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Rise of the Arboviruses

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Abstract

A large group (>700) of enveloped RNA viruses, transmitted primarily (but not exclusively) by Arthropod vectors (mosquitoes, sand-flies, fleas, ticks, lice, etc.) are collectively known as 'Arboviruses'. They include the genera Alphavirus and Flavivirus, responsible for many of the 200+ diseases that affect humans worldwide. Diseases such as dengue fever, West Nile and Equine Encephalitis for example. These diseases are showing resurgence of late and are spreading from their traditional endemic areas to Europe and the Americas.

There are several postulates to explain this spread. Global travel and human alterations to the environment, such as rapid urbanization, are helping to fuel some infectious diseases outbreaks. Attempts to eradicate the vector have so far proven unsuccessful and then there's climate change. As the weather warms, especially in the tropics, the mosquito is able to thrive and expand its potential range. A 2008 report by the Lowy Institute in Sydney estimated that by 2085, more than half the world's population will be living in areas that are at risk for dengue fever, far greater than today. With the exception of dengue fever, most arboviruses have a zoonotic phase where the virus resides in an animal host such as birds before infecting the insect vector. This protects the virus and increases its range of transmission. In general, vector-borne diseases like malaria and dengue and West Nile Virus could become more prevalent as the weather warms and the winters that once stopped these mosquitoes cold become less of a barrier.

Biography

Malcolm Thomas is president and CEO of Arbovax, a biotechnology company commercializing a unique and innovative platform technology that can be used to make vaccines against insect-borne viral diseases. The company is currently working on Dengue Fever and Chikungunya vaccines. Prior to Arbovax he was Vice President of Operations for StemCo Biomedical and before that, was Director of International Marketing for Bayer Biologicals and Vice President of Pacific Rim Operations for Becton Dickinson Biosciences. During his tenure with Becton Dickinson as Vice President for Asia Pacific he lived in Singapore for 5 years. He started his working life as a research scientist in the biochemistry department of the Wellcome Research Laboratories in the UK.