War on Disease

IPT talks to Stanley C Erck, President and Chief Executive Officer of Novavax, about the fight against infectious diseases and what role his company is playing in the battle

How did you become involved with the vaccine market?

Our current vaccine focus arose out of a progression of companies: from early cloning of blood-related proteins, to an immunology business working on T cell receptors, and finally to concentrating on vaccines. We have targeted the vaccine market because there is a significant medical need in this area, and we have a unique technology platform that enables us to efficiently and effectively respond to both known and newly emergent diseases.

What are the main infectious diseases you focus on?

We are currently developing an F-protein nanoparticle vaccine to target respiratory syncytial virus (RSV) for maternal, paediatric and elderly populations. We also have ongoing clinical programmes that include a quadrivalent seasonal influenza vaccine and a vaccine for H7N9, an avian influenza virus with pandemic potential. Finally, we have a preclinical programme to develop vaccines for emerging threats, such as Middle East respiratory syndrome.

Stanley C Erck was named President and Chief Executive Officer of Novavax in 2011. He became a Director in 2009 and served as Executive Chairman of the Board the following year. Stanley currently sits on the Board of Directors of BioCryst Pharmaceuticals, MaxCyte, Inc and the MdBio Foundation.

What is recombinant protein nanoparticle technology?

Our recombinant technology platform is based on insect cell lines and the advanced engineering of genes to produce two different types of immunogenic nanoparticles that form the basis of our vaccine candidates:

- Virus-like particles – recombinant particles with viral matrix proteins that provide a structure onto which multiple immunogenic surface proteins can be incorporated
- Recombinant protein nanoparticles – recombinant protein micelles generally composed of a multitude of specific single-target proteins, engineered to assemble into stable nanoparticles

Is science currently winning the fight against infectious diseases?

Science has come a long way. There are over a dozen important vaccines that have reduced the incidence of vaccine-preventable diseases dramatically and some of them – such as smallpox and polio – have reduced incidence to almost zero. Despite this, we have a long way to go with existing diseases such as RSV, tuberculosis, HIV and malaria, not to mention the battle against emerging diseases. However, we do have better tools to make drugs and vaccines, and technology continues to improve.

When responding to a pandemic threat, how quickly can a solution be found?

Late last year, we were able to develop a vaccine to H7N9 and have it ready to test in the clinic a mere 91 days after the gene sequence of H7N9 was released. The results of this study were published in the December 2013 issue of the *New England Journal of Medicine*.

What would you like 2015 to bring?

Next year will be a big turning point. We expect to report data on three key RSV trials in women in their third trimester of pregnancy, paediatrics and the elderly, in addition to a Phase 2 study of our recombinant quadrivalent seasonal influenza vaccine candidate. The studies may position us to initiate our first Phase 3 clinical trial by the end of the year – the important last step before getting FDA approval.

How do you think vaccine technology will change over the next decade?

A lot of effort will go into developing a universal flu vaccine, while new approaches to malaria and tuberculosis should bear fruit. Ebola is highly visible today, representing a desperate need for vaccines and therapies to treat the infected. As an industry, we will continue to develop our ability to make vaccines targeting new viruses quickly, and with greater efficacy.