

**P010** TLR-4 expression in the genital tract  
**Herath, S<sup>1</sup>, Bryant, CE<sup>2</sup> and Sheldon, IM<sup>1</sup>.**

<sup>1</sup> Royal Veterinary College, Royal College St, London, NW1 0TU, <sup>2</sup> University of Cambridge, Madingley Road, Cambridge, CB3 0ES, UK

Bacterial infection of the uterus is an important cause of mammalian infertility, disrupting the endocrine function of the ovary and uterus. Effective resolution of uterine disease is dependent on pattern recognition receptors (PRR) including the toll-like receptors (TLR). We have previously shown that uterine epithelial and stromal cells express the lipopolysaccharide (LPS) recognition receptor complex gene, TLR4/CD14/MD2 and respond to LPS by secreting prostaglandins. The mammalian egg develops in the ovary surrounded by nurturing somatic granulosa cells, which secrete the sex hormone oestradiol. To test the hypothesis that ovarian cells respond to bacterial molecules and express TLR, granulosa cells were treated with LPS (0.1, 1 and 10 µg/ml) reflecting the concentration in the ovary of diseased animals, and their endocrine function and TLR4/CD14/MD2 mRNA expression was determined. Treatment of granulosa cells with LPS suppressed oestradiol secretion and aromatase gene expression, the enzyme required for oestradiol production. Furthermore, granulosa cells constitutively expressed TLR4/CD14/MD2 as well as the immune mediators TNF- $\alpha$  and IL-1 $\alpha$ , suggesting that granulosa cells have immune capabilities. In conclusion, the cells of the genital tract have immune sensing capabilities and LPS modulates reproductive cell endocrine function, providing an insight into how bacterial infection causes infertility.