



# Culture Media with GM-CSF

Unique culture media for  
poor prognosis patients

NEW!



ORIGIO • SAGE • Humagen • TPC • K-Systems • RI • Wallace • LifeGlobal • CooperGenomics

# Communication is key for a successful pregnancy

Communication between the embryo and endometrium is crucial in creating the right environment for a successful pregnancy. Compromised embryo competence, impacting the maternal-embryo dialogue, may lead to an increase in implantation failure, preclinical pregnancy loss and miscarriage.

Poor communication between embryo  
and endometrium may result in as much as:

**40%**

of unexplained infertility<sup>1,2</sup>

**80%**

of unexplained  
pregnancy losses<sup>1,2</sup>

## Cytokines: a critical role in communications

Cytokines drive the dialogue between the embryo and endometrium and are increasingly expressed throughout embryo development.<sup>3</sup> The cytokine Granulocyte-Macrophage Colony-Stimulating Factor (GM-CSF) is a natural signaling molecule that allows for both autocrine and paracrine communication between the embryo and endometrium.



1. Roussev *et al.* Laboratory Evaluation of Women Experiencing Reproductive Failure, *Am. J. Reprod. Immunol.*, 1996; 35:415-420  
2. Adapted from The International Council on Infertility Information Dissemination, Inc. (INCIID), [www.inciid.org](http://www.inciid.org)  
3. Zhao, Y. and Chegini, N. (1999). The expression of granulocyte-macrophage colony-stimulating factor (GM-CSF) and receptors in human endometrium. *Am. J. Reprod. Immunol.* 42, 303-311.

# Bring new hope to your patients with our GM-CSF media solutions

SAGE 1-Step™ GM-CSF, EmbryoGen® and BlastGen™ make up our novel culture media suite supplemented with the recombinant human cytokine GM-CSF. The inclusion of cytokines aims to reduce embryonic stress by creating a more physiological *in vitro* environment, increasing the chance of a successful implantation<sup>1</sup>. This innovative media suite provides both a single-step and sequential solution, giving you an additional option for your poor prognosis patients without the need to change your existing protocol.



## SAGE 1-Step GM-CSF

The world's first single-step culture medium containing the recombinant human cytokine GM-CSF



## EmbryoGen & BlastGen

The world's first sequential culture media containing the recombinant human cytokine GM-CSF

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### Recommended for patients who have:<sup>2</sup>

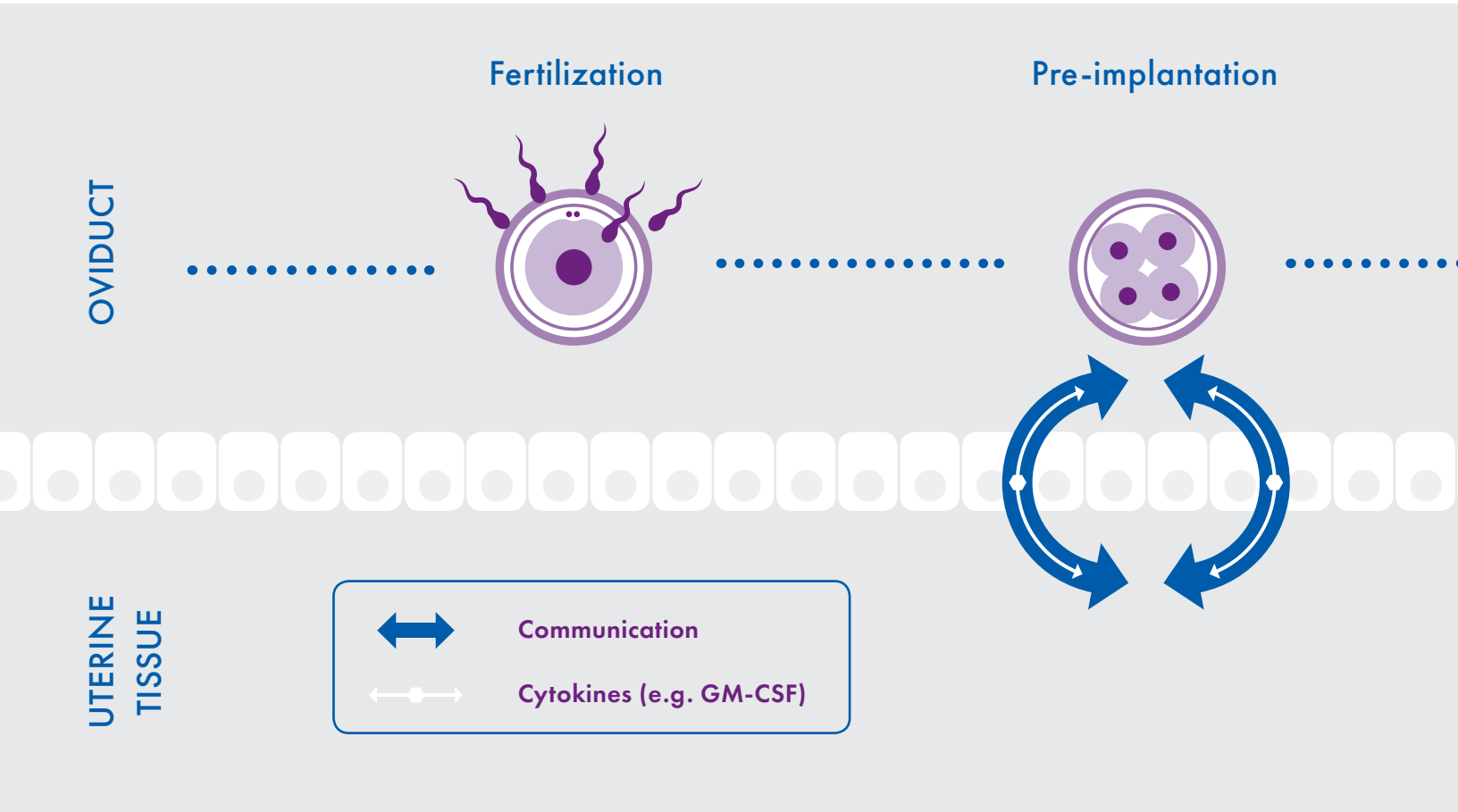
- Experienced recurrent clinical and biochemical pregnancy loss
  - Experienced recurrent implantation failure
  - Unexplained infertility
  - Advanced maternal age
- 

1. Chine *et al.*, Stress response genes are suppressed in mouse pre-implantation embryos by granulocyte-macrophage colony-stimulating factors GM-CSF, Human Reproduction, 2009, September 8, 24(12), 2997-3009

2. Ziebe *et al.*, A randomized clinical trial to evaluate the effect of granulocyte-macrophage colony-stimulating factor (GM-CSF) in embryo culture medium for *in vitro* fertilization. Fertil Steril. 2013 May;99(6):1600-9.

# Providing a more physiological *in vitro* environment

Our innovative culture media suite is supplemented with the cytokine GM-CSF to mimic the environment found in the female reproductive tract at conception.<sup>1</sup> Creating the best possible *in vitro* conditions for the embryo, with the use of this cytokine, will promote successful implantation through improved endometrial receptivity.



## Day 0-1 Fertilization

For IVF or ICSI, media that supports both gametes during fertilization and promotes sperm function is recommended.

Following fertilization, the embryo immediately begins to communicate with its environment and should be moved to media that better supports the next stage of its development.

## Day 1-3 Initial dialogue

Cytokines are critical in the communication between the embryo and the endometrium prior to implantation and are naturally found in the reproductive tract at this stage.

In the laboratory setting, exposure of embryos to GM-CSF has been shown to promote blastocyst formation and alleviate the negative effects of *in vitro* culture.

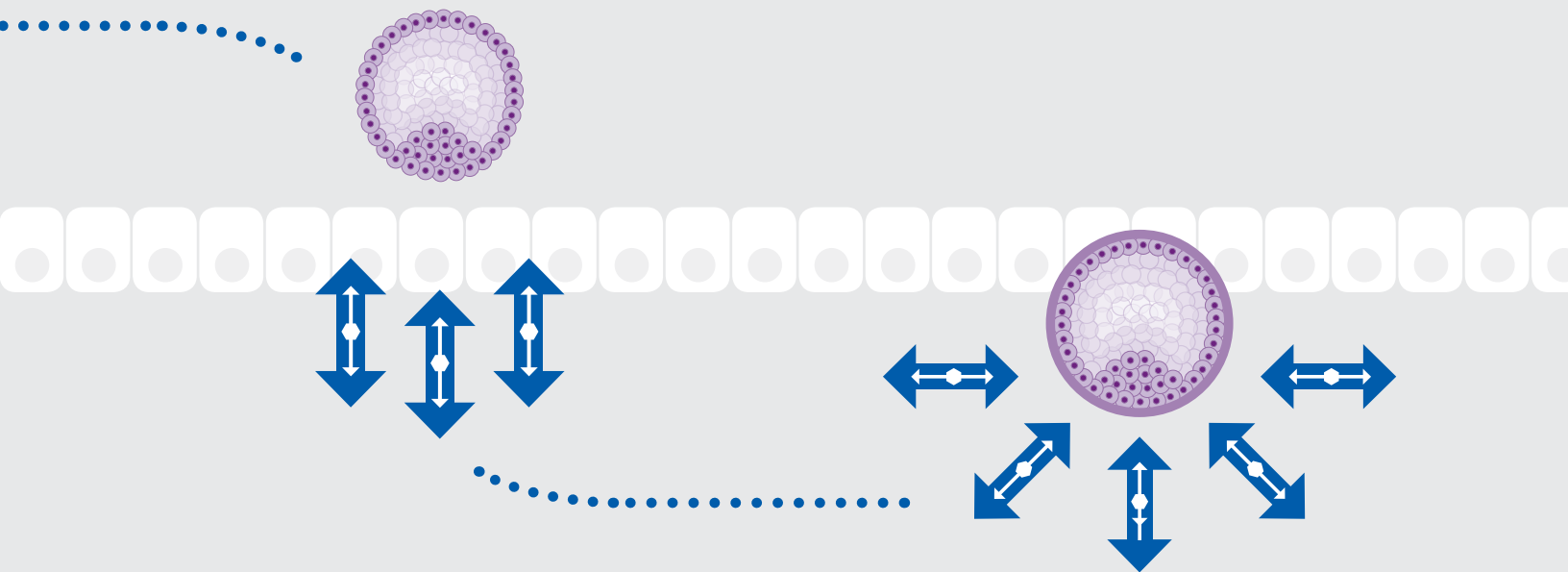
1. Robertson, GM-CSF regulation of embryo development and pregnancy, Cytokine & Growth Factor Reviews 2007, 18, 287-298





### Apposition, adhesion & trophoblast invasion

### Implantation



#### Day 3-6 Ongoing support

Maternal–embryo communication is essential for recognition and implantation of the embryo.

Continuing to culture in media containing GM-CSF supports the embryo’s development right through to the blastocyst stage.

#### From embryo transfer onwards Sustained dialogue

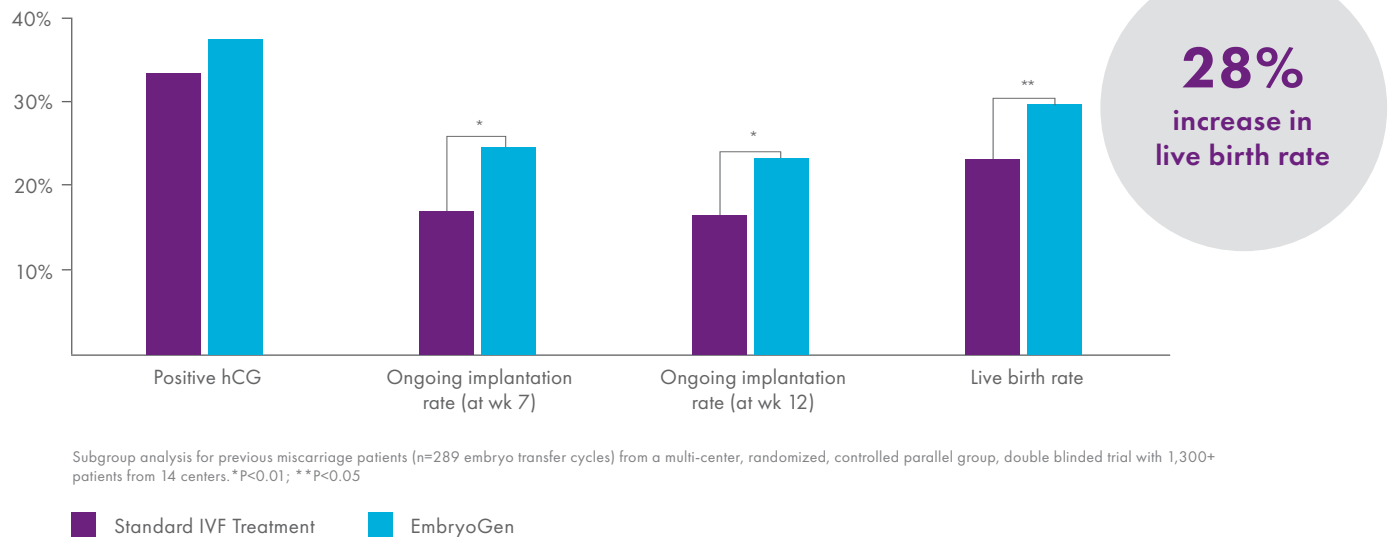
An environment that supports the dialogue between the embryo and endometrium is crucial for successful implantation, especially for poor prognosis patients. GM-CSF is known to play an important role in this dialogue, as well as the regulation of the maternal immune response.

Transferring embryos in media with GM-CSF ensures that the cytokine is present in the reproductive tract at this vital time.

# GM-CSF culture media in the clinical setting

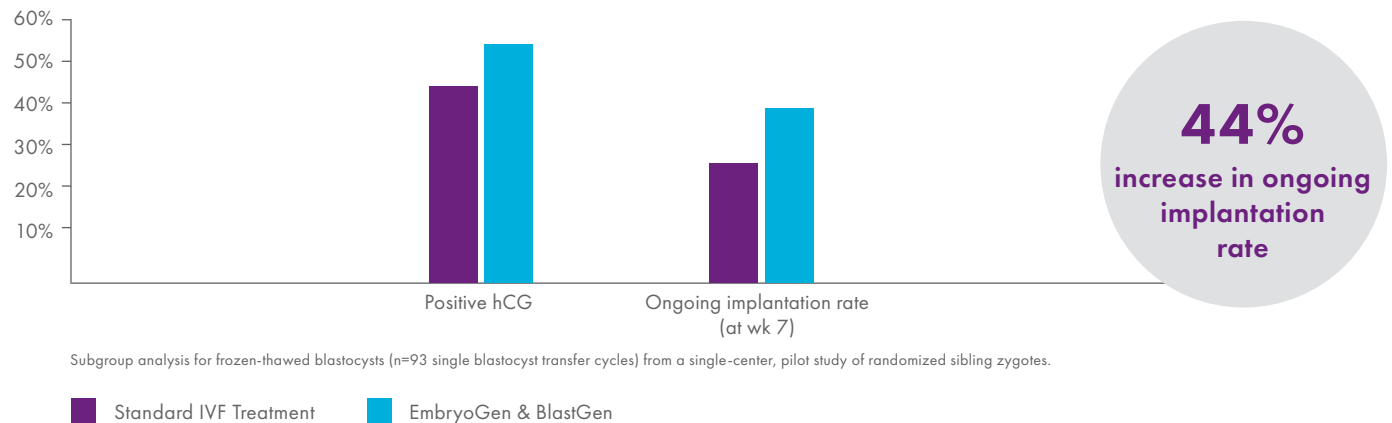
The introduction of a GM-CSF containing culture medium to the IVF world was based on the positive results of EmbryoGen in a prospective randomized clinical trial,<sup>1</sup> which showed its positive effect on ongoing implantation and live birth rates.

## 3 days of embryo culture in EmbryoGen improved live birth rate<sup>1</sup>



Today early data on the clinical use of the full GM-CSF media suite, EmbryoGen and BlastGen, demonstrates that culturing in GM-CSF containing media until the blastocyst stage increases pregnancy and implantation rates<sup>2</sup>.

## EmbryoGen and BlastGen have a positive effect on pregnancy rate and increase the chances of obtaining a live birth<sup>2</sup>



### Definitions

Ongoing implantation rate: Number of sacs with heart beat per transferred embryo. Live birth rate: Live births per transferred embryo.

- Ziebe *et al.*, A randomized clinical trial to evaluate the effect of granulocyte-macrophage colony-stimulating factor (GM-CSF) in embryo culture medium for *in vitro* fertilization. *Fertil Steril.* 2013 May;99(6):1600-9.
- CooperSurgical, data on file

# Make our culture media with GM-CSF part of your toolbox

Our innovative culture media suite offers GM-CSF solutions for both continuous and sequential embryo culture protocols.

- Embryo–endometrial communication is key to successful pregnancy
- Cytokines play a critical role in driving this communication
- Culture media supplemented with GM-CSF has a positive effect on embryo transfer rates
- **EmbryoGen, BlastGen** and **SAGE 1-Step GM-CSF** make up the first culture media suite containing the recombinant human cytokine GM-CSF

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**44%** increase in ongoing implantation rate with GM-CSF containing media<sup>1</sup>

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1. CooperSurgical, data on file

## Train with CooperSurgical and optimize your performance, learn new skills and network with international peers

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Since 2011, we have invited customers and partners to learn new techniques and share best practices in our fully equipped laboratory.

At the ORIGIO Training Lab we provide evidence-based training by skilled, experienced embryologists which includes demonstrations and hands-on training in a comprehensive range of ART techniques and procedures.

