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Transcript of
Inovio Pharmaceuticals, Inc.
Fourth Quarter & Year End Financial Results Conference Call
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Participants

Jeff Richardson - IR
J. Joseph Kim - Chief Executive Officer
Peter Kies - Chief Financial Officer

Analysts

Alex Schwartz - Stifel
Charles Duncan - Piper Jaffray
Yi Chen - Wainwright
Jason Wittes - Aegis Capital
Jason McCarthy - Maxim

Presentation

Operator
Greetings, and welcome to the Inovio Pharmaceuticals Fourth Quarter and Year End Financial Results Conference Call. At this time all participants are in a listen-only mode; an interactive question-and-answer session will follow the formal presentation. [Operator instructions]. As a reminder, this conference is being recorded.

I'd like to turn the conference over to your host, Mr. Jeff Richardson. Thank you. You may begin.

Jeff Richardson - IR
Good afternoon, ladies and gentlemen, thank you for joining us today.

Today's call may contain certain forward-looking statements relating to our business, including our plans to develop DNA immunotherapies and electroporation-based delivery technologies, products and product candidates, as well as our capital resources, all of which involve certain assumptions, risk and uncertainties that are beyond our control and could cause actual results to differ materially from these statements. A description of these risks can be found in the latest SEC disclosure documents and recent press releases. These statements speak only as of today's date and we undertake no duty to update or revise them.

Presenting today are Dr. J. Joseph Kim, Inovio's President and Chief Executive Officer; and Peter Kies, our Chief Financial Officer. Now, Dr. Kim.

J. Joseph Kim - Chief Executive Officer
Good afternoon, everyone. I'll start by saying that I expect 2017 to be an excellent year for Inovio, building on key accomplishments in 2016.

There are three reasons for this. Number one is clinical trial data. In just the last half year, we announced encouraging new human data from our head and neck cancer, MERS, and Zika immunotherapies and vaccines. You can expect clinical data from six of our cancer and infectious disease programs in 2017. We expect to see

our MERS and Zika data published and we will also report on clinical trials for Ebola, Hepatitis B, HIV and prostate cancer.

Number two, we are initiating important clinical studies including our Phase 3 program with VGX-3100 and two separate immuno-oncology combination studies. In 2016, after extensive preparation, we were ready to start our Phase 3 study of cervical dysplasia in the fourth quarter of last year. The FDA asked us to submit additional information regarding our brand-new delivery device, which has not previously been tested in a clinical study, and placed the program on clinical hold before it was started. We are preparing that response and expect to be able to initiate Phase 3 activities in the first half of the year.

We also look forward to initiating two separate cancer trials that combine an Inovio multi-antigen DNA immunotherapy with a checkpoint inhibitor, which could create an all-important one-two punch with the potential to take the valuable data outcomes achieved by the checkpoint inhibitors alone to a whole new level. These efficacy-measuring cancer studies will place Inovio as a unique player on the immuno-oncology map.

Finally, number three is the potential for more business development steps. In the fourth quarter alone, we announced $15 million in non-dilutive grants being awarded to fund Inovio programs for MERS and Zika through collaborators. We started this year with the announcement of a valuable collaboration for VGX-3100 for Greater China that represents a proactive path to pursue that large and undeveloped market opportunity. This deal is also positioned to inject up to $50 million into our treasury in the near term. With consistently strong and robust human immune response data that we have reported and the various products we have ready for the next stage of clinical development, I believe we are strongly positioned for additional funding from and collaborations with third parties.

While I just touched on a few important steps in 2016 that provide the basis for what we believe will be another very productive year in 2017, I will now recount all of the important advancements of last year. They were reiterated in the year end news release we put out before this call today. I will, however, make this point. I could not be more pleased about where Inovio is sitting today. Our foundation of research and development is extensive and predicts an expanding number of human studies and advancing studies over the next years.

We often state that we have tested our immunotherapies and vaccines in over 1,300 subjects with over 3,800 different immunizations without a single related serious adverse event. This is an enviable record. What we haven't said before is that we have also generated and measured significant antigen-specific immune responses in almost 1,000 patients and subjects to date. We have truly a remarkable immunotherapy platform and never has this company had so much advancement, so much momentum, so much validating confirmation of the merit and the potential of this platform. Furthermore, our expertise, our conviction and our capacity is at the greatest level ever.

So, I will now expand on the three reasons why we expect a highly productive 2017. First, let's speak about data. The news that's already arrived is our data on two infectious disease vaccines at the recent CEPI Conference, that is the Coalition for Epidemic Preparedness Innovations, or CEPI, which has been partly funded by the Gates Foundation. Inovio's data on Zika and MERS was the most talked about presentation there. Why? Because we reported that in a Phase 1 study of our Zika vaccine GLS-5700 after a three-dose vaccine regimen, high levels of antibodies were measured in 100% of 39 trial subjects. I say again, 39 subjects, 100% of them responded. We are highly confident that the level of antibodies and response rate in humans to date suggests the potential for a protective vaccine.

At the same conference, we also reported that in our Phase 1 MERS vaccine study of 75 subjects, high levels of antibodies from GLS-5300 product were measured in 92% of the participants. In addition, 98% of the subjects generated an antibody and/or a T-cell immune responses. Again, the data points to the potential of providing preventive benefits of the vaccine. These Zika and MERS vaccines were well tolerated and there were no safety concerns.

These studies and initial data are unique in the world. They both represent firsts, and we expect this data to be published in a major scientific journal this year.

During the balance of this year you'll also see clinical data from three more infectious disease trials, from our expanded Ebola vaccine trial, our HIV vaccine study as well as our immunotherapy trial to treat hepatitis B infection, called INO-1800.

Speaking of our hepatitis B therapy, the 90-patient global Phase 1 study for INO-1800 just completed enrollment. We plan to report interim data on immune responses and safety by year end. Chronic hep B infection is the largest infectious disease market in the world and one that is notably underserved. There are drugs that help to control the virus, but no cure. We think our vaccine will generate T-cell responses against HPV in a similar manner in which we demonstrated positive immune responses and efficacy against chronic human papillomavirus infection and related cervical dysplasia in our Phase 2b study as published in *The Lancet*. We're one of the few companies to ever characterize and publish this type of correlated immune response and efficacy, so we're very bullish about our hepatitis B program.

The sixth data report is for our prostate immunotherapy, which we expect to report at an oncology conference in 2017. Our prostate study has completed enrollment with 62 patients, but our patient evaluation is ongoing. The main objective of the study is to see if INO-5150 can activate significant antigen-specific killer T-cells.

It is clear that large pharma and various funding agencies are increasingly intrigued with Inovio's consistently positive immune activation. We're obviously pleased to see their interest, but clearly we are as impatient as anyone to see our various products advance to a later stage of clinical development where we can assess the impact of these immune responses on targeted diseases. And we are on the cusp of important steps on that front.

I will now discuss the clinical trial initiation we expect this year.

First VGX-3100, I understand the uncertainty created by the Phase 3 clinical hold, but I also emphasize that we fully expect to successfully fulfill the FDA's request for additional information. Let me reiterate the situation and our efforts to resolve this. First, it was imperative that we used the new CELLECTRA 5PSP electroporation delivery device in conjunction with VGX-3100 in this Phase 3 study. This sophisticated fully automated device was designed for commercial use. Since our immunotherapy and delivery device will be reviewed as a combination by the FDA when we do file for marketing approval, we must therefore use this device in the Phase 3.

In 2016, we completed key logical steps for immunotherapy in our delivery device. To start the Phase 3 program, we submitted a comprehensive package to the FDA last fall which included our proposed trial design, our chemistry manufacturing and control, or CMC, data relating to our biologic product or the vaccine, and extensive information regarding the new device. In October, the FDA informed us that they concurred with our trial design and CMC of the product. This was an important accomplishment. However, in their initial notification and subsequent formal letter in November – before we started the trial – the FDA indicated they were delaying the

start of the study to request additional information regarding the new device. Part of their request included more data regarding stability and shelf life of the single-use disposable tip.

I want to be very clear, we had not started the trial so there were no observed trial-related safety issues. Rather, the FDA's questions and comments specifically related to this new device only. This has been a priority project for our team and I am pleased with our progress on generating necessary data and preparing our full response to the FDA's comments and questions. We are continuing to work towards the goal of starting the Phase 3 study in the first half of this year.

This year, we are also planning to initiate a Phase 2 study to evaluate the efficacy of VGX-3100 in patients with pre-cancerous lesions of the vulva. The current therapy for women with vulvar pre-cancer is surgery that causes disfigurement, pain and distress with an overwhelming 50% recurrence rate. Inovio's immunotherapy could potentially be the first licensed non-surgical option for women with this condition in addition to our initial cervical dysplasia indication.

Moving on to our cancer studies, Inovio and MedImmune will soon launch an efficacy trial against an HPV-caused cancer. This trial will combine Inovio's INO-3112 and MedImmune's PDL-1 inhibitor. That combination incorporates our T cell generator with Medi's checkpoint inhibitor in a goal to shrink tumors and increase survival.

I'm a huge believer in this one-two punch against cancer. First, generate a significant amount of antigen-specific killer T cells, let them infiltrate into tumors, or what is being referenced as turning tumors from "cold" without T-cells to "hot" with T-cells using Inovio's cancer vaccines, and then knock down the defensive mechanisms of the cancer cells with a checkpoint inhibitor. We think that's a powerful combination; one that can be effective in treating multiple tumors going forward. In this regard, we have already seen that INO-3112 could turn a "cold" head and neck cancer into a "hot" one in our Phase 1 monotherapy study.

Now I also want to make a point, checkpoint inhibitor therapies have been highly effective with less side effects than traditional cancer therapies. So, Bristol-Myers, first Merck and now Genentech/Roche, have approved products in this field. MedImmune's PDL-1 products should be the fourth one, and there are about half a dozen other PD-1 or PDL-1 inhibitor products in Phase 1 or Phase 2 clinical studies.

Within the next three to five years I believe the checkpoint inhibitor PD-1, PDL-1 space is going to be extremely crowded and commoditized. Moreover, except for melanoma and a handful, and small handful of other cancers, the overall response rate with all PD-1 and PDL-1 inhibitors in cancer patients across the board have been circling around 20%, strongly indicating there is a lot of room to improve, in a market still projected to be about $50 billion.

A couple of key questions from big pharma developers of the PD-1, PDL-1 inhibitors. Number one, how will you differentiate yourself when there are ten other players with similar checkpoint inhibitors? Number two, how will you try to improve beyond 20% efficacy threshold? I think MedImmune already answered these questions by combining with Inovio's 3112 cancer vaccine with the goal of more capably generating hot tumors and increasing the overall effectiveness of checkpoint inhibition.

So, Inovio will also play the other side of this strategy. We will partner our antigen-specific therapies with multiple checkpoint inhibitor manufacturers, the first being with MedImmune.

To that end, I want to speak further about INO-5401, which includes a powerful new combination of multiple cancer antigens. The National Cancer Institute highlighted these antigens, WT1, hTERT and PSMA, among a list of attractive antigens for cancer immunotherapy development with WT1 at the top of the list.

Molecular Therapy recently published our preclinical data showing that our SynCon WT1 antigen broke tolerance in multiple animal species. Immunized mice exhibited smaller tumors and prolonged survival in a tumor-challenged study. We previously reported similar results for our SynCon hTERT and PSMA cancer antigens. We believe this product, which combines all three antigens, INO-5401 has the potential as a universal cancer immunotherapy against multiple cancer types in combination with different checkpoint inhibitors.

I expect that in the first half of the year we will provide more details about our planned Phase 1/2 immuno-oncology combination study with INO-5401 and a checkpoint inhibitor. I also expect that in 2017 you will hear from us about additional clinical collaborations with other checkpoint molecule developers to advance our immuno-oncology strategy.

Staying on the topic of collaborations, let me speak further about business developments. Last month Inovio entered into a collaboration and license agreement providing China's ApolloBio Corporation with exclusive rights to develop and commercialize VGX-3100 within Greater China. This deal is worth up to $70 million in upfront, milestone and equity payments, and includes all development cost for this market and double-digit royalties. We are very pleased to have this valuable opportunity to pursue what is perhaps the world's largest under-developed market for this type of product with a highly capable partner.

On the cancer front, I believe our cervical dysplasia efficacy data plus preliminary head and neck cancer T cell immune response data strongly positions Inovio for new collaborations particularly for combination therapies. We are working toward more relationships of this nature.

On the infectious disease side of things, the receptivity of our MERS and Zika vaccine data at CEPI really highlights where we are at. Our data stands out, our technology and products stand out. As referenced recently in an *MIT Technology Review* article, the newly formed CEPI, which has already raised almost $500 million, aims to use synthetic DNA vaccines as part of their approach to emerging potential pandemics. Inovio is the undisputable leader in DNA vaccines and we have offered our services to help achieve this promising organization's ambitious goals.

Now, we're going to turn to Peter, our CFO, for a financial update.

Peter Kies - Chief Financial Officer
Thanks, Joseph. This has been a growth year for Inovio. Our headcount increased from 150 employees at the beginning of 2016 to 260 as of the end of February of this year. This growth was primarily in our R&D, engineering and manufacturing groups. These steps increased our operating expenditures and for the year our net operating burn was just over $62.5 million.

We will continue to benefit from many Inovio products being advanced with the benefit of non-dilutive third-party funding, and we will continue to seek these types of relationships that contribute both human and financial resources.

During the year, the company sold 658,748 shares of its common stock under its ATM sales agreement for net proceeds of $6.3 million with an average price of $9.75 per share.

As of December 31st, cash and cash equivalents and short-term investments were $104.8 million compared with $163 million as of December 31, 2015. As of December 31, 2016 the company had 74.1 million shares outstanding and 82 million fully diluted.

We anticipate under our recently established collaboration with ApolloBio Corp, and in conjunction with the clinical hold lift, payments to Inovio of $15 million consisting of an upfront signing fee, plus up to $35 million in equity investment will be completed by the end of the second quarter.

Joseph, back to you.

J. Joseph Kim - Chief Executive Officer
Thanks, Peter. Sorry, everyone, for our technical difficulty here. But the key point I want to leave you with is that we and our DNA-based immunotherapies and vaccines are in the conversation around the table at big pharma giants, government medical groups and NGOs. We are in those conversations because of our data, because of the development milestones we reached and because we fit well with other emerging technologies like checkpoint inhibitors to increase their power to fight disease and raise their response levels and to potentially save more lives. This has always been Inovio's primary mission. With the accomplishments of the past six months as well as what we expect in the next six, I believe we will have a vital critical mass of development positioned for many new successes.

Thank you for your attention. I am pleased to take any questions that you may have.

Operator
Thank you. At this time we will be conducting a question-and-answer session. [Operator instructions]. Our first question comes from Tom Shrader from Stifel. Please go ahead.

Q: Hi, Joseph and team, this is Alex Schwartz filling in for Tom Shrader. Congrats on the continued progress. I had a few questions, if you will. So far I know you have reported some good immunogenicity data with your first Zika vaccine trial, transitioning to your additional Zika vaccine trial in Puerto Rico. What endpoints are you going to report? Looking at prior attempts with Dengue vaccines and other related Zika viruses, is there any sense of what good data might look like this early in clinical development?

J. Joseph Kim - Chief Executive Officer
Yes, Alex, thanks for the questions. Certainly, our first 40-subject study in North America, we had 100% response rate, so I guess that I think had a very good endpoint and immune responses report. We also expect to see in our Puerto Rico study, which is designed slightly differently with 80 persons receiving our vaccine and 80 getting placebo and it's randomized in a highly endemic area in the island of Puerto Rico, we have an exploratory endpoint, in addition to our normal typical Phase 1 endpoints of immune responses and safety, of efficacy.

So it's been powered to have an early look into efficacy. So as you said, Alex, we expect our Zika program to continue to remain at the first. We were the first vaccine to go into the clinic. We were the first through the FDA and we were the first to report positive, 100% data from our clinical studies, and we continue to look at our clinical program as the first to perhaps get an exploratory look into an efficacy of this vaccine. There are other hybrid work that we're also doing, such as being able to take the patient serum with positive antibodies and then we can put those serum into animals to have an animal Zika infection challenge study. And so these are all various exciting data points that we could report in the coming year.

Q: Two more questions if you will, the first one, you may have talked about this but with the technical difficulties maybe I didn't hear it. With the combination trial of INO-5400 and checkpoint inhibitors, have you publicly announced what indications you'll be targeting or can you talk about some trial design and endpoints you're looking at in the study?

J. Joseph Kim - Chief Executive Officer
We haven't disclosed those details about that. What we have talked about thus far is INO-5401 is comprised of WT1 and hTERT and PSMA, top three of our cancer antigens that we have in our arsenal all combined into one. We'll also add our IL-12 immune activator, as well as a checkpoint inhibitor from a partner or a collaborator from the get-go. And because WT1, hTERT and PSMA, these antigens are expressed in not just one type of cancer but multiple types of different cancers, we actually see this INO-5401 as a potentially universally adaptable cancer immunotherapy. And the first study we'll disclose them, which type of cancer we're going after and all those information will be forthcoming in the coming quarter. But that, we're so excited about that.

5401 really is for our program and our team to be swinging for the fences. We feel that we have gathered just a wealth of immune data from our clinical studies, both from the ID as well as in our cancer studies and now we are, in addition to 3112 going into combination with MedImmune, we're really very excited about INO-5401 as the major thrust into immuno-oncology by Inovio.

Q: Okay, very good. And then my last question is, on the previous earnings call, you talked about cash burn rate for 2017, it seemed pretty low and implied some financial milestones for the year. Can you talk about what milestones you're expecting this year and what potentially are you eligible to receive?

J. Joseph Kim - Chief Executive Officer
Well, obviously what we already discussed about milestones and deal revenues or money coming in. ApolloBio, we already talked about, we expect once our Phase 3 clinical hold is lifted there is a mechanism in place, an agreement that we had previously announced, where $15 million in cash signing plus milestone at the time of clinical hold lift and $35 million in equity investment from ABC. We expect to have additional product development-based milestones from MedImmune and other efforts that we have ongoing. In terms of the cash projection, we expect around $60 million to $65 million net burn in the coming year.

Q: Okay, very good. Well thanks for the additional color and congrats on the continued progress.

Operator
Our next question is from Charles Duncan from Piper Jaffray. Please go ahead.

Q: Thanks for taking my question. You have, obviously, a lot going on; it would be really great if we could tighten up these calls going forward. I'm kind of wondering if you think about what could happen in 2017, what do you think is going to be the most remarkable thing that you do, when we're talking about this in a year? I got to say that it's been a full nearly three years since your initial data in cervical dysplasia and it would be great to see that finally make some progress. But in your mind what do think is going to be the greatest achievement for the company this year?

J. Joseph Kim - Chief Executive Officer
I think the greatest achievement is getting our Phase 3 started, and I agree with you, I'm as impatient as anyone to get this great VGX-3100 product Phase 3 going. So we expect to get that started in the first half and we expect to hit the ground running with enrollments. So as the lead product and as the only Phase 3 program in the company we expect great things in the next 12 months.

On top of that there are two cancer studies that we are very excited about: 5401 that we are driving, and 3112 that MedImmune is driving. They're both efficacy studies, they're both endpoints with overall and progression-free survival built in. We think each of these programs will make a huge stand in their respective cancer indications specifically, but in more general, I think both of those, once we can impact anti-tumor and survival benefits, we'll be able to overall generally speak to the power of our T cell generating products, whether it's 3112 or 5401 or other programs that are coming through our R&D pipeline. So I think both of those studies will be very impactful.

And lastly, I think our infectious disease, both Zika and MERS, I fully expect that we'll be on our way to a Phase 2 efficacy study for Zika, and hopefully with a lot of backing of both national and global health agencies. So I'm very bullish. I think we're the only game in town in terms of Zika vaccine clinical data, and I think our data that was presented at CEPI and what we see is quite significant and impressive, and all the other things that we see. But those four things are I think are the most important.

Q: Joe, thanks for answering that question and we're still bought into the broad applicability and differentiation of the platform. But I guess back to the 3100, given the timeframe that has gone by, I agree with you it's very important as a lead candidate to get that right especially with the regulators. I'm wondering if you have had any new evolution of thought in terms of clinical trial design or could you just remind us how you're thinking about that clinical trial and is there any way to recapture some of this lost time? Thanks.

J. Joseph Kim - Chief Executive Officer
Well, we can't recapture the time that's lost. But what we can do is we are doing everything we can prior to the patient enrollment to accelerate the uptake of these sites around the globe. We're doing everything we can operationally to make sure we can hit the ground running once the hold is lifted, and this has been an all hands on effort by our team. So our regulatory clinical and engineering teams have been working very hard to get a very satisfactory complete response back to the FDA, and I have no doubt we'll be able to achieve that in the first half of this year.

Q: Is there any additional color you can provide on the nature of the complete response letter? Was it I guess kind of Gantt chart like in that required maybe some additional validation, or was it doing some kind of experimental or experimentation on the design or functioning of the device? I understand it isn't about the drug, but is it something that you're waiting to see the results from to be able to move forward or is it a more Gantt chart like?

J. Joseph Kim - Chief Executive Officer
Well what I can tell you is, and what we have shared publicly was additional information that was requested, some of those required additional testing of the device and we've been able to execute that. Obviously, we are doing everything that we can to meet all of the requests and the questions and the comments the first time, and all I can say is we have a comprehensive effort to move this forward.

There is no one else on this planet that wants to get this study started more than myself. And singularly our team has the same vision and objectives, so I'm very blessed with having a great hardworking and highly efficient team and that's going to execute as we planned. All along we said this will be, we projected that this will be our first half '17 event. And I have no doubt we will be able to hit that in the first half of this year.

Q: Appreciate that. Last question I had is regarding the device, the new device design, the way it works, any aspect of it, does that bear on any of the utility of the data that you've generated in the past? I mean how should

investors think about the predicted value of the past results, say you've generated, which we were pleased with at the time, we're going to have to dust it off to remind ourselves of that as we think about your new study? But, any way to gauge probabilities of success differently or newly with this new device?

J. Joseph Kim - Chief Executive Officer
Yes, I think the predictability between our Phase 1 and 2 device to our commercial device should be highly linear. As I previously stated in calls before, we wanted everything that interfaces with the patient regarding the needles, the delivery, pulses to be identical to previously. So the form and function of what the patient feels is the same and what the immune system of the patient sees should be the same. That's how it was designed. Everything else in the backend, including the ease of use, sophistication of automation and so on, reproducibility, the manufacturing had all of the commercial aspect issues designed into it. So I would say it's fully scalable and translatable from our previous data to going forward.

Q: Okay, thanks for taking my questions.

Operator
Our next question comes from Yi Chen from Wainwright. Please go ahead.

Q: Thank you for taking my questions. Regarding the Phase 2 trial for vulvar intraepithelial neoplasia, do you plan to initiate this trial after you initiate the Phase 3 trial of VGX-3100? What's your expected cost of this Phase 2 trial and also how big is the market for this indication out there? And, does the patient population overlap with those cervical dysplasia patients?

J. Joseph Kim - Chief Executive Officer
Really good question. First, the VIN trial is totally decoupled from the CIN trial in terms of the timing, obviously, it's the same biologic product, but the Phase 2 will be conducted with our Phase 2 device. So there's no limitations for starting that trial. So, VIN Study Phase 2 is on its own timeline. We've said that we'll start that in the first half of '17, and so that's independent of our Phase 3 CIN 2/3 trial.

Now the other part, the VIN indication, the total number of patients are smaller, it's probably about ten-fold smaller than the CIN 2/3, but it's highly identifiable market with really undesirable treatment options, which is surgery, which is highly disfiguring, painful, and stressful because of the aspects of what the surgery does to the organs. And to make that even worse, about half the patients have to go through their treatment again. So their recurrence rate is extremely high. Because the number of patients are smaller we fully expect to achieve orphan indication designation for the VIN indication here in the US and Europe and abroad. So, we think, not to take any away from our CIN 2/3 market, we think VIN is a very attractive market for us to add-on to our CIN 2/3 indication.

So, this has been our systematic approach to expand and maximize the market potential of VGX-3100. I haven't talked too much about this but we will also go into anal intraepithelial neoplasia, again highly underserved market where surgery is just unthinkable and side effects are recurrent.

So, that's our goal. We want to own—Inovio's goal is to own all therapeutic markets after the patient is infected with HPV. So in the pre-cancerous indications like CIN, VIN and AIN, Inovio will develop these markets on our own, overall, and with regional and smaller partnerships like what we're doing with ABC, in China. And then cancers caused by HPV, well there we've already partnered with MedImmune to go after using 3112 along with their checkpoint inhibitors. So, I think we will be very dominant in post-HPV infection therapeutic markets.

Operator

Our next question comes from Jason Wittes from Aegis Capital. Please go ahead.

Q: Thanks for taking my questions. Just a question on the checkpoint inhibitor trials. It seems to me as you mentioned a lot of these checkpoints are becoming somewhat commoditized and I completely understand the potential mechanism here where you could boost the effectiveness. But do you anticipate there to be any difference between one checkpoint inhibitor to another in terms of how it reacts to the vaccine or is it also a case of for labeling reasons anyone who wants to get that boost is going to have to do some kind of trial to get on the market?

J. Joseph Kim - Chief Executive Officer
Yes, Jason, very good question. We have the same question and I can't speak for the FDA or the other regulators, but I mean my scientific view of the PD-1 and PDL-1 inhibitors out there, they all work in a similar fashion, there are some distinct differences, but I think the differences are outweighed by the similarities. And what's clear is having an active T cell infiltrated in the tumor is going to be a very important prognosticator of patient's responsiveness to an overall immunotherapy. So I think it positions Inovio extremely well, whether we partner with one or two or more of these global PD-1, PDL-1 developers, we do control a very important aspect of T cell generation.

Q: Okay, that's helpful. And then you mentioned $60 million, $65 million that is net of all the milestone payments in terms of the cash burn that you anticipate for '17?

J. Joseph Kim - Chief Executive Officer
At the current time and that also is net of all the revenues from our grants and contracts and other partnership revenues that we have brought in, in the past.

Q: Okay and then you mentioned sometime in the first half you'll start the Phase 3 trial for VGX-3100. Can you just remind us again how long do you think it will take to enroll that trial?

J. Joseph Kim - Chief Executive Officer
We expect around two years all in.

Q: Okay.

J. Joseph Kim - Chief Executive Officer
And obviously, we are looking to tighten up the timeline of course.

Q: And I guess you've already kind of set the parameters for that, I think there was a question earlier about this. Was there any opportunity beforehand to potentially increase the number of sites or is that just not something that you're planning on doing at this point?

J. Joseph Kim - Chief Executive Officer
We're doing everything that's feasible under the regs for us in terms of contracting, all the paperworks are getting done. So we really will hit the road running, once the—and I say once, once the hold is lifted from this program.

Q: Okay, that's helpful, thank you very much.

Operator
Our next question comes from Jason McCarthy from Maxim. Please go ahead.

Q: Hi, Joe, another Jason. I haven't heard it in a little while and I wonder if you can give us an update on the DNA-based monoclonals, which I always found really intriguing, I think we've discussed it before, the possibility of making your own checkpoints and even using neutralizing antibodies in infectious disease. Can you give us an update of when we might see some more progress in those programs? Thanks.

J. Joseph Kim - Chief Executive Officer
Thank you, Jason. Absolutely, dMAbs are one of the most favorite development program of ours. Certainly, with all of the actions that we have in clinical studies moving into Phase 3 and moving multiple Phase 2s, at least three Phase 2s program in 2017, some of the earlier game-changing developments are getting less air time here. But I would not undersell the leaps and bounds of development that we're doing with the dMAbs. Obviously, our last Gates Foundation grant that we received in December of about $9 million between us and our collaborators was directed to making a Zika dMAb and we have other infectious disease dMAbs that we have been researching and developing through animal testing.

I expect there should be about half a dozen publications this year just pointed towards our cancer and infectious disease dMAbs, so these are significant animal models, perhaps game-changing effects in animals. And we have plans to take one of these products into our first clinical evaluation within the next 12 months, so, most likely our Ebola dMAb that's funded with DARPA funding, through clinical evaluation. But I won't be surprised if you hear more additional funding or additional development in the dMAb area. As you said Jason, this is a very hot and very focused area where you can imagine having each person being able to express their own monoclonal antibodies. We would be able to take a huge bite into this market where last year the big pharmas have sold more than $50 billion as a class of drug.

So I can tell you this, you will definitely hear more about our dMAb development in 2017.

Operator
Thank you. This does conclude the question-and-answer session. I'd like to turn the floor back over to management for any closing comments.

J. Joseph Kim - Chief Executive Officer
Well thank you very much. We look forward to all of the milestones and catalysts that I have put forward and we think this is going to be an extremely productive year. Thank you.