

## Characterisation of the early host response to *Salmonella* and *Campylobacter* infection

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To date advances in host-pathogen research have mainly focussed on pathogens while studies of host-responses have lagged behind. Detailed insight into specific pathogen properties has however, not led to optimal control strategies for infection of humans and farm-animals. Zoonotic infections with *Salmonella* and *Campylobacter* still remain important human health problems. A better insight into host-pathogen interaction with a focus on host-responses may enable the development of optimal control strategies. This project aims to contribute to our understanding of mechanisms for infection by focussing on the early host-response to *Salmonella* and *Campylobacter*.

Comparison of early host-responses of C3H/HeN mice (wild-type, *nramp<sup>R</sup>*) and C3H/HeJ (*tlr4* deficient) using micro array analysis revealed a very strong response to infection in the Tlr4 deficient mice whereas the response in wild-type mice was less pronounced, but showed a similar pattern. Three regulated clusters were identified: one cluster which includes genes involved in stress response and acute phase response, a second cluster which includes various metabolic genes, and a third cluster which includes mainly immune genes. The last cluster is regulated in a similar manner in the two mouse strains. In this cluster, the majority of the gene is IFN, especially IFN $\gamma$ , regulated. Histopathological evaluation revealed that the pathology was more pronounced in wild-type mice than in *tlr4* deficient mice, indicating that transcription changes are not reflecting pathological changes. Next, the transcription profile induced upon *Salmonella* infection or *Campylobacter* colonization was studied in Balb/C mice (*nramp<sup>S</sup>*). For this purpose the response to wild-type *Salmonella* and *Campylobacter*, and strains with a higher capacity to infect or colonize was compared. The response to infection or colonization was again not strong. However, analysis of the expression of the previously identified clusters revealed these were also induced. The similarities and differences in response will be discussed.

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**Roberto La Ragione** graduated in 1995 with a BSc degree in Zoology and then went on to study for an MSc in veterinary microbiology. In 1996 he commenced a joint post with the University of London and the Veterinary Laboratories Agency to undertake a PhD on the pathogenesis of *E. coli* in poultry. On completion of his PhD he commenced a post-doctoral position in collaboration with the University of London based at the VLA, studying *E. coli* virulence factors and vaccine development. In 2001 Roberto was appointed to his current position of work group leader for the pathogenesis and control group in the Department of Food and Environmental Safety at the VLA. His current research interests focus on the pathogenesis of foodborne pathogens with a particular interest in VTEC and *Salmonella* and the development of intervention strategies for the control of these bacterial pathogens in food producing animals.

**The data from Roberto La Ragione's presentation is currently unpublished, so the abstract is published on the EADGENE website instead of his PPT.**