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## MRC and Singapore's A\*STAR unite to fight infectious disease



25 May 2010

The Medical Research Council (MRC) and Singapore's Agency for Science, Technology and Research (A\*STAR) have today announced a £2.2m (\$\$4.5m) investment to fund six collaborative research projects tackling infectious diseases such as gastric flu, hepatitis B, dengue fever and tuberculosis. Each project aims to contribute towards developing a treatment, vaccine or antimicrobial product to address these infections.

The Joint Grant Call is the first to be held under the A\*STAR-MRC Collaborative Research Fund, which was established in 2008. The programme aims to promote R&D collaboration between UK-based public institutes and Singapore public sector research organisations through joint scientific projects in areas of common interest and is an important part in accelerating progress in international health research.

Wendy Ewart, Director of Strategy for the MRC said:

*"Supporting this breadth of research will tackle some of the most deadly diseases in the world that kill millions of people each year. From pioneering new treatments to unlocking the genetics behind these diseases, this international partnership will fund the highest quality science to deliver a wealth of knowledge. It's through international collaborations such as this one, that we can accelerate our understanding to develop future treatments and ultimately save thousands of lives."*

Executive Director of A\*STAR's Biomedical Research Council, Prof Lee Eng Hin said:

*"We are pleased and excited to announce the results of our first joint grant call with MRC. The awarded projects in highly relevant areas of infectious disease are a result of collaborative efforts between teams with Singapore and UK's top capabilities in both biomedical and engineering research. By bringing the two communities together, we aim to accelerate knowledge creation with the goal of treating, eradicating and preventing infectious disease, and improving human health."*

## Research awarded

- *Outsmarting bacteria that cause gastric flu in young and old*

Under one grant, researchers from A\*STAR's Institute of Medical Biology (IMB) and UK's Imperial College London aim to shed light on the signalling pathways employed by two rogue strains of the gut bacteria *Escherichia coli*. One strain is the leading cause of infantile diarrhoea, morbidity and mortality in developing countries, while the other is predominantly in developed countries and can cause gastroenteritis (better known as 'gastric flu') to which the young, elderly and those with reduced immunity are most at risk.

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IMB Principal Investigator, Dr Sohail Ahmed said:

*"There are currently no vaccines or specific treatments against such bacterial infections. HUS patients may require dialysis and in severe cases, kidney transplantation. Better understanding of the bacteria and their means of infection is thus essential for the development of specific and effective treatments. Working together with Imperial College, our team will use an award-winning infection research model to identify proteins and signal transduction pathways targeted by specific virulence proteins produced by the rogue bacteria, and thus elucidate their infection strategies."*

- *Training immune cells to outlast viral infections*

Another grant is targeted at redirecting the body's T cells to overcome tolerance in chronic hepatitis B infection. Hepatitis B remains one of the top ten killers in the world today, causing around a million deaths every year from chronic liver disease. A vaccine exists, but is of no use to the 400 million people estimated to already be chronically infected. There is also no effective drug therapy for the end-stage complications of liver failure and liver cancer. Researchers from A\*STAR's Singapore Institute of Clinical Sciences (SICS) and UK's University College London will work collaboratively.

The SICS Principal Investigator, Dr Antonio Bertoletti said:

*"Our goal is to develop a treatment for hepatitis B virus infection by harnessing the natural ability of T cells to control this virus. Hepatitis B patients have very few T cells left that can fight the virus in the body, so we will genetically engineer their T cells to regain their ability to fight. We will look into how effectively these genetically engineered T cells combat the hepatitis B virus in the liver by mimicking this situation in vitro and in vivo. Our findings will provide valuable information for the potential application of this approach to hepatitis and other chronic infections and tumours."*

The other projects awarded funding are:

- Collaboration between National University of Singapore and University of Liverpool to study and optimise the interaction between drugs used to treat tuberculosis and HIV, which are commonly co-inherited diseases
- Collaboration between A\*STAR's Singapore Immunology Network and Imperial College London to examine the interplay between regulatory T cells and the *Streptococcus* bacterium
- Collaboration between Singapore's Nanyang Technological University and UK's National Institute for Medical Research to investigate how the malaria-causing *Plasmodium* parasite evades the immune system
- Collaboration between National University of Singapore and University of Birmingham to study how multi-antibiotic resistant bacteria responsible for hospital-acquired infections actively pump out drugs from their interiors

Ends

For more information, please contact:

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