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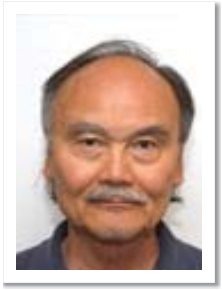

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Past, present, and augmentation of current vaccines for select category A/B pathogens

Events in the last several decades have brought into focus the need for preventive countermeasures against the possible exposure to biological agents that impact not only the physical state of the individual but imparts a lasting psychological fear in the general population. More recent events have demonstrated how easily one biological agent was used to affect our lives and has been part of an initiative to re-examine what type of countermeasures can best be used to protect us after exposure to a biological agent. With the possibility of the appearance of a newly genetically engineered biological agent or unexpected spread of an obscure emerging pathogen, it may take a multidisciplinary approach to control the immediate and long-term consequences of the pathogen. Whether it is important to emphasize the development of prophylactic countermeasures, postexposure therapeutics, new diagnostic identification procedures or rely on all three avenues for better protection against biological agents might be debatable; nevertheless, prophylaxis vaccination has been successfully used against many infectious diseases acquired by humans. We will present the current status of vaccines against select Category A/B bacterial pathogens (*Bacillus anthracis, Yersinia pestis, Francisella tularensis, Burkholderia mallei, and B. pseudomallei*), what type of platforms and adjuvants are being used, what possible future candidate vaccines are being considered, and what animal models are being used to measure efficacy of the vaccine. In addition, because of an increase in the understanding of the host response to infectious biological agents, specifically how the innate immune response can directly affect the acquired immune response, we can use this information to augment the immune response of the host to candidate vaccines. Some examples of how stimulation of the innate immune response to the vaccine increases their efficacy will be presented.

Biography

Dr. Amemiya obtained his B.S. and M.S. at Long Beach State University in Microbiology. He received his doctoral degree at Rugers University in Microbiology in 1973. He went to Albert Einstein College of Medicine, Bronx, NY, to do post-graduate studies in the cell-cycle of the diphasic bacterium Caulobacter crecentus and studied gene regulation during development in the laboratory of Lucy Shapiro. Later he went to the National Institute of Neurological Diseases and Stroke in 1986, where he examined gene regulation in JC virus, which is a human polyomavirus associated with the demyelinating disease progressive multifocal leukoencephalopathy in immune suppressed patients. In 1999, he went to the U.S. Army Medical Research Institute of Infectious Diseases, Bacteriology Division, where he has been involved in vaccine development and the immune response to candidate vaccines of glanders and plague. His primary interest has been with adjuvants and the innate immune response to vaccines in animal models.