

Groundbreaking, lifesaving TB vaccine a step closer

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Researchers at Aberystwyth University, following a number of years of investment by the Biotechnology and Biological Sciences Research Council (BBSRC), have licensed ground-breaking research to a non-profit product development partnership working to develop new, more effective vaccines against Tuberculosis (TB). This development will give hope that significantly better prevention and treatment of TB will be available within the next few years.

The Aeras Global TB Vaccine Foundation, which was founded to develop new, cost-effective TB vaccines for use in the developing world, has licensed a discovery of a protein that is able to 'wake up' dormant *Mycobacterium tuberculosis* bacteria that cause TB. The research and the fundamental knowledge that came out of it could be used to develop a vaccine that either stops infecting TB bacteria from taking hold or, for the one in every three people world-wide who are already carrying a latent TB infection, prevents dormant bacteria from 'waking up'. Another possible strategy could be to deliberately 'wake up' dormant bacteria in a controlled way so they can be destroyed with antibiotics.

In the late 1990s, researchers funded by BBSRC discovered a new family of proteins that were able to resuscitate bacteria found harmlessly in and around the human body. When 'awoken' from dormancy the bacteria were then much more susceptible to attack from antibiotics. The team led by Professors Mike Young and Doug Kell at Aberystwyth University together with Prof Arseny Kaprelyants of the Bakh Institute of Biochemistry, Russian Academy of Sciences, Moscow, identified the

gene in the bacterium that produced the protein and went on to discover the corresponding genes in *M. tuberculosis*. This research has now been licensed by Aeras after years of development. Aeras plans to take its recombinant BCG (AERAS-407) vaccine, based in part on the Aberystwyth work, to clinical trial in 2009.

Prof Young, now based in Aberystwyth University's newly formed Institute of Biological, Rural and Environmental Studies, said: "Current TB treatments can go on for over six months and can still leave bacteria in the body that can cause the disease when they resume active growth and multiplication. Our discovery, which is now being developed into a vaccine, might help prevent the establishment of persistent infections in the first place or, alternatively, it might prevent persisting organisms in individuals with latent TB from reawakening at all.

"TB kills around 1.7 million people around the world every year. I hope that our research will now be rapidly translated into a vaccine that can help as many of these people as possible."

Dr Alf Game, BBSRC Deputy Director of Research, said: "This discovery came out of research in the basic biology of a different bacterium. It shows that we need to strive to understand the fundamental workings of the world around us and from that we can identify how to tackle challenges, such as dangerous diseases, that we all face."

Source: Biotechnology and Biological Sciences Research Council

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