

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

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HERBAL WEAPONS IN WAR ON SARS

Natural Chinese herbal medicines may form part of an arsenal of potent new weapons being developed by science in a bid to check future outbreaks of SARS.

SARS – severe acute respiratory syndrome – gave the world a fright in 2002/03 when it caused 8000 infections and 774 deaths, and threatened to become a pandemic.

Despite much progress in understanding the mysterious coronavirus that causes SARS, there is still no effective way of stopping it, Professor Zihe Rao, president of Nankai University, Tianjin, China, will tell the Sir Mark Oliphant Conference on Vaccine and Immunotherapy Technologies in Canberra today.

“The simplest reason for the lack of an effective treatment against the SARS virus is that it is no longer viewed as a threat. SARS disappeared just as quickly as it emerged and no longer poses a problem to human health,” Prof. Rao says. “However, we should not be complacent and rule out the possibility that SARS (or another related coronavirus) will emerge in the future. We still don’t fully understand how the SARS virus works.”

Prof. Rao’s research group is working to understand the virus at the atomic level, so as to design a drug that will prevent it reproducing – an important goal, given the difficulties so far encountered in producing an effective vaccine against SARS.

In a unique fusion of 21st century molecular science with Chinese traditional medicine he and his team are seeking to design potent inhibitors of the virus’s ability to replicate – or copy itself in human cells – and are combing their library of traditional herbal medicines in search of suitable candidate compounds.

“Our library of natural mixtures consists of traditional Chinese medicine, herbs and other natural products. Traditional Chinese medicine is an integral part of Chinese history and culture, and we are hoping to use our library to develop a new generation of Chinese medicine derived from natural sources,” Prof Rao explains.

He adds that there are a number of challenges to developing an effective vaccine against SARS, making the alternative – design of a suitable drug to stop it – important.

“These challenges include the frequent rate of virus mutation, the high variability of coronaviruses and their ability to jump species, and the apparent pathogenic interactions between the virus and the host immune system. Science also has to observe high safety standards which rules out some approaches, such as deriving a vaccine derived from a live but weakened virus.”

Prof Rao will explain how his team is using an approach called "structure guided drug therapy" which uses the atomic structure of proteins, the building blocks of a virus.

“If we know the atomic structures of the proteins in a virus, we can understand how the protein works and we can then design compounds that effectively stop the protein from functioning. These compounds can be developed into drugs that block the virus’s ability to replicate – and so stop it from spreading.”

While several groups worldwide are continuing to work on developing a vaccine for SARS, Prof. Rao believes that, given the enormous number of people to be protected in the event of another outbreak, it is equally important to have drugs which can fight the infection.

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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