Case Study: RESEARCH PATHOLOGY 1

Research Question

We are interested in fertility in cattle and the contribution of the maternal immune system to ovarian function. We had several objectives: (1)To identify the predominant immune cells present in the ovulatory follicle (2) To determine if the number of cells and the cytokines that they produce change during the ovulatory process in cattle (3) To understand if and how these cells can influence the ability of the ovulated oocyte to support fertilisation and early embryo development (4) To determine the contribution of these cells to corpus luteum formation and function.

Our Approach

The oestrous cycles of beef heifers were synchronised to precisely time ovulation. The heifers were processed for beef at the abattoir and their ovaries retrieved. The ovulatory follicle was dissected, fixed, paraffin embedded and sectioned. Tissue sections were adhered to microscope slides and processed for automated immunohistochemistry. Afterwards, sections were scanned and labelled immune cells were detected using a bespoke algorithm.

Resulting Publication: NA Alrabiah et al. Immunological aspects of ovarian follicle ovulation and corpus luteum formation in cattle. *Reproduction* (2021) 162 209–225

NA Alrabiah et al. Immunological aspects of ovarian follicle ovulation and corpus luteum formation in cattle. (Poster/Oral) *International Embryo Transfer Society Meeting* (2021)

Expertise:

We offer unique expertise and advice for academic and commercial clients to perform immunohistochemistry studies and digital pathology with services spanning the research pathway from antibody optimisation to image annotation and quantitative/spatial analysis.

Testimonial

"We started with ~15 antibodies against various markers of a panel of immune cells. Janet McCormack identified and optimised the incubation conditions for each reactive antibody and processed all of the slides, then trained and worked closely with my PhD student, Noof Al Rabiah Abdulrahman, to quantify and analyse the cell labelling. Noof presented the data in poster and oral session in the International Embryo Transfer Society Meeting 2021, winning 1st and 2nd prize, respectively and subsequently published a full length paper. It is always a pleasure to work with Janet who is wonderfully patient, kind and encouraging to students and is a fountain of knowledge and expertise"

Professor Trudee Fair
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