

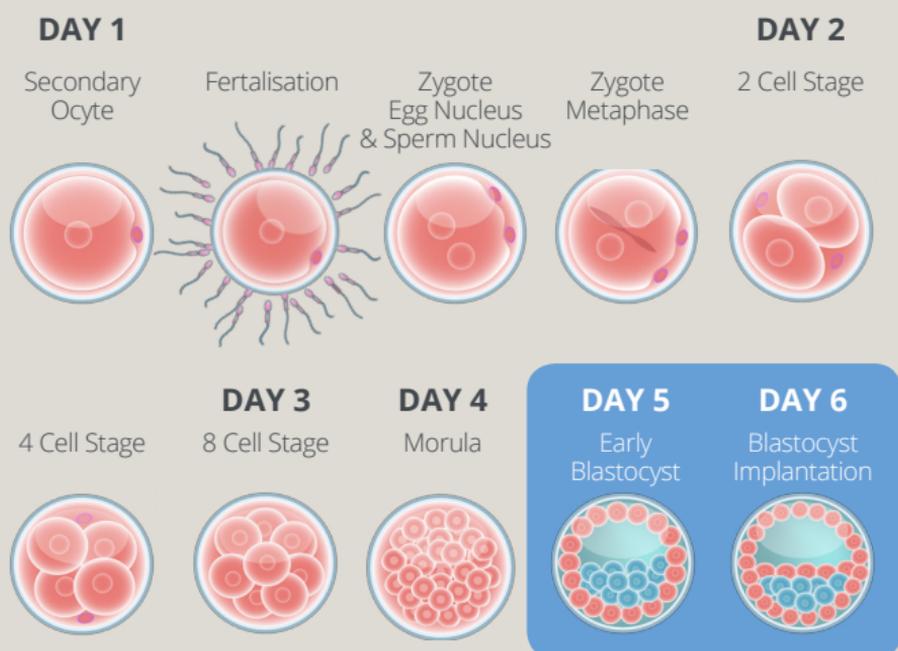
EMBRYOGEN® AND BLASTGEN™ CULTURE MEDIUM

What is a Culture Medium?

A culture media system is utilised in the laboratory to optimise embryo development in vitro by supporting metabolic and physiological phases of the preimplantation embryo. Improvement of embryo culture has significantly contributed to the increase in the overall success rates in assisted reproductive technology.

What is Embryogen/Blastgen?

Embryogen® and Blastgen™ are new sequential culture media offered to City Fertility Centre patients. Fertilised and cleavage stage embryos (zygote to day 3) are cultured with Embryogen®, followed by the culture to the blastocyst stage with Blastgen™. For the embryos cultured with this system, Blastgen™ is the recommended medium used™ for embryo transfer.



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Embryogen® and Blastgen™ are suitable for all patients, and especially recommended for patients who have experienced recurrent biochemical pregnancy loss, miscarriage, recurrent implantation failures or unexplained infertility.

Embryogen® and Blastgen™ are culture medium that have been developed with the addition of the cytokine Granulocyte Macrophage Colony Stimulating Factor (GM-CSF).

What is Granulocyte Macrophage Colony Stimulating Factor (GM-CSF)?

GM-CSF is the active ingredient in Embryogen® and Blastgen™. GM-CSF is a protein expressed in the female reproductive tract and upregulated throughout embryo development. Research has shown that an addition of 2ng/ml GM-CSF to culture media improved embryo growth and development.

GM-CSF appears to assist embryo development in several ways:

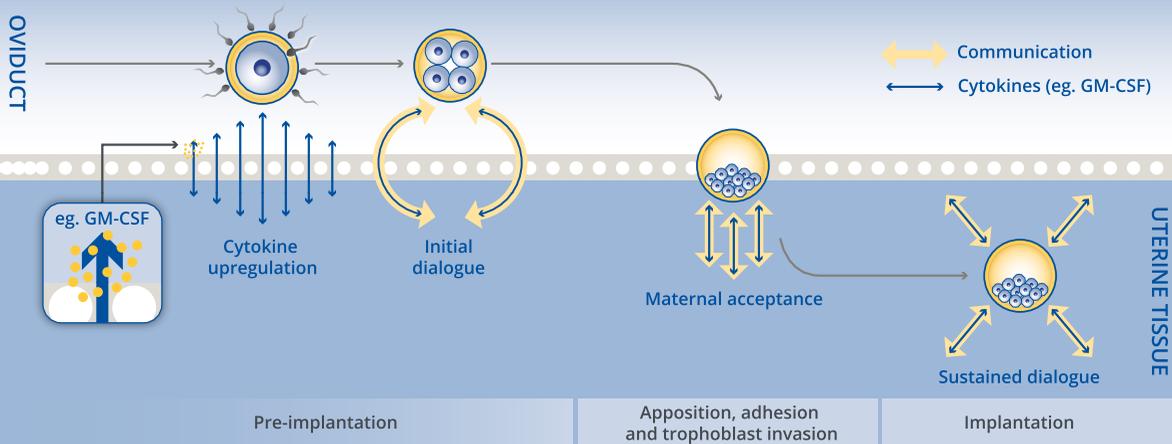
- regulates cell survival, proliferation and differentiation
- regulates immune response
- important for cell signaling

- important for cell to cell communication
- promotes blastocyst formation
- preimplantation embryos express receptors for GM-CSF
- participates in the regulation of implantation.

A large clinical trial conducted in Denmark and Sweden observed the effects of GM-CSF and its addition in culture media of patients undergoing assisted reproduction (ART). Studies have shown a significant increase in survival of transferred embryos and lower miscarriage rates. GM-CSF displays positive effects on embryo development and there are no known negative effects of culturing embryos in culture media containing 2ng/ml GM-CSF.

Embryogen® have CE, FDA and Canada Medical device approval. Blastgen™ is in the process of being CE-marked and FDA-cleared, and has been approved by Health Canada. In Australia, TGA approval is pending. Patients of City Fertility Centre can have access to Embryogen® and Blastgen™ through the TGA's Authorised Prescriber Scheme.

Should you wish to discuss the use of Embryogen® and Blastgen™ in your treatment cycle please discuss with your treating specialist or contact the City Fertility Centre Scientists.



Schematic of GM-CSF upregulation in vivo for the preimplantation embryo growth and development through to implantation.

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Reference

Ziebe et al. (2013) A randomised clinical trial to evaluate the effect of Granulocyte-Macrophage Colony-Stimulating Factor (GM-CSF) in embryo culture medium for In Vitro Fertilisation (IVF). *Fertil. Steril.* 99, 1600-1609

Sjoblom et al. (1999) Granulocyte-Macrophage Colony-Stimulating Factor promotes human blastocyst development in vitro. *Human Reproduction* 14, 3069-3076

Tevkin et al. (2014) The frequency of clinical pregnancy and implantation rate after cultivation of embryos in a medium with Granulocyte Macrophage Colony-Stimulating Factor (GM-CSF) in patients with preceding failed attempts of ART. *Gynecol Endocrinol.* 30, 9-12

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