Stem Cell Derived Placenta-On-A-Chip

Tech ID: 33767 / UC Case 2024-926-0

BRIEF DESCRIPTION

This technology offers a groundbreaking approach to mimic human placental development and study pregnancy-related complications in vitro.

FULL DESCRIPTION

Researchers at UC Irvine have developed a placenta-on-a-chip technology utilizing human induced pluripotent stem cells (iPSCs) to create placental organoids within a microfluidic device, simulating the human placental environment and its interactions with maternal vasculature. This innovative platform enables the study of placental development, drug toxicity, and various pregnancy-associated complications without the ethical and practical limitations of using human subjects.

SUGGESTED USES

- Research and development in developmental biology and maternal health.
- Drug toxicity and efficacy testing specific to pregnancy.
- Advanced academic and pharmaceutical research into pregnancy complications and fetal development.
- Innovative platforms for studying the effects of environmental factors on placental and fetal health.

ADVANTAGES

- Enables the study of human placental development and diseases in vitro.
- Overcomes ethical and accessibility issues associated with using human subjects and placental samples.
- Provides a physiologically relevant model with the inclusion of vascular structures.
- Offers an unlimited source of placental cells for research purposes.
- Facilitates disease modeling and toxicity screening with higher reproducibility and lower costs.

PATENT STATUS

Patent Pending

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OTHER INFORMATION

CATEGORIZED AS

- **Medical**
  - Research Tools
- **Research Tools**
  - Other
  - Screening Assays

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