

Synthetic Endometrial and Uterus-Like Tissue Platforms for In Vitro Embryo Culture

Tech ID: 34860 / UC Case 2026-527-0

BRIEF DESCRIPTION

Innovative synthetic endometrial tissues and uterus-like structures enable advanced in vitro embryo implantation, growth, and culture to model post-implantation stages.

FULL DESCRIPTION

This technology provides methods and devices to create synthetic, vascularized endometrial tissues and uterus-like structures using co-cultured endothelial and fibroblast cells in hydrogels, facilitating embryo implantation and development in vitro. Utilizing microfluidic platforms, it mimics natural embryo-endometrium interactions, supporting mammalian embryos—including human embryos and stem cell-derived models—to transition successfully from pre- to post-implantation stages under controlled dynamic culture conditions.

SUGGESTED USES

- » Assisted reproductive technology (ART) research to improve IVF success rates.
- » Pharmaceutical development and testing targeting early pregnancy and implantation processes.
- » Stem cell and developmental biology research using embryo models.
- » Fertility clinics employing advanced embryo culture platforms for therapeutic use.
- » Biotech companies developing microfluidic and organ-on-chip technologies for reproductive health.
- » Academic research studying maternal-fetal interface and early human development.
- » Customized drug screening for pregnancy safety and efficacy evaluation.

ADVANTAGES

- » Recreates vascularized, perfusable tissue microenvironments to closely simulate in vivo uterus conditions.
- » Enables extended culture of mammalian embryos, including human blastocysts, beyond implantation stages.
- » Compatible with microfluidic devices allowing precise control of physical and biochemical culture parameters.
- » Flexible hydrogel compositions allow customization of extracellular matrix components for enhanced tissue functionality.
- » Supports hormone-primed endometrial organoids and stromal cells assembly to form functional uterus-like tissues.
- » Dynamic oxygen and gas pressure regulation improves embryo developmental outcomes.

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OTHER INFORMATION

CATEGORIZED AS

- » **Biotechnology**
- » Health
- » Other
- » **Medical**
- » Other
- » Research Tools
- » **Research Tools**
- » Other

RELATED CASES

2026-527-0

» Facilitates study of implantation failures and potential infertility solutions with in vitro human embryo models.

PATENT STATUS

Patent Pending

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