

CASE STUDY

IVF BREAKTHROUGH TO HIT THE WORLD MARKET

Professor Sarah Robertson has achieved a major breakthrough in IVF technology that is expected to help millions of women around the world who have suffered previous miscarriages after IVF treatment.

Professor Robertson, who is an NHMRC Principal Research Fellow, partnered with a Danish company to develop a product which improves IVF embryo implantation rates for some women by up to 40%.

In the world's largest clinical trial on IVF media, Professor Robertson and Origio a/s – a European company specialising in assisted reproductive technologies (ART) – have shown for the first time that growth factor molecules are critical to ensuring optimal embryo development.

The resulting product, EmbryoGen, to be released in 2011, contains a signalling molecule called GM-CSF found naturally in the mother's tissues which protects the embryo from stress, making it stronger and more robust in the early implantation period.

The clinical trial, involving 1319 IVF patients exposed to either EmbryoGen or standard IVF embryo media, resulted in an average 20% improvement in embryo implantation rates at 12 weeks for all IVF women whose embryos developed in EmbryoGen. The effect is primarily due to benefits for women who had previously miscarried, who showed an impressive 40% increase in implantation success.

"This is a wonderful advance for couples undertaking IVF, particularly those who have previously lost babies in the first trimester," Sarah says.

It is also the culmination of more than two decades of work for Sarah, who based her PhD on the role of growth factors in healthy pregnancies and then worked with Swedish colleagues to explore applications in IVF embryos.

"This breakthrough has been 20 years in the making," Sarah says. "It's enormously rewarding to see one's basic research translate into practical outcomes that will benefit so many families."

"From day one we went right back to the fundamental biology to see what makes an embryo healthy in its normal environment in the reproductive tract. We discovered that the embryo is exposed to growth factor signals from the mother's tissues, which is critical to its optimal development.

"This is a major paradigm shift for reproductive medicine. All of the other ART companies around the world, along with biologists and clinicians in this area, have thought that embryos don't need growth factors.

"We have demonstrated through extensive animal and human clinical trials that the reality is just the opposite. EmbryoGen is not only completely safe and natural – it contains signalling molecules that the embryo expects to find in the mother's body – but our data from animal studies shows that it may also result in IVF babies that are larger and healthier at birth."

Sarah says IVF children are often smaller at birth, sometimes leading to long-term effects in later life.

"By adding back this growth factor and protecting the embryo from stress, the result should be babies that are of a similar size to those naturally conceived." The data on the perinatal outcomes will be available later this year.

EmbryoGen will be launched in Europe and the Middle East by mid 2011 and in the USA in late 2012.



(Top) Professor Sarah Robertson

