

Glucosamine Supplementation and the Oocyte

Principal Supervisor: Dr Mel McDowall (Discipline of Obstetrics & Gynaecology)

E-mail: melanie.mcdowall@adelaide.edu.au

Phone: 8313 1013

Co-supervisors: Associate Prof Jeremy Thompson, Dr Robert Gilchrist, Dr Karen Kind.

Aims and significance

Glucosamine is a dietary supplement that is commonly used to treat joint problems. However, glucosamine supplementation during oocyte maturation results in poor embryo development post-fertilisation by mimicking hyperglycaemic conditions. The aim of this project is to further investigate the mechanisms through which glucosamine supplementation is perturbing pig oocyte development. Techniques include tissue culture, staining and metabolism assays.

Introduction to the laboratory

A major focus of our laboratory is the influence of the microenvironment surrounding the oocytes (eggs) and embryos on development outcomes, with particular focuses on metabolites (glucose, oxygen) and associated pathways and genes (for example Hypoxia Inducible Factor, HIF).

The incidence of diet related obesity (such as high glucose diets) in Australia is rapidly increasing and is associated with higher susceptibility to chronic diseases, decreased fertility, poor pregnancy outcomes and development of children born from obese mothers. Glucose is particularly important for oocyte development and alterations in the level of glucose the oocyte is exposed to prior to fertilisation can have a negative impact on the success of embryo development.

Research performed within our group is relevant to human reproduction, human assisted reproduction and the livestock farming industries through a better understanding of the impact of the maternal environment on successful fertilisation and early embryonic development. Furthermore, our research aims to enhance the outcomes of both human and livestock *in vitro* embryo production by developing improved culture conditions.

References

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