Developing an anthrax vaccine

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A team of University scientists are leading new research to develop a vaccine against anthrax to help counteract the threat of bioterrorism.

Working with scientists from the Republic of Georgia, Turkey and the USA, Professor Les Baillie, School of Pharmacy and Pharmaceutical Sciences, is leading a NATO project to tackle the potential misuse of anthrax.

"Currently the majority of the world’s population is susceptible to infection with Bacillus anthracis the bacterium which causes anthrax," according to Professor Baillie, who leads the multi-national research collaboration.

"The US postal attacks in 2001 highlighted the vulnerability of civilian populations and brought home the need to develop effective, rapid, robust medical countermeasures to combat the threat posed by terrorist use of this organism," he added.

It is the growing concern over the threat posed by bioterrorism that has promoted world authorities like NATO through its Science for Peace and Security Programme to support efforts to develop more effective vaccines and medical countermeasures.

Efforts have so far been hampered by the fact that cases of naturally acquired human infection are rare in NATO countries. As a consequence, researchers have been forced to employ animal models to develop new vaccines.

The problem with this approach is the immune responses of animals and humans differ and as a consequence human clinical trials represent an essential element in confirming the efficacy of any new vaccine.

Such trials require access to several thousand volunteers at risk of infection and as such would be almost impossible to perform in Western Europe or the US.

In contrast anthrax represents a significant disease of animals and humans in the Caucasus and Central Asia. For this reason researchers from the UK and US have joined with colleagues from Turkey and the former Soviet republic of Georgia to tackle the problem.

Professor Baillie added: "These unique resources, combined with the expertise of NATO researchers offers us an unparalleled opportunity."

The outputs of this study are expected to underpin the development of future vaccines capable of conferring broad-spectrum, robust protection following minimal dosing.

Such vaccines would impact on two levels, locally they would directly improve the life of workers at risk of contracting anthrax such as farmers, and globally they would contribute to the protection of citizens from the use of anthrax as an agent of bio-terrorism.

An additional benefit of this work will be the establishment of a research centre in Georgia which will support infectious disease research and ultimately improve the lives of all of the people in the region.

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Caucasian connection could help find anthrax vaccine

by Katy Edgington
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Researchers from the United Kingdom, the Republic of Georgia, Turkey and the United States are combining their skills and resources in a new project aimed at finding a vaccine for anthrax. This multinational research project is funded as part of NATO’s Science for Peace and Security Programme to look at ways of tackling the bacteria that has been used in the past as a lethal bioweapon.

Members of the team are hopeful that the technology and expertise shared with collaborators in the Caucasus will contribute to the development of stronger scientific infrastructure in Georgia, and provide a basis for tackling other pressing infectious disease issues there in the long run.

Leader of the study Professor Les Baillie, from the School of Pharmacy and Pharmaceutical Sciences at Cardiff University, spoke to ScienceOmega.com about the nature of anthrax infection and the difficulties presented by the attempt to find a more effective human vaccine...

How does anthrax infect and affect the human body?
The commonest route of infection by anthrax is from infected animal products. It primarily affects cows, but goats and various other domestic animals can also be infected. They contract the disease and die, but the spores can linger on animals fur and meat and can be passed on to people that handle them. These spores are very resistant and long-living. Anthrax can survive for decades, if not hundreds of years, posing a continual risk.

There are other forms of infection, too. In the United Kingdom there is currently

Most vaccines are developed by commercial companies to make money. Although anthrax is a terrible disease that can be tragic for those who contract it, it’s a relatively rare disease and, as a consequence, there is no real market for a vaccine. Professor Les Baillie