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Inducing cross-reactive responses

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Vaccines that exert their effects solely through the induction of highly specific neutralising antibodies can be effective but their benefit diminishes in a scenario of vaccine mismatch or if a new subtype of virus emerges. Cross-protective responses, such as those invoked and continuously boosted by natural infection, probably account for why most individuals experience clinical influenza on only a few occasions during their lifetime in response to antigenically drifted influenza strains. Cross-reactive immunity may also provide some protection against severe illness following infection with virus of a novel subtype. Current split virus vaccines induce very little if any cross-protective immunity against heterologous subtypes of virus and vaccine strategies that enable such responses would represent a substantial improvement. Proof of principle studies using two different strategies that potentially induce both highly specific neutralising antibody and heterosubtypic immunity in the form of cross-reactive cytotoxic T cells will be reported. The first of these is delivery of live virus by a non-productive route and the second is delivery of split virus vaccine in combination with an epitope-based TLR2-containing component. The "dose-sparing" effects of such vaccines will be discussed as well as the influence of routes of inoculation on the balance of antibody versus cytotoxic T cell immunity and the potency of the viral clearing response.

Biography

Lorena Brown is a Professor at the University of Melbourne and at Hokkaido University. She is a Lecturer in Virology to students of Science and Medicine and also heads a laboratory dedicated to understanding and controlling influenza. Her work is focused on researching and evaluating new vaccines designed to combat both seasonal and highly lethal avian strains of influenza, including vaccines that induce cross-reactive T cell responses. Along with a combined expertise in immunology and basic virology, her teamed is skilled in molecular virology techniques, which are used to understand the detailed replication of influenza virus and disease pathogenesis.

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