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Multi-action antibiotics to treat chronic biofilm infections Six Month Progress Report – March 2016

In August 2015, the Trustees for the Australian Cystic Fibrosis Research Trust (ACFRT) signed a contract with the University of Wollongong (UOW) for a research project called – ‘*Multi-action antibiotics to treat chronic biofilm infections*’. The ACFRT has committed \$588,687 to fund the project over three years.

Bacterial biofilms (e.g. *Pseudomonas aeruginosa*) often build up in the lungs of people with cystic fibrosis. The biofilms contain large populations of bacterial cells that are encapsulated within gum-like materials.

These biofilms protect bacteria against the action of antibiotics and the patient’s immune system, resulting in an increase in bacterial resistance of up to 1000-fold.

The Chief Investigator for the Project is Associate Professor Michael Kelso from UOW. He and his research team were the first to discover that low concentrations of nitric oxide (NO) act as a signal that triggers bacteria in biofilms to disperse.

When dispersed, the bacteria become more sensitive to antibiotics and to the body’s immune system. By combining the use of NO-releasing compounds with antibiotics, they developed a new way of targeting the delivery of NO to biofilms.

Over the last six months, the researchers have almost completed the synthesis of six target drugs (NO-donor cephalosporins). These will soon undergo comprehensive evaluation through collaborators at Nanyang Technological University (Singapore), University of Southampton (UK) and the Centre for Drug Candidate Optimisation (Monash University) for their microbiological/antibiofilm activities and drug-like properties.

For more information, please contact Cystic Fibrosis Australia on (02) 9889 5171 or via general@cfa.org.au