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Development and assessment of multivalent recombinant vaccines for bovine respiration disease

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Bovine respiratory disease (BRD) is the most important cause of morbidity and mortality in intensively finished cattle in the world. The total economic losses attributed to BRD have been estimated to exceed US\$1 billion annually. The disease has a complex aetiology involving a range of viral and bacterial pathogens, animal factors and environmental conditions all contributing to BRD development. It has been demonstrated that prior exposure to specific pathogens can reduce the risk of cattle developing BRD which suggests that vaccines could play a role in ameliorating the impacts of this disease. However the range of pathogens implicated in BRD presents significant challenges in the development of effective vaccines. Currently there are four viruses and three bacteria commonly implicated in BRD development. Furthermore the meaningful assessment of vaccine efficacy in the context of such complex disease aetiology can also be problematic. To address these issues the development of multivalent live viral vaccines has been undertaken using a bovine herpesvirus 1 infectious clone to deliver antigens from other BRD pathogens. In addition the capacity of these prototype vaccines to protect cattle from BRD are being assessed in biphasic multi-pathogen challenge models to more accurately assess field efficacy. The progress towards achieving these goals and ultimately improved control of BRD will be discussed.

Biography

Associate Professor Mahony received his PhD in molecular biology from James Cook University. He is a molecular virologist who joined the University of Queensland in 2010 after 15 years working with the AgriScience Queensland. Associate Professor Mahony's research interests include the characterisation of animal pathogens and how they interact with their respective hosts. By better understanding disease development his research is improving disease prevention and management in livestock industries. His research has been published in international journals and has been subjected to patenting. A/Prof Mahony currently leads research projects developing vaccines for bovine respiratory disease and cattle ticks.

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