WIRF PhD Top-Up Scholarship

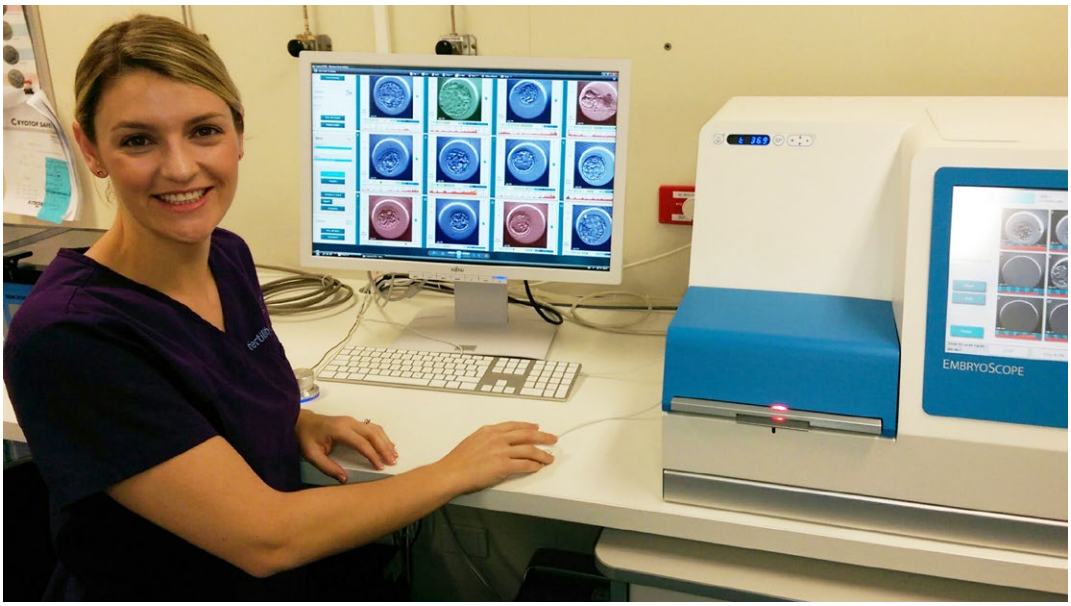
Research overview

In Vitro Maturation (IVM) is an alternative form of In Vitro Fertilisation (IVF) treatment which involves less hormonal stimulation to the patient and is therefore less invasive. It is still not known exactly why some oocytes (eggs) mature and develop into useable embryos and successful pregnancies, and others do not. The aim of this research is to identify developmental differences between traditional IVF and IVM treatments in patients with and without polycystic ovarian syndrome (PCOS). Embryos are cultured in an incubator known as an Embryoscope which has a built in camera and takes a photo of the embryos every 20 minutes to produce a time-lapse video of cell division and blastocyst (day 5-6 embryo) development. The study of the time-lapse video of embryo development is known as "embryo morphokinetics".

The research has now progressed into the phase of using the acquired images to determine if the size and texture of the eggs differs between treatment methods and if they are affected by PCOS. It is hoped that a profile may be developed for identifying the good or bad quality oocytes according to these observations and incorporate these into a model for embryo selection or deselection.

Research highlights

This research project has been an overwhelming success resulting in a number of publications in high impact journals including Human Reproduction. Some aspects of the research were recently presented to hundreds of experts during an invited speaker session at the 2015 European Society or Reproduction and Embryology (ESHRE) annual meeting. Following this, Melanie was awarded the annual UWA higher degree by research achievement publication prize, in the clinical medicine and dentistry category, for the first publication arising from this research. This included comparing retrospective outcomes of IVM and standard IVF in PCOS patients. Melanie was also named as one of four finalists for the Premier's Science Awards, in the Exxon Mobil Best Student Scientist category.



Research achievements

The success of this research and the program has led to IVM being used as a routine method for fertility preservation in patients recently diagnosed with cancer, who wish to freeze their eggs prior to chemo/radio therapy. This technique was recently used for a patient who had to have her ovaries removed and eggs were collected from the ovaries in the laboratory (ex-vivo). This resulted in 22 eggs frozen for the patient and was the first case of its kind in Australia. A report of this procedure will soon be published in the journal: Gynaecologic Oncology Case Reports and will presented at the annual FSA conference, to be held in Canberra in September.

THE TEAM

Chief Investigators

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National Health and Medical Research Council (NHMRC) Centre for Research Excellence (CRE) in the Origins Outcomes and Optimal Management of Polycystic Ovary Syndrome (PCOS)