

P039 Conserved and distinct features of the avian TLR system and implications for control of bird-borne zoonoses.

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The Toll-like receptor family is highly conserved in vertebrates and recently the chicken TLR (chTLR) have received greater attention. The differences and similarities between mammalian and avian TLR have implications for control of avian-derived zoonotic disease (e.g. Avian Influenza or Salmonella). Ongoing work will be summarised covering chTLR repertoire, agonist specificity and agonist-induced responses.

The chTLR repertoire includes orthologues of many mammalian TLR but there are also significant differences, including a deletion in the chTLR8 gene and no evidence for TLR9. There are two chTLR2 genes and only one representative of the TLR1/6/10 family. Moreover, two chTLR (chTLR15 and chTLR20) are quite distinct from any mammalian TLR. The conserved chTLR have broadly similar agonist specificities to those seen with mammals although the outcome of TLR-mediated responses in chickens exhibit both conserved and distinct features. The lack of IFN α/β derived from a range of R848 stimulated chicken cell types is a good example of this aspect of chTLR biology. Interestingly, transfection of chTLR7 into HEK293 cells induces R848-dependent IFN β whereas mouse TLR7 induces IL-1 β but not IFN α/β in chicken cells. Detailed determination of avian TLR function can inform on the evolutionary conservation or divergence of pattern recognition processes and is practically important in developing control strategies to limit and prevent transmission of serious diseases from birds to humans.