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EBS - Emergent BioSolutions Inc Analyst & Investor Day

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CORPORATE PARTICIPANTS

Adam R. Havey *Emergent BioSolutions Inc. - EVP of Business Operations and President of Biodefense Division*

Atul Saran

Barbara Solow

Christopher Frech

Daniel J. Abdun-Nabi *Emergent BioSolutions Inc. - CEO, President and Director*

Darren Buchwald

Doug White

Laura Saward

Robert G. Burrows *Emergent BioSolutions Inc. - VP of IR*

Robert G. Kramer *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

Sean Kirk

W. James Jackson *Emergent BioSolutions Inc. - Chief Scientific Officer and SVP*

CONFERENCE CALL PARTICIPANTS

Eric Thomas Schmidt *Cowen and Company, LLC, Research Division - MD and Senior Research Analyst*

François Daniel Brisebois *Laidlaw & Company (UK) Ltd., Research Division - Healthcare Equity Analyst*

Jessica Macomber Fye *JP Morgan Chase & Co, Research Division - Analyst*

Keay Thomas Nakae *Chardan Capital Markets, LLC, Research Division - Senior Research Analyst of Therapeutics, Devices and Diagnostics*

Mike Rogers

PRESENTATION

Robert G. Burrows *- Emergent BioSolutions Inc. - VP of IR*

Ladies and gentlemen, good morning. My name is Bob Burrows, I'm an Investor Relations Officer for Emergent BioSolutions, and it is my distinct pleasure to welcome all of you here on site as well as all of those participating via the webcast. To what is, yes, the inaugural Emergent BioSolutions Analyst and Investor Day. We're going to spend the next 4 hours together talking about the company, and all of you again here on site and via the other webcast, it's our intent to come away with a better understanding of the company, the talent, the strategy, the financial condition, and ultimately, the drivers that's going to propel growth for the company over the next number of years. So very important milestone for the company, we turn 20 years old next year. And indeed, it's appropriate that we have this event today.

So let me take you to some housekeeping pieces. First and foremost, obviously, all of this will webcast. We have WiFi for folks here on site, that is the passcode. We have a page on our website for those on the webcast and those here in the room. It's the Investor -- Analyst Investor Day page and on there is access to the webcast, a PDF of the slides as well as, importantly, supplemental information. I will get to that in a moment. We also have presented biographies and an appendix at the end of the slide deck. In terms of those supplemental materials, we posted on the site, a number of pieces, including the blue ribbon panel, a directive recently from the European Commission around CBRN risk. We have the PHEMCE strategy, albeit somewhat old, but nonetheless, still very important for you all to be associated with that document. And lastly, a document that we helped produce and create it's called CBRNE threat landscape. For those that are interested, who are not here on site, all of you here on site are receiving a copy, but those who are not here who wish to get a copy, you need to e-mail me your request, and we will handle it that way. Obviously, there is food and drink outside for those here on site. And lastly, the Q&A logistic, I'm sort of your emcee for today. I will be repeating all the questions for the benefit of those on the webcast, and we will go from there.

Obviously, today we may very well be making forward-looking statements. So please look at our filings on Form 10-K, 8-K and 10-Q for the risks and uncertainties that may cause actual results to differ. We will also, more than likely, be talking non-GAAP measures, specifically EBITDA today. So again, we'll refer to, not only the filings, but also the appendix and a reconciliation tables that we put in that document. It's at the very end of the slide deck. So in terms of the next 4 hours, as I said, a quick run through, you'd be needing, again, a number of individuals from the company. Dan will get things going with a review of the 2020 strategy. He will then segue to Chris Frech, our head of government affairs, and Congressman Mike Rogers, who will take us through the U.S. government's preparedness stance. So for the first time, all of you have a chance to actually hear from a member of Congress around that very important dynamic of our business going forward. And then we'll have our Head of Sales of Marketing, Darren Buchwald, take us through the sales and marketing effort, both domestically and internationally. We'll have a quick break, then we will go through each of the business units. As you all are aware, we are restructuring our business into business units, and you'll meet each of those business unit heads, and they will each talk around their business. We'll have a collective Q&A at the end of that session. We'll then segue to our pipeline and you will meet our CSO, and he will talk about our strategy for R&D, an important component of the business and certainly growth. We will segue to Barb Solow, who will take you all through the contracting clamp line and what actually is driving that and how we really have built that portion of our business out from a funding perspective, contributing to the net R&D number that we continually talk about. We'll then segue to Atul Saran, a new member of the team, who is head of our Corporate Development group and you'll learn a lot more about our M&A strategy. Bob Kramer will come up as our CFO and give you an update on the financial condition. And Dan will round things out with the summary. Okay? So without further ado, may I introduce Dan Abdun-Nabi, our President and CEO. Dan?

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Thank you, Bob, and welcome, everyone. Really excited to be here. It's a great opportunity for us to catch you up on what's happening with Emergent, and for you all to take a deeper dive into various aspects of our business, and for me, it's an exciting time. It's the first inaugural as Bob Burrows said, of our Analyst and Investor Day, and I look forward to the time that we're going to spend together. And in particular, I'm going to take a deep dive in a number of facets of the operation.

First to give you a better understanding of the goals that we have, the strategy that we've laid out, the plans that we've developed to execute on that strategy. And I think for the group here, it's a real opportunity to dive into the public health [stretch] market, understand a growth potential in that market, both domestically and internationally.

And in addition, as we look at the growth potential for the company, better understand our opportunities for growth, both organically and through M&A. And similarly, this is the first opportunity for all of you to hear about our business unit structure. How we've organized those business units, the strategies and plans that we've developed for those business units, their core competencies, their products, the pipeline that they've got. So it's a way for you to evaluate how we are structuring the organization to drive growth going forward.

And lastly, we're going to be talking about the various core competencies that we have as an organization. And these core competencies are critically important to our future growth trajectory. There are things that we leverage as a company to enable the trajectory of growth that we've had over the years.

At the end of this session, I'm really confident that you'll come away with a much better understanding of the company, our mission, our people, the assets that we have, the products in the pipeline, the markets that we're addressing and the growth potential for the organization as we look forward for the next several years and even beyond. So as a way to kick off this meeting, we've prepared a very short video, which highlights Emergent. How we operate, what we do and the way in which we go about doing our business. And I think it's a wonderful backdrop on -- to the session. It enables, I think, an effective dialogue as we go forward for the next several hours as we talk about the various aspects of the company. So let's take a minute and watch this video.

(presentation)

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

As I said, it really does present a nice backdrop to the accomplishments of the company over the last several years. And actually before, we look forward to the years ahead of us. I'd like to take a retrospect because I think it's important to understand the trajectory of growth of the company over the last 5 years. Many of you have been following the company since 2012 and even before, and remember the time when we first announced a growth plan and that growth plan covered the period 2012 to 2015. And in that plan, we established 3 simple matrix for the company. Number one was to grow our revenue. At that time, we were about $280 million total revenue and we set an aggressive target for the organization of achieving $500 million top line revenue.

In addition, we wanted to diversify our business. At that time, we had one marketed product, so we set a goal of achieving or having in our portfolio at least 3 marketed products. And finally, we wanted to show growth in the bottom line. And at that time, it was a pretty aggressive target for the organization of 15% net income CAGR from the period 2012 to 2015. So in order to achieve those objectives, we developed a fairly comprehensive strategy document. And that strategy outlined the core strategic principles for the organization, which we shared with the investors and we shared with the analysts. We also identified the core competencies that we had as an organization that we intended to rely upon and leverage, and those core competencies really set us apart from the competition. They give us real competitive advantage. And we applied those competencies across the series of objectives in order to drive to the completion of the goals that we had laid out for the organization. And we were quite successful in achieving the 3 principal goals that we identified. First, in terms of revenue we did, in fact, achieve, the $500-plus million of total revenue.

Importantly, in terms of diversification of the market of products, we went from 1 marketed product to 10 marketed products, well in excess of the 3 that we had identified. Further in terms of our net income CAGR, against a target of 15%, we ended up at 38%. So significant performance over the last 5 years, which enabled us to set the stage for our future growth.

So with that past performance in mind and that model that we developed, we established our 2016 to 2020 growth plan. And there we followed the same paradigm. We set up aggressive, but achievable targets for the organization. First thing, revenue, targeting a $1 billion in revenue with at least 10% coming from ex-U.S. markets, again, in an effort to diversify our customer base. We wanted to continue to drive the future of the organization with products in development and expanding pipeline. So there we're targeting 6 products in advanced development with at least being -- with at least 3 being dual market, again, a diversification play.

And lastly, continue to grow the bottom line. And here we are targeting 13% of revenue as a net income target. And I think the drivers that you see on the screen will enable us to get there, and again, following the paradigm of the earlier 2012 to 2015 plan, we've developed a comprehensive strategy that we believe will enable us to get there.

So here's the roadmap. We're going to have very focused strategic priorities for the organization. We're going to continue to leverage the proving core competencies that we've developed over the course of time. And we've structured ourselves in aligned and effective business units that can enable growth across those business units to contribute to the overall success of the enterprise. And let me spend a few minutes on each of these.

So in terms of focus strategy, we want to continue to leverage and expand our leadership position in the growing public health threats marketplace. And you'll hear more about that public health threats marketplace in just a few moments. We want to continue to develop innovative products, and in particularly, we want to leverage the platform of technologies that we have and also target products, whereby we can secure third-party funding, albeit government funding or NGO funding, just to defray some of significant costs in the R&D programs.

Continue to growth through acquisition. And by that, we mean a priority given to revenue generators that can be accretive within 12 months of acquisition. We want to expand our base of only in class and best-in-class products, which is really a hallmark of the portfolio at Emergent when you look at the portfolio of products that we have.

And lastly, expand into dual markets. And again, it's an opportunity to diversify the customer base for the enterprise. We have identified and are going to leverage the proven core competencies that we have. And this is an area where you're going to hear much more from the leadership team over the course of the morning, government relations and contracting, medical countermeasure of development, quality manufacturing, business and product acquisitions and financial discipline, all those you're going to hear more about and all of those are critically important to enable the execution of our strategic plan.

And let me spend just a minute on the business unit structure that we have established. Each of these business unit possesses unique attributes that are very distinct and different among them. Nevertheless, they all have focused leadership teams and a tailored strategies and tailored plans and unique core competencies that they're going to leverage. And later this morning, you will hear the business units talk about those plans, talk about the strategies, talk about their products and their portfolio, and how they're going to leverage the core competencies to drive their growth.

And with this strategy in place, right now, we are very well positioned to continue to advance our leadership position in the public health threats space. And when you think about the drivers in the public health threats market, one of the key drivers is the U.S. government. The U.S. government has been spending approximately $13 billion a year on health security, and this is across a portfolio of programs and a number of different agencies.

On the international side, we're seeing growing awareness of the public health threats paradigm that's out there and the need to acquire and stockpile critical medical countermeasures to protect civilian and military populations.

In addition, the dual market opportunity for us is critically important, as I mentioned, a diversity play and what we're seeing is opportunities to develop and commercialize products for governments for stockpiling, but also have those products be sold in the traditional commercial settings of hospitals and specialty clinics.

And lastly, globalization. We're all aware that a health threat that exists anywhere in the globe can quickly and rapidly become a health threat everywhere in the world. And this could be a matter of weeks, or even potentially, a matter of days.

So this is a beautiful segue into the next agenda item that we set up for you to hear about, which is the public health threats market, and in particular, talk a little bit about the U.S. government perspective on that. So I'd like to introduce Chris Frech, our Senior Vice President of Global Government Affairs, to introduce our keynote speaker, Congressman, Mike Rogers. Chris?

Christopher Frech

Morning. Today, it's my honor to introduce Congressman, Mike Rogers. Mike has 20 years of experience in top-level national security positions from the U.S. Army and the FBI to the Chairman of the House Intelligence Committee. From satellites to catching spies, he has led oversight of all 16 U.S. intelligence agencies, including the CIA, the MSA and military intelligence. Mike's traveled around the globe, meeting with heads of state as well as military intelligence professionals on the ground.

During his time, he has worked with 2 presidents and the congressional leadership on America's toughest national security problems. Today, Mike hosts a nationally syndicated radio commentary for Westwood One. He's a CNN national security commentator, serves on several corporate advisory boards, including Trident Capital news cybersecurity fund.

On a personal note, I've known Mike over the last 16 years and I've had the privilege to work with him in several different positions. First, as simply a congressional leadership staffer, then simply as White House liaison on to the House of Representatives, and finally, as a member of the Emergent team. Each role has allowed me to see Mike at work through different sets of lenses from representing his constituents in Michigan to dealing with the many threats to our nation, and indeed, the world. While over the years, his roles may have changed, the guy never did. He's always been a clear, measured voice at the table.

Please join me in welcoming the honorable, Mike Rogers.

Mike Rogers

Good morning. Oh, it can't be that bad. I will give you something to be at least terrified with at the end of the morning. So if nothing else, we'll grab you that way. I appreciate you all taking the time to be here. Chris, thank you for that. And Chris is humble too. He has had a very distinguished career in service to his government, of all of which I'm appreciative and I -- we can't tell you some of the more interesting discussions we had along the way about trying to solve some national security problems, but I'll tell you that if I'm ever in a fight, I want Chris with me. I want to start off with

a couple of things. First of all, thanks for the kind introduction. As a former member of Congress getting a kind anything is a pretty good day for us. I was flying back from Korea recently, met with some of their defense and intelligence officials. And you've been overseas, you've been on these travel trips, you know that your first leg can be brutal, little tiring, little cranky, you come in, you clear customs, you're waiting for your domestic flight and somebody in the terminal is just staring at me. I mean, just staring at me. And I think, this can't be good. So I take my newspaper and I pick it up a little higher. A few minutes later, I pulled it down and he is still staring at me. He's going to beat on me. Finally, he works up enough courage and he walks up to me and he says, "Hey, did anyone ever say you look a lot like Mike Rogers." And I went, well, people do say that. And he said, God, that must be awful. So thanks, (inaudible) it's good to see friends from -- back from the old days in Lansing, Michigan. I want to take you to the threat matrix here a little bit. And why that, a, this company plays an incredibly important role in our national security infrastructure as well as at ongoing for-profit organization. And I'm going to start with this town. I happen to see the tower is going up, replacing the Twin Towers. And to me, this -- that whole episode is very, very instructive about why we need to worry about chemical and biological agents, sounds a little off, bear with me. So if you think about 1993, they decided, they being Al Qaeda that they are going to bring down the Twin Towers. They are going to bring down one tower and have it cave into the other tower. That was their goal in 1993. They had 1,300 pounds of a nitrate bomb that they were able to develop. They were able to get the vehicle loaded with that 1,300 pounds into the basement of one of the Twin Towers. And they walked away from it and ignited on the timer. It had a 60-foot crater in the basement of one of those buildings and collapsed 2 floors, 2 concrete reinforced floors. I mean, think of the power of that bomb. Twin Towers didn't come down. Had 6 killed, unfortunately, and about 1,000 injured with smoke inhalation and, of course, that fired off a huge manhunt to try to catch the folks, who did it. And the mastermind of it was dotting around the world. So they were chasing them. He ended up in one place, they get there, he was gone. He was in the next place. His name was Ramsey. And so he gets to the Philippines, they think they have a good line on him. They go, he gets into Pakistan. But what he did, he was in such a hurry, he left a lot of really interesting material back. And you think about why it didn't work, it was a science problem, right? It certainly wasn't an attitude problem on their part. It wasn't a lack of courage to get it done. The science of what they were trying to do didn't work. So what they did is they started going through this process of saying, how can we change the way we get at our target. It's that fierce determination that we have seen over and over and over again. And on his laptop in the Philippines, they found a plot to kill the pope. They also found a plot to either blow up or hijack 15 American airliners back in 1995. If you think about what happened between 1995 and 2001, they went back to the drawing board and said, blowing it up from the basement doesn't -- the physics don't work, works against you. But doing something different, now think of all the plots that they had -- they were thinking about, they tied them together and decided through good science that they were going to go into one of these buildings. And I tell you that because that's exactly the kind of attitude we're watching in chem and biological agents in groups like ISIS and Al-Qaeda and others around the world. They are determined to try to find a chemical or biological agent of which they can deploy to create chaos and kill folks. I wish I could be, as I said, I never get invited to another one of these, by the way, because it's normally so depressing. If you think about that progression, so -- and how we got to BARDA. In 2004, as a member of the Intelligence Committee, I went to Libya. There, if you recall what happened in Libya at the time, Muammar Qaddafi decided he was going to give up his nuclear weapons, his biological weapons and his chemical weapons. And it was candidly a pretty -- a big coo that was very quiet. Nobody really talked about it. But it was a big deal. As a matter of fact, most of those missile systems and other components are on a military installation, I think, it's Kentucky, which my wife says one more reason not to drive through Kentucky. I'm just kidding. Okay, you've got to work with me people. This is a lot funnier after cocktail hours, I will tell you that. So if you think about the major thing what we went to find out, hey, how can we kind of accelerate getting rid of what really nasty stuff we have. And I'll never forget this. I got to go on a tour with their head of their chem-bio program, who had -- and he was very excited to meet me because he had studied at Michigan State University, a place that I represented in Congress at that time. I'm not the kind of alumni, if I'm on the front cover of your alumni magazine. But critically important because he had a good understanding of America, a great master of English, and he was a brilliant scientist. As a matter of fact, I asked him on this tour, by the way, we back up, very, very clever how they hid their facility in order to do this. They hid it around normal industrial complex that had some hills and complexes so that you would never see anyone go in and never see anyone go out. All the industrial activity would look completely normal. It would be really difficult to find. And by the way, we didn't know, we being -- the United States or intelligent services, didn't know where it was before they took us to it. It's kind of an amazing accomplishment with all the technology we have to find it. In the process of going through the tour of this facility, he says a couple of really interesting things. One, I asked him what his most important accomplishment was? And he said that, I have developed the best serine gas the world has ever known. He said after 10 years, we have a 92% lethality rate in the chemicals. I guess if you are a scientist, that's a good day. If you are an intelligence guy, that gives a little bead of sweat on your forehead, right, not a great day. And so I pushed him a little bit. We went to the nuclear facility site earlier. We went to the chemical site, their production facility. And then, there was a room all roped off, as you can imagine, with a yellow tape. And I said, can we go in there? He said, I don't recommend we go in there. And I said, obviously, that's your bio program -- research program. And he stopped as dead in this guy who was bragging about everything, the design of the building, the (inaudible) way of which he created egress and entry to the building, the fact that he made the best serine gas the world has ever seen. And he said in a deep kind of a hushed voice, even I won't talk about

that. So you know that Libya was developing, and we know from not only interviews there, but subsequent to that, a pretty aggressive bio-weapons program. Why that's important today? So we're trying to get rid of it. And candidly, one of the things I was trying to do is get a more advanced insinuator, if you remember these conversations. Because we'd already made the deal about who destroys the chemical weapons, but it was too small. It was taking forever. And my argument was you better do this as fast as we can because, at that time, we just didn't know, right? What if he changes his mind? What if he kicks this out? What if he decides, I'm going to keep a little for myself as a parting gift from office. Well, as we know, he escalates fast forward. He goes away, and the place is overrun by radicals of every sort. There are folks who are interested in good government in Libya. Those were struggling to get traction. Then you had all the bad actors in the entire north region of Africa pouring in from Chad, from Niger, from Algeria, everybody that had an ill intent was going there for a couple of things, weapons and components. And what we saw in a body of intelligence was the Al-Qaeda elements at the time were saying, somebody go in and get your hands on something nasty. We really would like the opportunity to have it, right. And so you have all these folks pouring in for a whole bunch of different mission sets, but what he know is that folks who are most determined to kill folks using these weapons for terror were definitely interested in getting their hands on it. In that same point -- so this is from 2004 to what you see today. We know they had a program. We saw the program. I personally witnessed the program. We know they had lots of really nasty stuff, but what we don't know is where it is today. That's the thing -- kind of thing that keeps me up at night. We just don't know where it's at today. If you look at Iraq, a lot of the debate centered around the stockpiles and it was there or wasn't there. But one thing that was missed is that we knew they had programs. We knew that they had research programs into chemical and biological weapons. We watched them use chemical weapons in Halabja and other places. Largest deaths by chemical weapons happened between Iraq and Iran. So we know they had it. We know they used it. Didn't find the stockpiles, but what we did find were programs. So when you have that massive destabilization in Iraq, they lost their ability to get their hands on these programs. And information and knowledge is power in that space. So we also saw a body of intelligence that would say, they wanted to also get their hands on those -- all that programmatic research, all right. Anthrax, ricin, all of the things -- smallpox, they were definitely -- they being Al-Qaeda at the time. And if you look at what moved to Syria right afterward, the folks that ended up in Syria and creating ISIS were really formed in Western Iraq. And so what they did is they took -- they had a massive release of folks who were in the insurgency from prison. I mean, I think, it was 1,500 people. All of them went to a guy named Al-Baghdadi. They all went, they were looking for safe haven, they founded in Western Syria -- excuse me, Eastern Syria along the Iraq-Syrian border. And so when they did that, they now had a place of operation. So we have 2 bad things happened. They had a collapse of the control of those facilities in Iraq, and we also witnessed in Syria a loss of control, not of all of their capabilities to lever the government of Syria, but a good number of the research facilities. So if you think, gosh, all of this persistence, remember 1993 to 2001, they went back and did some white boarding on how to bring that building down, both of those buildings down, and they got it right. This constant, constant, constant interest in getting chemical and biological weapon systems has never gone away. And what worries folks like me is the fact that now we can't say for certain that they didn't get into some of these facilities and get the information that we know they were interested in getting. And even if they can't, some would argue, do they have a capability right now to go out and develop it to do what you need to do to develop an anthrax attack as an example. The problem is we don't know the answer to that because what we also saw in that body intelligence for years is that Al-Qaeda, then ISIS, other separatist and radical groups, all around the world by the way, were saying, hey, we need people who can come in and help us develop a chemical and biological weapon. They were recruiting. They recruit cyber people today, and they're also recruiting scientists that can come in and help them develop chemical and biological weapons. So if you have somebody pretty smart, does pretty well, they come in, they are chemist by nature or a biologist. You put him in a room with all the right data. Houston, we have a problem, right? That's why you're seeing, I think, in more interested international community in the kinds of things that companies like Emergent has to offer. And by the way, was the easiest yes I ever got to when Emergent said, "Hey, would you mind coming up to New York to do this?" Because they were -- they're early on in our need, and if you remember going into Iraq, we ended up deciding because we knew what he had that we are going to prophylactically treat every U.S. soldier. My brother was one of them, who are getting -- going in and deploying into Iraq. And that is a massive undertaking. Think of the complicated quality control process to make sure that, that amount of vaccine to people who are going to go and be in the fight. It was just an incredible thing to watch. I got to witness it firsthand to watch them go through this process of developing vaccines with that quality control that are very sophisticated at a rate and continue, by the way, to develop that vaccine so the number of shots that an average soldier needed went down over about 2 years, 3 years. And it was really an incredible thing to watch. It was science at its best in my estimation. And it saved and protected soldiers we know that. Even from some of the smaller exposures that happened along the way. So that to me was just an incredible thing. So after all that, 2004, we go there, Libya says, even I don't want to talk about what goes on in that room. In 2004, we decided, I think, finalized in 2005, so think about everything is going on in the world. In Iraq, we know that some of this material may have slipped away, not only materials and stockpiles, I mean, the programmatic research of these chemical and biological agents. And now we know that Libya had -- Libya hadn't fallen apart yet, we thought we at least had our arms around that. We knew that other nation states were developing capability, which is really interesting. And we saw, overtime, this relationship between Syria and North Korea go figure, right. This was even in the 2000s, the first decade. They came out and recognized that Syria was doing research on 13 biological agents, and North

Korean military just announced the -- excuse me, the South Korea Defense Ministry just announced that they have good information that North Korea is in the possession of about 13 biological agents, we'll talk about that in a minute. And so what you see is this kind of urgent need in Congress. So we reached out. We work with people like Chris and others in the administration. I worked with a Democrat colleague of mine, named Anna Eshoo from California, and we said, we best do something in a hurry, and she also served on the Intelligence Committee. And so what happened in the first round was something called Bioshield. And Bioshield, think about why this happens, nothing happens fast in congress. And this wasn't incredibly fast, but the pot of money was fast, $5 billion, right? Think of this. We're a nation at war. Setting aside $5 billion was a big deal at the time, it was called Bioshield. And that was our first down payment to what we knew is going to be a lifelong endeavor of how to produce medical countermeasures, defend ourselves from what we knew was accessible in the world market, and it is pretty dangerous, though. So Bioshield comes in, it takes us about 2 years to complete something called BARDA, right? You've all heard of that. That is an important piece of what happened. And what it did is that it allowed companies, Emergent being one of them, to actually spend some R&D money knowing that there was a market on the other end. And we argued if we don't do this, we're in trouble, right? Who else would get into the anthrax vaccine business, right? Is that -- I mean, you get up in the morning and go, my God, this is a moneymaker. You can't wait, right? We had to encourage these companies to continue to develop their countermeasure. They were doing it already, but we needed to make sure that we had a outlet for folks like you to understand, guess what? There is a place for them to go in the marketplace, and they can grow and be diverse in their revenue moving forward because it's just not the United States anymore. Think about this problem with North Korea I just discussed. You can imagine the renewed interest around the world in medical countermeasures, knowing what capabilities are coming out of North Korea. It -- as it turns out, it's a pretty big deal.

In 2016, by the way, this get back to the ISIS before I go into the North Korea piece, there was -- remember the Belgium airport attacks? That group of individuals, not the sharpest terrorists on the shelf. They were -- they planned the execution part of it very, very well, but they were also dabbling, as most people (inaudible) didn't really realize, in some kind of biological agents. So when they did the search of their facilities, they found biological agent research happening. Really rudimentary, not very sophisticated. It was clear they weren't plugged into some other piece of the organization that had some higher level of capability in the development of biological agents, but it shows you the sheer determination. And again, through a body of work, we were finding that they were recruiting and encouraging people if you even stumbled across it to use it, right? We knew that they had a will and an intent, they being the terrorist organization we knew then as ISIS, to use the -- use those -- whatever agents they could find, chemical or otherwise.

And so February of this year, let's fast forward, one -- a major training exercise happens in the United Kingdom where they train on biological and chemical attacks between the U.S. and the United Kingdom. Not something that happens very often, I'll tell you that right now. And so when you start seeing this public body of evidence and what we know, where the terrorists groups are, what you know when the MI6 director comes out publicly and says, we have the highest threat that we've ever had. It tells you that, again, they're getting information that causes them a concern, knowing this appetite to get a chemical and biological opportunity, right? Think of the terror, even if it's a small event, right? Bringing down buildings is pretty awful, right? They went after that because this is the heart of -- they believe, the absolute heart of the U.S. economy. Imagine even a smaller chemical or biological release somewhere that kills a dozen people or less, the sheer terror that, that creates and how that shut things down is pretty terrifying, and they know it. That's why they're on this march to try to find this.

I want to go into just the North Korea threat here really quickly. And I do want to make sure we have time for questions. Bill Gates showed up at something called the Munich Security Conference. It's a big security conference that happens every year. It attracts all the national security geeks like me, who come in and we discuss what's going on in the world and what our challenges and opportunities might be to make a safer place for the world. So Bill Gates gets up, and this is not somebody who normally shows up to the Munich Security Conference, right? Bill Gates. I was shocked, and it didn't hardly get any attention. This February, this last February. He got up and said to this group, a pretty distinguished national security folks, and it's both private sector and government officials from all over the world, "If you have not been following biology lately, I am here with some really bad news." Bill Gates. And he started talking about the need for a more robust investment in medical countermeasures and talked about only -- in an only way that Bill Gates can do about the expounding problem of a release of even a pandemic smallpox, fill in the blank, right, that is either intentional or unintentional. A nuclear attack stops at some point, right? The dust does settle. In a biologic attack, his argument was, if we don't get our arms around this, we don't know how to stop it. It gets to a certain point, how do you contain it. It was pretty terrifying. I think he got a cut of the bar. The bar bill that night was pretty significant. Oh boy, come on. They told me you analyst were funny people. I believed it.

Again, so you think -- so he's out there, and this is a guy who's out in the research community in a way that's just, I think, unprecedented. If Bill Gates is worried about it, and this isn't his day job, I think we ought to be a little bit concerned about it as well, right? And what we know from the

North Korea, I happen to be with a very senior Pacific Rim intelligence director last night, and we were just chatting about the threats that they're worried about. And one of the things they decided is they're going to ramp up their investment, by the way, in medical countermeasures. Why? Once they saw that the missile systems of which the Kim Jong-un has been able to deploy, even if -- there's a debate in a scientific community, did -- could that ICBM really get to Washington, D.C. or New York? I think there is a bigger consensus that it could still reach the West Coast of the United States. And if any of those conversations are accurate, and you're at places that are in the Pacific Rim, you're thinking, guess what? We're right in the target set for Kim Jong-un. We are one missile away. And what we found, again, is a body -- public body of intelligence work in the earlier years that there was an external government helping teach the Syrians how to weaponize anthrax. So we know that, right? That's pretty public. And again, that relationship between North Korea and Syria, you can draw pretty much a straight line. And so all of that interaction with all of this and now his missile capability advancing, you go, okay, I get it. I'm not that bright, but I get it. There's lots of scientific exchange, and the very fact that we know he has those 13 agents, the -- again, the North Korean -- or excuse me, the South Korean Defense Ministry has put out a pretty interesting report on that, it mirrors what's going on in Syria or used to go on in Syria. So we know that they have that capability, and if the Russians helped the Syrians figure out how to weaponize anthrax, we're guessing that, that information probably found its way into North Korea. And so now you have this whole new Pacific Rim interest in countermeasures for their protection, right. And the best way to make them not use it is to be able to publicly demonstrate that you have the capability to defeat it, right? Like, through these medical countermeasures, as we do. Pretty interesting stuff, but it's a little scary.

So if you think about, well okay, he has it. Would he do it? Do you remember the VX nerve agent attack on his half brother at Kuala Lumpur Airport? And I think about -- there's an old FBI guy and is chairman of something called Covert Action Programs. These are the hardest, most-sensitive things that you could ever do. In intelligence business, sending somebody to kill your half brother because you're worried that he might take over would be a covert action. Even though we wouldn't do that, we don't -- United States does not authorize killings in that way. But if you think about it, there's a lot better ways than taking a nerve agent into a third country, putting it on someone's hands, walking in the airport and rubbing it in their eyes and the face. If you ever -- the video is on YouTube, and it's a -- it's pretty shocking. I mean, it was clear that the woman who did it was instructed exactly on where to put it. Like, she knew exactly -- but she said, oh, I thought it was a prank. If you look at what she was doing, there is no way that's a prank. They don't believe it was a prank either. Deliberately targeted. Why would you do it that way? You could shiv the guy getting his bag and walk away, right?

That's a lot easier than smuggling in a nerve agent, training someone how to use the nerve agent, applying the nerve agent to your hands and then applying it in a open airport, right? That's just not the most clever plan candidly, successful unfortunately. Why would you do that? Because I want to show the world that I have biological and chemical agents, and I'm prepared to use them. Right? He sent a very clear message, which worries our South Korean friends and allies greatly as it should, and our allies in the Pacific Rim. So all of those folks we're talking about, who are now engaged are saying, "Guess what, we are going to get in the business of finding and acquiring countermeasures just in case he has a bad day in the middle of the night." Right? And he can have one of those. Trust me on that.

And so if you think about -- BARDA came up -- how the BioShield, the first $5 billion, how BARDA, the funding stream, this company, Emergent, has matured with BARDA. They have absolutely matured with BARDA. Now they're engaged in making sure that their manufacturing processes of a very difficult, sophisticated process are the best in the world. And I argue they are the best in the world. You wouldn't give this to your family member or encourage it to be given to your family member if you didn't believe in it. And I can tell you, my family members got some of this in the -- in defensive -- standing in defense for their country, and I was all in other than he complained about that first shot. He's a big tough army dude, and he didn't like the needle. You don't think I had fun with that. I had a lot of fun with that.

So if you think about where we came and what our challenges and threats are moving forward, still pretty significant. If you're looking at it from a perspective of, okay, that's great, where is the market going from here, I will tell you that FEMA, in a conversation I had recently, United States FEMA organization, realized that once it was determined that missiles can reach the West Coast, they need to get into the discussions of how they're prepared with medical countermeasures on the odd shot something bad happens and not just nuclear, right? I mean, you can deliver a really nasty punch with a chemical or a biological weapon as well, right? Remember that research that showed Syria was learning how to weaponize anthrax on the top of a missile. Now we know that North Korea has anthrax. They have ricin. They have others. They have smallpox. I mean, all the bad things that can happen to you in a day, they got it.

And so that's where I think the market goes, candidly. I think there's going to be some very tired and busy people at Emergent in the months ahead. If you look at where the tension is going, and it looks from the outside like a march toward conflict, right, like, we -- there's no other option there's nothing else we can do. Moving military assets in the United States and NATO, and now we have all of these other countries saying, you know, if you're -- if everything went wrong, let's just say, if everything went wrong, what are we going to do? We're going to release everything we have if I'm Kim Jong-un, right? I'll fire everything because all I got is this, right? I'm either alive and the supreme leader or I'm dead. I take a life, right? And so we think that they're going to just pull the lanyard on everything. And so you're going to see this huge preparation, again, external to the United States and internally to the United States.

One of the other scenarios that's often talked about is they have about 200,000 in North Korea trained special forces operators, but they also have an interesting mission set, which is to deliver alternative weapon systems. (inaudible) I look terrible in those orange jumpsuits with the numbers on the back in the prison. They make me look very boxy. So they have capability. Imagine, right, you get around the world somewhere and you start small releases of something around the world to confuse, to make sure that if you're thinking what your mission is this that you've wrapped up these government agencies into trying to deal with something different. So there's an awareness of that in the international community, and there's certainly an awareness here that changes the way we ramp this stuff up.

So every once in a while, people fall asleep at the switch of the government. I would argue on this one. They are not. And one of the reasons, again, I wanted to be here for what I think is a great company is the fact that very rarely in Congress can you work in a bipartisan way, pass a bill that does more than you think it could ever accomplish. And I argue that BARDA was that.

It has put us in a much better -- if I look back before BARDA and BioShield, we were kind of maybe you win one, maybe you don't win one, maybe you get a little something. In this case, it has put us in a position to be prepared for what we are facing today, which I -- if I -- somebody said what is the best bill you ever passed, I'd have to argue it's this one because it never got attention. It's not sexy. It was good, old-fashioned gumshoe legislative work, but it prepared -- put the country in a place to be prepared and allow our private sector to be an equal partner in providing countermeasures that could protect not only Americans but our allies.

So again, thank you for having me. Thanks for sleeping through this. We have little vials of anthrax if you'd like to take them as a parting gift. Ricin, apparently, they wouldn't let in the city. I don't know, they have no sense of humor here. And with that, I'm just going to take some questions if I can. Any? Nothing. Yes, sir?

QUESTIONS AND ANSWERS

Unidentified Participant

Just (inaudible) today. I'm wondering -- so I guess, in terms of the sector and talking about executing on international trends in terms of stockpile [and regulatory threats], where do you see our NATO allies in that basis and are how fast are they moving towards the execution phase in that?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. So Congressman, I need to repeat that please. I do apologize. So yes, for the webcast, everyone, the question really is around what's the status of NATO and their ongoing demand?

Mike Rogers

And I would argue international. I think it's bigger than NATO. So NATO has a procurement policy, right? And so it's going to be fairly closely latched up to what U.S. intelligence and their intelligence agencies are saying, "Hey, here's the threats, what we should be worried about." And so that exists. I think what they're going to do is try to fight -- if you noticed, there's some new spending in defense budgets all across Europe. I'll guarantee you some of that is for preparation. It's not just new tanks, new weapons, new soldiers. I think where you're going to see the real difference is in

the Pacific Rim. I think that there is lots of interest in this. And so I argue it'll probably be fits and starts, but they will eventually find a regular procurement stockpiling process. Not every -- every country is so different in the Pacific Rim. Our closest allies will be first. I think they'll show the way. You can imagine who our closest allies are in the Pacific Rim. And then I think you're going to go -- you're going to see it go right down the list of people who can do it. So I think the government -- the U.S. government will probably help in some of those cases and then will ask -- again, I'm not speaking for the government, but I think the government will then say, "Hey, listen, we'll do X, but you got to do Y. We'll help you get there, but you have to do Y because we can't fund everything that we're doing and everything that they're doing, too, in a countermeasure." So -- But I think you're going to see that activity, but I already know you're -- that activity is already happening. Those discussions are happening. Takes a little while, as we know, from a discussion to a check, but I think we're well down that path.

Unidentified Participant

This is partially just for my own job. But in your story about Libya, so sounds like some of those weapons ended up in Kentucky, but some of them, obviously, stayed in Libya. And even though you saw them, you're not able to kind of shut it down. So what was the difference why some ended up in Kentucky, but some, the U.S. government was not able to shut it down?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. So for the webcast, the question was around the Libya piece that Mike talked about and the eventual separation of a program in Kentucky and Libya and what contributed to that separation.

Mike Rogers

So the items that left were all the hardware of a nuclear weapon program. So they were more advanced than our intelligence services believed at the time in their development of nuclear weapons, surprised us all. Their missile development was pretty good. So you can take a missile, and we can get it out of the country pretty easily. We know how to handle that. The problem was he was very proud of his sarin gas. They stored it in tents, in barrels outside. We -- when we started walking down the thing, you could almost -- there's like a weird odor in the [sand]. At that time, I didn't know if that was a good thing or a bad thing, but I'm thinking can't be a good thing. So we just said (inaudible) close enough. It was leaking out of the barrels. And so what we -- you don't want to do is try to take any of those chemical -- even biological agents, you don't want to transport it if you can avoid it. So we are trying to build, with the U.S. government with Libya's cooperation at the time, was building these massive incinerators that are specifically designed to kill all the active agents and anything that might pass through it. And so that's what was the problem. And as anything goes, they were -- when I got there, they were fighting over who was paying for the road from the facility to the incinerator. And the road was, I don't know, 2 miles long. I mean, I went back in Congress and actually put more money in the -- I said we'll pay for the damn road. Just burn it as fast as you can. It was -- but that's why. So all of that stuff never goes anywhere. And remember, the intellectual property was also there. So that is almost more valuable on a bio program than the actual material itself. I would rather -- if I were those folks, I'd rather have that intellectual property. I can take that anywhere I go and be safe about its development versus trying to grab it and put in your backpack and run down the road. And so that was -- really, the problem was just taking too darn long to get rid of it. That's why we know there's still some stuff there, and we don't know yet about where that intellectual property on the bio weapons program is. We just don't know. We hope it's -- hope is a really bad way. I think there's no really word of hope in an intelligence business, right? They frown on that, right? We don't have hope. We have facts. And so that's the part that we couldn't -- we just didn't have [advantage]. And remember, when we were still doing that, Gaddafi was still in charge of this government. So he wasn't going to let any of that intellectual property necessarily go. He acknowledged they had it. There were negotiations about how we treat it. We just don't know what was left of the intellectual portion. And I know that there are still chemical agents. I mean, it was -- I don't know who took that contract, but they're probably not there today not because they didn't make money, because that stuff was nasty. It was just leaking out of the barrels. I've never seen anything like it. It was a little terrifying to be honest with you. And nobody's -- none of the scientists seem to mind, and they never paid a pension to any one of those scientists. Just kidding. Work with me people. Work with me. Yes, sir?

Unidentified Participant

Just a question in terms of [order] from the U.S. government right now, you mentioned 13 potential biologics. Is that -- anthrax, ricin, smallpox, is that kind of in order, the anthrax first or (inaudible)?

Mike Rogers

Well -- and the reason anthrax always pops up to the top is because it's probably the easiest to weaponize and engage. And we know through, again, all this body of intelligence that foreign governments were interested in using it in that way, and we know that the bad guys are interested. Remember, you can create anthrax here if you had to, here in the United States. You could come here with that intellectual capability and do it here and weaponize it here. And so that's why anthrax, smallpox, ricin, the 13 -- actually, I think they're in that booklet that you -- did you guys get that booklet, that shiny one? If you can go through the 13, there's a -- I think they do nuclear and chemical on the front, and then there's a biologic section, where you can go through all of the 13 and kind of get a notion for it. But what they'll do is they try to focus our resources on threat. Here's what we know exists and they can use and weaponize to some degree of danger. And then they'll try to find programs along the way and companies along the way that can help them solve either prophylactically or postexposure to any of those agents. Yes, sir?

Unidentified Participant

Just politically within Congress for programs like BARDA and stockpiling, is this elevated [through forward the third rail] program? Or are these still subject to -- concerned about funding?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. The question is what's the status of funding in the U.S. across the multiple agencies?

Mike Rogers

It will always get funding. The fight will be, this is good news for those of us worried about this, what's the increase, right? What we saw in the beginning is it was great and everybody was in, yes, you kind of get it. We better stockpile. We've got these threats that people were exposed to. This is what the threat looks like. And that -- and like in Congress, it's the shiny toy, right, what -- and it's not the shiny toy ever really unless something bad happens. And so we -- I think there's a general awareness. What I'm seeing now is that funding was -- that went up a little bit. I think you're going to -- this is just me, Mike Rogers, speculating. You're going to see a bit of a spike here because of the tensions that are happening in the world and the places we know where they might have access to this, including nation states who might just use it. And so now there's -- it becomes the shiny toy in those security committees who are going do the appropriations for the money. So you can't hide from this. And they're going to need to make -- my argument to them is and will be that you also put a little money, and yes, we need our own, put a little money in to help of whatever that formula is for our best allies to get their programs going so that they're prepared as well because what you don't want to do is radar stockpiles for an ally in an event, right? That's a bad day. That's a really bad day. And so I think you're going to see this spike coming up, again, because of the level of threat. If this level of threat weren't so public, I think you'd still see an increase because they understand the value of it, and they're going to increase on each one of those line items before it's all over. You'll see that increase. Now I think you're going to see a steeper increase for those reasons. Money you don't want to spend but you can't not spend. It's like buying a fire truck, right? Nobody wants to buy the fire truck, but you better have a fire truck and everything that goes with it. And that's my argument on things like BARDA and this. You -- no, we don't want to spend money on this. I wish we didn't have to. But guess what, we do have to, and we better buy it. That's kind of the attitude, I think, you're going to find in Congress now.

All right. Well, thank you for having me. Enjoy your day. Nothing like going home today, going -- I don't want to eat anything. I'm turning my air conditioner off. Awesome. Thanks so much. Appreciate it.

PRESENTATION

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Great. Thank you again, Congressman Rogers. That was fantastic. So next up, everybody, is Darren Buchwald, our Senior Vice President for Sales and Marketing, who will talk to you about our U.S. and rest of world sales and marketing effort. Darren?

Darren Buchwald

Good morning. Bob wanted me to talk a little bit about my background before I got going. So I've worked in the industry for over 25 years at this point, mostly in pharmaceutical businesses. I started my career with Forest Laboratories. I then moved on to working with a number of different start-up companies, including Human Genome Sciences, MiddleBrook Pharmaceuticals, where I was one of the first commercial people hired by those companies. Last position I had before I came to work at Emergent was at a company called Clinical Data. We ended up commercializing a product called Viibryd. It's an antidepressant. The company was subsequently bought by Forest Laboratories, ironically enough, where I started my career. And then I came to Emergent about 6 years ago to work with Dan. Dan sort of went through his introductory remarks, I was involved in setting that strategy, worked in business development, helped the company to acquire all the products that we have today. And this time last year, Dan asked me to move over to sales and marketing to head up that initiative. So today, I have the pleasure of leading our global sales and marketing organization at Emergent. And my colleagues are the focal point of the company's efforts to protect 50 million lives. Through the relationships that they have with customers around the globe, the sales and marketing organization is the conduit through which we connect our customers with the communities they serve to the products, the devices, the services, the insight and the perspective that this company has to offer.

So let's take a look at the market opportunity that we have for Emergent. This is a significant market, the CBRNe and emerging infectious disease market in the U.S., in particular, is valued at about $13 billion. This is the largest market in the world, and it's reflected in our sales results, where we've seen nearly 90% of our product revenues generated in the United States. So our analysis suggests that the U.S. is spending $13 billion per year on research, development, procurement of products, devices, diagnostics, preparation in the event of an event to better prepare the U.S. to be able to respond to the security threats that Congressman Mike Rogers was speaking about earlier.

So of these investments, those under the direction of helping human services, in particular, and more specifically, BARDA, the CDC under the Strategic National Stockpile, project BioShield and the advanced research and development funds are most relevant to our business today, and those total about $1.5 billion in fiscal year '17. And the majority of our product revenue comes through those 3 programs.

So in the U.S., we benefit from enhanced transparency, and figures on spending in other countries are more difficult to come by. Australia, Canada, and the U.K., for example, have made significant investments in this space. And today, we're engaged through the sales and marketing organization and market building activities in these countries to try and convince these organizations that they need to enhance their level of investment in preparedness.

So take a second, spend a little bit of time talking about our customers. So the entity stakeholders that we interact with, the audience is very diverse. So from end users such as our armed forces, laboratory workers, first responders and the government agencies whose missions we support with our products, there are many stakeholders that are influential in the decision to invest in preparedness and the ultimate selection and decision to purchase our products and then deploy them.

So our customers tend to fall into 3 types of ministries in the government. So Departments of defense or ministries of defense, ministries of Health and ministries of state interior or home. Depending on the country, state and provincial governments also play a large role. This happens to be the situation in Germany for example. And most of our efforts are directed at the federal level across the globe, where we're active and working to advocate for national policy and execute programs across the CBRNe spectrum.

I want to take a minute and talk about end users and stakeholders. So as mentioned before, there are many different stakeholders that are influential in the selection and deployment of our products. So this slide gives you a better feel for the types of stakeholders that we reach through our sales and marketing efforts, which take form in programs to educate the audience about the threat environment and the concept of operations to deploy the products that we have in an emergency.

For example, we engage with the administration -- administrative and legislative branches of government to advocate for policy. In addition, we work with medical professionals to ensure that they're well informed on how to use the products and shape guidelines for their use. In addition, we engage with end users, whether that's the physician, the war fighter, first responder, all those folks that may end up using the product to make sure that the experience they have with our products is optimized and that we're also able to identify any insights that we might be able to use to enhance or improve our products over the long term.

So as I mentioned before, I've had the opportunity to help the company grow the portfolio to where it is today. And it was starting out with one product, BioThrax, and now today, we've got 8 different products in the portfolio that address the spectrum of CBRNe threats. And if you think about it, there is no other company in the world that's got a portfolio like this. We've got the broadest portfolio, and we're able to have conversations across the entire spectrum. So we're very well positioned in that regard to have a leadership role in this space. And as you'll hear later, in the presentations today, the company is very active in looking for additional products that complement this portfolio or that can expand this portfolio.

So I want to take a minute and talk about our sales leaders that we have working with us around the globe. And it's important to touch on the customer journey that we see the stakeholders moving through when we're having conversations about the products that we have. So it really begins with threat assessment, and it ends with procurement or stockpiling of the products that we have. And the sales leaders that we have at Emergent are instrumental in that process.

So our direct sales team is going to double in size over the next year, and these folks average more than 20 years of experience in the industry, having worked in pharmaceuticals and worked with ministries of health, typically, or ministries of defense. So it's our expectation that our sales leaders are going to be the expert integrator of all the things that Emergent can bring to bear, whether that's knowledge about the diseases that our products treat or about the policies that others have put in place to enhance their preparedness efforts.

So this is the customer evolution as we think about it at Emergent, and the customer journey begins with threat assessment and ends with procurement and stockpiling of products. So depending on the country or the product or the device, customers can be any way -- anywhere along this continuum, and it's our responsibility to help them move along to the process of actually stockpiling and deploying the product. So from country to country and product to product, their perception of the threat differs and their priorities differ. And ideally, across 8 products that we have, we want to move them in a position where they're stockpiling and prepared to deploy all those products. So our team spends a significant amount of time educating our customers and stakeholders on the threats and then the concept of operations necessary to be able to deploy them.

Let's take a moment now and talk about threat intelligence. So there are several initiatives that we've undertaken to assist countries better understand the current threat environment and the potential impact that these threats may have on the populations they serve. And I think there's very few people within countries that have the opportunity to hear the intelligence that's available through their intelligence apparatus, and valuable role that we play is to share that information that's available through public source documents with the operators, with the people that are closer to the decisions to deploy these products.

So today, we've distributed the global CBRNe landscape report, and this is a report that we deliver to our customers. This is a new initiative that we introduced this year, and the response we've gotten from customers has been fantastic. In fact, we've had more in-depth conversations and richer discussions around threats than ever before. So this is something that we'll be looking to update periodically, and we're moving now into a period where we're providing regional versions of this report. So our first regional report was just delivered, which is a report providing a detailed assessment of the level of preparedness in Europe and was almost like a report card comparing level of preparedness in different European countries to the U.S. And this has been very well received by policymakers and helpful in having them make the arguments that they need to enhance the preparedness level in their nations.

So in addition, we also provided customers with deep dive updates focused on different emerging threat actors or threats or advances in technology. And as you look through the report, there are some particularly interesting articles that are in that report that deal with new technology that increases the threat level. And one in particular is that CRISPR technology that was used to recreate horsepox. So that's detailed in there and is very interesting and something that people are spending a lot of time talking about because a lone wolf actor now is armed with capabilities where they can really do some terrible things.

So this initiative has really provided some more opportunities to engage with our customers and have a discussion around emerging threats and understand how their priorities are shifting and evolving. The perspective and insight helps us to direct and influence our internal pipeline as well to communicate with our R&D colleagues about what people are concerned about.

So in addition to the threat intelligence offering we provide, we also work with our customers to organize and execute war games and tabletop exercises to better frame the impact of different threats such as anthrax, botulism, smallpox and chemical weapons. And we find that these initiatives often identify gaps in preparedness and challenge assumptions, which lead to a shift in thinking around policies and concept and -- of operations. And while we've done these programs in the past, the level of interest that we're seeing and participating in programs going forward and a number of programs that we've got planned for 2018, I think, reflects what the Congressman was talking about, sort of the renewed interest in trying to increase the level of preparedness that countries are investing in.

So once a customer and various stakeholders have concluded that a threat needs to be addressed through policy, they move to the next step in the continuum where a medical policy or a concept of operations is developed. Given our history of the company of working across different threat areas and partnering with many countries, we're well positioned to offer perspective on -- and guidance on the manner in which the threats are addressed and how these plans are operationalized.

So this is where our sales leaders leverage their role as the expert integrator of Emergent expertise, and they work with colleagues either in medical affairs or government affairs, whichever is more relevant, to make sure that the policy and insights are available to those customers.

So our government affairs team is closely aligned with sales and marketing, and we work together around the globe in targeted countries or the European Union to implement policy and legislation to improve our customers' ability to protect life against priority threats. Likewise, once the foundation has been laid, that a threat has been identified and a policy to deter and respond is in place, we move to the now and what aspect of this continuum, where our medical colleagues can help inform our customers' concept of operations.

So given our unique position of offering a broad portfolio and having a global footprint, we bring tremendous value to our customers by providing insight and perspective on how others view and plan against threats, but we're also in position to make connections and bring those groups together in forums where operators can have direct conversations.

So the final chapter in our customer journey deals with procurement, contracting and logistics. Our sales leaders work with colleagues within our company in sales operations and other experts within the Emergent organization, and they have considerable experience and knowledge working through the unique challenges our product portfolio presents. So there are unique, legal, financial, regulatory and import/export issues that Emergent needs to address in moving these products into countries around the globe. For example, on partnering with our medical and regulatory colleagues, we've developed expertise in working with customers in securing approval and authorization to use our products under named patient programs, treatment IND or Emergency Use Authorization regulations. And the expertise here at Emergent, if you think about it, the tactics that I described are not too different from the types of tactics that orphan drug marketers will employ to expand access to their product in countries where the patient population might be really small.

So our experience in relationships have helped us to expedite these processes and be able to respond faster to customers and to move product into regions where it's -- where it needs to be. And we're working with customers now and trying to think very creatively about how we can position product around the world so that we're able to respond even faster than we have in the past.

So the global sales and marketing organization has unique privilege of having a seat at the table in helping the world become better prepared to address public health threats. The team enjoys a special connection with our company mission of protecting 50 million lives. We're working hard every day to engage with costumers in an ongoing dialogue about the threats, the strategies to address those threats and the tactical plans to deter, protect and respond to threats. The work is incredibly challenging. The number of stakeholders and influencers that we need to interact with is numerous, and helping our customers remove barriers that enable them to better serve their people is at the heart of what we do every day. So our mission and their mission is very much aligned that we both are interested in protecting and enhancing life. Thank you.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Q&A.

QUESTIONS AND ANSWERS

Unidentified Participant

As you work with foreign countries and kind of help them with preparing for [the sort of] bio threats, can you talk a little bit about sort of how that would help [in like] types of barriers, particularly to the regulatory process for them to procure any your guys' products?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Sure. You want to repeat that, Darren?

Darren Buchwald

Yes. The questions was, yes, how do we work with countries to help them remove barriers from a regulatory perspective to help them to import the products into their country. And it's a real challenge for our business, and many times, we're either working with Ministry of Health or a Ministry of Defense personnel, who -- and in particular, with Ministry of Defense personnel are not very facile with the regulations that one that works within the pharmaceutical industry might be comfortable with. So we've got a playbook that we use to help them understand what they need to move through and what sort of work they need to do within their country to be able to import the product in a situation where it may not be approved. And that's part of the service that we provide as an organization, and we leverage our past experience to be able to do that. But often times, things change, and there's new people involved. So it's an ongoing challenge. Yes?

Unidentified Participant

Is there a concern around -- long term around securing stockpiles (inaudible)?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. So the question is, long term, is there issues related to securing the stockpiles globally.

Darren Buchwald

Yes, I think so. I think that if you have opportunity to visit the stockpiles and visit the facilities, they're very secure facilities. Here in the U.S., that's particularly true, and many times, countries, while, to some degree, it's helpful to them to talk about the countermeasures that they have in place because it provides the deterrence, it varies by country, and some countries aren't willing to talk about it at all. So I agree with the concept. Those need to be very secured facilities.

Unidentified Participant

Congressman Rogers talked about the (inaudible). [Are you and your team] spending more there? And how do you foresee (inaudible)?

Darren Buchwald

Yes. So we've got a dedicated resource in...

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

(inaudible) questions...

Darren Buchwald

Oh, sorry.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. So for the webcast, the -- for Mike Rogers some comments on the Pacific Rim and the increased threat position stance there. What are we doing from a sales and marketing effort to that region?

Darren Buchwald

Yes. So we've had a dedicated resource in that region in the world. It's an area that we're going to be placing more direct sales representation going forward. And this week earlier, I was at the Biological Weapons Convention, and one of the countries in the region talked about a new $300 million fund that they've put in place to purchase products of this type to become better prepared. Yes?

Unidentified Participant

Just in the context of the U.S. where you have a framework like BARDA in place, do you -- globally, if you can speak to sort of other countries where you are further along or you've seen further along that have such framework in place that can facilitate sort of downstream preparedness. Or are they not even there at this point?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. The question is really around U.S. -- replicating the U.S. framework and the infrastructure policy wise. How is that replicated on a global basis? And are there certain regions where that's more advanced than others?

Darren Buchwald

Yes. So perhaps, some countries that you would suspect would be more prepared. The U.K., Australia, Canada, for example, they have committed programs and funds that they make investments every year to be prepared. But it varies greatly, and one of the challenges is what is directed at the federal level versus what's directed at the state or provincial level. So as an example, Germany, you've got 15 different states that have 15 different ideas of where they should spend their money and what their priorities should be. So the U.S. is extremely advanced in how they think about this, but that's part of what we try and do, is share the success stories from the U.S. government perspectives and put them in touch with people so that they can think about how better to prepare their own people.

Unidentified Participant

So just maybe along the same line of questioning, do you see this sort of happening organically? Or do you see that there has to be some sort of like medium-scale chemical, biological attack (inaudible) country and an uptick in spending domestically as well? And then, I guess, as a follow-up, how does Brexit impact sort of the international scene? And how this plays out (inaudible)?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. So first question was what catalysts are required in ex-U.S. markets to sort of catalyze those governments from a preparedness stance perspective and again, legislatively as much as funding? And secondly is what's the impact of Brexit.

Darren Buchwald

Yes. I would say that if one were to wait for an event to happen, it's too late. And a lot of work needs to go into the policy, the concept of operations, also planning through how one responds to an event. That's really important work because with -- whether it's a biological threat or a chemical threat, time is incredibly important and the countermeasures need to be in the country to be able to have the impact that we want to have. And I think your Brexit question is a really good question, and I think the events of the last week has been very intriguing. But my sense is that the U.K. would likely end up in the -- I think, it's -- the acronym is CETAA (sic) [CETA], which is the trade agreement between countries and that they would be able to benefit a lot from the construct of the European Union from an economic perspective.

Unidentified Participant

Darren, there have been some developments that have unfolded, I guess, in the European policy arena over the last couple of years. Maybe you can just summarize how Europe is thinking about protecting their civilians and military populations and some the policy documents that they've issued.

Darren Buchwald

Yes. That's great, [Dan], good point. So 2 pieces of legislation that's gone through. One is a joint procurement mechanism that came out of the response to the last flu pandemic, and it was really put in place to help smaller countries be able to negotiate with flu manufacturers to be able to procure products. But it was also adapted so that also could serve as a mechanism so that countries that were interested in building stockpiles and medical countermeasures against CBRNe threats could also use that mechanism to gain access to the products. That's very helpful to us. So we've got a central process through DG SANTE, which is basically Ministry of Health for European Union, to be able to enable procurement by smaller member states. The other piece, which is more recent and Chris may want to talk about this as well, is an initiative to combat terrorism within the EU, and one of the provisions provides for European Union member countries to actually have countermeasures and therapeutics in place to respond to acts of terrorism. So that's part of our work in Europe, is really explaining what we think that means and what sort of plan you need to have in place to be able to meet the spirit of that legislation.

Unidentified Participant

Yes. And the way I understand that, just to add a little color, it's a mandate that individual member states need to procure these medical countermeasures and stockpile them to protect their civilian populations. So right now the question for member states is how do they go about executing and implementing the mandate that is now being imposed by the European Parliament. So that's a work in process.

Darren Buchwald

Yes, sir?

Unidentified Participant

With all the natural disasters we have in country with the Houston and flooding and chemical [plants blowing] up there, and now you have wildfires in -- pretty bad in California. I mean, it looks like that's going to continue. Mother nature doesn't seem to be too kind these days. How does that overlap and if there are some form of [preparedness] you can do relating to natural disasters?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Sure. Yes. The question's really around citing the recent number of natural disasters across United States. How does that factor into our sales and marketing effort?

Darren Buchwald

Yes. So I think the apparatus that was put in place by the work that Congressman Rogers did was utilized in the response to the recent hurricanes. And those are, I would say, more traditional medical countermeasures that are being deployed in that sort of event, which is not aligned well with our portfolio. But at a macro level and one of the things you'll read about in the CBRNe threat landscape report is what does the impact of global warming have on creating threats. So there are a couple of pathogens that are becoming more prevalent as the result of climate change. There's also been stories about reindeer, for example, falling out in the tundra and those reindeer having anthrax spores for example. So a third element of that would also manifest in terms of where the aedes aegypti mosquito is endemic and that leads to things like Zika and chikungunya affecting more people around the Mediterranean Sea and along the East Coast.

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

But just to add to that, we do look at in terms of our growth potential, burns and explosives, countermeasures and devices as a growth opportunity for the company and to do a market whereby, these products could be utilized by government agencies, whether it's military or other government agencies, but also deployed in civilian populations to address the kinds of threats that you're talking about, the natural threats that you're talking about.

Darren Buchwald

Thank you so much for your time today. This is what gets us up in the morning, the protecting and enhancing 50 million lives by 2025. And in our team and sales and marketing, we've got this really unique opportunity to work with collaborators around the globe to try and help everybody be better prepared. So it's great work that the team has an opportunity to participate in. Thanks so much.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Thanks, Darren, we really appreciate it. So that ends Phase I, ladies and gentlemen. So we have a 10-minute break. If we can come back at 10 past the hour, that would be great. And we'll get started with Phase II. Thank you.

(Break)

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Okay, ladies and gentlemen, if we can come back together, please. Trying to stay on our schedule, get you all out here by 12:30. Again, thank you for all being here.

So let's start Phase II of today's event. I am privileged to introduce the leads of our business units, Adam Havey, Laura Saward, Doug White and Sean Kirk, who will each provide a 10-minute overview for each of you -- to all of you for each of their business units.

So let me start with Adam, please.

Adam R. Havey - *Emergent BioSolutions Inc. - EVP of Business Operations and President of Biodefense Division*

So good morning, everyone. Thanks for taking time. I know everybody is busy this time of year. I'm Adam Havey, as Bob said, the Executive Vice President of business operations, and I'm also the acting head of the Vaccines and Anti-infectives business unit.

It's been a busy year for Emergent, and, in particular, this business unit. We've been able to expand our product portfolio by adding ACAM2000 to the mix. We've also advanced our pipeline by initiating a clinical trial in an area for our novel iminosugar, UV-4, which we'll talk about in a minute. And we've also initiated a program and partnership around a Zika vaccine. And we'll talk about why some of those things are important. But it's been exciting and busy, and for me, I've got a chance to tell this story over the years, and it's been so focused on BioThrax, and it's really exciting to be able to talk to you in a bit more detail about other things and other markets and other opportunities, where we really think we differentiate ourselves and you're going to see growth over the coming years.

So the goal today here is really to provide you an overview of our mission from a business unit perspective. Our core strategies of how we're going to do that, and accomplish some of these goals as well as talk about our products, ACAM2000 and BioThrax, talk about our pipeline. And in particular, really just talk to you about how we're executing, how we knit these things together as a road map to really achieve some of our longer-term growth objectives.

So let's kind of jump right in. Our mission and as we're -- as we think about vaccines and anti-infectives in particular, I think we've built a strong reputation and a solid, solid foundation around vaccines. We're known for developing medical countermeasures. And we're going to use words a lot like unique and leveraged. And what I'm going to try to do is give you some color into why, from a vaccines and anti-infectives perspective, we're not just like your standard biotech. So when we say things like biologics manufacturing or regulatory sciences, how we apply that, I'll use some of Mike Rogers' words. It's kind of our own intellectual property, because it's different. We use those same words as many of our other competitors or people in this space, but how we apply it is very different. So I hope you leave with that difference.

As we think about our mission then, we're a global business within vaccines and anti-infectives. And we really have a portfolio of only-in-class products. And we talk about that because those are only-in-class as they are licensed. They're the only products licensed for their given indication for both smallpox and anthrax.

We also have a new capability and a unique capability around anti-infectives, both a broad-spectrum antiviral platform as well a broad-spectrum antimicrobial platform, and we'll talk about that as well. All of these kind of uniquely knitted together to exist and address emerging public health threats.

And when we think about our strategy, we do that through a number of key points. We develop obviously, vaccines and anti-infectives with dual market potential. And that's been one of the differences as I think about the businesses as it's matured. Anthrax, we've also been a leader in that area, especially on the vaccine side. But we're really starting to broaden out and you heard Darren and Mike talk about things like ricin or we'll talk about botulism or smallpox. So those Category A threats as they're defined by the CDC. But as we think about Zika and dengue and other emerging infectious diseases or other natural disasters, those are really where we see adjacencies and synergy with our kind of key skills and core competencies.

We've been able to build this pipeline of products in our portfolio through organic innovation, M&A and strategic partnerships, both with academic institutions and as well as other industry partners. And as Darren mentioned, we're expanding from an international perspective how we sell and interact with policymakers and customers. But we're also looking at new ways to manufacture and broaden our footprint in how we develop both products and services and how we deliver those across the globe. And I think we do that with this underpinning of being a thought leader, not just in the medical countermeasures space, but in the public health threats arena.

So let's talk about some of those core competencies and what we feel like we're really good at. Again, this is our IP, we're going to talk about viral and bacterial countermeasures, but what's kind of at the core of that is biologics manufacturing. In the Vaccines business, what that means is spore formers, BSL-2 organisms, very sensitive and difficult things to make and deliver. We talk about our platform technologies, and that could be partnering with a company like Valneva on the Zika vaccine, as the underpinning of a licensed product as well as the BioThrax product, which we've kind of used and leveraged that platform to create NuThrax, which is a next generation and the lead next-generation anthrax vaccine. And then later, you're going to hear Barb and others talk about -- and Jim talk about how we use that IP to create wins from a non-diluted funding perspective and really risk mitigate our pipeline.

So let's talk about a little bit about the products. So 2 really stellar products in anthrax and in BioThrax as an anthrax vaccine and ACAM2000 as a smallpox vaccine. As you can see, these only-in-class products have some very common attributes. So they're both licensed by the FDA, BioThrax for both PEP and GUP, so post-exposure prophylaxis and GUP, general use prophylaxis. So think about the GUP indication for BioThrax is really applying to the military population, and post-exposure to that stockpile response indication. And ACAM2000 is also licensed by the FDA. BioThrax is a 3-dose vaccine, ACAM2000 is a single-dose vaccine. Both of these products have had a long history of government procurement contracts, with the CDC and with BARDA, going back almost 20 years.

I think the other thing that's new for both of these programs is we're expanding again, internationally and getting licensure in international markets. We talked a lot about that with Building 55 and BioThrax. So we've got licensure in Germany and we've initiated the mutual recognition process kind of in parallel with Darren's team, as they're making progress on policy. And for ACAM2000, it's already licensed in both Singapore and Australia.

So as we look at that, as we've added that to our bag of tricks or our toolbox, what we've been able to do is become the #1 vaccine solutions provider to the Strategic National Stockpile.

So let's talk a little bit about our portfolio. Right now, we've got 4 products in the Vaccines and Anti-infectives business unit. The lead product is NuThrax. NuThrax is the lead next-generation anthrax vaccine, and we've positioned this product to move into Phase III as soon as possible. We're -- we announced a development contract last year, where we solidified that -- those development costs and those will be funded through a contract with BARDA. And as we push that program into Phase III, we expect to receive an Emergency Use Authorization. And that's again, when I think those intellectual property pieces that we do different than other companies. So we're going to be able to acquire and get approval of an Emergency Use Authorization, and then move this product into the Stockpile before it's actually approved and licensed. And we've done that before, and we'll do that in partnership with the U.S. government, kind of transitioning from BioThrax to NuThrax in the near future.

The other product that I wanted to mention that's a vaccine is the Zika vaccine. We talked a lot about dual markets and our ability to use our core competencies in these kind of adjacent spaces. I think the Zika vaccine is a great example. Darren mentioned global warming and the potential for maybe the spread of these types of diseases, but I think Zika, initially, was identified as a government priority. So we got involved using some of our IP and our infrastructure to come to the table. And we've partnered with a solid industry partner to bring this product forward. We plan to initiate the Phase I trial, in early 2018. And we see this as a product that both governments would procure and it could also be used in specialty markets like travelers.

The other 2 programs in our pipeline, are our small molecules, which is a new capability that we've started to build over the last few years. One of the top priorities for the U.S. government has been broad-spectrum activity in both antivirals and antibiotics. So we've gone out and again, purchased into our pipeline some new technologies. The first is what we call UV-4B, it's a small molecule for Dengue. And we initiated a clinical study earlier this year. The reason we think this is interesting and exciting is it uses a novel host-based mechanism as an iminosugar to drive a response. And the reason the host-based approach is important, is it gives us a chance to apply this molecule and the technology to other viral infections.

And last is our antibiotics -- or our antibiotic, which is a family of molecules that we bought years ago from a company called Evolva. And we've taken that and working with the Department of Defense, and in particularly, DTRA, to apply this to Burkholderia. But we believe this could also have broad-spectrum anti-micro -- and apply in this antimicrobial resistance space.

So as we think about Anti-infectives, we want to bring market treatments to the underserved and infectious diseases. And when we think about Vaccines, we're going to continue to supply the U.S. government but expand into those adjacent areas and EIDs to continue to grow our pipeline.

So in closing, I think I wanted you to think about that moniker that Dan had on his slide, which was prevent -- or, excuse me, prepare, prevent and protect. And all of our products, both licensed and in this pipeline, are serving that overarching mission. So preparing governments to -- and allowing them to be prepared, protecting soldiers and protecting citizens from these emerging public health threats.

With that, I'd like to kind of hold -- we're going to hold questions to the end of this panel. And I'd like to turn it over to Dr. Laura Saward, who heads up our Antibody Therapeutics business unit. Laura?

Laura Saward

Great, thanks, Adam. So I'm going to just take a minute to introduce myself, since I'm new to many of you. So I head up the Antibody Therapeutics Business Unit. I came to Emergent through the acquisition of Cangene Corporation in 2014, where I was the Chief Scientific Officer at Cangene. And I've been with the company now for a total of 14 years. I have 20 years of experience in drug development, so prior to joining Cangene and Emergent, I worked in a number of companies, both big and small, and then startup biotech.

So introducing then the Antibody Therapeutics Business Unit to you, we are a business unit that is focused on providing a broad or a comprehensive portfolio of specialty antibody products, looking to address those global health threats that we've heard so much about today, looking at both existing as well as emerging public health threats. And we have a number of strategies that we're going to employ to really grow our businesses in this area. But we're really starting from a position of strength as a recognized leader in the specialty antibody therapeutics area. And we have a very strong foundation from the licensure of several products that are in our portfolio that I'll review with you. And using that foundation then, that covers both hyperimmunes as well as monoclonal antibodies, we will further expand into the dual market or commercial market spaces and address some of the emerging threats as well as the existing disease threats.

Looking then at our specific goals, using this leadership position and some of the core capabilities that I'll review, we want to really leverage our partnerships that we've built over the years. To improve our competitive position, we're going to be investing in some new innovation and technologies that will improve our platforms and the product offerings that we have, and really build our business through organic growth as well as our merger and acquisition strategy. And the overarching theme that you've heard throughout here is we're really starting from our position as a leader in the antibody therapeutics space, specifically in the medical countermeasures space, to grow that thought leader position as a thought leader for public health threats and emerging infectious disease.

So here I've summarized some of the core competencies and I'll just highlight a few of them for you. As I've mentioned, we have several licensed products already, either in the Strategic National Stockpile or on the commercial product. Some of these are ones that we spun off with Aptevo earlier in 2016. So the remaining products that we have in the Antibody Therapeutic Business Unit are actually medical countermeasures that are part of the Strategic National Stockpile. But the broad experience across both the hyperimmunes as well as the monoclonals give us excellent platforms to address a broad range of threats such as viral, bacterial, toxin and other pathogens.

And I think what's unique and that I want to share with you is, how we apply these -- this experience in these platform technologies. So when we look at how to leverage these in an effective way to start new products, we're really using it to expedite and de-risk programs as we develop new products on the same manufacturing platforms. But broader than our manufacturing, we're leveraging the experience and some of the relationships we've put in place. And we've done this with 2 programs this year in 2017, so our seasonal flu program as well as the Zika program that I'll highlight in more details with you later.

What we're essentially doing is taking our CMC and our manufacturing and analytical support for many of the products that we've already brought to market and applying that to expedite new programs. And we're looking at how to leverage the safety profile, PK profiles and clinical experience from those products to also expedite new programs.

I think we've established through these licensure programs that we've executed on our ability to execute successfully and deliver on these very complicated medical countermeasure programs over many years. And through this, we've gained a lot of very unique experience I feel and very strong relationships with the regulatory agencies as we worked with them to develop the legislation, the regulatory pathway for the Animal Rule, where it's not ethical or feasible to conduct clinical trials and unique programs like the Emergency Use Authorization and expanded access protocols.

I think this experience in the rare disease and orphan disease area combined with some of this unique experience with the Medical Countermeasures will position us well as we go into expanding our pipeline with new programs.

So this is a snapshot of what our business unit looks like today. As you see, there are 4 products that we currently have in the antibody therapeutics covering both the hyperimmunes as well as the monoclonal with the recent acquisition of raxibacumab. Anthrasil, of course, is a therapeutic-targeting anthrax as well as raxibacumab. This is the only polyclonal antibody therapeutic that has been licensed by FDA and Canada for use in treatment of inhalational anthrax.

Botulism is another polyclonal antibody therapeutic that we've licensed. It addresses all 7 serotypes of botulinum toxin. It's a very unique product as we look at our medical countermeasures because this is one that serves a current need with public health threats. So it's one that the CDC deploys frequently when there are sporadic outbreaks of botulism. And certainly, for us, it's very rewarding to see a product that is in the stockpile but also being used to serve patients today.

The VIGIV, as we refer to it, is our vaccinia immunoglobulin, is a hyperimmune that's approved for treating complications with smallpox vaccination.

And as I've highlighted, the raxibacumab was a recent addition that brings a strong platform from monoclonal antibody experience and development. And we are working to transition this into our Emergent facilities right now.

So in combination then, as I've highlighted, we're a recognized leader in the specialty antibody therapeutic space already, and would be the #1 provider of antibody therapeutics to the Strategic National Stockpile. We have over 15 years of experience on executing these government contracts from development through to procurement. And these programs that I highlight here in the 4 buckets represent over $1 billion in contract funds that have been awarded.

I think I also want to point out that from an international customer base, we'll be looking to grow our international customer footprints, and we are already, with these products, supplying to over 20 countries and we'll continue to focus on expanding that throughout the world.

So this is where I wanted to spend some time and I'll try to not go over time here. A snapshot of the products that we have in our pipeline in the antibody therapeutic portfolio and I think really highlight the strategies that I've outlined there, where we're building on our strong science, our foundation from the products that we've already licensed, and bringing in products that will further diversify our pipeline and business looking at dual market and commercial market opportunities by leveraging our strengths.

The first product is an exciting one. That's our seasonal influenza hyperimmune that I've talked to that's intended to treat the unmet need of complicated hospitalized flu. This is an area where the influenza strain actually results in a number of hospitalizations within the U.S. I think it's up to 200,000 each year, due to severe complications with flu. And this is an area where we believe there's an opportunity to have a orphan drug designation, since the FDA does recognize the serious influenza resulting in hospitalization as a separate indications. So there's a number of antivirals, of course, that are therapeutics to address the uncomplicated flu space and these are fairly short acting. Where we see an antibody therapeutic sitting in is really providing a therapeutic opportunity once you have a patient that's been hospitalized with severe flu and is outside of that window. It will be used in conjunction with the standard of care, so in conjunction with antivirals. And this is a great example of how we applied our previous experience to expedite this program. So we started this in 2016 -- late 2016. And we are able to fast-track this program through 2017 to initiate our Phase II clinical trial this year. We're actually open for enrollment now. And we'll be looking to drive this program forward targeting licensures as early as 2021, with an important stage gate in 2018, where we will have the completion of our Phase II clinical trial.

Another program that I want to highlight is our Zika immunoglobulin, which is again, a therapeutic that we're looking to address the threat of the Zika virus as an important emerging infectious disease. And this was a great opportunity to look at how our platforms could really help and provide a new opportunity to treat patients in an expedited way. So the need within the Zika infection is in the pregnant mothers. So the exposure to Zika virus while pregnant can have significant morbidity and impacts to the fetus that are evident over the long-term consequence once that baby is born. So neurological disease, ocular damage as well as microcephaly. And so treatment of the mother is one way that you can prevent the transfer of virus to the fetus and prevent the damage to the fetus. So of course, pregnant women is of the populations that has the highest safety bar for new therapeutics. So again, looking at our experience and our platforms, we have several hyperimmunes that actually have an indication for use

in pregnant women, so there's a strong safety database that supports the use of a product in that specific vulnerable population. Also, the mechanism of action of many of our hyperimmunes has been to treat the mother to prevent impact to the fetus. So leveraging these 2 facts, we've looked at how we could very quickly develop our product, take it through to an Emergency Use Authorization. So we've fast-tracked this program throughout 2017. And we are at the stage of initiating our Phase I clinical trial, which we'll plan to start in early 2018. And I think this provides another good opportunity for us to show how we can meet these emerging threats, in a quick way to respond to them, leverage our platforms. And we'll be looking for partnerships to further advance this program going through the later clinical phases.

I'm short on time, so I'll just very quickly highlight, I think, a couple of the other interesting pipelines. You'll see here a unique one on the mobile manufacturing unit. We are looking at how to leverage our platforms and our experience in hyperimmune manufacturing to basically take our GMP bricks and mortar manufacturing process out into the field to become a field deployable asset where you could go into a pandemic preparedness or an emerging infectious disease situation and quickly generate a therapeutic using the plasma from convalescent patients.

This is an exciting one that's created a lot of opportunity for us to create some partnerships across various agencies that are active in the pandemic preparedness and really look at our ability as a global leader in pandemic preparedness and public health threats to leverage the knowledge that we've gained.

And then, another interesting program is around our filovirus monoclonal program. So still a high unmet need in this area around other strains of Ebola. Of course, there are some therapeutics that were progressed for the Ebola Zaire strain. And there's ongoing unmet need around the other strains of Ebola as well as Sudan. And so working with the government agencies to understand this need in this area, we're looking to develop some monoclonal antibody therapeutics that address that need.

So I'll just leave you with some final thoughts that as we continue to expand our pipeline, and there's many other programs that are in much earlier stages I haven't highlighted here, we'll look to diversify that pipeline, really adds strength to our hyperimmune portfolio. So we're transitioning from just the legacy programs in the medical countermeasures space into some of these dual market, commercial market opportunities. And we'll continue to add strength and depth to our pipeline by expanding the monoclonals and building off the platforms that we've brought in with the raxibacumab. Thank you.

I'll now introduce, Doug White, as Head of our Devices business unit.

Doug White

Good morning. I'll introduce myself as well. I'm fairly new to Emergent. I joined in October, so I guess, I'm very new. I'm new to the company, but I'm not new to the devices space. I've been in the Devices business for over 30 years, primarily in in vitro diagnostics. Most recently, I headed up the Molecular Diagnostics & Women's Health and cancer businesses at Becton Dickenson. Prior to that, I was the CEO of OpGen, and then served in very different roles from general management through marketing and sales in companies like Abbott, Bayer/Chiron and Digene.

So what I'd like to do today is to talk to you little bit about our business, the Device business which is relatively new. Our focus is to provide innovative, best-in-class solutions for emerging health threats. And the primary focus for us is to not only look at expanding our current portfolio through expansion into new markets. And you've heard there's a continuing threat concern. And we're seeing opportunities start to come up in areas like Europe, the Middle East and the Pacific Rim for growing our core business. But also, focus on expanding within the current portfolio that we have, very specifically in the auto-injector market, where we currently provide a product called Trobigard, which I'll explain a little bit about later.

Finally, one of the areas that we're looking to expand and Dan highlighted is, not only are we focused in the areas that we participate in today, but we're also actively looking at adjacencies or opportunities in the emerging global threat areas where the combination of our experience with government agencies, our ability to get contracts for development through government funding as well as looking at opportunities that are unique for Emergent and our capabilities to enable us to expand into the different markets. And that will primarily be done either through contracted funding or through M&A activity.

In terms of our core competencies, I think Darren highlighted it, you heard a little bit from the Congressman, Chris' capabilities, but also you'll hear later from Barb, who works in our contracts group, we have a very strong relationship and that is really core for us as a new Device business, because if you look across the products that we have today and the areas that we're focused on, it's the same set of customers, the same threats that they're concerned about that we're focused on. So we're leveraging that competence and capability to not only grow the business, but also look for opportunities for developing new products and potentially acquiring new products.

Another area that we have significant experience in is in our manufacturing. But in particular, in our quality manufacturing. And we are actively looking to expand our manufacturing capabilities for our auto-injector device, the Trobigard product. We have a third-party OEM partner. But this partner is very, very experienced and supplies product to companies like Sanofi, [Louis] and GSK at a very high scale. So we're actively engaged in that. And utilizing our own quality system, which is very well proven and established, to make sure that we can deliver product predictably and the quality of the product is at its highest level.

And then finally, one of the things that we as a unique Device business unit, it's a little bit different than Vaccines and Therapeutics, is we're very focused on creating a fast and nimble capability. As you look at the device spaces in particular, things tend to happen very quickly. I mean, my experience with diagnostics, clearly, that's something that we see. We want to make sure that we build out the business unit, that we are developing those skills and capabilities not only from a knowledge around regulatory processes and requirements, but also in terms of development and opportunities to move very quickly.

In terms of the business units itself, I just wanted to highlight just a few things that have happened in the last basically 6 months that are really trajecting us forward and creating a lot of momentum for the business.

We set up the business unit, as I've highlighted. We have a leadership team, a management team and its operation -- operational right now. We did launch our RSDL product to the public through Amazon. And I'll highlight a little bit about that product later. But we've also received 2 significant grants for development projects, to continue to expand our portfolio: a $63 million grant from BARDA to develop a cyanide antidote that would be basically a nasal spray; and also a contract to expand our auto-injector portfolio with the Department of Defense.

And then finally, very good news for us is that our RSDL product, which has been utilized by the Department of Defense since 2002, we just signed a contract for a 5-year extension to supply the product to the Department of Defense and be deployed to the U.S. Military. And then also, we did receive a contract from the Department of State to supply our Trobigard auto-injector, and that's a $25 million contract.

But I think it's important that when you look at our auto-injector business, which is relatively new for us, we're already seeing significant traction this year in 2017. We've already been able to fulfill orders in multiple international customers, and are looking forward to expanding the business into other regions of the world.

So the Trobigard portfolio. Just to give you a little bit on what that product does for those of you may not be familiar. It is an auto-injector that is used as a -- basically, an antidote for nerve agent exposure. It's a very simple system. It has basically a simple unlocking device that you pull off, you press firmly against your thigh, it takes about 10 seconds for the antidote to be administered. There are applications for the auto-injector, both in the military and also in civilian and emergency responder markets. As I mentioned before, we currently have several international military organizations that utilize the product as well as the Department of the State. And I mentioned, we are actively working on a program to expand that portfolio to be able to supply product to the U.S. Department of Defense and other agencies.

In terms of our RSDL product. This is a reactive skin decontamination lotion kit. It's basically a small packet that has a unique chemical compound that neutralizes nerve agent. But also, our sponge is also unique because it helps remove the agent as well after it's been neutralized. I think Congressman Rogers highlighted the situation in the airport with Kim Jong-nam, who was actually assassinated, if, for example, he had one of these kits, he could have easily ripped open the package and applied the chemical and potentially removed the VX chemical that would -- that basically killed him.

Today, we have a significant business with the Department of Defense. It's currently deployed to the U.S. Army. I mentioned before, we have a new contract on that front. We also have significant business with first responders and civilians. And the product is deployed in over 30 countries worldwide.

So finally, I think the important thing or one of the key elements I wanted to highlight is where we're going as a business, because we're in our early phase as a separate business unit. In addition to the products that we have today, we have ongoing programs for the development of a next-generation auto-injector, the D4, that's being funded by the Department of Defense. I mentioned before the cyanide antidote which is the SIAN project being funded by BARDA. But beyond that, we're also looking at, with our own internal funding, to continue to expand our auto-injector portfolio, not only for exposure to chemical agent, but also opportunities for emergency responder use in certain situations. So we're looking to expand. That will give us opportunity not only in traditional government business, but also looking at potential civilian and emergency medicine.

And then, finally and probably, very important for us is the opportunity to expand. And there's a few areas that we're focused on. In particular, we have a very strong position in the CBRNe and emerging infectious disease area. We want to continue to focus on that and identify opportunities outside of the auto-injector space, that we can -- where we can deploy solutions for. We're focused our potential M&A opportunity. I think it's been mentioned before and Dan mentioned it earlier, that we're looking at burned and wound care as an opportunity specifically, and we've been doing some exploration in terms of potential M&A opportunities. But I would also say there are other areas that we're exploring as well. Complementary for companion diagnostics is an opportunity when you look at our portfolio of therapeutics and vaccines, which could be applied and we're looking at several other areas. But the bottom line is we're not going to go too far afield from our current core business and our current core competencies, but leverage those to identify markets where we can participate, but also expand potentially into dual markets and more civilian based markets.

I would say that if you think about our business, there are 3 fundamental areas that we're focused on: one, is growing the business that we have today, where you've heard, there's a significant opportunity, growing threats that we can apply our current products to; secondly, is expanding within the core portfolio that we have today of our auto-injectors; and then finally, expanding the business through targeted focused M&A activity.

So thank you very much. I'd like to now introduce Sean Kirk, who heads up our operations -- Manufacturing Operations and our CMO business unit.

Sean Kirk

Thanks, Doug. Welcome everyone. I appreciate the opportunity to talk to you today. I have the distinct pleasure of representing what I consider to be kind of the heart beat or lifeblood of the organization. I essentially wear 2 hats. One of them is leading the Manufacturing Operations entities and the 7 manufacturing facilities that represent our core capability; and the other is the strategic growth of our Contract Manufacturing business.

I hope many of our manufacturing plant folks are on the phone today or listening to the WebEx because everything that's been presented today as well as what I'm about to present is really a success story and a future prospect built on the capability that we've developed over the years.

Personally, I've had the good fortune to hold a variety of different roles in the organization in my 14-plus-years with the company. I began in Lansing, Michigan running AVA manufacturing. I was responsible for running the Cangene organization following the acquisition. I was responsible for a couple of years to run product development for Biodefense and am currently, as I mentioned before, running all of Manufacturing Operations in the Contract Manufacturing business unit.

That experience has really impressed upon me something that Mike Rogers alluded to earlier. Our people and our capabilities are highly differentiated. In those 14-plus-years, I have seen the organization grow, bring great talent, great capability and followed a lot of really difficult challenges and problems, some of which Mike mentioned.

That track record and that history provides a foundation upon which my business unit can continue to provide state-of-the-art goods and services to my customers to the left here as well as our external U.S. government and non-U.S. government clients. And that's really what this presentation is about.

Through time, we have come to differentiate ourselves in a variety of different areas. And we intend to continue to do that on the manufacturing and contract manufacturing front.

Agility, our customers are discerning and they're demanding. They have very unique requirements, they have very unique responsive -- requirements, responsiveness requirements. For example, Adam has set a standard in the Vaccines and Anti-infectives unit that you see reflected on this chart for a high degree of responsiveness, a high degree of preparedness. Our U.S. government clients share the same expectation. So as a manufacturing entity, we have become highly matrixed over time. But it's really focused on those unique requirements.

Going back to the Cangene acquisition in February of 2014, and, in particular, bringing the Cangene fill/finish facility into our portfolio, we began to recognize that starting with that facility, that is a very unique offering. They serve a variety of different niche customers with small- to mid-volume fill/finish. And it was a perfect complement to the existing plant portfolio that we already had. So that began to be kind of the origin and the crafting of this overall strategy. So how can we service the unique needs of our internal clients and leverage those capabilities in the service of our external clients as well.

So over time, you will see us make investments in technology. We are scouring the earth for technology and innovative technology that help to enhance the overall profitability of our current portfolio, and provide those unique and differentiating service to our external clients as well.

You will see us invest in talent, biologics expertise, product development and manufacturing is a core capability of ours, and we continue to grow that. And you will also see us begin to and continue to optimize the services that we offer. The folks at the facilities here may preach a lot about customer-centric focus. And we are working to create a culture where our customers, internal and external, require the same degree of high service, high flexibly, agility and nimbleness to meet their evolving needs.

So I want to dive a little bit deeper into those capabilities. In the upper left quadrant, you'll see kind of represented that the property, plant and equipment and the talent infrastructure that we've acquired over the years and grown as an organization. So I'll give you a little bit of an overview.

We have a hyperimmune development manufacturing capability that Laura touched on in Winnipeg. We have that small- to mid-volume fill/finish, sterile fill/finish viral and syringe capability at Camden in Baltimore. We have single-use bioreactor, flexible viral, non-viral cell culture manufacturing capability at our Bayview facility in Baltimore, which is our center for advanced development and manufacturing partnership with BARDA. We have bacterial, highly flexible spore former manufacturing capability in Lansing, Michigan. We've recently acquired, via the ACAM2000, acquisition viral bulk manufacturing capability in Canton, Massachusetts as well as viral fill/finish capability in Rockville, Maryland. We also have a unique robotic field facility in Hattiesburg, Mississippi that does our RSDL, reactor skin decontamination lotion filling We are looking at that portfolio of capabilities, obviously, serving our primary customers here at Emergent, but looking to leverage them for the betterment of business overall.

Technology, the upper right quadrant. We have got to continue to kind of voraciously look for new technologies to enhance our overall performance today, and invest in the future for our growth tomorrow. The flexible rapid response surge capacity I've referred to earlier, particularly with Adam's business unit as well as the U.S. government. The heart of the Bayview facility, the Center for Innovation in Advanced Development and Manufacturing partnership with the U.S. government is this particular issue. Okay, how can we be responsive to emerging and infectious diseases? How can we be responsive to evolving public health risk threats? How can we tackle, in an expedited manner, complicated biologics product development manufacturing to meet those needs? I mean, look how quickly the Zika threat evolved. And we were there, we were a player in it and we will continue to be a player on this front, not only using Bayview but our other facilities as well.

On the bottom left, I'm just going to touch on a couple different capabilities. Through those years of growth, and though those years of acquisition of fantastic talent and many successes in the product development and manufacturing arena, we have developed significant expertise in regulatory. We have developed state-of-the-art compliance and quality systems. And we have integrated them effectively and continue to do so as we acquire these organizations to strengthen that foundation of our success.

Lastly, Barb Solow is going to talk about this a little bit, another differentiated capability that we have is our U.S. government contracting methodologies, inherent systems and processes and our reputational credibility in that space. We have clients that come to us all the time who say, "You guys are kind of the Lockheed Martin of biodefense, and U.S. government contracting. Can you partner with us on proposals? Can you

partner with us on development and manufacturing solutions that meet the high threshold of government contracting in as efficient a manner as possible," and that is a core competency that, in my opinion, we are extremely strong at, and we will continue to leverage going forward for the growth of this business.

A little bit of a pictorial here, if you will. That kind of cradle to -- or I call it concept to market interconnectedness of all of our capabilities is extremely important. I've mentioned all the different capabilities of the plants. Here is an overall summary, but we were able to leverage those concept-to-market capabilities across our network facilities and partnership with our BU leadership teams and our external clients to bring to bear a variety of different developmental capabilities for the success of our external/internal partners. We have over 20 commercial products right now in manufacturing. We have contract manufacturing partners at 4 of our largest facilities, currently. We've worked on over 200 clinical products heavily at Camden and at Bayview. And we will continue to grow that business. And we'll grow it, build upon that strong foundation of quality and regulatory.

And then over here in the quadrant -- bottom right quadrant, always important to point out, the CIADM facility in Bayview, Maryland is the -- oh I'm sorry, Bayview and Baltimore, Maryland is kind of that primary focal point to which we intend to bring new task orders or new product development opportunities via the BARDA relationship or other relationships within the U.S. government, and then network them across our plants and facilities for the betterment of the business in the pursuit of addressing these unmet needs.

This is just a little bit of a snapshot into the blend. From a pipeline and manufacturing operations' perspective, it's very important, in our opinion, that you diversify your portfolio, you create a foundation of today's success and future success, and you see that reflected here. We have a variety of relationships in the contract manufacturing space. These graphics actually represent our external clients, ranging from less than a year, all the way up to greater than 10 years. So we keep a healthy blend there from a relational perspective to keep that pipeline flowing.

We also keep a healthy blend on the development and manufacturing front. It's important to keep good candidates coming in, candidates that we may have a commercial interest in and may seek other alternative partnership strategies with those organizations. But to feed that pipeline of activity we have liquid/lyo, we have monoclonals, peptides, proteins, oligonucleotides and other platforms and technologies that we feed into our facilities to better leverage these facilities. I personally see the contract manufacturing space as an opportunity to maximize the profitability not only of our current Emergent own portfolio, but also for the strategic interest of the company. Perhaps we'll identify candidates that are of interest to us in the future and for the betterment of our external clients.

So thanks for the time, very much appreciate it. I'm going to turn it over to Adam. He's going to close this up.

Adam R. Havey - *Emergent BioSolutions Inc. - EVP of Business Operations and President of Biodefense Division*

Thanks, Sean. You've got to close out slide here. So prepare, prevent, protect. We're uniquely positioned and operating in this global public health threats market, where the U.S. government has deep commitment to the investments of existing and new medical countermeasures and where there exists a large untapped kind of international opportunity.

We've been positioned over the years to really apply some of those specially core competencies that Sean talked about. And as you dive into it or peal the onion back, you can see that it's not just biologics manufacturing. It's something different. It's a little bit harder. It's a little more complex. It kind of, I think, embodies what Mike was trying to describe. And we've been doing it for a long time and doing it very, very well.

We're committed to revenue growth in all of our business units and diversification both with the U.S. government, so diversifying the types of branches of the government that we hit and work with as well as moving into dual market opportunities. And you're going to see that both, again, in the U.S. and internationally. And I think you're going to see us continue to exercise not just financial discipline but how we prioritize, how we select targets from a mergers and acquisitions perspective as well as how we set up our pipelines.

Each one of these, the biggest benefit in my eyes to going to this business unit structure is focus and focus on delivering to internal customers, external shareholders and our partners. And each of these teams are very, very focused on implementing the strategies that they shared with you today. And I think their presentations and collectively as a team, I think we demonstrate that we've got a really strong management team that we've built over the years, and we're really, really excited about the future.

So again, thank you for your time. I think we're going to flip to Q&A right now. Thanks.

Jessica Macomber Fye - *JP Morgan Chase & Co, Research Division - Analyst*

I just have a quick question about when you expect to have other contracts for ACAM2000 and begin the deliveries (inaudible).

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. So the question was for ACAM2000 and when do we anticipate the resumption of deliveries and potential follow-on contract.

Adam R. Havey - *Emergent BioSolutions Inc. - EVP of Business Operations and President of Biodefense Division*

Sure, I'll take it. For ACAM, we're still in the early stages of that integration. And we were excited to get the approval from the FDA, and we assume and have always assumed that we initiate those deliveries in 2018. But now that we've got the approval, we're working through the quality system process. And so we're going to try to do that as soon as possible. But I think our plan as we brought the asset into the organization was to deliver those doses next year.

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

The follow-on contract, Adam?

Adam R. Havey - *Emergent BioSolutions Inc. - EVP of Business Operations and President of Biodefense Division*

Oh sorry, follow-on contract. So right now, with the current orders that are open, we expect that to -- it's going to take us some time to deliver on the current contract. And we expect the discussions around the follow-on contract to start next year. And we'd like you see some results or more definitive contracting negotiations by late '18, early '19.

Eric Thomas Schmidt - *Cowen and Company, LLC, Research Division - MD and Senior Research Analyst*

(inaudible) the management teams across these business units and are you going toward (inaudible) different financial reporting (inaudible)?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. The question relates to the BU structure and how we're compensating the heads of each of these units and yes, financial management. Thank you.

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Yes. Thanks for the question, Eric. So we have the standard computation program that we apply to all of our senior executives. It's benchmarked. It's standard pretty much across the industry. We benchmark it to Radford and to the proxy peer group. And we review that with the Compensation Committee. It's salary, bonus, equity, all within range. We benchmark 25th, 50th, 75th. And then we have goals that typically are applied for the performance of the individuals and for the business units and compensation is paid out accordingly. So no special compensation tied to sales in particular or any particular metric other than particular goals that are identified for the executive over the course of the year. In terms of financial reporting, I'll ask Bob to handle that question.

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

Yes. Eric, the business unit structure, we're probably 5 months into the adoption of that structure. So we're getting our management reporting and internal reporting house in order in terms of giving to Adam and to Laura and Sean and Doug the profit contribution metrics around their individual business units. So that's evolving. That will mature further in 2018. Longer term, we'll take a look at whether or not we seek to tie elements of compensation to those profit contribution metrics. But as Dan indicated, we do have a general executive and management incentive package that applies to everyone.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes?

Jessica Macomber Fye - *JP Morgan Chase & Co, Research Division - Analyst*

When you think about that long-term guidance, with respect to the contribution to revenue from contract manufacturing, how do you think about that evolving over time? And can it bring potentially like outsized growth? And what's the relative contribution from a margin standpoint? Is that above or below (inaudible)?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. The question relates to the CMO business and its contribution to the long-term goals, probably specifically the 2020 financial goals, and what's the long-term trend in terms of margin.

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Yes. So I think Bob and I will tag team this one. Thanks for the question, Jess. So the -- just standing up 2 business units. Really we have the CMO business. While we have extensive experience and capabilities, we've really not been a long-term player in the CMO business. And I think we now have developed a strategy that will enable us to generate some significant growth across the CMO business as well as the device businesses. Those 2, I think we're looking for significant growth driving the top line and bottom line contributions for the organization. We haven't put numbers on them yet. That's still work in progress. And over the course of time, we may be able to give better specificity around that. But I think generally speaking, we are looking for significant growth for those 2 business units in particular. Bob, on the other question?

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

And just to provide, Jess, a little bit more color on the revenue to Sean's point, we first had a presence in this contract manufacturing business in 2014 from the acquisition of Cangene. And in that year, you'll see in my comments later on, we had about $31 million of revenue from the CMO business in 2014. Earlier this year, we announced our Q3 results for the first 9 months of '17. That CMO revenue had already grown to over $53 million and represented about 14% of our total revenue. So both in dollars as well as in the mix, it's increasing in size. And some of the opportunity that Sean identified in his presentation give us confidence that, that is a business unit that has upside and will continue to grow. We'll see as we go forward how large of a component that can be. It wouldn't be unrealistic to think it's going to be 10% to 15% of that overall revenue going forward.

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

And what I would add to that is that the -- and I think Sean laid this out very nicely. The skills that we have in the CMO business are really niche and very tailored and very specific, which separate us from the large number -- the larger CMOs. So we're a specialty player in this space solving unique

problems, whether they are problems that the U.S. government wants resolved in our CIADM facility or whether they're commercial customers that need development as well as commercialization assistance. So we're trying to develop and carve out for ourselves a very niche offering in the CMO space.

Unidentified Participant

Can you provide us more specific information about the (inaudible)? Where are you currently? I think 2017 you're able to innovate the (inaudible).

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. The question relates to Trobigard and our manufacturing and what's the capacity output currently and going forward.

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Yes. Why don't I start and then, Doug, you fill in. So as you might recall, when we first aggregated the technologies to enable this product to be offered, we very quickly had orders that exceeded our manufacturing capacity. So we have been genuinely focused on expanding manufacturing to address the demand that we're perceiving and receiving, primarily from international markets. We now have the Department of State that has come in. So this has been an ongoing challenge for us in terms of increasing manufacturing capacity to address the demand. I think we made some real progress around that. And Doug, maybe you want to add some color to that as well.

Doug White

Just to add to that, we've clearly demonstrated enough capacity to meet our current contractual obligations through '18. We're looking to expand and potentially double that capacity so that we can continue to look for opportunities with different governments and also potentially expanding within the current contracts that we have. So fundamentally doubling where we are today is what we're looking at.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes, Frank?

François Daniel Brisebois - *Laidlaw & Company (UK) Ltd., Research Division - Healthcare Equity Analyst*

Sorry, one for Adam here. Just in terms of NuThrax you mentioned Emergency Use Authorization (inaudible) pull through, can you talk about -- just give more color on that and potential for it?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. The question relates to NuThrax and the path to EUA ability and what's required and the potential likelihood, et cetera.

Adam R. Havey - *Emergent BioSolutions Inc. - EVP of Business Operations and President of Biodefense Division*

Sure. So we've talked about this even in some of the calls. Where we stand today is where we've completed the Phase II trial. We have had the end of Phase II meeting. We know what the Phase III protocol is going to look like. And the EUA should probably correspond with the initiation, if you will, of the Phase III study. So we don't need any additional clinical data. What we need is a nonclinical work, and we need to validate the manufacturing process. So we're going through kind of the early stages. If you remember back to Building 55, we're doing engineering runs and working through

some of the nuances of getting the process in a state of control before we validate it. So most of the early part of '18 will be spent doing that work. And we'll probably give more clarity to the timing of when we think our EUA could be earliest available and maybe latest available. But as we're getting into that right now, we're still in the beginning stages of those engineering and development runs.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. Any other questions? Okay, thank you very much. We'll transition now to Dr. Jim Jackson and Barb Solow to talk about our product development pipeline.

PRESENTATION

W. James Jackson - *Emergent BioSolutions Inc. - Chief Scientific Officer and SVP*

Well, good morning, and thank you for giving me the opportunity to talk and see many of you again, and I've had the opportunity to meet and speak with in the -- oops, this is not a good sign.

All right. Well first, we talked about our R&D programs in the context of our business units. What I want to do now is kind of show you what the consolidated enterprise-wide R&D portfolio looks like. As you can see, there's a -- the combined pipeline consists of a diversified mix of both preclinical- and clinical-stage candidates, which is what you just heard from Adam, our second-generation anthrax vaccine, NuThrax, being the most advanced candidate. As you heard, NuThrax is nearing EUA status, and we plan to start Phase III safety immunogenicity and conformity study in either late 2018 or early 2019.

As this slide also shows, all of our development candidates align well with our corporate strategy and our objectives to grow and strengthen our position as the premier provider of preparedness and response products in the public health space and also to leverage our internal platform technologies and expertise as one means to expand our portfolio into not only pure public health threat space product, new PHT products, but also into adjacent dual market spaces as well.

Many of the programs, regardless of the class of molecule the type of technology platforms being developed off of, are being funded by various U.S. government agencies, whether that's DoD, DTRA, NIAID or in the case of our Zika vaccine candidate, in collaboration with a commercial partner. As Adam and Laura alluded to earlier, while some of our programs are not currently being funded like our Flu-IG or Zika, therapeutic immunoglobulin, it's our standing approach to R&D to seek funding for all of our candidates and offset as much of the development expense and risk as possible.

As this slide also shows and highlights, it's not surprising that a number of our candidates will be eligible for priority review vouchers. But as a result of the 21st Century Cures Act, many medical countermeasure products are now going to be eligible for PRVs as well.

In addition to NuThrax and our antiviral candidate, UV-4, which is in the Phase I multiple ascending dose study that Adam mentioned earlier and now as Laura referred to, we're beginning to enroll subjects into a Phase II study for our Flu-IG product to treat severe influenza disease. We plan to start 2 other clinical studies in the near future in the early 2018, one being a safety immunogenicity study for our Zika vaccine and the other being a safety and PK study for our Zika hyperimmune therapeutic product.

All right. Let's spend a couple of minutes on our overall portfolio strategy. While our primary M&A focus is on acquiring revenue-generating assets, we're going to remain open to bringing in pipeline assets ideally clinical stage that come with funding but doing so in a disciplined manner as a way to fortify and grow our pipeline as we continue to advance our earlier-stage interim platform candidates.

Now I get an opportunity to talk about some of the pipeline programs that I'm most excited about. First and foremost is NuThrax. That's our second-generation dual adjuvant anthrax vaccine, which is based on as BioThrax, as Adam mentioned. This is a 2-dose vaccine, unlike BioThrax, that's being developed initially for a postexposure prophylaxis indication.

NuThrax is ideally suited out for a pet vaccine that will be combined with antibiotics as a means to prevent anthrax disease in individuals who have been exposed to spores, anthrax spores, which are the infectious form of the organism. And it's uniquely positioned to be very effective in this setting due to the fact that it will elicit -- rapidly elicit protective antitoxic antibodies as a result of having both aluminum hydroxide and this novel-immune stimulator, CPG, a pLR9 agonist as a dual adjuvant combo.

In addition to NuThrax, our Flu-IG hyperimmune therapeutic, Laura was talking about, to treat severe cases of influenza may very well be a near-term candidate that gets approved in the 2021, 2022 time frame. While neuraminidase inhibitors are the standard of care for mild and moderate influenza disease, there are no approved therapy to treat serious disease that result in over 200,000 hospitalizations and between 20,000 and 30,000 deaths per year in the U.S.

The Antibody Therapeutics group is in the process of enrolling patients to start this double-blind, placebo-controlled Phase II study that will evaluate not only safety, PK, identify an optimum dose but also evaluate clinical benefit in hospitalized patients with severe Type A influenza. Interesting. NIH is also exploring this approach as a treatment for severe influenza disease and are currently running a research Phase III study in a similar patient population using a human seasonal influenza hyperimmune product, which we actually manufactured at our Winnipeg facility using our hyperimmune manufacturing capabilities. Laura and her team are in regular contact with NIH group, and they plan to use this information and this study data to help guide the development of our product.

As Adam mentioned, we're really excited about our antiviral program, our host-based antiviral program. And our approach here, as he alluded to, to developing novel antiviral compounds from others in the space is that we're taking somewhat of an innovative approach and focusing on developing molecules that selectively interact and inhibit host-based targets required by viruses to grow and properly assemble inside the cell. And this is a departure from a lot of antiviral development activities where they focus on more traditional viral targets like replicases and protease to try and inhibit.

We feel that with this approach, resistance will be less of a concern or maybe nonexistent given the fact the target is actually host-based. And this approach will also lead to drugs with broader spectrum of antiviral activity given the fact that many different types and classes of virus require similar or the same host machinery to grow and propagate.

The molecules in our UV-4 and iminosugar program target a host enzyme in the endoplasmic reticulum, the ER, and alpha-glucosidase, viruses like dengue and influenza, whether it's seasonal or pandemic influenza, required to have a proper virus assembly and infectivity.

Moving on, our Zika vaccine candidate. As mentioned, we're collaborating with a European company, Valneva, on the development of an inactivated whole virus vaccine candidate to prevent Zika infection and disease and hopefully prevent congenital Zika syndrome (inaudible). The candidate is being developed using Valneva's commercial manufacturing cell line, their validated manufacturing processes and many of the same assays they employ to produce their licensed Japanese encephalitis virus vaccine, which is also a whole virus inactivated vaccine.

Our partner has demonstrated that Zika virus from various locations goes very well on the manufacturing cell line and to high tiders. And we believe that this high viral productivity in this system coupled with using these proven manufacturing processes and assets -- assays will allow us to develop an effective Zika vaccine ultimately faster and at a viable commercial manufacturing scale than other competitors.

Lastly but not -- and certainly not the least, on the device side, as you just heard from Doug, is that we were recently received a word from DoD to develop a dual chamber auto-injector device that will allow us to simultaneously deliver 2 immiscible APIs to individual. And this could be used for nerve agent antidote or other applications.

We've also received an award similarly from BARDA to develop an antidote for cyanide poisoning. And this will involve using or developing novel intranasal devices to deliver a stabilized form of isoamyl nitrite. Cyanide can be used as a chemical agent, a nerve agent or it's also an issue with firefighters and first responders and the fact that they can get exposed to aerosolized cyanide as a result of certain types of industrial fires.

A little bit about governance. To ensure that we manage our pipeline and our R&D investments effectively and in a disciplined fashion, we've established a cross-functional and cross-company government team, something we refer to as the Portfolio Steering Team, which is comprised of

senior functional area and BU leaders. Both Barb and I co-chair this team, and the team is responsible basically for ensuring alignment between the business unit R&D activities and portfolios with enterprise strategy. We're all aligned and we're all going in the same direction. It's also within its remit to identify or recommend new product opportunities, innovative technologies that we may want to recommend to the business units that they consider to bring into their overall portfolio.

And one last slide is let me give you a little -- what did I do? There we go. Last slide. Our R&D investment philosophy, is to progress candidates primarily using external funding but also with appropriate internal resources. And we see that internally supporting R&D projects allows us to leverage our capabilities and our platforms not only within the public health threat space but also for, as I said, adjacent dual market products. It also surprise -- it supplies us with the ability to do some seed investment for new novel public health threat candidates in the CBRNe/EID spaces as a way of getting them up into a point where they can actually be attractive and eligible for external funding. External funding, it addresses our customers' PHT needs and it also provides us a significant amount of contribution to our revenue.

So with that, I will stop and turn it over to my colleague, Barb Solow.

Barbara Solow

So good morning, everybody. I don't know any of you although actually, I've worked at Emergent now for over for 10 years. Bob reminded me last night at dinner that I get a plaque as soon as I get home because I hit the decade on the 16th of this month. So anyway, so from that, actually, not only have I worked at Emergent for 10 years, prior to joining Emergent, I consulted at Emergent for several years before that. I have a unique experience in that I have a Ph.D. in biochemistry, and I have worked for over 20 years now on government-funded product development projects.

When I started at Emergent, I stood up and now I lead our external development and contracting team. So what does external development and contracting mean? And I guess I need to find my slide because although I understand government funding, I am very IT challenged. So here you go. Got it. So anyway, so what is external development and contracting? External development is going out and capturing funding for development and service-related projects. And then the contracting aspect is actually managing the contracts afterwards based on the requirements and the contracts as they are written.

So from that then, that's different than what Darren Buchwald does, which he described earlier. He goes in finds money for our products and product -- or sorry, for our products and product sales whereas I go and find funding for actual development of products and then also services through governments and nongovernment agencies.

So right now, our current contracts are funded through Department of Health and Human Services and Department of Defense. So Department of Health and Human Services, this has been mentioned throughout this, is actually primarily BARDA funding. We have a significant history of working with BARDA. As has been stated by Sean and others, we have many unique skill sets. We've been very successful in our contracts with them. And it has established a very solid partnership with BARDA, which has resulted in additional work for us in different areas. We also have a contract with National Institute of Allergy and Infectious Diseases, which funds earlier-stage development than BARDA, and also Department of Defense through the Defense Threat Reduction Agency and Medical Countermeasure systems. Our Department and Defense work has actually been growing lately as we expand into new areas.

So then from that, how did we establish our external development and contracting and associated functions to be able to be successful in the space? It actually started out early in the company's history. We needed to stay in the anthrax vaccine market, and the government was looking at next generation anthrax vaccine products. So we needed to go ahead and capture that market, which we have been through AV7909. But while we were doing that, we had to go ahead and build some unique competencies and capabilities to allow us to be successful in that contract. And those included our ability to capture contracts, our ability to manage the contracts both technically and contractually, the financial requirements around contracting and then also the government compliance aspects.

And so we've actually, over time, built very robust and well-staffed teams in these different areas that then allowed us to continue to grow to expand into additional biological products, and as Laura mentioned, the acquisition of Cangene where they also had a strong contracting base. And we continue to grow in our contracting skill sets, which then has allowed us more recently to diversify into antimicrobials, chemical treatments

and expanding our customer base beyond predominately Department of Health and Human Services to also include now contracts with the Department of Defense.

So how do we actually get the funding that we've been getting? There's actually a process that we follow. The first is to actually go out and proactively pursue funding opportunities. We know ahead of time when funding opportunities are going to come out. Pretty much by the time the government issues a request for a proposal, we have had a good idea of not only what's going to be in the proposal in terms of what the government wants and what the budget requirements may be. But we've also -- are able to have our own solution at a high level on how we want to respond to the effort.

We understand the funding needs. We have funding initiatives ahead of the RFP going out. And then after the RFP, the request for proposal, comes out and we're in the proposal preparation stage prior to submitting, we understand the direction of the funding initiatives. And we interact with our government partners to then meet with them and respond to request for information to be able to gain a further understanding to be able to win the contract.

We also -- which I -- hasn't been mentioned so far is we have a solid experience in negotiating contracts, too. So once we've been selected to move into contract negotiation, with our contract experience base, we're able to successfully negotiate the contract where we come to agreements with the government that are beneficial to us but then also beneficial to the government.

So how do we determine what we need to put into the proposal and what our capture strategy needs to be? It's actually a multifaceted approach. We need to look at the customer, the competition, Emergent's experience, collaborators and subcontractors and solution development. And all of that needs to be looked at and understood to be able to actually win a contract.

So the customer, we need to understand what products the customer is looking for. What characteristics of that product does the customer want? What budget is available? How many years does the customer plan to fund the project? We then need to look at our competition and understand what our competition is providing and what we provide and what the strengths and weaknesses are of the competition versus our own experiences. From our experience, that means our technical expertise, our project management expertise versus what the government is looking for.

From there then, what we can do is if we have weaknesses in certain areas or if we don't have skill sets in certain areas, is we go out and we find collaborators and subcontractors to work with where we can partner with them to develop and then once the contract is awarded, implement the solution that the government is working for -- looking for. From that then, we move forward into solution development.

What needs to be understood about government customers and other customers at the supply funding is that they all have their own mission. They have a mission. They have certain goals that they need to achieve. Just like a company, the government is the same way. They are responsible for achieving a mission with certain goals. It's important as a company for us to align with the government on those and with the funding agencies. So we can then provide what the government is looking for. And it's a win-win situation when we are developing products under government funding and the government is able to achieve its mission that it was looking to achieve.

So then how do we decide what opportunities to pursue? So if you look at the number of government funding opportunities that are out there, there's thousands of them. So what we do then is we go and we look at our capture process. And we look at the contractors and subcontractors, the solution development, our experience, the competition and the customer. And we determine based on all those criteria if we think we have better than even odds of winning the opportunity. We also go look at what our strategy is as a company and how the solution meets the customers' needs.

If all of those align and it makes sense for us to pursue, we then go ahead and pursue the opportunity. If not, we no bid it. It's a significant amount of resource strain to pursue government funding if the probability is low or it doesn't fit our strategy to pursue it. So we make sure that we're very strict in what we pursue and what we don't pursue to give ourselves a higher win probability.

So then if you look through our wins over the last 5 years, which really this is the point in time where we started diversifying from biological products to providing services and moving into other areas. We have a total awards in excess of up to $650 million over the last 5 years. These are for contracts.

They're multiyear contracts that have significant dollar values. They're across all of our business units. So if you look, you can see that they range from devices to vaccines. These are actually the development portion of the contract.

So for instance, the NuThrax contract also included a procurement piece to it, which is additional large sum of money. So from that perspective, we've actually been very successful in capturing funding for our development programs and in addition, being able to expand the funding across the different business units to support development.

This is unique for us because it allows us to have more products in development than we would be able to if we were funding products solely off of our own internal money that was available for funding. So it really gives us an advantage because eventually these products, the early-stage ones will grow into licensed products that have government or dual markets associated with them.

So how are we planning to grow moving forward? We're actually in a really positive time right now. We're seeing very good growth in being able to get development funding, especially with our ability to go out and expand into areas across our new business units. So we plan to continue to expand tangentially into new products and services.

We're continuing to grow relationships with our established agencies, most notably right now, Department of Defense. We're growing relationships with nongovernment organizations such as Gates and Wellcome Trust. And there's organizations that are being formed right now actually to address globally emerging infectious diseases, and we're aligning with them. That's -- one example of that is CEPI. And then we're looking at new relationships with tangential government agencies such as the Department of Energy and the Department of Homeland Security to continue allowing us to grow our development funding into the future.

QUESTIONS AND ANSWERS

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Great. So we can transition to question-and-answer? Are there any questions? Jess?

Jessica Macomber Fye - *JP Morgan Chase & Co, Research Division - Analyst*

Can you just help us get a better sense of the competitive landscape? Who are you usually competing against in these RFPs? And then the second part type question is, specifically when you win on these contracts, what do you tend to see in terms of edge that Emergent allowing you to win contracts?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. So the question is twofold. One, what's the competitive landscape with respect to entities that we sort of come up against from a contracting grant funding perspective, RFP submissions, et cetera? And what ultimately is the determining factor that wins for us, evidenced by that slide that we showed?

Barbara Solow

So the competition actually is contract dependent. There's no -- if you look across the history of the contracts that we have, you can't say that there's a specific type of company. A small company, a large company, university, specific types of products, each one's been unique. So we really have to make sure for each of the opportunities that we go after that we are careful in making sure that we have done diligence around learning as much about who might be bidding on a specific opportunity as we can because there is -- there's no -- there's isn't any recipe for who our competition is in this space. Why have we been winning work? We win work because as a company, we've established core capabilities that have turned into strengths for us. So in this space, there's very few companies that have grown up and licensed products in this space, which we have. There's also

very few companies that have used the time and the resources to establish robust infrastructure to support the contracts around the financial and the contracting requirements. So actually, when we talk to the government, we know how to speak the government's language around contracting, which is unique in this space because the -- typically, for most opportunities, we are not competing against government contracting powerhouses. We're competing against biotech and pharma in that area, and they don't have the same understanding of government contracting as we do. So really, our technical expertise and the facilities we've built up and our experience in the space over time coupled with our contracting and financial infrastructure has allowed us to be successful.

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Yes. I think that's right, Barb. But I think there's another element to the success of the enterprise and receiving awards. And that is history of successfully delivering on the deliverables under the contracts that we have received. So one of the metrics that the government does look at is the performance of Emergent in past contracts, and to the extent that you have successfully delivered on obligations under those prior contracts, it does give you a leg up in terms of the reliability of Emergent as a contracting entity.

Unidentified Participant

For the government to intelligently put out a contract, they must consult with other people so that they get what they hope to get at the end of the day. So how often do they consult with you guys before they actually put out a bid?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. How often does the government consult with us directly before they actually issue a bid?

Barbara Solow

The government has a process. They have to be equal to everyone. So typically, before they put out a bid, they put out -- they have a number of processes they go through. So they will put out a request for information, and they'll ask all parties that are maybe interested to respond to that. They will put all the sources [thought] notice. For instance, BARDA has something called a TechWatch where you can bring your idea into BARDA and they'll provide feedback. And that's open to everybody. So the government has specific processes that they've put in place, dependent on government agency, that they use to get advice from companies on what's out there and what might work. But they do it fairly across everybody to make sure that their contracting process is fair to everyone that may be involved.

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Yes, yes, Barb is right. This is a highly regulated environment so that no company gets unfair advantage in terms of potential for awards. So they do have a stepwise process that they're bound by to ensure a level playing field across industries.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. Any more questions for Barbara, for Jim? Okay. Thanks very much.

PRESENTATION

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

We're now going to turn to the next segment. My colleague, Atul Saran, who heads our Corporate Development group, is going to take you through our current M&A approach. Atul?

Atul Saran

Thank you, Bob, and thank you all for coming today. I know we've kept you a long time. I've got -- my job here is to talk to you a tiny bit about corporate strategy and also as well as our mergers and acquisitions. I can talk to you about legal, but I'm not sure that's the core of what you're interested in.

My background, I was at MedImmune and then AstraZeneca for about 11 years. I held a variety of different roles, but of most relevance to this, I held up corporate development and their internal venture capital fund at the MedImmune level and then at the global level for AstraZeneca. I was also point for our BARDA negotiations for the H1N1 pandemic response there. So -- and then I spent the last 3 years as the General Counsel of a publicly traded clinical-stage biotech company. So more of a traditional pharma-biotech background. I've been with this company for about 6 months and it's been very exciting.

One of the things that's been most exciting, for those of you that have followed our story for sometime, you know that in 2016, we spun off our Biosciences division into a separate company called Aptevo. And one of the first things that Dan asked me to do after I joined was to really help the company work on a refresh of the corporate strategy, making sure that we were staying focused internally. We knew we wanted to set up the 4 different business units that you have heard so much about today and so, we really undertook to make sure that each business unit had its own strategy but it was aligned across the entire organization and that we have the appropriate level of focus going forward to make sure that we could hit both our 2020 objectives that we laid out in 2016 as well as continue to build for future growth. So we've spent a significant amount of time internally as an organization doing that. You saw the slide from Dan earlier today and hopefully, everything you've heard here today really is in sync with that, because that's really what we have been doing to make sure we're focused on it.

As I mentioned, M&A is actually a very critical piece of how we pull this forward. And so I'm going to spend the rest of my time here just talking to you a little bit about both our history as an organization in terms of business development, mergers and acquisitions, and then, also what we plan to do over at the upcoming years.

First from the substantive standpoint, as you've heard on a number of different occasions from everybody up here, including from Congressmen Rogers, from Darren when he was talking and as you can see from the materials, we believe that there's a significant opportunity in the public health threat space as well as emerging infectious diseases. And so that's where the core area of focus is for everything that we're doing. You've heard several times that these are -- that the U.S. government defines these by the acronym CBRNe, chemical, biological, radiological, nuclear and explosive threats, and so those are the areas that we focus on in terms of driving forward with what we're doing with our strategy.

One of the things that's been most interesting to me personally as a historic biotech pharma guy coming into this is that the company is so focused on mission and strategy and has such a core skill set on the manufacturing side of things that actually we're not as modality dependent as you might see in other pharmaceutical biotech companies. A lot of times it's like, "Well, I'm really good at my monoclonal antibody biologics." And here, we're very much focused on, how do we continue to focus on the public health threat space and are -- as you heard from Sean, we're so good on the manufacturing side of it that we've been able to incorporate large molecule, vaccine, small molecule, devices, and we've been able to pull all of those through with a quality level of manufacturing that is quite unique and differentiated.

So let me talk a little bit about our track record on the corporate M&A front and business development side of things. Looking really, starting in 2012, when as a company we had one marketed product, which is BioThrax, and looking at the growth of the organization that happened over that time, a lot of what you heard today is directly relatable to things that we have done on the mergers and acquisitions front. So when you heard from vaccines and anti-infective from Adam, we acquired ACAM2000, as he mentioned, just this year, and we've built part of the pipeline on the anti-infective side through some of the deals that we've done. When you heard from Laura -- Laura herself came with the Cangene acquisition in

2014, and that built the cornerstone of our antibody therapeutics franchise, and we've added to that, particularly, with the acquisition of Raxibacumab this year. On the devices side of it, Doug just joined us about 1.5 months ago, and we've really taken what the fledgling business and put some real emphasis and focus around that, those came to us through acquisitions that we've done over the last several years as well. And on the contract manufacturing side of things, the facilities that Sean was mentioning, I'm not going to hit all of them, but the Winnipeg site, the Canton site, the Rockville site, the Hattiesburg site, all of these came to us through different forms of acquisitions that had been part of our M&A strategy and that we've been driving towards for the past 5 years.

So looking at 2017 specifically, you've heard some discussion around this and if you've been following the news on this, you'll know that over the last 2 months we closed on 2 major acquisitions, one of which was acquiring ACAM2000, which is the smallpox vaccine from Sanofi, as well as the acquisition of monoclonal antibody directed against anthrax from GSK, both of those aligned completely from a strategic and competency standpoint and we've just been working on the integration aspect for those. But we're very excited to get those into the portfolio.

So let's turn now to looking at what does it look like in the 2018 to 2020 time period. As you've heard at various points, we've already laid out what our 2020 objectives are going to look like. Primary among those is that we're looking to hit $1 billion in revenue by 2020, with at least 10% of that coming from outside of the U.S. We are -- we have some financial discipline metrics that we've looked in from net income, R&D, SG&A. And then we're really looking on the operational side of at least 6 products in advanced development, including at least 3 that are dual-market.

And so when we think about our M&A strategy, I has to be absolutely aligned with that. Our first priority was when we take a look at near-term revenue contributors. When I say near-term revenue contributors, I mean, between now and 2020, is that's really focused on getting us to that $1 billion mark. And that is our primary focus from an M&A standpoint, I think Dan said that earlier, and that's how the team is directed internally.

How are we looking at continuing to drive that in a financially responsible way. There are 3 aspects to looking at this. One is looking at products that are government procured, medical countermeasures, and I would put ACAM2000 and Raxibacumab both in this category. These are the things that are absolutely right up the fairway and things that we would expect would be natural for us to try to acquire. The second, as we've talked about, is dual-market products. And as we've talked about, dual-market for us means things that are precured by the government but for which there -- we believe there's also a commercial market as well. And so these are things we think would make sense for us. If it's going to have a commercial market, it has to be tie in with our capabilities and feel like a natural part of our growth story, and so we're trying to be responsible at about how we pick those opportunities going forward. But that's a key element of looking at what the potential growth is for the organization.

And then the third piece is looking at products that are purely commercial in nature but that could leverage our capabilities in a unique way. It may be the case that companies have not gone into the government space. They don't like the regulation that's associated with it, they don't like the complexity that's associated with it, and we think that we can add something differentiated by going into that space. And we also think that we might be able to add something potentially, for example, on the manufacturing side. We've listed out at various points here what our core competencies are, but if we have an opportunity to really add value to an acquisition based on the core competencies that we have, we think, that's a good candidate to look at from a merger and acquisition standpoint.

So as I said, that's our primary area of focus. As a secondary area of focus, we're also looking at things that are longer-term revenue contributors, and by longer term, I mean, would contribute to revenue past 2020. So in the subsequent years beyond that. And so here, we're looking at different forms of research and development. And you heard certainly from Barb that we have a very strong presence in our external development contracting space, and that continues to supplement what we do from an R&D standpoint.

We look at R&D in 3 buckets. I think, the first one is those elements that are primarily funded by government or nongovernment organizations. There are certain types of products that are out there that lend themselves to that, for which there is no real natural commercial market. Anthrax is like that, for example. There isn't really a natural market for anthrax. And so if there's not going to be government spending in that space, that's not something that we'll necessarily pursue. The second category is where we think that there is a bit of a commercial space, but it also needs some supplement from a government standpoint. And so if we were to get some level of, say, 50-50 funding from the government, then we would still pursue it even with some of our own dollars. And then the third category is really looking at investments and innovation where we think it is smart to make a bet or where we think we might be able to lead. And that's where we would use some of our unfunded R&D. Each of the business units

has been actively thinking about, okay, which things fall into each of these buckets, and being very conscious about where do we actually place those bets.

Underpinning all of these, both in the near-term and the longer-term revenue contributors, is making sure that they're tied to our strategic priorities both at the corporate level as well as the business unit level. Making sure that we're diversifying but that we're doing it in a responsible way, we don't want to go too far afield, how do we actually continue to broaden the scope of what we're doing, but using the core capabilities that we have, and ensuring that we have the right level of financial discipline. Bob is going to come up here in a minute and talk to you a little bit more about the specifics around how we're thinking about the financial pieces of that, but that's actually pretty critical to our assessment process and making sure that we're developing this in the right way.

So with that, I will pause and ask if there are any questions.

QUESTIONS AND ANSWERS

Unidentified Company Representative

Yes, Frank, please.

François Daniel Brisebois - *Laidlaw & Company (UK) Ltd., Research Division - Healthcare Equity Analyst*

So just wondering, your third strategy though is to find something that's purely commercial in nature and maybe bring into your manufacturing capability or maybe bring into the government when they are unable to find themselves. Is there anything that you're looking at purely commercial but just to find a way (inaudible) what you guys are doing, would you keep it purely commercial or is that (inaudible)?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. The question is related to the third bucket that Atul addressed, which is the purely commercial asset type and just provide a little more color on what that potential look like. Are there things that we're actually currently assessing on that front?

Atul Saran

Yes. So we've got a fair number of things that we're assessing right now, and I'm just trying to flip through my head and think about the different ones that we're looking at. I would say, in general, it needs to really lineup from a core strategy standpoint. So the ones that we're looking at have some sort of a potential associated with it where we could be adding something differentiated to it. If it is purely commercial in nature, I mean, we, as Doug mentioned, I don't know, where did Doug go -- as Doug mentioned, we've recently launched on Amazon.com, but a lot of our commercial effort is really focused on government agencies right now. And so I think, if we were going to do an acquisition that was -- well, the acquisitions need to fit any of these 3. If it was going to be in this commercial space, it needs to somehow leverage something that we're doing right now well. Otherwise, I'm not sure that we're really adding sufficient value to that deal. Dan?

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Yes. I think, that's right, Atul. You can imagine a situation where you have either a commercial product or a portfolio of product. And the owner doesn't really understand the potential for that product in the government space. And because we bring that focus or that prism to the way in which we evaluate the product, we see real opportunities for doing market that the current owner might not or the owner looks at this and says, "You know, that's a smaller opportunity for us. We don't have expertise in the government space. It's very complicated doing business with the government. It's off strategy for us and not real core competency." That's where I think we can get real leverage in identifying those opportunities,

bringing them in and expanding the market potential for the products because it's untapped in terms of commercial capability or target revenue and growth.

Atul Saran

Yes. I mean, one thing we talked about explosive threats, and it was mentioned earlier today if you're looking at kind of the burn and wound space, there are companies out there that have products that are in the burn and wound space that are really not focusing on the explosive threat that's out there. They're focused more on the commercial market as to how these products could be used. But to the extent the government actually has a need for that in terms of thinking about medical countermeasures, that's how we're thinking about that kind of a product. So that's an example of how you might think about how we approach it from our strategic standpoint.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Bill?

Unidentified Participant

Could you talk about the financial metrics that you're using to evaluate any potential M&A product?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. The question relates to the financial metrics we use internally to assess transactions.

Atul Saran

So I'm going to say 1 or 2 things about this and then I will ask Bob to comment as well or Dan if you'd like to. The first thing is we have a very rigorous approach to taking a look at this in the sense that we will take a look at what we think the revenue potential is associated with it, we'll look at where the current market is. And we'll really do an assessment as to where do we think this goes in the future, what additional R&D dollars might be associated with going along with it, what types of capabilities do we already have that we could leverage and what capabilities do -- we might need to build onto. And then what are the possibilities? If we acquire something, what do we think the growth opportunity might look like as well. And I think for most of those, there's financial assumptions that we tie to those things, and that's kind of the key pieces of how we look at those opportunities. But I will ask either Bob or Dan to comment as well.

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

Yes. The only thing I'd add to that, Atul, is again to emphasize how robust our process is for looking at M&A opportunities, whether it's the traditional DCF models or NPVs, we look at upsides, we look at downsides, we look at synergies. Again, a lot of what we've talked about today has been emphasizing the fact that there is untapped or unrealized value in certain of these M&A transactions in the current holder that can best be realize by a company like Emergent. So we put some value on that, typically, we kind of tuck that away in terms of an upside in terms of the valuation, but it's not unlike what you'd expect any venture capital firm to go through when looking at the valuation.

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Yes. I guess, I would add to that as well. It is a very rigorous process, and we tend to hold true to our principles. I know that for those of you who followed the company for a while, we had a dry spell in terms of our M&A and it was not because we weren't actively in the market and bidding for assets and looking to acquire assets, it's because we were very disciplined and, quite frankly, we got outbid on a number of opportunities. But

because of the discipline, we were not willing to go over certain threshold. And sometimes in the heat of the moment, you get very excited about an opportunity and you tend to overpay for assets. That's something, as an organization, that have instilled that discipline in our process. So Bob's right, we look at DCFs, we look at NPVs, we look at synergies, we look at value creation that we could bring to the -- either the business or the asset. But we are quite disciplined and that's a feature what we've described as a core competency in the organization.

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

I think, the other element is, again, because we've been at this for almost 20 years now, we do have robust quality systems, we have robust regulatory affairs expertise and knowledge, so we can look at opportunities, perhaps, a little more holistically than other firms. And we have a better appreciation for how that translates into what it means to our partners and our collaborators, we can risk adjust up or down based on factors that most firms, quite frankly, can't do. So that all adds to the robustness, just not from a numbers perspective, but from a qualitative perspective.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Jess?

Jessica Macomber Fye - *JP Morgan Chase & Co, Research Division - Analyst*

Atul, I don't know if you were (inaudible) to be involved in the diligence on ACAM2000, but can you just -- I think just to remind us of your confidence level that this is the first smallpox vaccine in the U.S. relative to the Bavarian product in development. I think, you guys previously talked about that being more of a niche product, higher priced. But is there something about the product profile of ACAM2000 that you think it will -- that keep it sort of as the core product in U.S. stocks or is it more price?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. The question relates to ACAM2000 and our assessment of it as the cornerstone of the U.S. armamentarium against smallpox vis-a-vis Imvamune, the Bavarian product. And what confidence do we have that it will remain as such?

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Yes. Jess, I think, that's a great question. I think, it's probably more appropriate for Adam to tackle that one because there is a clear differentiator, I'd say, a bright line between the ACAM2000 product and the label that you've got there and the history of use and the international presence versus the product that's in development, the Imvamune product in development by Bavarian. So Adam, if you could tackle that?

Adam R. Havey - *Emergent BioSolutions Inc. - EVP of Business Operations and President of Biodefense Division*

Sure. So, I mean, the simplest difference, Jess, is Imvamune is a 2-dose vaccine and then there's the economics that go along with that 2-dose vaccine. So I think from a basic blocking and tackling perspective, when you look at stockpiling of the -- also Imvamune, right now, isn't licensed in the FDA, and it's -- the way it's licensed in Europe is really for the immune-compromised. So I think, through our diligence and, I think, we believe strongly the government's going to continue to stockpile ACAM2000 as the primary or the lead when it comes to being prepared for smallpox events, and I think Imvamune will always have a piece of that, but it will be really focused on that niche immune-compromised population.

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Yes. And, I think, that's a really important point, Jess, that it is the immune-compromised indication that BARDA is interested in, and that's why they're funding the development of that, and it's not really targeting the broader population that ACAM has targeted. And historically, I think the

-- there's been a huge split between the number of doses that Imvamune would target for the stockpile versus ACAM. And price is one point, and the number of doses in order to get protection is another. And I think the way in which protection is demonstrated for ACAM2000 is quite different than the Imvamune product. ACAM has demonstrated efficacy and Imvamune, I think, is a bit of a different path to licensure than the historical smallpox vaccine. We actually get the demonstration of efficacy with the (inaudible) on the arm.

Atul Saran

Tying that question with the preceding question, one of the things that we look closely at in our M&A strategy is just trying to understand the landscape and the kind of the upside, downside of potential competitors in the space. And so there's a fair amount of work to your question that goes into the diligence to try to understand that before we pull the trigger on moving forward within any of our M&A activity.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Any other question? Great. Wonderful.

Atul Saran

So, next up, I'm going to introduce Bob Kramer, who, I think, most of you have already met before. But he is our EVP of Administration and Chief Financial Officer.

PRESENTATION

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

Thank you, Atul. So good morning, everyone. We're in the homestretch of this here. So I'm going to, this morning, start out with a bit of a deeper dive into the financial performance of the company since we announced the growth strategy in late 2012, and then turn to more forward-looking comments and discussion as we tackle some ambitious goals for where we go from here to 2020.

Earlier this morning Dan reviewed our performance for the 2012 through 2015 period, which was the initial phase of our growth strategy. And as Dan commented earlier, those numbers included the results of our Biosciences division, Aptevo Therapeutics, which has since been spun out in August of 2016. So the numbers here on these 3 panels for revenue, for net income and for EBITDA are exclusive of the Aptevo results. So they really represent the business that Emergent has today on a continuing-operations basis. So let's walk through each of these 3 panels from 2012 to 2017, and I'll provide a bit more color into the numbers and you'll see the association with all of the comments that my colleagues have made up to now.

So starting with revenue. We've grown the top line from 2012 level of $278 million in revenue to the midpoint of our 2017 range this year, which is $550 million, representing a compound annual growth rate for revenue of just over 14%. Importantly, the revenue growth has been a result of increases across the board in all categories of the sales mix. So it's included increases in product sales, increases in grant and contract revenue that Barb has spoken to and hopefully by now you have a better feeling for the engine that we have in the external development area to support ongoing grant and contract activities. And then also in the contract manufacturing operations business unit that's led by Sean, and again, he went through very well the capabilities that we have here. So we've increased revenue across all 3 categories over this 5-year period.

In 2012, the $278 million of revenue included $216 million from BioThrax alone, which at the time in 2012 was the only product we had, that represented almost 80% of our product revenue, the balance being made up of grant and contract revenue in 2012. So if you advance the clock forward to this year, the $550 million in total revenue, $285 million of that is attributable to BioThrax, which represents a little over a 50% of that revenue base, with rest being in grants and contracts, CMO and other bio defense product revenue. So in a fairly short period of time, we've not

only been able to double revenue, but we've also increased the number and the size of the BioThrax revenue, our flagship product, but it in -- and all along the way been able to decrease the percentage relative of BioThrax to the overall portfolio.

Another comment I made earlier in response to Jess's question is the contract manufacturing revenue. So effective with the Cangene acquisition in 2014, when we first had a presence in that market, and the calendar '14, we had revenues of $31 million. As I said earlier this morning, for year-to-date 2017, that number is $53 million, just for the 9-month period, and represents about 15% of our overall revenue for calendar year 2017 year-to-date.

The income and EBITDA numbers pretty much mirrored the revenue growth over this 5-year period, and focus more on the last panel on the right, the EBITDA panel, we have essentially doubled our EBITDA over the same 5-year period, very similar to the revenue story. It's about a 15% compound annual growth rate. In addition, if you look at the numbers at the top of each of these bars representing the percentage of EBITDA to total revenue, we have been able to do so and grow this EBITDA number in a fairly tight range of roughly 28% to 33% of total revenue, with exception of 2015, 2015 was an unusual year for us in that we had a higher than expected contribution from BioThrax revenue, which kind of spiked up the overall profitability and as a results spiked up the percentage of our EBITDA.

So the take away message from this panel is very simple, over the last 5 years, we've been able to aggressively grow revenue, and that growth has occurred from a diversified source of revenue over that period between product revenue, between grants and contract activity as well as CMO.

So where do we go from here? So as we evaluate what we have today, and what we want to do with the business going forward, we have clearly laid out some very specific goals in terms of what we want the business to look like by the end of 2020. So just to go into the 2017 numbers in a little bit more detail, again, as I mention before, our revenue range for this year is $540 million to $560 million with a midpoint of $550 million. We recently updated that, the original range was $500 million to $530 million. When announced Q3 earnings, we took advantage of the fact that there was significant momentum and growth in the fundamentals of the business organically as well as through the 2 acquisitions that were recently announced and closed upon. Based on those 2 elements, we were able to upsize and upgrade the revenue range from the initial range to what it is today.

As Atul and other folks have identified, bridging from where we are today at that $550 million level to the $1 billion target by the end of 2020, is going to require continued growth in our organic business, but it's also going to continue to put an emphasis on M&A. We're going to do that smartly, we're going to follow our principles around looking for revenue-generating and accretive assets, whether those be products, divisions or whole companies. And we're going to do that in a way that's also in furtherance of needing to look into and get deeper into the dual-market and these dual-product opportunities where we get a bridging of both the U.S. government interest as well as the commercial market that you heard Darren and the business unit colleagues talk about.

Also in furtherance of that M&A, we need to continue to look for opportunities to spread our footprint in the ex U.S. market by having at least 10% of our revenue sourced from customers outside the U.S. So a combination of organic growth, M&A, dual market, ex U.S. market expansion are the key principles that will drive our decisions around how we bridge this roughly $0.5 million (sic) [$0.5 billion] in revenue. Clearly, the acquisitions we were able to close on earlier this year with ACAM2000 and Raxi will make a meaningful contribution and dent into that gap. They won't get us all the way there, but it will be a meaningful contribution, and you'll see some of the benefits of that as we put out our guidance for 2018 ahead of the JPMorgan conference in about a month.

Kind of walking down the P&L profile on the left, we refer to our net R&D expense and investment throughout the date -- day today. When we say net R&D, what we're referring to is the fact that our -- as a business, we invest in research and development expenses. We also have grant and contract revenue that Barb had mentioned earlier that offsets that. So the difference being net R&D on a year-to-date basis through 9 months of this year has ranged roughly at 5%. As we look to where we like to be and need to be in 2020, we will continue to monitor and evaluate opportunities. But we're going to be spending more at-risk net R&D in furtherance of the growth that has been discussed by the business units and by Jim and Barb going forward.

You've heard from the business units, you've heard from Jim, on their thoughts on how to opportunistically invest in research and development initiatives that both are in alignment with our strategy, but just as important, are in line with the views and the perspectives and needs of our

customers and our partners in the government. This will require a meaningful increase in research and development expense, but this is what will really fuel the growth of the company well beyond 2020.

Walking down the P&L a little bit further, we come to SG&A. So selling, general and administrative expenses on a year-to-date basis in 2017 are at that 28% of revenue number. We said for quite some time that we expect that metric to be below 25% and clearly, by the end of 2020, that's where we want that to land. As Darren spoke earlier today, his team is aggressively looking to expand into this dual market and this ex U.S. market for opportunities with existing products as well as new products that will increase the selling expense or the selling component of SG&A going forward. The good part is that we have invested wisely in general and administrative expenses and systems in the past. So as we add incremental revenue to an existing infrastructure, we can do so efficiently so the G&A component of SG&A will be coming down as a percent of revenue, which will allow us to land the overall SG&A of less than 25% by the end of 2020.

Going further into net income and EBITDA, we also this year updated and increased the guidance both for net income and EBITDA when we announced the upgrade in revenue earlier just year as well. The metrics around that, the 13% number for net income and the 28% for EBITDA, are metrics that we expect to meet or exceed by the end of 2020. So the 18% -- or the 13% is consistent for net income and that roughly 30% is consistent for EBITDA. Again, the theme is profitably growing revenue in a diversified way to get into markets that we are undersized for right now.

Underpinning all of this are a number of factors, but included in that is the fact that we need capital. And we need a strong balance sheet to support the organic business today as well as the M&A opportunities that you've heard Atul and the business unit colleagues talk about, we're addressing that already. We have proactively put in place earlier this year a $200 million credit facility with a seasoned strong group of banking partners. That facility has an upsize of $100 million to create a total of $300 million if we need it. And even more recently, we have taken the initiative of initiating the call provision on the $250 million convert that we first put in place in January of 2014 to support the Cangene acquisition so that by the end of this year, as we head into '18, we should have a very clean unlevered balance sheet to support the business going forward.

So let me pause there, I've got couple of minutes, and be -- would be responsive to any questions that you have. Keay? Okay.

Keay Thomas Nakae - *Chardan Capital Markets, LLC, Research Division - Senior Research Analyst of Therapeutics, Devices and Diagnostics*

Just with respect to your 2020, aspiration goals and the contribution of M&A to that. Beginning of this year, you laid out your goals, you were highly confident you were closing these small acquisitions. You clearly exceeded that closing, too. So what should we think that your confidence in closing acquisitions in 2018?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. Related to the 2020 goals and then the impact of M&A. We gave guidance on '17 of at least 1. We have exceeded that. What's our confidence level on 2018 in terms of transaction wins?

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

Yes. So I think you've heard Dan and Atul and others be a bit cautious about trying to project when we're able to close on M&A transactions. Some of these take quite some time. I will only say that we are aggressively -- we continue to be aggressively looking at M&A opportunities consistent with the principles that Atul and Dan have laid out. We're committed to doing those, but we're also committed to doing those in an efficient and an appropriate way. So we're not going to overpay. We want to grow, we want to grow through M&A, but we're going to do that in a wise way. So I'm -- really can't predict the timing of those other than to say that they're a key part of our strategy.

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Yes. And if I can -- that's right, Bob. And I think I'd like to add just a couple of thoughts around that. With the completion of the 2 acquisitions, don't infer from that, that we have no pipeline now of potential candidates that we're looking at, whether they are product candidates or full business opportunities, we have a robust pipeline of targets that we evaluate. The uncertainty, of course, is the ability to close on that. And I shared with you that we've been outbid in the past and opportunities have disappeared for other reasons, so you can never accurately predict. But we do have a robust pipeline at various stages on any evaluation process all the way from very early stage to later stage in discussion. So it does remain a priority, it's just hard to predict with certainty when those acquisitions might actually mature.

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

The other thing I'd say, just to be clear, for everyone is that when we give guidance, that guidance does not include the impact of any M&A activity other than the diligence cost required to ongoing support any number of transactions. So the guidance that we'll give ahead of the JPMorgan conference coming up will be exclusive of any M&A. It will be organic. Yes?

Unidentified Participant

So one thing that I think may emerge in instinct to a lot of investor was you guys were able to innovate with a very well net R&D expense because of this unique relationship you had with various entities that were getting growth in R&D. And over the next 4 years, you're forecasting a tripling of net R&D from 5% to, I guess, 15% or so. And that's a big change in your income statement. So I guess, a, why does that need to happen and b, what should give investors confidence that, that money will earn a good return since it is such a major change from the current state?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

The question is related to net R&D and the ramp that we are projecting for 2020 from right now 5% of revenue to roughly 15% of net revenue in 2020, what's the justification for that increase.

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

Yes, so clearly, it is a change. It's an evolution, quite frankly. I would just call your attention to the fact that at the bottom line, that, that income metrics continue to be strong at that 13-or-greater percent of revenue. So it's not as if we're eroding our historically -- our historical margins. We think strategically that there are interesting opportunities, investments that we need to make as an organization to continue to partner with third parties, whether they be government or other, to stay ahead of the curve. And we think there are opportunities, again, to leverage the competencies and expertise that you have heard about today from the business unit heads in a profitable and long-term meaningful way. This investment that we're talking about over the next couple of years is going to fuel the growth for Emergent well beyond 2020.

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Yes, I think, the other thing to -- just to highlight is the importance that we place on dual-market opportunities, and we are looking at developing some of those dual-market opportunities. Invariably, we're going to have to bear some of the costs associated with the R&D, and the development cost overall. I think it's only fair and reasonable to look at the R&D expenditure as part of the broadening of the portfolio, away from strictly government products, to the products that could have commercial applicability as well -- commercial customers as well.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

[Laura]?

Unidentified Participant

I'm just wondering with what's going on with the tax bill, how it might affect your company?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes, the question relates to the tax bill and its impact to us in '17, '18 and onwards.

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

We obviously are monitoring that very closely. I don't think, from a strategy execution or an investment perspective, it changes how we look at the business or the potential. Clearly, we'll have some upside in terms of the overall bottom line but net-net, it's not going to change how we look at the investment opportunities that we have.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Bill?

Unidentified Participant

In terms of going back to the kind of margin outlook, if you look at the 2020 target, to keep that 13% margin, is there a lot of leverage on the gross margin side is how you maintain that as R&D in investment growth. And then secondly, in terms of the 2020 target, can you give us a sense of, as the portfolio stands today, how close can you get to that $1 billion from organic growth (inaudible)?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes. The 2 questions there are related to the portfolio in our -- actually, I need help with this.

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

No, I think, the question -- or 2 questions, one, how does any pressure at the operating and gross margin line impact that 13% net income number? And secondly, when you look at our organic business, as exist today, realistically, how much of that $500 million increase in revenue can be sourced from or can accrue from the organic business? So let me take the margin number first. Historically, we said -- been very public that our consolidated gross margin typically is around between the 60% and 70% level. As we add additional products and services to that mix, it will create some pressure at the gross margin level. You've heard Sean talk about his ideas and thoughts about leveraging the capacity that we have with the existing manufacturing sites and looking for ways to partner with third parties and protect those margins. But just to be clear, that will continue to be a pressure point of ours as we add new and different types of revenue to that mix. On the revenue front, we've been careful not to predict or project how much of the $0.5 billion in the new revenue will come from organic sources versus M&A. I think, clearly, now that we have these 2 acquisitions under our belt, that adds a significant amount of revenue beginning in 2018. So that's an important part of the overall bridge from now to 2020, but there will need to be additional acquisitions that make up that difference. We're just not in a position right now, nor do I think it will be wise for us to say how much of that is going to be organic versus M&A.

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

Brian?

Unidentified Participant

Can you talk a little bit about your appetite for leverage in your quest for M&A? And what sort of math (inaudible) EBITDA that you (inaudible)?

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Yes, the question's around leverage appetite and EBITDA ratios?

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

Yes, so I think we have answered that question in the past by acknowledging that any EBITDA-to-debt number that's around the 3 would be comfortable. So clearly, we're in that situation today with the debt that we have, again, the actions -- recent actions taken by the company to initiate and the provisional call for the convert will put less pressure on that number. But we'll continue to evaluate. We have a very strong business that's generating cash on a year-over-year basis, we have excess cash still today, even though we've used a good chunk of that to acquire ACAM2000 and Raxi. So we're in a -- again, a strong capitalization position with a strong balance sheet and a delevered balance sheet, so we think we're in good position to support the growth going forward.

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Yes. And Bob, you might comment on the deadline that we just put in place from this year.

Unidentified Company Representative

I mentioned as part of my earlier comments the $200 million facility that has a $100 million accordion to take it up to $300 million if we need it. So we have plenty of dry powder right now.

Robert G. Burrows - *Emergent BioSolutions Inc. - VP of IR*

Any other questions? Okay.

Robert G. Kramer - *Emergent BioSolutions Inc. - CFO, EVP of Administration and Treasurer*

Thank you very much. Dan, is going to take us home here. So...

Daniel J. Abdun-Nabi - *Emergent BioSolutions Inc. - CEO, President and Director*

Okay. Thank you, Bob. And thank you all for your patience and your questions and comments. I said at the top of the session that I hope that you would learn a lot as we go deeper into Emergent, understand our goals, our plans, our business units, et cetera. I have a number of takeaways that I personally have that I'd like to share with you. One of the most important for me is, this is really the most exciting time ever for Emergent. We believe we've got the right assets, we have the right business units, we have the right products on the market, we have the right pipeline that's in development, we have the right resources, both in terms of facilities and engaged employees than we've ever had before. We have a strong leadership team, getting stronger by the day. You had an opportunity to meet with them and better understand the capabilities of the organization, the potential future growth. So this for me is a really exciting time for Emergent. And we're coming off the heels of significant growth in our 2012 to 2015 growth plan.

And what I would like you to take away as we look at the next stage of our growth is that the public health market is real and it's growing and it's domestic and it's international. And the number of threats that we see there -- out there that are -- that need to be addressed, both in civilian and the military populations, is significant. And Emergent is uniquely positioned to address that public health threat marketplace in the U.S. and increasingly and more so internationally. We've got a well-developed strategy, and we shared with you some of the key strategic priorities for the organization. We have very unique core competencies that no company out there, I believe, can emulate. And we have an aligned business unit structure. You've got now a real glimpse as to the core competencies of those business units, how those core competencies are really driving their strategy, how they're leveraging their products and their pipelines, and how they're building the future of each of those business units, which is slightly different because of the capabilities that they have, the assets that they have and the focus that each of those business units have.

We are committed to revenue growth and to diversification, both organically and through M&A. You've heard quite a bit about the potential for organic growth over the course of the next several years and beyond that as we invest in the pipeline for growth beyond 2020. And that pipeline, we believe, is well suited for not only the public health threat space in terms of government customers, but really addressing the needs for commercial customers as well, whether it be hospitals or specialty clinics or civilian populations. I mean, just think about for the first time ever, Emergent has actually got a product that's being sold on Amazon. A number of years ago, I would never have predicted that was a possibility. But the opportunities, as we look at the aperture for the products that are in the pipeline and the way in which they can be commercialized, it's just expanding for us and creating real growth potential as we look forward.

And lastly, I do want to focus on the financial discipline of the organization. We are very disciplined in terms of how we run this company and how we operate and particularly around M&A, we have clear metrics that we abide by and we understand that we have a responsibility to shareholders to grow in a responsible manner, build on the momentum that we've developed so far, but again, do that in a very responsible manner. So I think we set the stage here with the very effective strategy and competencies that have been shared with you and various business units that have been stood up to grow towards our targets for 2020 and beyond.

And what's not on the slide, which I have mentioned, but I want to reiterate, it is the strongest leadership team that this company has ever had. And it's getting stronger over the last couple of years and we anticipate, it's a priority of ours, strong leadership is the key to successful enterprises, and for us, we're very focused on strong leadership. And most importantly, even beyond the leaders is an engaged group of talented employees. And we have 1,300 employees across the globe that are fully engaged in our mission to protect and enhance life, that are fully engaged in the vision of protecting 50 million lives by 2025, and that's probably the most powerful engine a company can have.

So I hope you take that away as a real opportunity to evaluate Emergent as you see the growth potential and appreciate where we can go as a company, not only through 2020, but beyond.

I thank you, all for your time today, really appreciated. I know it's been a bit of a marathon and hopefully, you've got most, if not all, of your questions answered. And I look forward to seeing you in the weeks and months ahead. Thanks so much for coming today.