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Development of vaccines to control chlamydial infection and disease : Are we making any progress ?

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Abstract

Chlamydia trachomatis continues to be the most commonly reported sexually transmitted bacterial infection with more than 100 million new cases diagnosed annually. These acute infections translate into significant downstream health care costs, particularly for women, where infertility and pelvic inflammatory disease are the most serious sequaele. While it is accepted that a successful vaccine should preferably reduce infection levels to below that required for transmission, a vaccine that can prevent the adverse pathology is also required. Our laboratory has used the mouse / *C.muridarum* model to show that, using the major outer membrane protein, MOMP as the vaccine candidate, subcutaneous, transcutaneous, intranasal, oral and even sublingual routes of administration all result in significantly reduced infection burdens, reduced length of infection and most importantly, reduced pathology in the upper genital tract. Recent results however are showing that the vaccine preparation that produces the best reduction in infectious load does not necessarily result in the best reduction in pathology score. The key cytokine responses that underpin each type of protection are now beginning to be elucidated. The mouse / *C.muridarum* model has a weakness in that it is not a natural infection model. Work with a multi-MOMP vaccine against natural *C.pecorum* infections in the koala model is showing considerable promise and may point to key differences between natural immunity and vaccine induced immunity. Overall, while still remaining a major challenge, the development of a successful *C.trachomatis* vaccine is starting to look more likely.

Biography

Timms is Professor of Microbiology and Director of Research at QUT's Institute of Health and Biomedical Innovation in Brisbane Australia. He is a nationally and internationally renowned microbiologist with specific expertise in the area of Chlamydia. His laboratory is acknowledged as the leading Australian laboratory and one of the leading groups internationally working on all aspects of chlamydial infections. Timms has published over 170 refereed journal papers and is editor of the journal, Pathogens and Disease