457
Increases for tax positions for prior years	5
Decreases for tax positions for prior years	-
Increases for tax positions for current year	299
Settlements	-

Lapse of statute of limitations	-
Gross unrecognized tax benefits at December 31, 2016	$ 1,761

When resolved, substantially all of these reserves would impact the effective tax rate.

The Company's federal and state income tax returns for the tax years 2011 to 2015 remain open to examination. The Company's tax returns in the United Kingdom remain open to examination for the tax years 2007 to 2015, and tax returns in Germany remain open indefinitely. The Company's tax returns for Canada remains open to examination for the tax years 2009 to 2015.

As of December 31, 2016, the Company's 2011 and 2012 federal income tax returns are under audit.

12. Purchase commitment

During 2014 the Company entered into a contract with Norwood Laboratories Inc. ("Norwood") to purchase $15.2 million of raw materials related to the Company's RSDL product. For the years ended December 31, 2016, 2015 and 2014, the Company purchased $4.5 million, $6.2 million and $1.5 million, respectively, of materials under this commitment.

13. 401(k) savings plan

The Company has established a defined contribution savings plan under Section 401(k) of the Internal Revenue Code. The 401(k) Plan covers substantially all U.S. employees. Under the 401(k) Plan, employees may make elective salary deferrals. The Company currently provides for matching of qualified deferrals up to 50% of the first 6% of the employee's salary. During the years ended December 31, 2016, 2015, and 2014, the Company made matching contributions of approximately $2.5 million, $2.2 million and $2.1 million, respectively.

14. Related party transactions

In November 2015, the Company entered into a consulting arrangement with a member of the Company's Board of Directors, amended in July 2016, to provide assistance in connection with the planned spin-off of Aptevo. The total compensation under the agreement was approximately $0.2 million per year. The consulting agreement terminated on August 1, 2016.

The Company entered into an agreement in February 2009 with an entity controlled by family members of the Company's Executive Chairman to market and sell BioThrax. The agreement was effective as of November 2008 and requires payment based on a percentage of net sales of biodefense products of 17.5% in Saudi Arabia and 15% in Qatar and United Arab Emirates, and reimbursement of certain expenses. No expenses were incurred under this agreement during 2016, 2015 and 2014.

15. Earnings per share

The following table presents the calculation of basic and diluted net income per share:

	Years ended December 31,		
(in thousands, except share and per share data)	**2016**	**2015**	**2014**
Numerator:			
Net income from continuing operations	$ 62,524	$ 91,416	$ 54,266
Interest expense, net of tax	3,255	3,019	2,879
Amortization of debt issuance costs, net of tax	781	868	735
Net income, adjusted from continuing operations	66,560	95,303	57,880
Net loss from discontinued operations	(10,748)	(28,546)	(17,525)
Net income, adjusted	$ 55,812	$ 66,757	$ 40,355
Denominator:			
Weighted-average number of shares-basic	40,184,159	38,595,435	37,344,891
Dilutive securities-equity awards	1,054,453	939,882	737,391
Dilutive securities-convertible debt	8,096,500	7,720,525	7,720,525
Weighted-average number of shares-diluted	49,335,112	47,255,842	45,802,807
Net income per share-basic from continuing operations	$ 1.56	$ 2.37	$ 1.45
Net loss per share-basic from discontinued operations	(0.27)	(0.74)	(0.47)
Net income per share-basic	$ 1.29	$ 1.63	$ 0.98
Net income per share-diluted from continuing operations	$ 1.35	$ 2.02	$ 1.26
Net loss per share-diluted from discontinued operations	(0.22)	(0.61)	(0.38)
Net income per share-diluted	$ 1.13	$ 1.41	$ 0.88

For the year ending December 31, 2016 and 2015, substantially all of the outstanding stock options to purchase shares of common stock were included in the calculation of diluted earnings per share. For the years ending December 31, 2014, outstanding stock options to purchase approximately 1.4 million shares of common stock, respectively, are not considered in the diluted earnings per share calculation because the exercise price of these options is greater than the average per share closing price during the year and their effect would be anti-dilutive.

16. Restructuring

In August 2016, the Company adopted a plan to restructure and reprioritize the operations of one of our facilities at the Emergent BioDefense Operations Lansing LLC ("EBOL") site due to the Company's large-scale manufacturing facility at EBOL commencing manufacturing operations. Severance and other related costs and asset-related charges are reflected within the Company's consolidated statement of income as a component of selling, general and administrative expense.

The Company has completed this restructuring. The costs of the restructuring as of December 31, 2016 are detailed below:

(in thousands)	**Incurred in 2016**	**Inception to Date Costs Incurred**	**Total Expected to be Incurred**
Termination benefits	$ 5,246	$ 5,246	$ 5,287
Abandonment of equipment	3,749	3,749	3,749

Other costs	691	691	691
Total	$ 9,686	$ 9,686	$ 9,727

During the years ended December 31, 2016, the Company abandoned certain equipment and associated assets at its EBOL facility related to the manufacturing process at Building 12 ("manufacturing process") asset group. The Company recorded a charge for the manufacturing process asset group of $3.7 million. The additional expense is classified in the Company's statements of operations as selling, general and administrative expense.

The following is a summary of the activity for the liabilities related to the EBOL restructuring:

(in thousands)	Termination Benefits
Balance at December 31, 2015	$ -
Expenses incurred	5,246
Amount paid	(889)
Other adjustments	-
Balance at December 31, 2016	$ 4,357

In addition to the above restructuring costs, the Company also recorded a charge of $2.0 million during the year ended December 31, 2016 related to retention payments for certain employees at the EBOL site.

17. Segment information

On August 6, 2015, the Company announced its plan to separate into two independent publicly-traded companies. In anticipation of the spin-off, the Company realigned certain components of its biosciences business to the new Aptevo segment to be consistent with how the CODM allocates resources and makes decisions about the operations of the Company. Effective January 1, 2016, the Company changed its segment presentation to reflect this new structure, and recast all prior periods presented to conform to the new presentation. On August 1, 2016, the Company completed the spin-off of Aptevo. The results of operations and financial position of Aptevo are reflected as discontinued operations for all periods presented through the date of the spin-off.

For financial reporting purposes, in the periods following the spin-off of Aptevo, the Company reports financial information for one business segment.

For the years ended December 31, 2016, 2015 and 2014, the Company's revenues from the United States comprised 96%, 98% and 96%, respectively, of total revenues. For the years ended December 31, 2016, 2015 and 2014, product revenues from BioThrax comprised approximately 80%, 89% and 87%, respectively, of total product revenues. As of December 31, 2016, 2015 and 2014, there were no other product sales in excess of 10% of total product sales revenues.

For years ended December 31, 2016 and 2015, the Company had long-lived assets outside of the United States of approximately $28.4 million and $25.8 million, respectively, which are primarily located within Canada.

18. Quarterly financial data (unaudited)

Quarterly financial information for the years ended December 31, 2016 and 2015 is presented in the following tables:

	Quarter Ended			
(in thousands, except per share data)	March 31,	June 30,	September 30,	December 31,
2016:				
Revenue	$ 102,964	$ 91,241	$ 142,914	$ 151,663
Income (loss) from operations	21,157	(2,042)	35,478	50,929
Net income (loss) from continuing operations	11,889	(2,042)	20,388	32,289
Net income (loss) from discontinued operations (1)	(7,898)	(8,905)	952	5,103
Net income (loss)	3,991	(10,947)	21,340	37,392
Net income (loss) per share from continuing operations-basic	$ 0.30	$ (0.05)	$ 0.50	$ 0.80
Net income (loss) per share from discontinued operations-basic	(0.20)	(0.22)	0.02	0.13
Net income (loss) per share-basic	$ 0.10	$ (0.27)	$ 0.52	$ 0.93
Net income (loss) per share from continuing operations-diluted	$ 0.26	$ (0.05)	$ 0.43	$ 0.67
Net income (loss) per share from discontinued operations-diluted	(0.16)	(0.22)	0.02	0.10
Net income (loss) per share-diluted	$ 0.10	$ (0.27)	$ 0.45	$ 0.77
2015				
Revenue	$ 52,147	$ 119,022	$ 158,378	$ 159,784
Income (loss) from operations	(21,895)	35,104	63,159	65,146
Net income (loss) from continuing operations	(15,728)	22,565	42,088	42,491
Net loss from discontinued operations	(5,792)	(8,465)	(5,145)	(9,144)
Net income (loss)	(21,520)	14,100	36,943	33,347
Net income (loss) per share from continuing operations-basic	$ (0.42)	$ 0.59	$ 1.08	$ 1.08
Net loss per share from discontinued operations-basic	(0.15)	(0.22)	(0.14)	(0.23)
Net income (loss) per share-basic	$ (0.57)	$ 0.37	$ 0.94	$ 0.85
Net income (loss) per share from continuing operations-diluted	$ (0.42)	$ 0.50	$ 0.90	$ 0.90
Net loss per share from discontinued operations-diluted	(0.15)	(0.18)	(0.11)	(0.19)
Net income (loss) per share-diluted	$ (0.57)	$ 0.32	$ 0.79	$ 0.71

(1) Reflects a change in estimate attributed to higher pretax income within continuing operations. According to the ordering rules of intraperiod tax allocation, the residual amount of change after determining the effective rate for continuing operations is allocated to discontinued operations.

19. Litigation

On July 19, 2016, Plaintiff William Sponn, or Sponn, filed a putative class action complaint in the United States District Court for the District of Maryland on behalf of purchasers of the Company's common stock between January 11, 2016 and June 21, 2016, inclusive, or the Class Period, seeking to pursue remedies under the Securities Exchange Act of 1934 against the Company and certain of its senior officers and directors, collectively, the Defendants. The complaint alleges, among other things, that the Company made materially false and misleading statements about the government's demand for BioThrax and expectations that the Company's five-year exclusive procurement contract with HHS would be renewed and omitted certain material facts. Sponn is seeking unspecified damages, including legal costs. On October 25, 2016 the Court added City of Cape Coral Municipal Firefighters' Retirement Plan and City of Sunrise Police Officers' Retirement Plan as plaintiffs and appointed them Lead Plaintiffs and Robins Geller Rudman & Dowd LLP as Lead Counsel. On December 27, 2016 the plaintiffs filed an amended complaint that cites the same class period, names the same defendants and makes similar allegations to the original complaint. The Company filed a Motion to Dismiss on February 27, 2017. The Defendants believe that the allegations in the complaint are without merit and intend to defend themselves vigorously against those claims. As of the date of this filing, the range of potential loss cannot be determined or estimated.

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

Not applicable.

ITEM 9A. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our chief executive officer and chief financial officer, evaluated the effectiveness of our disclosure controls and procedures as of December 31, 2016. The term "disclosure controls and procedures," as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act, means controls and other procedures of a company that are designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is recorded, processed, summarized and reported, within the time periods specified in the SEC's rules and forms. Disclosure controls and procedures include, without limitation, controls and procedures designed to ensure that information required to be disclosed by a company in the reports that it files or submits under the Exchange Act is accumulated and communicated to the company's management, including its principal executive and principal financial officers, as appropriate to allow timely decisions regarding required disclosure. Management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on the evaluation of our disclosure controls and procedures as of December 31, 2016, our chief executive officer and chief financial officer concluded that, as of such date, our disclosure controls and procedures were effective at the reasonable assurance level.

Management's Report on Internal Control Over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting, as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act. Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2016. In making this assessment, our management used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control-Integrated Framework* (2013 Framework). Based on this assessment, our management concluded that, as of December 31, 2016, our internal control over financial reporting was effective based on those criteria.

Ernst & Young LLP, the independent registered public accounting firm that has audited our consolidated financial statements included herein, has issued an attestation report on the effectiveness of our internal control over financial reporting as of December 31, 2016, a copy of which is included in this annual report on Form 10-K.

Changes in Internal Control Over Financial Reporting

During 2016, we completed the implementation of an enterprise resource planning ("ERP") system. In connection with the implementation, we updated the processes that constitute our internal control over financial reporting, as necessary, to accommodate related changes to our business processes and accounting procedures.

Although the processes that constitute our internal control over financial reporting have been materially affected by the implementation of this system and will require testing for effectiveness as the implementation progresses, we do not believe that the implementation has had or will have a material adverse effect on our internal control over financial reporting.

Except as otherwise described above, there have been no other changes in our internal control over financial reporting (as defined in Rules 13a-15(f) and 15d-15(f) under the Exchange Act) during the year ended December 31, 2016, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

Report of Ernst & Young LLP,
Independent Registered Public Accounting Firm,
Regarding Internal Control Over Financial Reporting

The Board of Directors and Stockholders of Emergent BioSolutions Inc. and subsidiaries

We have audited Emergent BioSolutions Inc. and subsidiaries' internal control over financial reporting as of December 31, 2016, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), (the COSO criteria). Emergent BioSolutions Inc. and subsidiaries' management is responsible for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Report on Internal Control Over Financial Reporting. Our responsibility is to express an opinion on the company's internal control over financial reporting based on our audit.

We conducted our audit in accordance with the standards of the Public Company Accounting Oversight Board (United States). Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, Emergent BioSolutions Inc. and subsidiaries maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheets of Emergent BioSolutions Inc. and subsidiaries as of December 31, 2016 and 2015, 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, 2016 of Emergent BioSolutions Inc. and subsidiaries and our report dated February 27, 2017 expressed an unqualified opinion thereon.

/s/ Ernst & Young LLP

McLean, Virginia
February 27, 2017

ITEM 9B. OTHER INFORMATION

Not applicable.

PART III

ITEM 10. DIRECTORS, EXECUTIVE OFFICERS AND CORPORATE GOVERNANCE

Code of Ethics

We have adopted a code of business conduct and ethics that applies to our directors, officers (including our principal executive officer, principal financial officer, principal accounting officer or controller, or persons performing similar functions), as well as our other employees. A copy of our code of business conduct and ethics is available on our website at www.emergentbiosolutions.com. We intend to post on our website all disclosures that are required by applicable law, the rules of the Securities and Exchange Commission or the New York Stock Exchange concerning any amendment to, or waiver of, our code of business conduct and ethics.

The remaining information required by Item 10 is hereby incorporated by reference from our Definitive Proxy Statement relating to our 2017 Annual Meeting of Stockholders, to be filed with the SEC within 120 days following the end of our fiscal year.

ITEM 11. EXECUTIVE COMPENSATION

The information required by Item 11 is hereby incorporated by reference from our Definitive Proxy Statement relating to our 2017 annual meeting of stockholders, to be filed with the SEC within 120 days following the end of our fiscal year.

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

The information required by Item 12 is hereby incorporated by reference from our Definitive Proxy Statement relating to our 2017 Annual Meeting of Stockholders, to be filed with the SEC within 120 days following the end of our fiscal year.

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

The information required by Item 13 is hereby incorporated by reference from our Definitive Proxy Statement relating to our 2017 Annual Meeting of Stockholders, to be filed with the SEC within 120 days following the end of our fiscal year.

ITEM 14. PRINCIPAL ACCOUNTANT FEES AND SERVICES

The information required by Item 14 is hereby incorporated by reference from our Definitive Proxy Statement relating to our 2017 Annual Meeting of Stockholders, to be filed with the SEC within 120 days following the end of our fiscal year.

PART IV

ITEM 15. EXHIBITS AND FINANCIAL STATEMENT SCHEDULES

Financial Statements

The following financial statements and supplementary data are filed as a part of this annual report on Form 10-K in Part I, Item 8.

Report of Independent Registered Public Accounting Firm
Consolidated Balance Sheets at December 31, 2016 and 2015
Consolidated Statements of Operations for the years ended December 31, 2016, 2015 and 2014
Consolidated Statements of Comprehensive Income for the years ended December 31, 2016, 2015 and 2014
Consolidated Statements of Cash Flows for the years ended December 31, 2016, 2015 and 2014
Consolidated Statement of Changes in Stockholders' Equity for the years ended December 31, 2016, 2015 and 2014
Notes to Consolidated Financial Statements

Financial Statement Schedules

Schedule II - Valuation and Qualifying Accounts for the years ended December 31, 2016, 2015 and 2014 has been filed as part of this annual report on Form 10-K. All other financial statement schedules are omitted because they are not applicable or the required information is included in the financial statements or notes thereto.

Exhibits

Those exhibits required to be filed by Item 601 of Regulation S-K are listed in the Exhibit Index immediately preceding the exhibits hereto and such listing is incorporated herein by reference.

SCHEDULE II - VALUATION AND QUALIFYING ACCOUNTS

(in thousands)	Beginning Balance	Charged to costs and expenses	Deductions	Ending Balance
Year ended December 31, 2016				
Inventory allowance	$ 1,637	$ 9,950	$ (8,052)	$ 3,535
Prepaid expenses and other current assets allowance	1,981	2,887	-	4,868
Year ended December 31, 2015				
Inventory allowance	$ 1,314	$ 6,258	$ (5,935)	$ 1,637

Prepaid expenses and other current assets allowance	1,885	96	-	1,981
Year ended December 31, 2014				
Inventory allowance	$ 963	$ 3,185	$ (2,834)	$ 1,314
Prepaid expenses and other current assets allowance	1,446	439	-	1,885

SIGNATURES

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

EMERGENT BIOSOLUTIONS INC.

By: /s/ Daniel J. Abdun-Nabi
Daniel J. Abdun-Nabi
President and Chief Executive Officer
Date: February 27, 2017

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

Signature	Title	Date
/s/Daniel J. Abdun-Nabi Daniel J. Abdun-Nabi	President, Chief Executive Officer and Director (Principal Executive Officer)	February 27, 2017
/s/Robert G. Kramer Robert G. Kramer	Executive Vice President, Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)	February 27, 2017
/s/Fuad El-Hibri Fuad El-Hibri	Executive Chairman of the Board of Directors	February 27, 2017
/s/Zsolt Harsanyi Zsolt Harsanyi, Ph.D.	Director	February 27, 2017
/s/Dr. Kathryn Zoon Dr. Kathryn Zoon	Director	February 27, 2017
/s/Ronald B. Richard Ronald B. Richard	Director	February 27, 2017
/s/Louis W. Sullivan, M.D. Louis W. Sullivan, M.D.	Director	February 27, 2017
/s/Dr. Sue Bailey Dr. Sue Bailey	Director	February 27, 2017
/s/George Joulwan George Joulwan	Director	February 27, 2017
/s/Jerome Hauer Jerome Hauer, Ph.D.	Director	February 27, 2017

Exhibit Index

All documents referenced below were filed pursuant to the Securities Exchange Act of 1934 by the Company, (File No. 001-33137), unless otherwise indicated.

Exhibit Number	Description
2.1	Contribution Agreement, dated July 29, 2016, by and among Emergent BioSolutions Inc., Aptevo Therapeutics Inc., Aptevo Research and Development LLC and Aptevo BioTherapeutics LLC (incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K, filed on August 4, 2016).
2.2	Separation and Distribution Agreement, dated July 29, 2016, by and between Emergent BioSolutions Inc. and Aptevo Therapeutics Inc. (incorporated by reference to Exhibit 2.2 to the Company's Current Report on Form 8-K, filed on August 4, 2016).
3.1	Third Restated Certificate of Incorporation of the Company (incorporated by reference to Exhibit 3 to the Company's Quarterly Report on Form 10-Q filed on August 5, 2016).
3.2	Amended and Restated By-laws of the Company (incorporated by reference to Exhibit 3 to the Company's Current Report on Form 8-K filed on August 16, 2012).
4.1	Specimen Common Stock Certificate (incorporated by reference to Exhibit 4.1 to Amendment No. 3 to the Company's Registration Statement on Form S-1 filed on October 20, 2006) (Registration No. 333-136622).
4.2	Registration Rights Agreement, dated as of September 22, 2006, among the Company and the stockholders listed on Schedule 1 thereto (incorporated by reference to Exhibit 4.3 to Amendment No. 1 to the Company's Registration Statement on Form S-1 filed on September 25, 2006) (Registration No. 333-136622).
4.3	Indenture, dated as of January 29, 2014, between the Company and Wells Fargo Bank, National Association, including the form of 2.875% Convertible Senior Notes due 2021 (incorporated by reference to Exhibit 4.1 to the Company's Current Report on Form 8-K filed on January 29, 2014).
9.1	Voting and Right of First Refusal Agreement, dated as of October 21, 2005, between the William J. Crowe, Jr. Revocable Living Trust and Fuad El-Hibri (incorporated by reference to Exhibit 9.1 to the Company's Registration Statement on Form S-1 filed on August 14, 2006) (Registration No. 333-136622).
10.1	Credit Agreement, dated as of December 11, 2013, among the Company, as borrower, certain of its subsidiaries party thereto, as guarantors, Bank of America, N.A., as administrative agent, and certain financial institutions party thereto as lenders (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on December 12, 2013).
10.2	First Amendment to Credit Agreement, dated as of January 17, 2014, among the Company, as borrower, certain of its subsidiaries party thereto, as guarantors, Bank of America, N.A., as administrative agent, and certain financial institutions party thereto as lenders (incorporated by reference to Exhibit 10.2 to the Company's Annual Report on Form 10-K filed on March 10, 2014).
10.3	Second Amendment to Credit Agreement, dated as of March 21, 2014, among the Company, as borrower, certain of its subsidiaries party thereto, as guarantors, Bank of America, N.A., as administrative agent, and certain financial institutions party thereto as lenders (incorporated by reference to Exhibit 10 to the Company's Quarterly Report on Form 10-Q filed on May 12, 2014).
10.4	Third Amendment to Credit Agreement, dated as of September 3, 2015, among the Company, as borrower, certain of its subsidiaries party thereto, as guarantors, Bank of America, N.A., as administrative agent, and certain financial institutions party thereto as lenders (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed on November 6, 2015).

10.5	#	Fourth Amendment to Credit Agreement, dated as of August 5, 2016, among the Company, as borrower, certain of its subsidiaries party thereto, as guarantors, Bank of America, N.A., as administrative agent, and certain financial institutions party thereto as lenders.
10.6	#	Fifth Amendment to Credit Agreement, dated as of November 30, 2016, among the Company, as borrower, certain of its subsidiaries party thereto, as guarantors, Bank of America, N.A., as administrative agent, and certain financial institutions party thereto as lenders.
10.7	*	Emergent BioSolutions Inc. Employee Stock Option Plan, as amended and restated on January 26, 2005 (incorporated by reference to Exhibit 10.1 to the Company's Registration Statement on Form S-1 filed on August 14, 2006) (Registration No. 333-136622).
10.8	*	Emergent BioSolutions Inc. 2006 Stock Incentive Plan (incorporated by reference to Exhibit 10.3 to Amendment No. 5 to the Company's Registration Statement on Form S-1 filed on October 30, 2006) (Registration No. 001-33137).
10.9	*	Amended and Restated Emergent BioSolutions Inc. 2006 Stock Incentive Plan (incorporated by reference to Exhibit 10.1 to the Company's Quarterly Report on Form 10-Q filed on August 7, 2009).
10.10	*	Second Amended and Restated Emergent BioSolutions Inc. 2006 Stock Incentive Plan (incorporated by reference to Appendix A to the Company's definitive proxy statement on Schedule 14A filed on April 6, 2012).
10.11	*	Third Amended and Restated Emergent BioSolutions Inc. 2006 Stock Incentive Plan (incorporated by reference to Appendix A to the Company's definitive proxy statement on Schedule 14A filed on April 7, 2014).
10.12	*	Fourth Amended and Restated Emergent BioSolutions Inc. 2006 Stock Incentive Plan (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed on August 5, 2016)..
10.13	*	Form of Director Nonstatutory Stock Option Agreement (incorporated by reference to Exhibit 10.5 to the Company's Annual Report on Form 10-K filed on March 8, 2013).
10.14	*	Form of Director Restricted Stock Unit Agreement (incorporated by reference to Exhibit 10.6 to the Company's Annual Report on Form 10-K filed on March 8, 2013).
10.15	*	Form of Non-Qualified Stock Option Agreement (incorporated by reference to Exhibit 10.7 to the Company's Annual Report on Form 10-K filed on March 8, 2013).
10.16	*	Form of Restricted Stock Unit Agreement (incorporated by reference to Exhibit 10.8 to the Company's Annual Report on Form 10-K filed on March 8, 2013).
10.17	*	Form of Performance-Based Stock Unit Award Agreement (incorporated by reference to Exhibit 10 to the Company's Current Report on Form 8-K filed on February 21, 2017).
10.18	*	Form of Indemnity Agreement for directors and senior officers (incorporated by reference to Exhibit 10 to the Company's Current Report on Form 8-K filed on January 18, 2013).
10.19	*	Director Compensation Program (incorporated by reference to Exhibit 10.10 to the Company's Annual Report on Form 10-K filed on March 8, 2013).
10.20	*	Annual Bonus Plan for Executive Officers (incorporated by reference to Exhibit 10.7 to the Company's Annual Report on Form 10-K filed on March 5, 2010).
10.21	*	Amended and Restated Senior Management Severance Plan (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on December 22, 2011).
10.22	*	Second Amended and Restated Senior Management Severance Plan (incorporated by reference to Exhibit 10 to the Company's Current Report on Form 8-K filed on July 16, 2015).
10.23		Amended and Restated Marketing Agreement, dated as of November 5, 2008, between Emergent Biodefense Operations Lansing LLC (formerly known as Emergent Biodefense Operations Lansing Inc.) and Intergen N.V. (incorporated by reference to Exhibit 10.27 to the Company's Annual Report on Form 10-K filed on March 6, 2009).
10.24	#††	Solicitation/Contract/Order for Commercial Items (the "CDC BioThrax Procurement Contract"), effective December 8, 2016, from the Centers for Disease Control and Prevention to Emergent Biodefense Operations Lansing LLC.
10.25	†	Award/Contract (the "BARDA NuThrax Contract"), effective September 30, 2016, from the BioMedical Advanced Research and Development Authority to Emergent Product Development Gaithersburg Inc. (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q filed on November 9, 2016).
12	#	Ratio of Earnings to Fixed Charges.
21	#	Subsidiaries of the Company.
23	#	Consent of Independent Registered Public Accounting Firm.
31.1	#	Certification of the Chief Executive Officer pursuant to Exchange Act Rule 13a-14(a).
31.2	#	Certification of the Chief Financial Officer pursuant to Exchange Act Rule 13a-14(a).
32.1	#	Certification of the Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
32.2	#	Certification of the Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.
101.INS		XBRL Instance Document
101.SCH		XBRL Taxonomy Extension Schema Document
101.CAL		XBRL Taxonomy Calculation Linksbase Document
101.DEF		XBRL Taxonomy Definition Linksbase Document
101.LAB		XBRL Taxonomy Label Linksbase Document
101.PRE		XBRL Taxonomy Presentation Linksbase Document

#	Filed herewith
†	Confidential treatment granted by the Securities and Exchange Commission as to certain portions. Confidential materials omitted and filed separately with the Securities and Exchange Commission.
††	Confidential treatment requested by the Securities and Exchange Commission as to certain portions. Confidential materials omitted and filed separately with the Securities and Exchange Commission.
*	Management contract or compensatory plan or arrangement filed herewith in response to Item 15(a) of Form 10-K.

Attached as Exhibit 101 to this Annual Report on Form 10-K are the following formatted in XBRL (Extensible Business Reporting Language): (i) Consolidated Balance Sheets as of December 31, 2016 and 2015, (ii) Consolidated Statements of Operations for the Years Ended December 31, 2016, 2015 and 2014, (iii) Consolidated Statements of Comprehensive Income for the Years Ended December 31, 2016, 2015 and 2014 (iv) Consolidated Statements of Cash Flows for the Years Ended December 31, 2016, 2015 and 2014, (v) Consolidated Statements of Changes in Stockholders' Equity for the Years ended December 31, 2016, 2015 and 2014, and (vi) Notes to Consolidated Financial Statements.

EXHIBIT 10.5

FOURTH AMENDMENT TO CREDIT AGREEMENT

This FOURTH AMENDMENT TO CREDIT AGREEMENT, dated as of August 5, 2016 (this "Amendment"), modifies that certain Credit Agreement, dated as of December 11, 2013 (as amended, restated, extended, supplemented or otherwise modified in writing from time to time, the "Credit Agreement"), among **EMERGENT BIOSOLUTIONS INC.**, a Delaware corporation (the "Borrower"), each Domestic Subsidiary of the Borrower from time to time party thereto as a Guarantor, each lender from time to time party thereto (collectively, the "Lenders" and individually, a "Lender"), and **BANK OF AMERICA, N.A.**, as administrative agent (in such capacity, the "Administrative Agent"), Swing Line Lender and L/C Issuer. Capitalized terms used herein and not defined shall have the meaning assigned to such terms in the Credit Agreement.

RECITALS

WHEREAS, the Borrower has requested that the Administrative Agent and the Lenders agree to amend certain of the terms and provisions of the Credit Agreement, as specifically set forth in this Amendment; and

WHEREAS, the Administrative Agent and each of the undersigned Lenders are prepared to amend the Credit Agreement on the terms, subject to the conditions and in reliance on the representations set forth herein.

NOW THEREFORE, in consideration of the premises and the mutual agreements contained here, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto hereby agree as follows:

Section 1. Amendment to Credit Agreement. Section 7.06 (Restricted Payments) is hereby amended and modified by restating clause (d) set forth therein in its entirety as follows:

"(d) so long as no Default or Event of Default shall have occurred and be continuing or would result therefrom, the Borrower may purchase, redeem or otherwise acquire its common Equity Interests issued by it pursuant to stock repurchase programs entered into by the Borrower from time to time in the ordinary course of business, provided, however, that the aggregate amount of Restricted Payments made pursuant to this Section 7.06(d) shall not exceed $75,000,000 per calendar year;"

Section 2. Conditions Precedent. This Amendment shall become effective as of the date first written above (the "Effective Date") upon the satisfaction of the following conditions precedent:

(a) Documentation. Administrative Agent shall have received all of the following, in form and substance satisfactory to Administrative Agent:

(i) a fully-executed and effective Amendment executed by the Borrower, the Guarantors, the Administrative Agent and the Required Lenders; and

(ii) such additional documents, instruments and information as Administrative Agent may reasonably request in connection with the transactions contemplated hereby.

(b) No Default. On the Effective Date and after giving effect to this Amendment, no event shall have occurred and be continuing that would constitute a Default or an Event of Default.

Section 3. Representations and Warranties; Reaffirmation of Grant. Each Loan Party hereby represents and warrants to the Administrative Agent and the Lenders that, as of the date hereof and after giving effect to this Amendment: (a) all representations and warranties of the Borrower and each other Loan Party set forth in the Credit Agreement and in any other Loan Document are true and correct in all material respects (except that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof) on and as of the date hereof, except to the extent such representations and warranties specifically relate to an earlier date, in which case such representations and warranties shall have been true and correct in all material respects as of such earlier date (except that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof), (b) no Default or Event of Default has occurred and is continuing, (c) the Credit Agreement and all other Loan Documents are and remain legally valid, binding obligations of the Loan Parties party thereto, enforceable against each such Loan Party in accordance with their respective terms, subject to bankruptcy, insolvency, reorganization, moratorium and other laws applicable to creditors' rights generally and subject to general principles of equity, and (d) the provisions of the Collateral Documents to which such Loan Party is a party are effective to create in favor of the Administrative Agent for the benefit of the Secured Parties a legal, valid and enforceable first priority Lien (subject only to Liens permitted by Section 7.01 of the Credit Agreement) on all right, title and interest of the respective Loan Parties in the Collateral described therein do and shall continue to secure the payment of all Obligations as set forth in such respective Collateral Documents. Each Loan Party hereby reaffirms its grant of a security interest in the Collateral to the Administrative Agent for the benefit of the Secured Parties, as security for the payment and performance in full of the Obligations.

Section 4. Survival of Representations and Warranties. All representations and warranties made in this Amendment or any other Loan Document shall survive the execution and delivery of this Amendment, and no investigation by the Administrative Agent or the Lenders shall affect the representations and warranties or the right of the Administrative Agent and the Lenders to rely upon them.

Section 5. Amendment as Loan Document. This Amendment constitutes a "Loan Document" under the Credit Agreement. Accordingly, it shall be an immediate Event of Default under the Credit Agreement if any representation, warranty, certification or statement of fact made by

any Loan Party under or in connection with this Amendment shall have been incorrect or misleading in any material respect when made or deemed made.

Section 6. Costs and Expenses. The Borrower shall pay not later than ten (10) Business Days after invoiced all reasonable out-of-pocket costs and expenses of the Administrative Agent (including the reasonable fees, charges and disbursements of counsel to the Administrative Agent) incurred in connection with the preparation, negotiation, execution and delivery of this Amendment, in each case, in accordance with Section 10.04 of the Credit Agreement.

Section 7. Governing Law. THIS AMENDMENT AND ANY CLAIMS, CONTROVERSY, DISPUTE OR CAUSE OF ACTION (WHETHER IN CONTRACT OR TORT OR OTHERWISE) BASED UPON, ARISING OUT OF OR RELATING TO THIS AMENDMENT AND THE TRANSACTIONS CONTEMPLATED HEREBY SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAW OF THE STATE OF NEW YORK.

Section 8. Execution. This Amendment may be executed in any number of counterparts and by different parties hereto in separate counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement. Delivery of an executed counterpart of a signature page to this Amendment by telecopier (or electronic mail (including in PDF format)) shall be effective as delivery of a manually executed counterpart of this Amendment.

Section 9. Limited Effect. This Amendment relates only to the specific matters expressly covered herein, shall not be considered to be an amendment or waiver of any rights or remedies that the Administrative Agent or any Lender may have under the Credit Agreement or under any other Loan Document (in each case, except as expressly set forth herein) or under Law, and shall not be considered to create a course of dealing or to otherwise obligate in any respect the Administrative Agent or any Lender to execute similar or other amendments or waivers or grant any amendments or waivers under the same or similar or other circumstances in the future.

Section 10. Ratification by Guarantors. Each of the Guarantors acknowledges that its consent to this Amendment is not required, but each of the undersigned nevertheless does hereby agree and consent to this Amendment and to the documents and agreements referred to herein. Each of the Guarantors agrees and acknowledges that (i) notwithstanding the effectiveness of this Amendment, such Guarantor's Guaranty shall remain in full force and effect without modification thereto and (ii) nothing herein shall in any way limit any of the terms or provisions of such Guarantor's Guaranty or any other Loan Document executed by such Guarantor (as the same may be amended from time to time), all of which are hereby ratified, confirmed and affirmed in all respects. Each of the Guarantors hereby agrees and acknowledges that no other agreement, instrument, consent or document shall be required to give effect to this Section 10.

Section 11. Spin-Off Transaction. Pursuant to that certain Consent and Agreement Regarding Proposed Spin-Off Transaction, dated February 26, 2016 (the "Spin-Off Consent"), among the Borrower, the Guarantors party thereto, the Administrative Agent and the Lenders, the Borrower hereby acknowledges and certifies that, concurrently with the effectiveness of distribution of the equity interests of the Aptevo Therapeutics Inc. to the shareholders of the Borrower, the following Subsidiaries of the Borrower (that were formerly Loan Parties) have been transferred to Aptevo Therapeutics Inc. pursuant to the Proposed Spin-Off Transaction (as such term is defined in the Spin-Off Consent): (i) Emergent Product Development Seattle, LLC, a Delaware corporation, and (ii) Aptevo BioTherapeutics LLC, a Delaware limited liability company (collectively, the "Specified Entities"). In connection with the Proposed Spin-Off Transaction, the Borrower requested that the Administrative Agent release each Specified Entity from its obligations under the Guaranty and release the Lien in favor of the Administrative Agent on the assets of each Specified Entity, and the undersigned Lenders hereby acknowledge and ratify such releases. The Borrower has further requested that the Lenders waive the requirements of the Collateral Documents with respect to actions required to be taken with respect to the Specified Promissory Note (as such term is defined in the Spin-Off Consent), including, the requirement that such Specified Promissory Note be delivered to the Agent, and the undersigned Lenders hereby agree to waive such requirements with respect to the Specified Promissory Note. The Loan Parties hereby acknowledge and confirm that, after giving effect to the consummation of the Proposed Spin-Off Transaction, the Loan Parties are in compliance with the requirements of Section 6.12 of the Credit Agreement. Each of the Loan Parties agrees and acknowledges that notwithstanding the effectiveness of the Proposed Spin-Off Transaction, such Loan Party's Guaranty shall remain in full force and effect without modification thereto and such Loan Party's grant of a Lien on the Collateral to secure the Obligations shall remain in full force and effect, and each are hereby ratified, confirmed and affirmed in all respects.

[*Signature Pages Follow*]

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be executed and delivered as of the date first above written.

BORROWER:

EMERGENT BIOSOLUTIONS INC.

By: /s/ Robert G. Kramer
Name: Robert G. Kramer
Title: Senior Vice President, CFO & Treasurer

GUARANTORS:

EMERGENT BIODEFENSE OPERATIONS LANSING LLC

EMERGENT COMMERCIAL OPERATIONS FREDERICK INC.

EMERGENT INTERNATIONAL INC.

EMERGENT PRODUCT DEVELOPMENT GAITHERSBURG INC.

EMERGENT EUROPE INC.

EMERGENT PROTECTIVE PRODUCTS USA INC.

By: /s/ Robert G. Kramer
Name: Robert G. Kramer
Title: Treasurer

CANGENE BIOPHARMA LLC

By: /s/ Michael R. Darling
Name: Michael R. Darling
Title: Treasurer

GUARANTORS (cont'd):

400 PROFESSIONAL LLC

By: /s/ Robert G. Kramer
Name: Robert G. Kramer
Title: Vice President

EMERGENT MANUFACTURING OPERATIONS BALTIMORE LLC

By: /s/ Robert G. Kramer
Name: Robert G. Kramer
Title: Executive Manager

EMERGENT VIROLOGY LLC

By: /s/ Robert G. Kramer
Name: Robert G. Kramer
Title: Treasurer

CANGENE PLASMA RESOURCES, INC.

By: /s/ Robert G. Kramer
Name: Robert G. Kramer
Title: Treasurer

ADMINISTRATIVE AGENT:

BANK OF AMERICA, N.A.

By: /s/ Linda Alto
Name: Linda Alto
Title: SVP

LENDERS:

BANK OF AMERICA, N.A., as a Lender, a L/C Issuer and Swing Line Lender

By: /s/ Linda Alto
Name: Linda Alto
Title: SVP

JPMORGAN CHASE BANK, N.A.

By: /s/ Anthony Galea
Name: Anthony Galea
Title: Vice President

PNC BANK, NATIONAL ASSOCIATION

By: /s/ Steven Day
Name: Steven Day
Title: Vice President

EXHIBIT 10.6

FIFTH AMENDMENT, LIMITED WAIVER AND CONSENT TO CREDIT AGREEMENT

This **FIFTH AMENDMENT, LIMITED WAIVER AND CONSENT TO CREDIT AGREEMENT**, dated as of November 30, 2016 (this "Amendment"), modifies that certain Credit Agreement, dated as of December 11, 2013 (as amended, restated, extended, supplemented or otherwise modified in writing from time to time, the "Credit Agreement"), among **EMERGENT BIOSOLUTIONS INC.**, a Delaware corporation (the "Borrower"), each Domestic Subsidiary of the Borrower from time to time party thereto as a Guarantor, each lender from time to time party thereto (collectively, the "Lenders" and individually, a "Lender"), and **BANK OF AMERICA, N.A.**, as administrative agent (in such capacity, the "Administrative Agent"), Swing Line Lender and L/C Issuer. Capitalized terms used herein and not defined shall have the meaning assigned to such terms in the Credit Agreement.

RECITALS

WHEREAS, the Borrower has informed the Administrative Agent and the Lenders that Emergent BioDefense Operations Lansing LLC and the Centers for Disease Control and Prevention have been engaged in discussion to enter into a new contract for the procurement of Biothrax that is anticipated to expire not earlier than five (5) years after its signing date (such transaction, the "BioThrax Renewal Transaction");

WHEREAS, the BioThrax Renewal Transaction is anticipated to be consummated on or prior to January 16, 2017 (the "Renewal Deadline");

WHEREAS, the existing BioThrax Contract will expire on November 30, 2016, and such expiration will result in an Event of Default under Section 8.01(n) of the Credit Agreement (such Event of Default, the "Specified Default");

WHEREAS, the Loan Parties have informed the Administrative Agent and the Lenders that the Loan Parties intend to liquidate and dissolve Cangene Plasma Resources, Inc., a Florida corporation (the "Specified Loan Party"), and, in connection therewith, to cause the Specified Loan Party to transfer all of its assets to another Loan Party (such transaction, the "Specified Dissolution Transaction");

WHEREAS, without the written consent of the Administrative Agent and the Required Lenders, Section 7.04 of the Credit Agreement prohibits the Loan Parties from consummating the Specified Dissolution Transaction;

WHEREAS, the Borrower has requested that the Administrative Agent and the Lenders (a) grant a limited waiver with respect to the Specified Default, (b) consent to the Specified Dissolution Transaction and (c) agree to amend certain of the terms and provisions of the Credit Agreement, as specifically set forth in this Amendment; and

WHEREAS, the Administrative Agent and each of the undersigned Lenders are prepared to (a) to grant a limited waiver with respect to the Specified Defaults, (b) consent to the Specified Dissolution Transaction and (c) amend the Credit Agreement, in each case, on the terms, subject to the conditions and in reliance on the representations set forth herein.

NOW THEREFORE, in consideration of the premises and the mutual agreements contained here, and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the parties hereto hereby agree as follows:

Section 1. Amendment to Credit Agreement. Section 1.01 (Defined Terms) is hereby amended by restating the following definitions contained in such Section in its entirety as follows:

"BioThrax" means, collectively, (a) BioThrax® (Anthrax Vaccine Absorbed), a vaccine indicated for the active immunization for the prevention of disease caused by *Bacillus anthracis* and (b) NuThrax™ (BioThrax® (Anthrax Vaccine Adsorbed) in combination with a novel immunostimulatory compound, CPG 7909).

"BioThrax Contracts" means, collectively, (a) that certain CDC BioThrax Procurement Contract (Contract No. 200-2011-42084), effective September 1, 2012, between Emergent BioDefense Operations Lansing LLC and the Centers for Disease Control and Prevention, and (b) that certain BARDA development and procurement contract (Contract No. HHSO100201600030C) between Emergent Product Development Gaithersburg Inc. and the Biomedical Advanced Research & Development Administration, and, in each case of clauses (a) and (b) as the same may be amended, restated, supplemented, replaced, substituted for, renewed, or otherwise modified from time to time.

Section 2. Limited Waiver. Subject to all of the other terms and conditions set forth herein and in reliance upon the agreements of the Borrower and the other Loan Parties contained herein, the Administrative Agent and the undersigned Lenders hereby temporarily waive until the Renewal Deadline the Specified Default. On and after the Renewal Deadline, the waiver set forth above shall automatically, without the requirement of any notice to the Borrower or any other Loan Party, terminate and expire and the Administrative Agent and the Lenders shall be free in their sole and absolute discretion to proceed to enforce any or all of their rights and remedies set forth in the Credit Agreement, the other Loan Documents, and under applicable law in respect of any Event of Default then outstanding.

Section 3. Consent. Notwithstanding the restrictions contained in the Credit Agreement or any other Loan Document, the Administrative Agent and the undersigned Lenders hereby consent to the Specified Dissolution Transaction, provided that (i) all of the assets of the Specified Loan Party shall be Disposed of to another Loan Party and (ii) no Default or Event of Default has occurred and is continuing or would result therefrom.

Section 4. Conditions Precedent. This Amendment shall become effective as of the date first written above (the "Effective Date") upon the satisfaction of the following conditions precedent:

(a) Documentation. Administrative Agent shall have received all of the following, in form and substance satisfactory to Administrative Agent:

(i) a fully-executed and effective Amendment executed by the Borrower, the Guarantors, the Administrative Agent and the Required Lenders; and

(ii) such additional documents, instruments and information as Administrative Agent may reasonably request in connection with the transactions contemplated hereby.

(b) No Default. On the Effective Date and after giving effect to this Amendment, no event shall have occurred and be continuing that would constitute a Default or an Event of Default.

Section 5. Representations and Warranties; Reaffirmation of Grant. Each Loan Party hereby represents and warrants to the Administrative Agent and the Lenders that, as of the date hereof and after giving effect to this Amendment: (a) all representations and warranties of the Borrower and each other Loan Party set forth in the Credit Agreement and in any other Loan Document are true and correct in all material respects (except that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof) on and as of the date hereof, except to the extent such representations and warranties specifically relate to an earlier date, in which case such representations and warranties shall have been true and correct in all material respects as of such earlier date (except that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof), (b) no Default or Event of Default has occurred and is continuing, (c) the Credit Agreement and all other Loan Documents are and remain legally valid, binding obligations of the Loan Parties party thereto, enforceable against each such Loan Party in accordance with their respective terms, subject to bankruptcy, insolvency, reorganization, moratorium and other laws applicable to creditors' rights generally and subject to general principles of equity, and (d) the provisions of the Collateral Documents to which such Loan Party is a party are effective to create in favor of the Administrative Agent for the benefit of the Secured Parties a legal, valid and enforceable first priority Lien (subject only to Liens permitted by Section 7.01 of the Credit Agreement) on all right, title and interest of the respective Loan Parties in the Collateral described therein and do and shall continue to secure the payment of all Obligations as set forth in such respective Collateral Documents. Each Loan Party hereby reaffirms its grant of a security interest in the Collateral to the Administrative Agent for the benefit of the Secured Parties, as security for the payment and performance in full of the Obligations.

Section 6. Survival of Representations and Warranties. All representations and warranties made in this Amendment or any other Loan Document shall survive the execution and delivery of this Amendment, and no investigation by the Administrative Agent or the Lenders shall affect the representations and warranties or the right of the Administrative Agent and the Lenders to rely upon them.

Section 7. Amendment as Loan Document. This Amendment constitutes a "Loan Document" under the Credit Agreement. Accordingly, it shall be an immediate Event of Default under the Credit Agreement if any representation, warranty, certification or statement of fact made by any Loan Party under or in connection with this Amendment shall have been incorrect or misleading in any material respect when made or deemed made.

Section 8. Costs and Expenses. The Borrower shall pay not later than ten (10) Business Days after invoiced all reasonable out-of-pocket costs and expenses of the Administrative Agent (including the reasonable fees, charges and disbursements of counsel to the Administrative Agent) incurred in connection with the preparation, negotiation, execution and delivery of this Amendment, in each case, in accordance with Section 10.04 of the Credit Agreement.

Section 9. Governing Law. THIS AMENDMENT AND ANY CLAIMS, CONTROVERSY, DISPUTE OR CAUSE OF ACTION (WHETHER IN CONTRACT OR TORT OR OTHERWISE) BASED UPON, ARISING OUT OF OR RELATING TO THIS AMENDMENT AND THE TRANSACTIONS CONTEMPLATED HEREBY SHALL BE GOVERNED BY, AND CONSTRUED IN ACCORDANCE WITH, THE LAW OF THE STATE OF NEW YORK.

Section 10. Execution. This Amendment may be executed in any number of counterparts and by different parties hereto in separate counterparts, each of which when so executed shall be deemed to be an original and all of which taken together shall constitute one and the same agreement. Delivery of an executed counterpart of a signature page to this Amendment by telecopier (or electronic mail (including in PDF format)) shall be effective as delivery of a manually executed counterpart of this Amendment.

Section 11. Limited Effect. This Amendment relates only to the specific matters expressly covered herein, shall not be considered to be an amendment or waiver of any rights or remedies that the Administrative Agent or any Lender may have under the Credit Agreement or under any other Loan Document (in each case, except as expressly set forth herein) or under Law, and shall not be considered to create a course of dealing or to otherwise obligate in any respect the Administrative Agent or any Lender to execute similar or other amendments, consents, or waivers or grant any amendments, consents or waivers under the same or similar or other circumstances in the future.

Section 12. Assignment of BioThrax Contract. Borrower hereby agrees that, on or prior to February 28, 2017 (or such later date as may be agreed to by the Administrative Agent in its sole discretion), the Borrower and the Guarantors shall take such action with respect to the BioThrax Contract (which is the subject of the BioThrax Renewal Transaction) under the Federal Assignment of Claims Act of 1940, 31 U.S.C. 3727, 41 U.S.C. 15, as the Administrative Agent shall reasonably request, such that all payments under such BioThrax Contracts are validly assigned to the Administrative Agent, for the benefit of the Secured Parties. It is understood and agreed that the Borrower and the Guarantors shall not be required to take any action under the Federal Assignment of Claims Act of 1940, 31 U.S.C. 3727, 41 U.S.C. 15 in respect of the BioThrax Contract described in clause (b) of the definition thereof.

Section 13. Ratification by Guarantors. Each of the Guarantors acknowledges that its consent to this Amendment is not required, but each of the undersigned nevertheless does hereby agree and consent to this Amendment and to the documents and agreements referred to herein. Each of the Guarantors agrees and acknowledges that (i) notwithstanding the effectiveness of this Amendment, such Guarantor's Guaranty shall remain in full force and effect without modification thereto and (ii) nothing herein shall in any way limit any of the terms or provisions of such Guarantor's Guaranty or any other Loan Document executed by such Guarantor (as the same may be amended from time to time), all of which are hereby ratified, confirmed and affirmed in all respects. Each of the Guarantors hereby agrees and acknowledges that no other agreement, instrument, consent or document shall be required to give effect to this Section 13.

[*Signature Pages Follow*]

IN WITNESS WHEREOF, the parties hereto have caused this Amendment to be executed and delivered as of the date first above written.

BORROWER:

EMERGENT BIOSOLUTIONS INC.

By: /s/ Robert G. Kramer
Name: Robert G. Kramer
Title: Executive Vice President, CFO & Treasurer

GUARANTORS:

EMERGENT BIODEFENSE OPERATIONS LANSING LLC

EMERGENT COMMERCIAL OPERATIONS FREDERICK INC.

EMERGENT INTERNATIONAL INC.

EMERGENT PRODUCT DEVELOPMENT GAITHERSBURG INC.

EMERGENT EUROPE INC.

EMERGENT PROTECTIVE PRODUCTS USA INC.

EMERGENT VIROLOGY LLC

By: /s/ Robert G. Kramer
Name: Robert G. Kramer
Title: Treasurer

GUARANTORS (cont'd):

400 PROFESSIONAL LLC

By: /s/ Robert G. Kramer
Name: Robert G. Kramer
Title: Vice President

CANGENE BIOPHARMA LLC

By: /s/ Michael R. Darling
Name: Michael R. Darling
Title: Treasurer

EMERGENT MANUFACTURING OPERATIONS BALTIMORE LLC

By: /s/ Robert G. Kramer
Name: Robert G. Kramer
Title: Executive Manager

CANGENE PLASMA RESOURCES, INC.

By: /s/ Robert G. Kramer
Name: Robert G. Kramer
Title: Treasurer

ADMINISTRATIVE AGENT:

BANK OF AMERICA, N.A.

By: /s/ Erik M. Truette
Name: Erik M. Truette
Title: Vice President

LENDERS:

BANK OF AMERICA, N.A., as a Lender, a L/C Issuer and Swing Line Lender

By: /s/ Linda Alto
Name: Linda Alto
Title: SVP

JPMORGAN CHASE BANK, N.A.

By: /s/ Anthony Galea
Name: Anthony Galea
Title: Vice President

PNC BANK, NATIONAL ASSOCIATION

By: /s/ Eric H. Williams
Name: Eric H. Williams
Title: Vice President

EXHIBIT 10.24

Confidential Materials omitted and filed separately with the
Securities and Exchange Commission. Double asterisks denote omissions.

SOLICITATION/CONTRACT/ORDER FOR COMMERCIAL ITEMS *OFFEROR TO COMPLETE BLOCKS 12, 17, 23, 24, & 30*			1. REQUISITION NO. 0000HCGE-2017-05523	PAGE 1 OF 28
2. CONTRACT NO. 200-2017-92634	3. AWARD/EFFECTIVE DATE 12/08/2016	4. ORDER NO.	5. SOLICITATION NO. 2016-N-17905	6. SOLICITATION ISSUE DATE 08/22/2016
7. FOR SOLICITATION INFORMATION CALL	a. NAME Sherrie N. Randall		b. TELEPHONE NO. *(No collect calls)* (770) 488-2866	8. OFFER DUE DATE/LOCAL TIME 09/02/2016

9. ISSUED BY CODE 2543	10. THIS ACQUISITION IS	11. DELIVERY FOR FOB	12. DISCOUNT TERMS
Centers for Disease Control and Prevention Office of Acquisition Services (OAS) 2920 Brandywine Rd, RM 3000 Atlanta, GA 30341-5539	UNRESTRICTED SET ASIDE: % FOR SMALL BUSINESS SMALL DISADV. BUSINESS 8(A) SIC: SIZE STD:	DESTINATION UNLESS BLOCK IS MARKED SEE SCHEDULE	13a. THIS CONTRACT IS A RATED ORDER UNDER DPAS (15 CFR 700) 13b. RATING 14. METHOD OF SOLICITATION RFQ IFB RFP

15. DELIVER TO CODE		16. ADMINISTERED BY CODE 2543
		Centers for Disease Control and Prevention Office of Acquisition Services (OAS) 2920 Brandywine Rd, RM 3000 Atlanta, GA 30341-5539
17a. CONTRACTOR/ OFFEROR CODE 026489018 FACILITY CODE		18a. PAYMENT WILL BE MADE BY CODE 434
EMERGENT BIODEFENSE OPERATIONS LANSING LLC 3500 N MARTIN LUTHER KING JR BLVD # 1 LANSING, MI 48906-2933 TELEPHONE NO.		Centers for Disease Control and Prevention (FMO) PO Box 15580 404-718-8100 Atlanta, GA 30333-0080
17b. CHECK IF REMITTANCE IS DIFFERENT AND PUT SUCH ADDRESS IN OFFER		18b. SUBMIT INVOICES TO ADDRESS SHOWN IN BLOCK 18a UNLESS BLOCK BELOW IS CHECKED SEE ADDENDUM

19. ITEM NO.	20. SCHEDULE OF SUPPLIES/SERVICES	21. QUANTITY	22. UNIT	23. UNIT PRICE	24. AMOUNT
	"See Continuation Page" ***(Attach Additional Sheets as Necessary)***				

25. ACCOUNTING AND APPROPRIATION DATA See Section B	26. TOTAL AWARD AMOUNT *(For Govt. Use Only)* $910,710,699.10

27a. SOLICITATION INCORPORATES BY REFERENCE FAR 52.212-1, 52.212-4. FAR 52.212-3 AND 52.212-5 ARE ATTACHED. ADDENDA ARE ARE NOT ATTACHED.

27b. CONTRACT/PURCHASE ORDER INCORPORATES BY REFERENCE FAR 52.212-4. FAR 52.212-5 IS ATTACHED. ADDENDA ARE ARE NOT ATTACHED.

28. CONTRACTOR IS REQUIRED TO SIGN THIS DOCUMENT AND RETURN 1 COPIES TO ISSUING OFFICE. CONTRACTOR AGREES TO FURNISH AND DELIVER ALL ITEMS SET FORTH OR OTHERWISE IDENTIFIED ABOVE AND ON ANY ADDITIONAL SHEETS SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED HEREIN.	29. AWARD OF CONTRACT: REFERENCE OFFER DATED . YOUR OFFER ON SOLICITATION (BLOCK 5), INCLUDING ANY ADDITIONS OR CHANGES WHICH ARE SET FORTH HEREIN, IS ACCEPTED AS TO ITEMS:
30a. SIGNATURE OF OFFEROR/CONTRACTOR /s/ Daniel J. Abdun-Nabi	31a. UNITED STATES OF AMERICA *(SIGNATURE OF CONTRACTING OFFICER)*
30b. NAME AND TITLE OF SIGNER *(TYPE OR PRINT)* Daniel J. Abdun-Nabi President and Chief Executive Officer	30c. DATE SIGNED 12/08/2016
31b. NAME OF CONTRACTING OFFICER *(TYPE OR PRINT)* Sherrie N. Randall	31c. DATE SIGNED

32a. QUANTITY IN COLUMN 21 HAS BEEN RECEIVED INSPECTED ACCEPTED, AND CONFORMS TO THE CONTRACT, EXCEPT AS NOTED	33. SHIP NUMBER PARTIAL FINAL	34. VOUCHER NUMBER	35. AMOUNT VERIFIED CORRECT FOR
32b. SIGNATURE OF AUTHORIZED GOVT REPRESENTATIVE	32c. DATE	36. PAYMENT COMPLETE PARTIAL FINAL	37. CHECK NUMBER
		38. S/R ACCOUNT NO.	39. S/R VOUCHER NO.	40. PAID BY
41a. I CERTIFY THIS ACCOUNT IS CORRECT AND PROPER FOR PAYMENT		42a. RECEIVED BY *(Print)*	
41b. SIGNATURE AND TITLE OF CERTIFYING OFFICER	41c. DATE	42b. RECEIVED AT *(Location)*	
		42c. DATE REC'D *(YY/MM/DD)*	42d. TOTAL CONTAINERS	

AUTHORIZED FOR LOCAL REPRODUCTION SEE REVERSE FOR OMB CONTROL NUMBER AND PAPERWORK BURDEN STATEMENT STANDARD FORM 1449 (10-95)

Section B - Supplies Or Services and Prices/Costs

B.1

ITEM	SUPPLIES / SERVICES	QTY / UNIT	UNIT PRICE	NOT TO EXCEED
1001	BioThrax [**] product [**] upon date of delivery: [**] product at a unit price of $[**] Delivery Address: Contractor's Facility Delivery is estimated to occur within [**] of the exercised option	[**]Doses	$ [**]	$ [**]
	Line(s) Of Accounting: 93904ZU 2642 2017 75-X-0956 5664711101 $[**] 93907PY 2642 2017 75-X-0956 5664711101 $[**] 93907QS 2642 2017 75-X-0956 5664711101 $[**] 93907R5 2642 2017 75-X-0956 5664711101 $[**] 93907R6 2642 2017 75-X-0956 5664711101 $[**]			

Optional Line Item

ITEM	SUPPLIES / SERVICES	QTY / UNIT	UNIT PRICE	NOT TO EXCEED
0001	BioThrax [**] product [**] upon date of delivery: [**] product at a unit price of $[**] estimated per the [**] unit price. Delivery Address: Contractor's Facility Delivery is estimated to occur by [**]	[**]Doses	$ [**]	$ [**]

Optional Line Item

ITEM	SUPPLIES / SERVICES	QTY / UNIT	UNIT PRICE	NOT TO EXCEED
0002	BioThrax [**] product [**] upon date of delivery: [**] product at a unit price of $[**] Delivery Address: Contractor's Facility Delivery is estimated to occur by [**]	[**]Doses	$ [**]	$ [**]

Optional Line Item

ITEM	SUPPLIES / SERVICES	QTY / UNIT	UNIT PRICE	NOT TO EXCEED
0003	BioThrax [**] product [**] upon date of delivery: [**] product at a unit price of $[**] Delivery Address: Contractor's Facility Delivery is estimated to occur by [**]	[**]Doses	$ [**]	$ [**]

Optional Line Item

ITEM	SUPPLIES / SERVICES	QTY / UNIT	UNIT PRICE	NOT TO EXCEED
0004	BioThrax [**] product [**] upon date of delivery: [**] product at a unit price of $[**] Delivery Address: Contractor's Facility Delivery is estimated to occur by [**]	[**]Doses	$ [**]	$ [**]

Optional Line Item

ITEM	SUPPLIES / SERVICES	QTY / UNIT	UNIT PRICE	NOT TO EXCEED
0005	BioThrax [**] product [**] upon date of delivery: [**] product at a unit price of $[**] Delivery Address: Contractor's Facility Delivery is estimated to occur by 09/30/2021	[**]Doses	$ [**]	$ [**]

ESTIMATED NOT TO EXCEED TOTAL

$910,710,699.10

B.2 Option for Increased Quantity – Separately Priced Line Items

a) The Government may require the delivery of doses listed in CLINs 0001, 0002, 0003, 0004 and 0005. The Government may exercise each CLIN as an option more than once between 12/01/2016 – 09/30/2021, until the cumulative number of doses to be delivered under each CLIN is delivered, according to the proposed pricing schedule in incremental quantities from a minimum order of [**] doses per order up to the to the maximum amount of doses allowed per each CLIN. The total doses ordered hereunder shall not exceed 29,489,780 doses over 5 years ([**] for CLIN 1001, [**] for CLIN 0001, [**] for CLIN 0002, [**] for CLIN 0003, [**] for CLIN 0004 and [**] for CLIN 0005) The contractor shall not be required to deliver beyond 09/30/2021.

b) The pricing schedule must identify indicate alternate pricing to be paid for:

1) product manufactured with approved [**] expiry dating if the Contractor obtains FDA approval for [**] dating.

2) product manufactured with approved [**] expiry dating if the Contractor obtains FDA approval for [**] dating.

c) The amount of funding for each instance of exercising an option CLIN can be calculated as follows: number of doses X price per dose for the CLIN being exercised = funding amount.

d) The Contracting Officer may exercise the option by written notice to the Contractor. The Contractor will be notified in writing, by letter or email, at least [**] before the option to acquire more product is exercised. After that written notification, a funded, unilateral modification will be issued to actually exercise the option and order the doses. Anything beyond the initial award (CLIN 1001) is optional and up to the discretion of the Government. The number of times the option will be exercised is optional and up to the discretion of the Government. The Government reserves the right at any time to discontinue the use of the Option CLINs 0001, 0002, 0003, 0004 or 0005 without notice.

e) Alternate CLINs (with the same CLIN number and a two-digit numeric suffix) within a CLIN collectively function as one option. The maximum number of doses ordered against an option CLIN may be composed of a combination of orders from the CLIN and any alternate CLINs comprising that option.

f) The Contracting Officer may exercise the option so long as the total cost of the contract DOES NOT EXCEED the estimated cost of $910,710,699.10 which is based on a [**] dose price. The Government may exercising the option based on a [**] dose price or a [**] does price as stated below in the table.

Price Per Unit Cost by Date	Dose Price- [**]	Dose Price- [**]
Price per unit cost until [**]	[**]	[**]
Price per unit cost until [**]	[**]	[**]
Price per unit cost until [**]	[**]	[**]
Price per unit cost until [**]	[**]	[**]
Price per unit cost until 09/30/2021	[**]	[**]

B.3 Delivery Schedule

The Contractor shall propose a delivery schedule of products to include number of doses and dates.

NOTE: Anything beyond the initial award (CLIN 1001) is optional and up to the discretion of the Government.

CLIN	**# of Doses to be delivered**	**Date of Delivery**
1001	**[**]**	**Final Delivery to occur within [**] of contract award**
0001 (Optional)	**[**]**	**Final Delivery to occur by [**]**
0002 (Optional)	**[**]**	**Final Delivery to occur by [**]**
0003 (Optional)	**[**]**	**Final Delivery to occur by [**]**
0004 (Optional)	**[**]**	**Final Delivery to occur by [**]**
0005 (Optional)	**[**]**	**Final Delivery to occur by 09/30/2021**

B.4. Use of product by the US Government

To the extent that third parties contact DSNS to obtain doses of BioThrax®, DSNS will:

a) Notify such third parties that Emergent sells BioThrax on the commercial market

b) Notify Contractor of any new third party inquiries monthly and state whether the request for BioThrax was fulfilled or not by DSNS on the monthly report

c) If the SNS is involved in an "emergency" response no notification will be provided.

B.5 Price Protections.

Should the Government be unable to pick up product within [**] days of a scheduled delivery date while Emergent is ready, able and willing to deliver released lots of BioThrax, on the scheduled delivery date, the pricing for such lots shall be based on the remaining expiry dating as of the scheduled delivery date. This does not apply if the shipment is rescheduled at the Contractor's request. Further, this does not apply if there are unresolved issues with the quality, safety, and/or efficacy of the delivered product.

Section C - Description/Specification/Work Statement

C.1 Vaccine Production and cGMP Compliance:

a) The Contractor shall manufacture BioThrax® in accordance with current Good Manufacturing Practices (cGMP) guidelines.

b) BioThrax® must be delivered on any business day, except Federal holidays, within the scheduled month in accordance with the targeted delivery schedule. The Contractor shall notify the Government promptly upon becoming aware of any deviations from the targeted delivery schedule. All changes to the targeted delivery schedule must be approved by the Contracting Officer and/or the Contracting Officer's Representative (COR).

c) Quantities for each scheduled delivery shall be of a specific quantity.

d) The Contractor shall perform all requisite assays and release tests, including but not limited to potency, identity, and stability testing in accordance with the Food Drug Administration (FDA) approved Biologic License Application (BLA-License Number 1755, STN 103821, and any approved change).

e) All BioThrax® delivered under this contract must be labeled with an expiration date consistent with its current product license at the time of manufacture.

f) The Contractor shall provide primary and secondary points of contact who shall be available 24 hours per day, seven days per week to be notified in case of a public health emergency.

g) The Contractor shall notify the Government of Biologics Process Deviation Reports related to the safety and/or efficacy of BioThrax within [**] days after reporting to FDA. These notifications shall also be included in Quarterly Reports.

h) The Government will have the option to conduct inspections of the Contractor's Lansing facility. Such inspections will be performed by the COR or the COR's designee(s).

i) The product must be delivered in accordance with cGMP guidelines.

j) The Contractor shall notify DSNS at least [**] days prior to the estimated delivery of product. At least [**] business days prior to the product being ready for delivery to DSNS, the Contractor shall provide to the Contracting Officer and COR the following:

i. The date the product will be ready for loading on the truck(s) scheduled by DSNS
ii. Physical address of the product pick up location (facility name, address, point of contact name and telephone number)
iii. Number of pallets, vials, and doses to be loaded

k) At least [**] hours before each scheduled pick up by DSNS, the Contractor shall provide the following to the Contracting Officer and COR:

i. Packing Slip
ii. Actual number of pallets, vials and doses to be loaded
iii. Diagram of product shipment pallet (how many vials per box, per pallet)
iv. Certificate(s) of Analysis
v. FDA Lot Release(s)

l) Within [**] business days after delivery, the Government will provide the Contractor with the DSNS destination location(s) for the lot(s) delivered.

m) Within [**] hours after the product has been picked up by DSNS, the Contractor shall provide to the Contracting Officer and COR a letter for each delivered lot from the Contractor's Quality Department containing the following information:

i. The remaining ambient temperature exposure time for the lot until the point that DSNS (or DSNS-designated personnel) assumed responsibility for temperature control, per Section E.4
ii. This letter shall also indicate that the product was manufactured and released in accordance with cGMP and has met all acceptance criteria to allow for Government distribution.

n) Funds provided shall be paid on a price per doses basis only on those products delivered to DSNS under contract.

o) Under the CLINs of this contract, the products shall have an [**] product. The Contractor shall target greater than or equal to [**] of the total [**] remaining when the Government takes delivery of the product. In the event that product with lower than targeted [**] should be delivered, product with an [**] greater than or equal to [**] shall be deemed [**] product. Except as set forth in Section B.5 above, [**] when the Government takes delivery of the product according to the proposed pricing schedule table and Section B.2 in Section B.

C.2 Audits/Site Visits:

a) Site Visits/Audits: The Government shall perform annual site visits/security audits as deemed necessary by the Government throughout the period of performance of the contract.

b) Quality: The Government reserves the right to visit the contractor's site for purposes of assessing quality on an annual basis or as deemed necessary by the Government throughout the period of performance of the contract.

c) Notice: The Government will provide 2 weeks advance notice prior to the Contractor of all site visits and audits. The notice will include a statement concerning the intended scope of the audit and a list of the required documents or access to personnel.

d) All audits will be conducted between normal business hours i.e. 8 a.m. through 4 p.m., Monday through Friday.

C.3 Meetings and Reporting Requirements:

a) The Contractor shall participate in a quarterly meeting (teleconference and/or face-to-face) to discuss performance under the contract. These meetings will provide status updates and discuss on-going manufacturing and delivery issues as applicable. These meetings will be coordinated by the COR and/or Contracting Officer

b) The Contractor shall submit to the Contracting Officer and to the COR quarterly progress reports covering the work accomplished during each reporting period. These reports are subject to the technical inspection and requests for clarification by the COR. These shall be brief and factual and prepared in accordance with the following format:

(1) Quarterly Progress Reports: On the [**] day of each quarter, the Contractor shall submit a quarterly progress report to the COR and the Contracting Officer. The Contractor shall submit one copy of the quarterly progress report electronically via e-mail. Any attachments to the e-mail report shall be submitted in Microsoft Word or a compatible version. A quarterly report will not be required for the quarter where a final report is due.

Such reports shall include the following specific information:

a. The contract number and title, the period of performance being reported, the contractor's name and address, the author(s), and the date of submission;

b. Section I – An introduction covering the purpose and scope of the contract effort;

c. Section II – The report shall detail, document, and summarize the results of work done in performance of requirements of this contract during the period covered, and include a summary of work planned for the next reporting period. Production capacity assessment problems and recommendations to include:

i. Inventory report of product manufactured and delivered to the USG under this contract;
ii. Biologics Process Deviation Reports related to the safety and/or efficacy of BioThrax submitted to FDA.
iii. Overall performance assessment, problems encountered and recommended solutions.

d. Section III – An explanation of any difference between planned progress and actual progress, why the differences have occurred, and, if behind planned progress, what corrective steps are planned. The project plan and delivery schedule will be updated in each Quarterly Report and compared to the baseline plan and delivery schedule.

(1) Risk Mitigation Plan: The contractor shall submit a risk mitigation plan within [**] days after contract award and shall provide an updated plan after each year is complete. The plan should identify manufacturing, quality, regulatory, and shipment risks and countermeasures to mitigate these risks.

(2) Final Report: A final report is due [**] days prior to the end of the period of performance of the contract.

The Contractor shall deliver, within the time frames specified above, original reports to the Contracting Officer and a copy to the COR. E-mail submissions of all reports are allowable, but not required.

SECTION D - CONTRACT DOCUMENTS, EXHIBITS OR ATTACHMENTS

D.1 Marking Requirements (May 1998)

The contractor must mark/stencil all shipping containers with the following information:

Packaging shall be consistent with the FDA approved labeling and packaging for this product at the time of manufacture.

D.2. Government Property List

NOTE: This information is still being audited under the previous Contract Number 200-2011-42804. The contractor shall incorporate the resulting post-audit listing in full to this contract.

Section E - Deliveries Or Performance

E.1. Temperature Control and Monitoring (FOB Origin Delivery): The Contractor shall be responsible for maintaining product temperature control until the product leaves the Contractor's validated [**]°C storage facility for loading onto the carrier designated by the Government. The Contractor shall provide the Government with an ambient exposure letter that covers the time until the product leaves the Contractor's validated [**]°C storage facility. Upon transfer of the product to the Government, the responsibility for temperature control shall transfer to the Government. as well as the responsibility for logging ambient exposure time (temperatures between [**]°C). The Government will provide and place temperature monitoring device(s) on each pallet of product while the product is inside the Contractor's validated [**]°C storage facility. The Contractor shall be responsible for placing the product onto the truck(s) of the Government-designated carrier. The Government will be allowed access to the pallets inside the Contractor's validated [**]°C storage facility at least one hour prior to the loading of the pallets to place temperature monitoring device(s) on the pallets prior to loading. The Government's acceptance of the aforementioned responsibility applies only to temperature control and does not indicate its acceptance of the delivered lot(s).

E.2. DSNS Quality Control Unit (QCU) Acceptance Procedure for BioThrax (AVA)

At the time the product is picked up by DSNS personnel or delivered to a designated DSNS delivery location, all AVA product will be placed into DSNS Quarantine pending receipt of the required lot distribution documentation and the remaining ambient exposure time letter from the Contractor. The Contractor shall supply the Government:

1. Notification of practices that may impact DSNS shipping procedures, if applicable
2. All items outlined for delivery of product.

E.3. Acceptance Process and Timeframe (FOB Origin Delivery)

1) Contractor shall deliver to the Government, via e-mail or facsimile:
   a) All required documentation outlined for delivery of product
   b) Notification of the date and time that the product was delivered.
2) Acceptance Timeframe: The Government will have [**] full business days, after receipt of all documentation required to establish that the requirements have been satisfied and provide Contractor notice that DSNS accepts the lot(s).
   a) For purposes of this acceptance timeframe, business days are defined as 9:00AM to 5:00PM Eastern Time, Monday through Friday, excluding U.S. Government Holidays.
   b) For the avoidance of doubt, DSNS will provide the Contractor with a written acceptance or refusal of BioThrax® lot(s) no later than 5:00PM on the [**] business day after receipt of the documentation.

E.4. Product Delivery - Product Pick Up by SNS (FOB Origin Deliveries)

a) The delivery of BioThrax® product shall be F.O.B Origin at the Contractor designated pick up location.

b) At least [**] days prior to an estimated delivery, Contractor will notify the COR of the scheduled delivery date

c) The place of product pick up by the SNS will be provided by the Contractor to the Contracting Officer and COR at least [**] business days prior to scheduled pick up.

E.5. Delivery Documentation

For product delivered FOB Origin, the Contractor shall deliver, within the specified timeframes, and submit the following documents to the Contracting Officer and COR:

.

a. At least [**] days prior to an estimated shipment the contractor shall notify the COR of the scheduled delivery date.

b. At least [**] business days prior to each product pick up by DSNS, the Contractor shall provide to the Contracting Officer and COR:
   i. The delivery date that the product will be ready for loading onto the truck(s) that will be scheduled by the DSNS
   ii. Physical address of the product pick-up location (facility name, address, point of contact name and telephone number)
   iii. Actual number of 40"x48" pallets, number of vials, and doses to be picked-up

c. At least [**] hours before each scheduled pick up by DSNS, the Contractor shall provide the following to the Contracting Officer and COR:
   i. Packing Slip
   ii. Confirm the number of pallets, vials and doses to be loaded
   iii. Diagram of the product shipment pallet (how many vials per box, per pallet)
   iv. Certificate(s) of Analysis
   v. FDA Lot Release(s)

d. Within [**] hours after the product has been picked up by the Government, the Contractor shall provide to the Contracting Officer and COR the remaining ambient exposure time letter disclosing temperature control until the point that DSNS (or DSNS-designated personnel) assumed responsibility for temperature control, for each lot from the Contractor's Quality Department. The letter shall indicate that the product was manufactured and released in accordance with cGMP and has met all acceptance criteria to allow for Government distribution.

d.

Section F - Contract Administration Data

F.1. Contracting Officer Representative (COR)

Performance of the work hereunder shall be subject to the technical directions of the designated COR for this contract.

As used herein, technical directions are directions to the Contractor which fill in details, suggests possible lines of inquiry, or otherwise completes the general scope of work set forth herein. These technical directions must be within the general scope of work, and may not alter the scope of work or cause changes of such a nature as to justify an adjustment in the stated contract price/cost, or any stated limitation thereof. In the event that the Contractor feels that full implementation of any of these directions may exceed the scope of the contract, he or she shall notify the originator of the technical direction and the Contracting Officer in a letter separate of any required report(s) within [**] weeks of the date of receipt of the technical direction and no action shall be taken pursuant to the direction. No technical direction, nor its fulfillment, shall alter or abrogate the rights and obligations fixed in this contract.

The Government COR is not authorized to change any of the terms and conditions of this contract. Changes shall be made only by the Contracting Officer by properly written modification(s) to the contract.

The Government will provide the Contractor with a copy of the delegation memorandum for the COR. Any changes in COR delegation will be made by the Contracting Officer in writing with a copy being furnished to the Contractor.

F.2 Contracting Officer

(a) **The Contracting Officer is the only individual who can legally commit the Government to the expenditure of public funds. No person other than the Contracting Officer can make any changes to the terms, conditions, general provisions, or other stipulations of this contract.**

(b) No information, other than that which may be contained in an authorized modification to this contract, duly issued by the Contracting Officer, which may be received from any person employed by the United States Government, or otherwise, shall be considered grounds for deviation from any stipulation of this contract.

F.3. Please see FAR Clause 52.212-5 for additional Contract Administration Clauses for Commercial Items

F.4. Notification of Utilization

The Government agrees to notify the Contractor monthly of all vaccine distributions from the SNS. These monthly notifications shall include the following information, at a minimum, for each distribution:

1. Recipient Agency
2. Date of Distribution
3. Lot Number(s) distributed
4. Number of Vials distributed

Section G - Special Contract Requirements

G.1. Evaluation of Contractor Performance Utilizing CPARS (April 2013)

In accordance with FAR 42.15, the Centers for Disease Control and Prevention (CDC) will review and evaluate contract performance. FAR 42.1502 and 42.1503 requires agencies to prepare evaluations of contractor performance and submit them to the Past Performance Information Retrieval System (PPIRS). The CDC utilizes the Department of Defense (DOD) web-based Contractor Performance Assessment Reporting System (CPARS) to prepare and report these contractor performance evaluations. All information contained in these assessments may be used by the Government, within the limitations of FAR 42.15, for future source selections in accordance with FAR 15.304 where past performance is an evaluation factor. The CPARS system requires a contractor representative to be assigned so that the contractor has appropriate input into the performance evaluation process. The CPARS contractor representative will be given access to CPARS and will be given the opportunity to concur or not-concur with performance evaluations before the evaluations are complete. The CPARS contractor representative will also have the opportunity to add comments to performance evaluations.

The assessment is not subject to the Disputes clause of the contract, nor is it subject to appeal beyond the review and comment procedures described in the guides on the CPARS website. Refer to: www.cpars.gov for details and additional information related to CPARS, CPARS user access, how contract performance assessments are conducted, and how Contractors participate. Access and training for all persons responsible for the preparation and review of performance assessments is also available at the CPARS website.

The contractor must provide the CDC contracting office with the name, e-mail address, and phone number of their designated CPARS representative who will be responsible for logging into CPARS and reviewing and commenting on performance evaluations. The contractor must maintain a current representative to serve as the contractor representative in CPARS. It is the contractor's responsibility to notify the CDC contracting office, in writing (letter or email), when their CPARS representative information needs to be changed or updated. Failure to maintain current CPARS contractor representative information will result in the loss of an opportunity to review and comment on performance evaluations.

G.2. Non Disclosure Agreements for Contractor and Contractor Employees

G.2.1 The Contractor shall prepare and submit a Non-Disclosure Agreement (NDA) to the Contracting Officer prior to access of Government information or the commencement of work at CDC.

G.2.2 The NDA made part of this clause, Exhibit I and Exhibit II is required in service contracts where positions and/or functions proposed to be filled by Contractor's employees and Contractor's affiliates' employees (collectively, "Employees") who will have access to non-public and procurement- sensitive information. The NDA also requires contractor's employees to properly identify themselves as employees of a contractor when communicating or interacting with CDC employees, employees of other governmental entities (when communication or interaction relates to the contractor's work with the CDC), and members of the public. The Federal Acquisition Regulation (FAR) 37.114 (c), states "All contractor personnel attending meetings, answering Government telephones, and working in other situations where their contractor status is not obvious to third parties are required to identify themselves as such to avoid creating an impression in the minds of members of the public or Congress that they are Government officials, unless, in the judgment of the agency, no harm can come from failing to identify themselves. They must also ensure that all documents or reports produced by contractors are suitably marked as contractor products or that contractor participation is appropriately disclosed."

G.2.3 The Contractor shall inform Employees of the identification requirements by which they must abide and monitor employee compliance with the identification requirements.

G.2.4 During the contract performance period, the Contractor is responsible to ensure that any additional or replacement Employees sign a NDA and it is submitted to the Contracting Officer prior to commencement of their work with the CDC.

G.2.5 Employees in designated positions or functions that have not signed the appropriate NDA shall not have access to any non-public, procurement sensitive information or participate in government meeting where sensitive information may be discussed.

G.2.6 The Contractor shall prepare and maintain a current list of Employees working under NDAs and submit to the Contracting Officer upon request during the contract period of performance. The list should at a minimum include: contract number, employee's name, position, date of hire and NDA requirement.

EXHIBIT I

Centers for Disease Control and Prevention (CDC) Contractor Non-Disclosure Agreement

I. Non-public Information

[Name of contractor] understands that in order to fulfill the responsibilities pursuant to **[Contract name and number]** between the Centers for Disease Control and Prevention and **[Name of CDC contractor] dated [date],** employees of **[contractor]** will have access to non-public information, including confidential and privileged information contained in government-owned information technology systems. For purposes of this agreement, confidential information means government information that is not or will not be generally available to the public. Privileged information means information which cannot be disclosed without the prior written consent of the CDC.

In order to properly safeguard non-public information, **[contractor]** agrees to ensure that prior to being granted access to government information or the commencement of work for the CDC, whichever is applicable, all employees will sign a Non-Disclosure Agreement (NDA) provided by the CDC prior to beginning work for the CDC. Contractor agrees to submit to the contracting official the original signed copies of NDAs signed by the contractor's employees in accordance with the instructions provided by the contracting official. Failure to provide signed NDAs in accordance with this agreement and instructions provided by the contracting official could delay or prevent the employee from commencing or continuing work at the CDC until such agreement is signed and returned to the contracting official.

Contractor further agrees that it will not cause or encourage any employee to disclose, publish, divulge, release, or make known in any manner or to any extent, to any individual other than an authorized Government employee any non-public information that the employee may obtain in connection with the performance of the employee's responsibilities to the CDC.

II. Procurement-Sensitive Information

Contractor further agrees that it will not cause or encourage any employee to disclose, publish, divulge, release, or make known in any manner or to any extent, to any individual, other than an authorized Government employee, any procurement-sensitive information gained while in connection with fulfilling the employee's responsibilities at the CDC. For purposes of this agreement, procurement-sensitive information includes, but is not limited to, all information in Statements of Work (SOW), Requests for Contract (RFC), and Requests for Proposal (RFP); Responses to RFPs, including questions from potential offerors; non-public information regarding procurements; all documents, conversations, discussions, data, correspondence, electronic mail (e-mail), presentations, or any other written or verbal communications relating to, concerning, or affecting proposed or pending solicitations or awards; procurement data; contract information plans; strategies; source selection information and documentation; offerors' identities; technical and cost data; the identity of government personal involved in the solicitation; the schedule of key technical and procurement events in the award determination process; and any other information that may provide an unfair competitive advantage to a contractor or potential contractor if improperly disclosed to them, or any of their employees.

Contractor understands and agrees that employee access to any procurement-sensitive information may create a conflict of interest which will preclude contractor from becoming a competitor for any acquisition(s) resulting from this information. Therefore, if an employee participates in any discussions relating to procurement-sensitive information, assists in developing any procurement-sensitive information, or otherwise obtains any procurement-sensitive information during the course of performing duties at the CDC, contractor understands and agrees that contractor are be excluded from competing for any acquisition(s) resulting from this information.

III. Identification of Non-Government Employees

Contractor understands that its employees are not agents of the Government. Therefore, unless otherwise directed in writing by the CDC, contractor agrees to assist and monitor employee compliance with the following identification procedures:

A. At the beginning of interactions with CDC employees, employees of other governmental entities, members of the public, or the media (when such communication or interaction relates to the contractor's work with the CDC), contractors' employees will identify themselves as an employee of a contractor.

B. Contractors' employees will include the following disclosures in all written communications, including outgoing electronic mail (e-mail) messages, in connection with contractual duties to the CDC:

Employee's name
Name of contractor Center or office affiliation
Centers for Disease Control and Prevention

C. At the beginning of telephone conversations or conference calls, contractors' employees will identify themselves as an employee of a contractor.

D. Contractors should not wear any CDC logo on clothing, except for a CDC issued security badge while carrying out work for CDC or on CDC premises. The only other exception is when a CDC management official has granted permission to use the CDC logo.

E. Contractors' employees will program CDC voice mail message to identify themselves as an employee of a contractor.

I understand that federal laws including, 18 U.S.C. 641 and 18 U.S.C. 2071, provide criminal penalties for, among other things, unlawfully removing, destroying or converting to personal use, or use of another, any public records. Contractor acknowledges that contractor has read and fully understands this agreement.

Name of contractor:

Signature of Authorized Representative of Contractor:

Date:

Copies retained by: contracting official and contractor

(End of Clause)

EXHIBIT II

Centers for Disease Control and Prevention (CDC) Contractors' Employee Non-Disclosure Agreement

I. Non-Public Information

I understand that in order to fulfill my responsibilities as an employee of **[Name of CDC contractor],** I will have access to non-public information, including confidential and privileged information contained in government-owned information technology systems. For purposes of this agreement, confidential information means government information that is not or will not be generally available to the public. Privileged information means information which cannot be disclosed without the prior written consent of the CDC.

I **[Name of Employee],** agree to use non-public information only in performance of my responsibilities to the CDC. I agree further that I will not disclose, publish, divulge, release, or make known in any manner or to any extent, to any individual other than an authorized Government employee, any non-public information that I may obtain in connection with the performance of my responsibilities to the CDC.

II. Procurement-Sensitive Information

I further agree that unless I have prior written permission from the CDC, I will not disclose, publish, divulge, release, or make known in any manner or to any extent, to any individual other than an authorized Government employee, any procurement-sensitive information gained in connection with the performance of my responsibilities to the CDC. I specifically agree not to disclose any non-public, procurement-sensitive information to employees of my company or any other organization unless so authorized in writing by the CDC. For purposes of this agreement, procurement-sensitive information includes, but is not limited to, all information in Statements of Work (SOW), Requests for Contract (RFC), and Requests for Proposal (RFP); Responses to RFPs, including questions from potential offerors; non- public information regarding procurements; all documents, conversations, discussions, data, correspondence, electronic mail (e-mail), presentations, or any other written or verbal communications relating to, concerning, or affecting proposed or pending solicitations or awards; procurement data; contract information plans; strategies; source selection information and documentation; offerors' identities; technical and cost data; the identity of government personal involved in the acquisition; the schedule of key technical and procurement events in the award determination process; and any other information that may provide an unfair competitive advantage to a contractor or potential contractor if improperly disclosed to them, or any of their employees.

I understand and agree that my access to any procurement-sensitive information may create a conflict of interest which will preclude me, my current employer, or a future employer from becoming a competitor for any resulting government acquisition derived from this information. Therefore, if I participate in any discussions relating to procurement-sensitive information, assist in developing any procurement-sensitive information, or otherwise obtain any procurement-sensitive information during the course of performing my duties at the CDC, I understand and agree that I, my current employer, and any future employer(s) are excluded from competing for any resulting acquisitions.

III. Special Non-Disclosure Clause for Contractors with Access to CDC Grants Management and Procurement-Related Information Technology Systems

In addition to complying with the non-disclosure requirements and safeguards stated above, I understand that my authorization to use CDC's grants management and procurement systems is strictly limited to the access and functions necessary for the performance of my responsibilities to the CDC and which have been approved in advance by the CDC. I understand that I am not authorized to enter procurement requests for any requirements pertaining to contracts or subcontracts held by me or my employer.

IV. Identification as a Non-Government Employee

I understand that as an employee of a government contractor, I represent an independent organization and I am not an agent of the Government. Therefore, I agree that unless I have prior written authorization from the CDC, I will, at the beginning of interactions with CDC employees, employees of other governmental entities, members of the public, or the media (when such communication or interaction relates to the contractor's work with the CDC), identify myself as an employee of a contractor. I further agree to use the following identification procedures in connection with my work at the CDC:

A. I will include the following disclosures in all written communications, including outgoing electronic mail (e-mail) messages:

Employee's name Name of contractor Center or office Affiliation
Centers for Disease Control and Prevention

B. I will identify myself as an employee of a contractor at the beginning of telephone conversations or conference calls;
C. I will not wear any CDC logo on clothing, except for a CDC issued security badge while carrying out work for CDC or on CDC premises; the only other exception is when a CDC management official has granted permission to use the CDC logo.
D. I will program my CDC voice mail message to identify myself as a contractors' employee.

I understand that federal laws including, 18 U.S.C. 641 and 18 U.S.C. 2071, provide criminal penalties for, among other things, unlawfully removing, destroying or converting to personal use, or use of another, any public records. I acknowledge that I have read and fully understand this agreement.

Name of contractor:

Name of Employee:

Signature of Employee:

Date:

Copies retained by: contracting official, contractor, and Employee

(End of Clause)

G.3. Liability Protection under the PREP Act

The Public Readiness & Emergency Preparedness Act (PREP Act), Pub. L. 109-148, Division C, 119 Stat. 2818 to 2832, amended the Public Health Service Act, 42, U.S.C. 243 et seq., to provide targeted liability protections. The Government agrees that the medical countermeasure delivered by the Contractor under this contract will be administered in humans, in accordance with the declaration under the PREP Act issued by the Secretary of the Department of Health and Human Services on December 9, 2015 pursuant to section 319F-3(b) of the Public Health Service Act, 42, U.S.C 247-d-6d. The declaration provides targeted liability protections for anthrax countermeasures based on a credible risk that the threat of exposure to *Bacillus anthracis* and the resulting disease constitutes a public health emergency.

G.4. Liquidated Damages

The Government reserves the right to recover liquidated damages from the Contractor if there is a failure to deliver and it results in a rescheduled delivery.

Section H - Contract Clauses

FAR CLAUSES

H.1 FAR 52.212-4 -- Contract Terms and Conditions -- Commercial Items (May 2015)

(a) *Inspection/Acceptance.* The Contractor shall only tender for acceptance those items that conform to the requirements of this contract. The Government reserves the right to inspect or test any supplies or services that have been tendered for acceptance. The Government may require repair or replacement of nonconforming supplies or reperformance of nonconforming services at no increase in contract price. If repair/replacement or reperformance will not correct the defects or is not possible, the government may seek an equitable price reduction or adequate consideration for acceptance of nonconforming supplies or services. The Government must exercise its post-acceptance rights --

(1) Within a reasonable time after the defect was discovered or should have been discovered; and

(2) Before any substantial change occurs in the condition of the item, unless the change is due to the defect in the item.

(b) *Assignment*. The Contractor or its assignee may assign its rights to receive payment due as a result of performance of this contract to a bank, trust company, or other financing institution, including any Federal lending agency in accordance with the Assignment of Claims Act (31 U.S.C.3727). However, when a third party makes payment (*e.g.*, use of the Government-wide commercial purchase card), the Contractor may not assign its rights to receive payment under this contract.

(c) *Changes*. Changes in the terms and conditions of this contract may be made only by written agreement of the parties.

(d) *Disputes*. This contract is subject to 41 U.S.C. chapter 71,Contract Disputes. Failure of the parties to this contract to reach agreement on any request for equitable adjustment, claim, appeal or action arising under or relating to this contract shall be a dispute to be resolved in accordance with the clause at FAR 52.233-1, Disputes, which is incorporated herein by reference. The Contractor shall proceed diligently with performance of this contract, pending final resolution of any dispute arising under the contract.

(e) *Definitions*. The clause at FAR 52.202-1, Definitions, is incorporated herein by reference.

(f) *Excusable delays*. The Contractor shall be liable for default unless nonperformance is caused by an occurrence beyond the reasonable control of the Contractor and without its fault or negligence such as, acts of God or the public enemy, acts of the Government in either its sovereign or contractual capacity, fires, floods, epidemics, quarantine restrictions, strikes, unusually severe weather, and delays of common carriers. The Contractor shall notify the Contracting Officer in writing as soon as it is reasonably possible after the commencement of any excusable delay, setting forth the full particulars in connection therewith, shall remedy such occurrence with all reasonable dispatch, and shall promptly give written notice to the Contracting Officer of the cessation of such occurrence.

(g) *Invoice*.

(1) The Contractor shall submit an original invoice and three copies (or electronic invoice, if authorized) to the address designated in the contract to receive invoices. An invoice must include --

(i) Name and address of the Contractor; (ii) Invoice date and number;

(iii) Contract number, contract line item number and, if applicable, the order number;

(iv) Description, quantity, unit of measure, unit price and extended price of the items delivered;

(v) Shipping number and date of shipment, including the bill of lading number and weight of shipment if shipped on Government bill of lading;

(vi) Terms of any discount for prompt payment offered;

(vii) Name and address of official to whom payment is to be sent;

(viii) Name, title, and phone number of person to notify in event of defective invoice; and

(ix) Taxpayer Identification Number (TIN). The Contractor shall include its TIN on the invoice only if required elsewhere in this contract.

(x) Electronic funds transfer (EFT) banking information.

(A) The Contractor shall include EFT banking information on the invoice only if required elsewhere in this contract.

(B) If EFT banking information is not required to be on the invoice, in order for the invoice to be a proper invoice, the Contractor shall have submitted correct EFT banking information in accordance with the applicable solicitation provision, contract clause (*e.g.*, 52.232-33, Payment by Electronic Funds Transfer—
System for Award Management, or 52.232-34, Payment by Electronic Funds Transfer—Other Than System for Award Management), or applicable agency procedures.

(C) EFT banking information is not required if the Government waived the requirement to pay by EFT.

(2) Invoices will be handled in accordance with the Prompt Payment Act (31 U.S.C. 3903) and Office of Management and Budget (OMB) prompt payment regulations at 5 CFR part 1315.

(h) *Patent indemnity*. The Contractor shall indemnify the Government and its officers, employees and agents against liability, including costs, for actual or alleged direct or contributory infringement of, or inducement to infringe, any United States or foreign patent, trademark or copyright, arising out of the performance of this contract, provided the Contractor is reasonably notified of such claims and proceedings.

(i) Payment.

(1) Items accepted. Payment shall be made for items accepted by the Government that have been delivered to the delivery destinations set forth in this contract.

(2) Prompt Payment. The Government will make payment in accordance with the Prompt Payment Act (31 U.S.C. 3903) and prompt payment regulations at 5 CFR Part 1315.

(3) Electronic Funds Transfer (EFT). If the Government makes payment by EFT, see 52.212-5(b) for the appropriate EFT clause.

(4) *Discount*. In connection with any discount offered for early payment, time shall be computed from the date of the invoice. For the purpose of computing the discount earned, payment shall be considered to have been made on the date which appears on the payment check or the specified payment date if an electronic funds transfer payment is made.

(5) *Overpayments*. If the Contractor becomes aware of a duplicate contract financing or invoice payment or that the Government has otherwise overpaid on a contract financing or invoice payment, the Contractor shall—

(i) Remit the overpayment amount to the payment office cited in the contract along with a description of the overpayment including the—

(A) Circumstances of the overpayment (*e.g.*, duplicate payment, erroneous payment, liquidation errors, date(s) of overpayment);

(B) Affected contract number and delivery order number, if applicable; (C) Affected contract line item or subline item, if applicable; and

(D) Contractor point of contact.

(ii) Provide a copy of the remittance and supporting documentation to the Contracting Officer.

(6) Interest.

(i) All amounts that become payable by the Contractor to the Government under this contract shall bear simple interest from the date due until paid unless paid within 30 days of becoming due. The interest rate shall be the interest rate established by the Secretary of the Treasury as provided in 41 U.S.C. 7109, which is applicable to the period in which the amount becomes due, as provided in (i)(6)(v) of this clause, and then at the rate applicable for each six-month period at fixed by the Secretary until the amount is paid.

(ii) The Government may issue a demand for payment to the Contractor upon finding a debt is due under the contract.

(iii) Final decisions. The Contracting Officer will issue a final decision as required by 33.211 if—

(A) The Contracting Officer and the Contractor are unable to reach agreement on the existence or amount of a debt within 30 days;

(B) The Contractor fails to liquidate a debt previously demanded by the Contracting Officer within the timeline specified in the demand for payment unless the amounts were not repaid because the Contractor has requested an installment payment agreement; or

(C) The Contractor requests a deferment of collection on a debt previously demanded by the Contracting Officer (see 32.607-2).

(iv) If a demand for payment was previously issued for the debt, the demand for payment included in the final decision shall identify the same due date as the original demand for payment.

(v) Amounts shall be due at the earliest of the following dates: (A) The date fixed under this contract.

(B) The date of the first written demand for payment, including any demand for payment resulting from a default termination.

(vi) The interest charge shall be computed for the actual number of calendar days involved beginning on the due date and ending on—

(A) The date on which the designated office receives payment from the Contractor;

(B) The date of issuance of a Government check to the Contractor from which an amount otherwise payable has been withheld as a credit against the contract debt; or

(C) The date on which an amount withheld and applied to the contract debt would otherwise have become payable to the Contractor.

(vii) The interest charge made under this clause may be reduced under the procedures prescribed in 32.608-2 of the Federal Acquisition Regulation in effect on the date of this contract.

(j) *Risk of loss*. Unless the contract specifically provides otherwise, risk of loss or damage to the supplies provided under this contract shall remain with the Contractor until, and shall pass to the Government upon:

(1) Delivery of the supplies to a carrier, if transportation is f.o.b. origin; or

(k) *Taxes*. The contract price includes all applicable Federal, State, and local taxes and duties.

(l) *Termination for the Government's convenience*. The Government reserves the right to terminate this contract, or any part hereof, for its sole convenience. In the event of such termination, the Contractor shall immediately stop all work hereunder and shall immediately cause any and all of its suppliers and subcontractors to cease work. Subject to the terms of this contract, the Contractor shall be paid a percentage of the contract price reflecting the percentage of the work performed prior to the notice of termination, plus reasonable charges the Contractor can demonstrate to the satisfaction of the Government using its standard record keeping system, have resulted from the termination. The Contractor shall not be required to comply with the cost accounting standards or contract cost principles for this purpose. This paragraph does not give the Government any right to audit the Contractor's records.
The Contractor shall not be paid for any work performed or costs incurred which reasonably could have been avoided.

(m) *Termination for cause*. The Government may terminate this contract, or any part hereof, for cause in the event of any default by the Contractor, or if the Contractor fails to comply with any contract terms and conditions, or fails to provide the Government, upon request, with adequate assurances of future performance. In the event of termination for cause, the Government shall not be liable to the Contractor for any amount for supplies or services not accepted, and the Contractor shall be liable to the Government for any and all rights and remedies provided by law. If it is determined that the Government improperly terminated this contract for default, such termination shall be deemed a termination for convenience.

(n) *Title*. Unless specified elsewhere in this contract, title to items furnished under this contract shall pass to the Government upon acceptance, regardless of when or where the Government takes physical possession.

(o) *Warranty*. The Contractor warrants and implies that the items delivered hereunder are merchantable and fit for use for the particular purpose described in this contract.

(p) *Limitation of liability*. Except as otherwise provided by an express warranty, the Contractor will not be liable to the Government for consequential damages resulting from any defect or deficiencies in accepted items.

(q) *Other compliances*. The Contractor shall comply with all applicable Federal, State and local laws, executive orders, rules and regulations applicable to its performance under this contract.

(r) *Compliance with laws unique to Government contracts.* The Contractor agrees to comply with 31 U.S.C. 1352 relating to limitations on the use of appropriated funds to influence certain Federal contracts; 18 U.S.C. 431 relating to officials not to benefit; 40 U.S.C. chapter 37, Contract Work Hours and Safety Standards; 41 U.S.C. chapter 87, Kickbacks; 41 U.S.C. 4712 and 10 U.S.C. 2409 relating to whistleblower protections; 49 U.S.C. 40118, Fly American; and 41 U.S.C. chapter 21 relating to procurement integrity.

(s) *Order of precedence.* Any inconsistencies in this solicitation or contract shall be resolved by giving precedence in the following order:

(1) The schedule of supplies/services.

(2) The Assignments, Disputes, Payments, Invoice, Other Compliances, Compliance with Laws Unique to Government Contracts, and Unauthorized Obligations paragraphs of this clause.

(3) The clause at 52.212-5.

(4) Addenda to this solicitation or contract, including any license agreements for computer software.

(5) Solicitation provisions if this is a solicitation.

(6) Other paragraphs of this clause.

(7) The Standard Form 1449.

(8) Other documents, exhibits, and attachments.

(9) The specification.

(t) System for Award Management (SAM).

(1) Unless exempted by an addendum to this contract, the Contractor is responsible during performance and through final payment of any contract for the accuracy and completeness of the data within the SAM database, and for any liability resulting from the Government's reliance on inaccurate or incomplete data. To remain registered in the SAM database after the initial registration, the Contractor is required to review and update on an annual basis from the date of initial registration or subsequent updates its information in the SAM database to ensure it is current, accurate and complete. Updating information in the SAM does not alter the terms and conditions of this contract and is not a substitute for a properly executed contractual document.

(2)

(i) If a Contractor has legally changed its business name, "doing business as" name, or division name (whichever is shown on the contract), or has transferred the assets used in performing the contract, but has not completed the necessary requirements regarding novation and change-of-name agreements in Subpart 42.12, the Contractor shall provide the responsible Contracting Officer a minimum of one business day's written notif ication of its intention to:

(A) Change the name in the SAM database;

(B) Comply with the requirements of Subpart 42.12 of the FAR;

(C) Agree in writing to the timeline and procedures specified by the responsible Contracting Officer. The Contractor must provide with the notification sufficient documentation to support the legally changed name.

(ii) If the Contractor fails to comply with the requirements of paragraph (t)(2)(i) of this clause, or fails to perform the agreement at paragraph (t)(2)(i)(C) of this clause, and, in the absence of a properly executed novation or change-of-name agreement, the SAM information that shows the Contractor to be other than the Contractor indicated in the contract will be considered to be incorrect information within the meaning of the "Suspension of Payment" paragraph of the electronic funds transfer (EFT) clause of this contract.

(3) The Contractor shall not change the name or address for EFT payments or manual payments, as appropriate, in the SAM record to reflect an assignee for the purpose of assignment of claims (see FAR Subpart 32.8, Assignment of Claims). Assignees shall be separately registered in the SAM database. Information provided to the Contractor's SAM record that indicates payments, including those made by EFT, to an ultimate recipient other than that Contractor will be considered to be incorrect information within the meaning of the "Suspension of payment" paragraph of the EFT clause of this contract.

(4) Offerors and Contractors may obtain information on registration and annual confirmation requirements via SAM accessed through https://www.acquisition.gov.

(u) Unauthorized Obligations.

(1) Except as stated in paragraph (u)(2) of this clause, when any supply or service acquired under this contract is subject to any End Use License Agreement (EULA), Terms of Service (TOS), or similar legal instrument or agreement, that includes any clause requiring the Government to indemnify the Contractor or any person or entity for damages, costs, fees, or any other loss or liability that would create an Anti-Deficiency Act violation (31 U.S.C. 1341), the following shall govern:

(i) Any such clause is unenforceable against the Government.

(ii) Neither the Government nor any Government authorized end user shall be deemed to have agreed to such clause by virtue of it appearing in the EULA, TOS, or similar legal instrument or agreement. If the EULA, TOS, or similar legal instrument or agreement is invoked through an "I agree" click box or other comparable mechanism (e.g., "click-wrap" or "browse-wrap" agreements), execution does not bind the Government or any Government authorized end user to such clause.

(iii) Any such clause is deemed to be stricken from the EULA, TOS, or similar legal instrument or agreement.

(2) Paragraph (u)(1) of this clause does not apply to indemnification by the Government that is expressly authorized by statute and specifically authorized under applicable agency regulations and procedures.

(v) *Incorporation by reference*. The Contractor's representations and certifications, including those completed electronically via the System for Award Management (SAM), are incorporated by reference into the contract.

(End of Clause)

H.2. FAR 52.212-5 Contract Terms and Conditions Required To Implement Statutes or Executive Orders—Commercial Items (Nov 2016)

(a) The Contractor shall comply with the following Federal Acquisition Regulation (FAR) clauses, which are incorporated in this contract by reference, to implement provisions of law or Executive orders applicable to acquisitions of commercial items:

(1) 52.209-10, Prohibition on Contracting with Inverted Domestic Corporations (Nov 2015) (2) 52.233-3, Protest After Award (AUG 1996) (31 U.S.C. 3553).

(3) 52.233-4, Applicable Law for Breach of Contract Claim (OCT 2004)(Public Laws 108-77 and 108-78 (19 U.S.C. 3805 note)).

(b) The Contractor shall comply with the FAR clauses in this paragraph (b) that the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items:

[Contracting Officer check as appropriate.]

_x_ (1) 52.203-6, Restrictions on Subcontractor Sales to the Government (Sept 2006), with Alternate I (Oct 1995) (41 U.S.C. 4704 and 10 U.S.C. 2402).

_x_ (2) 52.203-13, Contractor Code of Business Ethics and Conduct (Oct 2015) (41 U.S.C. 3509)).

_ (3) 52.203-15, Whistleblower Protections under the American Recovery and Reinvestment Act of 2009 (June 2010) (Section 1553 of Pub. L. 111-5). (Applies to contracts funded by the American Recovery and Reinvestment Act of 2009.) _x_ (4) 52.204-10, Reporting Executive Compensation and First-Tier Subcontract Awards (Oct 2016) (Pub. L. 109-282) (31 U.S.C. 6101 note).

_ (5) [Reserved].

_ (6) 52.204-14, Service Contract Reporting Requirements (Oct 2016) (Pub. L. 111-117, section 743 of Div. C).

_ (7) 52.204-15, Service Contract Reporting Requirements for Indefinite-Delivery Contracts (Oct 2016) (Pub. L. 111-117, section 743 of Div. C).

_x_ (8) 52.209-6, Protecting the Government's Interest When Subcontracting with Contractors Debarred, Suspended, or Proposed for Debarment. (Oct 2015) (31 U.S.C. 6101 note).

_ (9) 52.209-9, Updates of Publicly Available Information Regarding Responsibility Matters (Jul 2013) (41 U.S.C. 2313).

_ (10) [Reserved].

_ (11)(i) 52.219-3, Notice of HUBZone Set-Aside or Sole-Source Award (Nov 2011) (15 U.S.C. 657a).

_ (ii) Alternate I (Nov 2011) of 52.219-3.

_ (12)(i) 52.219-4, Notice of Price Evaluation Preference for HUBZone Small Business Concerns (OCT 2014) (if the offeror elects to waive the preference, it shall so indicate in its offer) (15 U.S.C. 657a).

_ (ii) Alternate I (JAN 2011) of 52.219-4.

_ (13) [Reserved]

_ (14)(i) 52.219-6, Notice of Total Small Business Set-Aside (Nov 2011) (15 U.S.C. 644).

_ (ii) Alternate I (Nov 2011).

_ (iii) Alternate II (Nov 2011).

_ (15)(i) 52.219-7, Notice of Partial Small Business Set-Aside (June 2003) (15 U.S.C. 644).

_ (ii) Alternate I (Oct 1995) of 52.219-7.

_ (iii) Alternate II (Mar 2004) of 52.219-7.

_ (16) 52.219-8, Utilization of Small Business Concerns (Nov 2016) (15 U.S.C. 637(d)(2) and (3)).

_ (17)(i) 52.219-9, Small Business Subcontracting Plan (Nov 2016) (15 U.S.C. 637(d)(4)).

_ (ii) Alternate I (Nov 2016) of 52.219-9.

_ (iii) Alternate II (Nov 2016) of 52.219-9.

_ (iv) Alternate III (Nov 2016) of 52.219-9.

_ (v) Alternate IV (Nov 2016) of 52.219-9.

_ (18) 52.219-13, Notice of Set-Aside of Orders (Nov 2011) (15 U.S.C. 644(r)).

_ (19) 52.219-14, Limitations on Subcontracting (Nov 2011) (15 U.S.C. 637(a)(14)).

_ (20) 52.219-16, Liquidated Damages—Subcon-tracting Plan (Jan 1999) (15 U.S.C. 637(d)(4)(F)(i)).

_ (21) 52.219-27, Notice of Service-Disabled Veteran-Owned Small Business Set-Aside (Nov 2011) (15 U.S.C. 657 f).

_x_ (22) 52.219-28, Post Award Small Business Program Rerepresentation (Jul 2013) (15 U.S.C. 632(a)(2)).

_ (23) 52.219-29, Notice of Set-Aside for, or Sole Source Award to, Economically Disadvantaged Women-Owned Small Business Concerns (Dec 2015) (15 U.S.C. 637(m)).

_ (24) 52.219-30, Notice of Set-Aside for, or Sole Source Award to, Women-Owned Small Business Concerns Eligible Under the Women-Owned Small Business Program (Dec 2015) (15 U.S.C. 637(m)).

_x_ (25) 52.222-3, Convict Labor (June 2003) (E.O. 11755).

_ (26) 52.222-19, Child Labor—Cooperation with Authorities and Remedies (Oct 2016) (E.O. 13126).

_x_ (27) 52.222-21, Prohibition of Segregated Facilities (Apr 2015).

_x_ (28) 52.222-26, Equal Opportunity (Sept 2016) (E.O. 11246).

_x_ (29) 52.222-35, Equal Opportunity for Veterans (Oct 2015)(38 U.S.C. 4212).

_x_ (30) 52.222-36, Equal Opportunity for Workers with Disabilities (Jul 2014) (29 U.S.C. 793).

_x_ (31) 52.222-37, Employment Reports on Veterans (FEB 2016) (38 U.S.C. 4212).

_x_ (32) 52.222-40, Notification of Employee Rights Under the National Labor Relations Act (Dec 2010) (E.O. 13496).

_x_ (33)(i) 52.222-50, Combating Trafficking in Persons (Mar 2015) (22 U.S.C. chapter 78 and E.O. 13627).

_ (ii) Alternate I (Mar 2015) of 52.222-50 (22 U.S.C. chapter 78 and E.O. 13627).

_x_ (34) 52.222-54, Employment Eligibility Verification (OCT 2015). (Executive Order 12989). (Not applicable to the acquisition of commercially available off-the-shelf items or certain other types of commercial items as prescribed in 22.1803.) (35)(i) 52.223-9, Estimate of Percentage of

Recovered Material Content for EPA–Designated Items (May 2008) (42 U.S.C. 6962(c)(3)(A)(ii)). (Not applicable to the acquisition of commercially available off-the-shelf items.)

(ii) Alternate I (May 2008) of 52.223-9 (42 U.S.C. 6962(i)(2)(C)). (Not applicable to the acquisition of commercially available off-the-shelf items.)

(36) 52.223-11, Ozone-Depleting Substances and High Global Warming Potential Hydrofluorocarbons (JUN 2016) (E.O. 13693).

(37) 52.223-12, Maintenance, Service, Repair, or Disposal of Refrigeration Equipment and Air Conditioners (JUN 2016) (E.O. 13693).

(38)(i) 52.223-13, Acquisition of EPEAT®-Registered Imaging Equipment (JUN 2014) (E.O.s 13423 and 13514).

(ii) Alternate I (Oct 2015) of 52.223-13.

(39)(i) 52.223-14, Acquisition of EPEAT®-Registered Televisions (JUN 2014) (E.O.s 13423 and 13514).

(ii) Alternate I (Jun 2014) of 52.223-14.

_x_ (40) 52.223-15, Energy Efficiency in Energy-Consuming Products (DEC 2007) (42 U.S.C. 8259b).

(41)(i) 52.223-16, Acquisition of EPEAT®-Registered Personal Computer Products (OCT 2015) (E.O.s 13423 and 13514).

(ii) Alternate I (Jun 2014) of 52.223-16.

(42) 52.223-18, Encouraging Contractor Policies to Ban Text Messaging While Driving (AUG 2011) (E.O. 13513).

(43) 52.223-20, Aerosols (JUN 2016) (E.O. 13693).

_x_ (44) 52.223-21, Foams (JUN 2016) (E.O. 13693).

(45) 52.225-1, Buy American—Supplies (May 2014) (41 U.S.C. chapter 83).

(46)(i) 52.225-3, Buy American—Free Trade Agreements—Israeli Trade Act (May 2014) (41 U.S.C. chapter 83, 19 U.S.C. 3301 note, 19 U.S.C. 2112 note, 19 U.S.C. 3805 note, 19 U.S.C. 4001 note, Pub. L. 103-182, 108-77, 108-78, 108-286, 108-302, 109-53, 109-169, 109-283, 110-138, 112-41, 112-42, and 112-43.

(ii) Alternate I (May 2014) of 52.225-3.

(iii) Alternate II (May 2014) of 52.225-3.

(iv) Alternate III (May 2014) of 52.225-3.

(47) 52.225-5, Trade Agreements (OCT 2016) (19 U.S.C. 2501, et seq., 19 U.S.C. 3301 note).

(48) 52.225-13, Restrictions on Certain Foreign Purchases (June 2008) (E.O.'s, proclamations, and statutes administered by the Office of Foreign Assets Control of the Department of the Treasury).

(49) 52.225-26, Contractors Performing Private Security Functions Outside the United States (Oct 2016) (Section 862, as amended, of the National Defense Authorization Act for Fiscal Year 2008; 10 U.S.C. 2302 Note).

(50) 52.226-4, Notice of Disaster or Emergency Area Set-Aside (Nov 2007) (42 U.S.C. 5150).

(51) 52.226-5, Restrictions on Subcontracting Outside Disaster or Emergency Area (Nov 2007) (42 U.S.C. 5150).

(52) 52.232-29, Terms for Financing of Purchases of Commercial Items (Feb 2002) (41 U.S.C. 4505, 10 U.S.C. 2307(f)).

_x_ (53) 52.232-30, Installment Payments for Commercial Items (Oct 1995) (41 U.S.C. 4505, 10 U.S.C. 2307(f)).

(54) 52.232-33, Payment by Electronic Funds Transfer—System for Award Management (Jul 2013) (31 U.S.C. 3332).

(55) 52.232-34, Payment by Electronic Funds Transfer—Other than System for Award Management (Jul 2013) (31 U.S.C. 3332).

(56) 52.232-36, Payment by Third Party (May 2014) (31 U.S.C. 3332).

(57) 52.239-1, Privacy or Security Safeguards (Aug 1996) (5 U.S.C. 552a).

(58)(i) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (Feb 2006) (46 U.S.C. Appx. 1241(b) and 10 U.S.C. 2631).

(ii) Alternate I (Apr 2003) of 52.247-64.

(c) The Contractor shall comply with the FAR clauses in this paragraph (c), applicable to commercial services, that the Contracting Officer has indicated as being incorporated in this contract by reference to implement provisions of law or Executive orders applicable to acquisitions of commercial items:

[Contracting Officer check as appropriate.]

(1) 52.222-17, Nondisplacement of Qualified Workers (May 2014)(E.O. 13495).

(2) 52.222-41, Service Contract Labor Standards (May 2014) (41 U.S.C. chapter 67).

(3) 52.222-42, Statement of Equivalent Rates for Federal Hires (May 2014) (29 U.S.C. 206 and 41 U.S.C. chapter 67).

(4) 52.222-43, Fair Labor Standards Act and Service Contract Labor Standards-Price Adjustment (Multiple Year and Option Contracts) (May 2014) (29 U.S.C. 206 and 41 U.S.C. chapter 67).

(5) 52.222-44, Fair Labor Standards Act and Service Contract Labor Standards—Price Adjustment (May 2014) (29 U.S.C. 206 and 41 U.S.C. chapter 67).

(6) 52.222-51, Exemption from Application of the Service Contract Labor Standards to Contracts for Maintenance, Calibration, or Repair of Certain Equipment—Requirements (May 2014) (41 U.S.C. chapter 67).

(7) 52.222-53, Exemption from Application of the Service Contract Labor Standards to Contracts for Certain Services—Requirements (May 2014) (41 U.S.C. chapter 67).

(8) 52.222-55, Minimum Wages Under Executive Order 13658 (Dec 2015).

(9) 52.226-6, Promoting Excess Food Donation to Nonprofit Organizations (May 2014) (42 U.S.C. 1792).

(10) 52.237-11, Accepting and Dispensing of $1 Coin (Sept 2008) (31 U.S.C. 5112(p)(1)).

(d) Comptroller General Examination of Record. The Contractor shall comply with the provisions of this paragraph (d) if this contract was awarded using other than sealed bid, is in excess of the simplified acquisition threshold, and does not contain the clause at 52.215-2, Audit and Records—Negotiation.

(1) The Comptroller General of the United States, or an authorized representative of the Comptroller General, shall have

access to and right to examine any of the Contractor's directly pertinent records involving transactions related to this contract. (2) The Contractor shall make available at its offices at all reasonable times the records, materials, and other evidence for examination, audit, or reproduction, until 3 years after final payment under this contract or for any shorter period specifie d in FAR subpart 4.7, Contractor Records Retention, of the other clauses of this contract. If this contract is completely or partially terminated, the records relating to the work terminated shall be made available for 3 years after any resulting final termination settlement. Records relating to appeals under the disputes clause or to litigation or the settlement of claims arising under or relating to this contract shall be made available until such appeals, litigation, or claims are finally resolved.

(3) As used in this clause, records include books, documents, accounting procedures and practices, and other data, regardless of type and regardless of form. This does not require the Contractor to create or maintain any record that the Contractor does not maintain in the ordinary course of business or pursuant to a provision of law.

(e)(1) Notwithstanding the requirements of the clauses in paragraphs (a), (b), (c), and (d) of this clause, the Contractor is not required to flow down any FAR clause, other than those in this paragraph (e)(1) in a subcontract for commercial items. Unless otherwise indicated below, the extent of the flow down shall be as required by the clause— (i) 52.203-13, Contractor Code of Business Ethics and Conduct (Oct 2015) (41 U.S.C. 3509).

(ii) 52.219-8, Utilization of Small Business Concerns (Nov 2016) (15 U.S.C. 637(d)(2) and (3)), in all subcontracts that offer further subcontracting opportunities. If the subcontract (except subcontracts to small business concerns) exceeds $700,000 ($1.5 million for construction of any public facility), the subcontractor must include 52.219-8 in lower tier subcontracts that offer subcontracting opportunities.

(iii) 52.222-17, Nondisplacement of Qualified Workers (May 2014) (E.O. 13495). Flow down required in accordance with paragraph (l) of FAR clause 52.222-17.

(iv) 52.222-21, Prohibition of Segregated Facilities (Apr 2015) (v) 52.222-26,
Equal Opportunity (Sept 2016) (E.O. 11246).

(vi) 52.222-35, Equal Opportunity for Veterans (Oct 2015) (38 U.S.C. 4212).

(vii) 52.222-36, Equal Opportunity for Workers with Disabilities (Jul 2014) (29 U.S.C. 793). (viii) 52.222-37,
Employment Reports on Veterans (Feb 2016) (38 U.S.C. 4212)

(ix) 52.222-40, Notification of Employee Rights Under the National Labor Relations Act (Dec 2010) (E.O. 13496). Flow down required in accordance with paragraph (f) of FAR clause 52.222-40.

(x) 52.222-41, Service Contract Labor Standards (May 2014) (41 U.S.C. chapter 67). (xi)
52.222-50, Combating Trafficking in Persons (Mar 2015) (22 U.S.C. chapter 78 and E.O 13627). Alternate I (Mar 2015) of
52.222-50 (22 U.S.C. chapter 78 and E.O 13627).

(xii) 52.222-51, Exemption from Application of the Service Contract Labor Standards to Contracts for Maintenance, Calibration, or Repair of Certain Equipment-Requirements (May 2014) (41 U.S.C. chapter 67).

(xiii) 52.222-53, Exemption from Application of the Service Contract Labor Standards to Contracts for Certain Services- Requirements (May 2014) (41 U.S.C. chapter 67).

(xiv) 52.222-54, Employment Eligibility Verification (OCT 2015) (E.O. 12989). (xv) 52.222-55,
Minimum Wages Under Executive Order 13658 (Dec 2015).

(xvi) 52.225-26, Contractors Performing Private Security Functions Outside the United States (Oct 2016) (Section 862, as amended, of the National Defense Authorization Act for Fiscal Year 2008; 10 U.S.C. 2302 Note).

(xvii) 52.226-6, Promoting Excess Food Donation to Nonprofit Organizations (May 2014) (42 U.S.C. 1792). Flow down required in accordance with paragraph (e) of FAR clause 52.226-6.

(xviii) 52.247-64, Preference for Privately Owned U.S.-Flag Commercial Vessels (Feb 2006) (46 U.S.C. Appx. 1241(b) and 10 U.S.C. 2631). Flow down required in accordance with paragraph (d) of FAR clause 52.247-64.

(2) While not required, the Contractor may include in its subcontracts for commercial items a minimal number of additional clauses necessary to satisfy its contractual obligations.

(End of clause)

H.3. FAR 52.217-7 Option for Increased Quantity—Separately Priced Line Item. (Mar 1989)

The Government may require the delivery of the numbered line item, identified in the Schedule as an option item, in the quantity and at the price stated in the Schedule. The Contracting Officer may exercise the option by written notice to the Contractor within [insert in the clause the period of time in which the Contracting Officer has to exercise the option]. Delivery of added items shall continue at the same rate that like items are called for under the contract, unless the parties otherwise agree.

(End of clause)

H.4. FAR 52.232-40 Providing Accelerated Payments to Small Business Subcontractors. (Dec 2013)

(a) Upon receipt of accelerated payments from the Government, the Contractor shall make accelerated payments to its small business subcontractors under this contract, to the maximum extent practicable and prior to when such payment is otherwise required under the applicable contract or subcontract, after receipt of a proper invoice and all other required documentation from the small business subcontractor.

(b) The acceleration of payments under this clause does not provide any new rights under the Prompt Payment Act.

(c) Include the substance of this clause, including this paragraph (c), in all subcontracts with small business concerns, including subcontracts with small business concerns for the acquisition of commercial items.

(End of clause)

H.5. FAR 52.245-1 Government Property (Apr 2012)

H.6 HHSAR 352.203-70 Anti-Lobbying (2015)

H.7 HHSAR 352.208-70 Printing and Duplication (2015) **H.8 HHSAR 352.224-71** Confidential Information (2015) **H.9 HHSAR 352.227-70** Publications and Publicity (2015)

H.10 HHSAR 352.270-9 Non-Discrimination for Conscience (2015)

EXHIBIT 12

Ratio of Earnings to Fixed Charges

(in thousands)	Year Ended December 31, 2016	2015	2014	2013	2012
Pretax income from continuing operations (1)	$ 99,221	$ 135,716	$ 84,194	$ 83,439	$ 68,011
Fixed charges					
Interest expense	8,270	7,834	7,480	1,973	2,177
Debt issuance cost	1,526	1,564	3,290	319	67
Total fixed charges (2)	9,796	9,398	10,770	2,292	2,244
Noncontrolling interest in pretax income (3)	-	-	-	876	5,381
Capitalized interest (4)	2,179	2,875	2,530	1,973	2,177
Earnings ((1) + (2) -(3) -(4))	106,838	142,239	92,434	82,882	62,697
Fixed charges	9,796	9,398	10,770	2,292	2,244
Ratio of earnings to fixed charges	10.9	15.1	8.6	36.2	27.9

EXHIBIT 21

LIST OF SUBSIDIARIES

Name of Subsidiary	Jurisdiction of Incorporation or Organization
Domestic	
400 Professional LLC	Delaware
Cangene bioPharma, LLC	Maryland
Emergent Commercial Operations Frederick Inc.	Maryland
Emergent Biodefense Operations Lansing LLC	Delaware
Emergent Europe Inc.	Delaware
Emergent International Inc.	Delaware
Emergent Manufacturing Operations Baltimore LLC	Delaware
Emergent Product Development Gaithersburg Inc.	Delaware
Emergent Protective Products USA Inc.	Delaware
Emergent Virology LLC	Delaware
International	
3579299 Manitoba Ltd.	Manitoba
Emergent BioSolutions Canada Inc. (f/k/a Cangene Corporation)	Ontario
Emergent BioSolutions Malaysia SDN. BHD.	Malaysia
Emergent Countermeasures International Ltd.	England
Emergent Global Health Foundation Limited	England
Emergent Product Development Germany GmbH	Germany
Emergent Product Development UK Limited	England
Emergent Sales and Marketing Australia Pty Limited	Australia
Emergent Sales and Marketing Germany GmbH	Germany
Emergent Sales and Marketing Singapore Pte. Ltd.	Singapore
EPIC Bio Pte. Limited	Singapore

EXHIBIT 23

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the following Registration Statements:

(1) Registration Statement (Form S-8 No. 333-139190) pertaining to the Employee Stock Option Plan, as amended and restated, the 2006 Stock Incentive Plan and individual director options agreements of Emergent BioSolutions, Inc.,
(2) Registration Statement (Form S-8 No. 333-161154) pertaining to the Employee Stock Option Plan, as amended and restated, and the 2006 Stock Incentive Plan of Emergent BioSolutions, Inc.,
(3) Registration Statement (Form S-4 No. 333-169351) of Emergent BioSolutions Inc. and Subsidiaries,
(4) Registration Statement (Form S-3 No. 333-181133) of Emergent BioSolutions Inc. and Subsidiaries,
(5) Registration Statement (Form S-8 No. 333-184699) pertaining to the 2012 Employee Stock Option Plan and the Second Amended and Restated Emergent BioSolutions Inc. 2006 Stock Incentive Plan,
(6) Registration Statement (Form S-8 No. 333-196232) pertaining to the Third Amended and Restated Emergent BioSolutions Inc. 2006 Stock Incentive Plan, and
(7) Registration Statement (Form S-3 No. 333-204405) of Emergent BioSolutions Inc. and Subsidiaries;

of our reports dated February 27, 2017, with respect to the consolidated financial statements and schedule of Emergent BioSolutions Inc. and subsidiaries and the effectiveness of internal control over financial reporting of Emergent BioSolutions Inc. and subsidiaries included in this Annual Report (Form 10-K) of Emergent BioSolutions Inc. and subsidiaries for the year ended December 31, 2016.

/s/ Ernst & Young LLP

McLean, Virginia
February 27, 2017

EXHIBIT 31.1

CERTIFICATION

I, Daniel Abdun-Nabi certify that:

1. I have reviewed this Annual Report on Form 10-K of Emergent BioSolutions Inc.;

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 13a-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 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 27, 2017

/s/DANIEL J. ABDUN-NABI
Daniel J. Abdun-Nabi
Chief Executive Officer

EXHIBIT 31.2

CERTIFICATION

I, Robert Kramer certify that:

1. I have reviewed this Annual Report on Form 10-K of Emergent BioSolutions Inc.;

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 13a-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 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 27, 2017

/s/ROBERT G. KRAMER
Robert G. Kramer
Chief Financial Officer

EXHIBIT 32.1

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report on Form 10-K of Emergent BioSolutions Inc. (the "Company") for the period ended December 31, 2016 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Daniel Abdun-Nabi, Chief Executive Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; 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 27, 2017

/s/DANIEL J. ABDUN-NABI
Daniel J. Abdun-Nabi
Chief Executive Officer

EXHIBIT 32.2

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Annual Report on Form 10-K of Emergent BioSolutions Inc. (the "Company") for the period ended December 31, 2016 as filed with the Securities and Exchange Commission on the date hereof (the "Report"), the undersigned, Robert Kramer, Chief Financial Officer of the Company, hereby certifies, pursuant to 18 U.S.C. Section 1350, that:

(1) The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; 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 27, 2017

/s/ROBERT G. KRAMER
Robert G. Kramer
Chief Financial Officer