

Sir Mark Oliphant Conferences 2008: Frontiers of Science & Technology Vaccine and Immunotherapy Technologies

The Shine Dome, Canberra, Australia, 9–11 April 2008

MEDIA RELEASE

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NEW DEFENSES AGAINST AN OLD ENEMY

An Australian research team has made encouraging progress in developing new vaccines for tuberculosis (TB) – a disease which affects up to 20 million people worldwide, and kills almost 2 million every year.

The team at the Centenary Institute, led by Professor Warwick Britton, has developed two promising new vaccine approaches; one to improve protection against TB in previously-vaccinated adults, and a new vaccine to protect infants.

Professor Britton will outline the latest Australian advances in the global war on TB at the Sir Mark Oliphant Conference on Vaccine and Immunotherapy Technologies in Canberra tomorrow.

While BCG (*Bacillus Calmette-Guérin*) vaccine has been used for almost 90 years, there are some parts of the world where TB and other mycobacterial infections are rampant and BCG gives little or no protection, Prof. Britton says.

One approach to improving the effectiveness of BCG given to infants is to boost its effect in adolescence or adulthood with a non-viable recombinant vaccine. This uses knowledge of the genome of the tuberculosis bacterium to select fragments of the TB organism which can stimulate the immune system. These can be given as a safe non-living vaccine in regions with a high HIV prevalence.

To increase its effectiveness they have combined this vaccine with a cytokine which is one of the body's natural cell stimulants. This primes particular immune system cells called dendritic cells, which in turn trigger the kill T-cells to do their job of eliminating TB infection in the cells it has invaded.

In a second line of research, the Centenary Institute team are developing an improved BCG vaccine to use in infants. This recombinant BCG produces a cytokine which can increase the strength of the immune response against the TB organism.

“When this recombinant BCG was given intranasally, it resulted in a marked increase in protection against *M. tuberculosis* in the lung, as well as reduced parts of the body,” Prof. Britton says. This means that as well as killing off the TB organisms in the lung more

effectively, it reduces the risk of the disease spreading to other organs of the body, where its impact can be lethal.

It is estimated that two billion people - a third of the world's population - have been exposed to TB at one time or another, some of whom remain latent carriers of the disease. Of these, one in ten go on to develop TB, adding around 9 million new cases a year.

TB has developed resistance to many of the drugs commonly used to control it and is now on the increase again in both the developing and developed worlds.

The Sir Mark Oliphant Conference on Vaccine and Immunotherapy Technologies is being held at the Shine Dome, Canberra, from April 9-11, 2008.

The Conference is hosted by Australian Academy of Science (AAS) and the Australian Academy of Technological Sciences and Engineering (ATSE) and sponsored by the Department of Innovation, Industry, Science and Research (DIISR).

Media are welcome to attend and interview participants.

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<http://www.oliphant.org.au/april2008.html>