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Vaxxas' painless vaccine delivery tech fetches BioSpectrum award

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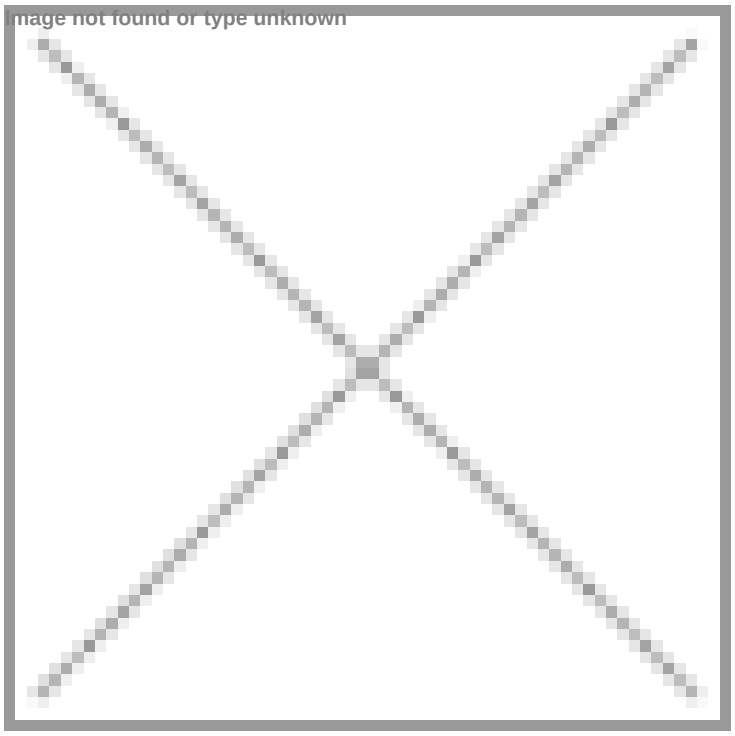
Vaxxas' painless vaccine delivery tech fetches BioSpectrum Asia Pacific Emerging Company award 2013



Prof Mark Kendall, a scientist at the Australian Institute of Bioengineering and Nanotechnology under University of Queensland, came up with the idea of nanopatch technology in 2003. The technology is an alternative to the needle-based drug-delivery systems and enables pain-free and rapid delivery of the vaccine to the abundant immune cell population below the skin surface.

Turning his idea into innovation, he developed this technology for the animal vaccine model. UniQuest led the initial commercialization of the Nanopatch technology prior to the creation of Vaxxas in 2011 and raised A$15 million from a strong group of venture investors, including OneVentures, Brandon Capital, Healthcare Ventures, and the Medical Research Commercialisation Fund.

Projecting confidence on the new vaccine delivery technology, Merck is working with Vaxxas to further evaluate the benefits of the nanopatch and proceed towards clinical development of antigen. The collaboration is intended to evaluate Vaxxas' Nanopatch platform that induces robust immune system activation by targeting vaccine to the immunological cells.

"Nanopatch has tremendous potential to improve the performance of a wide range of existing and new vaccines. Vaxxas plans to work with the world's leading pharmaceutical companies to enable efficient delivery of their vaccines via the nanopatch," says Prof Kendall, now the chief technical officer and director of Vaxxas, Australia.

Vaxxas' business model is to work with vaccine producers and license the Nanopatch technology. "In this way, we believe the technology has the best potential to be broadly used across many different vaccines, reaching and benefiting the largest

number of people," he adds. The technology is currently in pre-clinical development and is expected to be ready for use in clinical trials as early as 2015.

The technology

Nanopatch is a small silicon patch (1x1cm) that has thousands of projections of 200-to-300 microns in length and invisible to the naked eye. Vaccines are applied onto the nanopatch in liquid form and then dried down, leaving the active components in a thermostable form on the tips of the projections.

The manufactured patches are coated with a formulation containing the vaccine. Coating method is optimized to be scalable and efficiently apply coating formulations rapidly with minimal wastage.

Nanopatch is applied using a small spring loaded applicator that "taps" the nanopatch onto the skin. The nanopatch is left in place for two minutes and then removed. During the application process, the vaccine antigens are deposited directly in contact with the very dense population of immune cells that reside just below the surface of the skin, provoking a very potent immune response.

In a wide range of preclinical studies, it has been shown that the nanopatch is so efficient in activating the immune response that as little as 1/100th of the dose delivered by nanopatch can result in the same immune response as "full" dose by intramuscular injection.
Moreover, it is induced with dry-coating technology that eliminates the need for vaccine refrigeration during storage and transportation, removing the resource burden of maintaining the cold chain.