Stanford eCorner

The Vaxgen Story

Dr. Don Francis, *Vaxgen*

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Genentech and Vaxgen have spent a total of 20 years and $300 million on developing the vaccine, says Francis, but there is still a long way to go. Francis discusses some of the difficulties they have faced along the way.

Transcript

Okay. So, between Genentech and Vaxgen we've put about 20 years with little less than $300 million invested. And frankly, there's still a long way to go even now. Let me go through what we have done here in the timeline. You won't be able to read all of this, but Genentech is in the left-hand side when you get to this Stipula. It was Vaxgen as we move over. And the yellow here are the final vaccine products that went through Phase 1-2 and then ultimately faced this huge Phase 3 that I'll get into. Important is just on the left side of that, over the middle. And then our crew, we protected chimpanzees. We understood the science, we can manufacture theoutside the virus.

The nice thing about recombinant technology is that you can make these pieces of virus never having a live virus in your lab, which for a 100% fatal virus is a good thing. I know it for the people who received the vaccine. That's also a good thing for the people working in the lab but they don't get infected. Because for vaccines you have to grow massive amounts of virus in order to make a vaccine. So we went through using all the talent of Genentech's recombinant technology, made the outer-coat protein of the virus through recombinant technology and ultimately had to see if it would work. Now, unlike many diseases like SARS for example, which would be a very ideal target for such technology where you could use of small animals for your vaccine studies to see if the vaccine would actually protect. Unfortunately with HIV, in the evolution of the animal kingdom you have to lose your tail before you're susceptible to HIV. So, that means only the great apes and humans are susceptible. And those are tough animals to do experiments on, very expensive. But we went ahead and did our chimpanzee studies.

Chimpanzees are probably the natural source for HIV originally. They do better with it. They probably were the source in Africa, as people slaughtered chimpanzees for eating for what they call "bush meat" and probably stuck of themselves during the butchering process. And that's probably how AIDS came out of the jungle years ago. So, the chimps are the only animals you can really do vaccine experiments on. And in the early '90s, we had Genentech do the chimpanzee studies the first time in history, that we were able see that we're huge entering this challenge. We could protect against HIV infection in that model. But these are five chimps in each experiment. You don't have the large numbers of chimps. So, you can't do all the variations you'd like in terms of challenges, etc.

But we thought we could at least make a vaccine, we designed it as best as we could, and went on to do these studies in the BB vaccine, we call it in North America and Europe. And the BE vaccine trial was in Thailand and Bangkok. This is where the money came from. Genentech put about $50 million into this before we spun off Vaxgen. Vaxgen raised $130 million for its vaccine development trials, essentially the Phase 3 trials. These are 7,000 people ultimately in these trials in half a dozen

countries. And then with Celtreon, that's our manufacturing facility, there's no way to make this vaccine. If we had a successful vaccine and there's a five or six-year lead time in making a manufacturing plant. So, we got money from Korea ultimately to build a large manufacturing plant in Korea which is indeed being built as we speak. So, to be ready for the launch of the vaccine, now the plant is going to be ready and we don't have the vaccine but there's plenty of other recombinant proteins that can be used.

That's how much it costs and this is where it came from, almost entirely from private capital, a little bit from the US government. The government was not the best partner in this. And nothing from the non-government organizations which now is important because the Gates foundation is an NGO. It's going to put lots of money into this ultimately. So, this is private investors who, yes, wanted to do good in making an AIDS vaccine, but ultimately wanted to do well financially. I remember as someone totally naive and going out and raising capital thought well. There's different people in the audience and we give them the spiels. We did, probably hundreds of times with different investors and I said, "You could do good to invest in our company or you can do well financially if we're successful." And the bankers said, "No, no. You got to cut that out of your talk. These people are here for greed and they're not here to save the world," which indeed is this case for business opportunity.

So we took the do-good out and only at the end said, "You know, it's a good idea anyway," which indeed a lot of investors did. This was high-risk but it was a fun ride and continues to be.