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Vaccines protective against diseases caused by antibiotic-resistant bacteria: A pressing challenge to vaccinologists

Since the publication of a WHO report on the threat to public health of antibiotic resistant bacteria (April, 2014) newspaper editorials and articles have been redolent with echoes of this imminent threat. These, as well as reports on this topic by the WHO and the CDC in the USA, have singularly failed to recognise that vaccines constitute the most cost- effective defence against this emergent situation.

The question is: why?

Some 90%+ of the money for R&D in the healthcare sector is spent on seeking therapeutic solutions to the alleviation of existing pain and disease. So there is an inbuilt bias to seek to adapt existing approaches to pathogenic bacteria based on the use of antibiotics as these have been close to miraculous. The question then becomes - how do we move from where we are to a new paradigm for antibiotic discovery and use? The stock answer to the emergence of antibiotic resistant bacteria is to blame the overuse of antibiotics so it becomes necessary to limit and regulate the way in which antibiotics are deployed. Another response is to discover more and more effective, antibiotics. Others have considered the dropped concept of using Bacteriophages while yet seeking solutions in the molecular biology of the bacterial invasion process and the methods the bacteria use to become antibiotic resistant. There are even appeals for a change to the regulatory environment and to take special measures to encourage industrial efforts to be reinvigorated. There is an alternative way to proceed. This would require a major investment in the R&D that leads to new and more effective vaccines that can protect individuals for much of their lifetime against pathogenic bacteria. Several new, dedicated, publicly funded and state-of-the-art Institutes have to be founded, built and staffed with the brightest and the best vaccinologists. And these Institutes should be guaranteed financial support for over 20 years in the first instance. The author's presentation will examine, the reasons for, and the method of implementation, of this proposal in more detail

Biography

Ray Spier, having been educated at Christ Church, Oxford and University College, London in Biochemistry (First Class Honours), Chemical Microbiology and Biochemical Engineering, spent 7 years as a Senior Process Engineer in industry. On returning to the UK he worked for 10 years at the Animal Virus Research Institute, Pirbright, scaling-up bioreactors for virus vaccine production processes and maximizing the biological productivity of the BHK cell lines for Foot-and-Mouth Disease virus generation. He then moved to the University of Surrey as Professor and was Head of Microbiology (7 years) and was then (1997) appointed to the first chair in the UK in 'Science and Engineering Ethics'. His publication record includes over 200 research papers and reviews along with over 20 edited books and an encyclopedia on animal and plant cell culture technology. In 2002 his book 'Ethics Tools and the Engineer' was published by CRC Press. He is currently the Vaccine Series Editor in Chief, and Editor in Chief of Vaccine Research Quarterly, Procedia in Vaccinology, Trials in Vaccinology and 'Science and Engineering Ethics'. Having founded the European Society for Animal Cell Technology in 1975 and the International Society for Vaccines in 1996 (President: 2007-11), he was elected to be President of the European Association for Higher Education in Biotechnology in 2000.

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