I was awarded a travel grant from the International Union of Immunological Societies, Veterinary Immunology Committee and European Veterinary Immunology Group, which allowed me to travel to the International Veterinary Immunology Symposium 16-19 August 2016 in Gold Coast Australia.

My research interest is characterizing the role of WC1 receptor gene arrays encoding a diverse immune response to important pathogens of livestock. WC1 is a scavenger receptor cysteine rich (SRCR) receptor that acts as a co-receptor to the TCR, with binding to diverse pathogen associated molecular patterns (PAMPs) encoded in the genome through extensive duplication and conservation of multiple functional open reading frames. One of the pathogens we have examined in the context of a WC1+ γδ T cell response is the spirochete Leptospira, which infects all mammals.

The development of a successful vaccine against the refractory L. interrogans and L. borgpetersenii Hardjo serovars is correlated with the recruitment of a CD4 αβ T cell and a WC1+ γδ T cell response, rather than solely a humoral B cell response. We have shown that only some of the WC1 proteins are ligated directly by Leptospira and that these are expressed on Leptospira-responsive γδ T cells. However, all WC1+ γδ T cells express a restricted set of γδ TCR, leading to our working model that WC1 binding specificity determines whether the WC1/γδ TCR/CD3 complex interaction with pathogen is of high enough avidity to activate the γδ T cell.

The conservation of highly similar duplicated WC1 open reading frames over millions of years of evolutionary time suggests that WC1 gene products are conserved because each one of them is involved in an immune response to a different pathogen, suggesting that the characterization and inclusion of ligands from diverse pathogens could lead to vaccine improvement for many pathogens. The opportunity to attend IVIS 2016 in Australia was invaluable because it gave me a broad exposure to the work being done on diverse pathogens in diverse species, ranging from fish and platypus to cattle, pigs, sheep and goats.

I had productive discussions with other conference attendees, finalizing a joint program between my university and the University of Melbourne veterinary medical school and talking with the Australian company Virbac.

The conference also gave me the opportunity to participate in a Gates Grand Challenge in the Area of Immunology of Veterinary Vaccines. I look forward to attending the next IVIS.