



Showcasing research from Professor Hirokazu Kaji's laboratory, Department of Diagnostic and Therapeutic Systems Engineering, Institute of Science Tokyo, Tokyo, Japan.

Placental microphysiological systems: new advances on promising platforms that mimic the microenvironment of the human placenta

Studying pregnancy is challenging since traditional animal and two-dimensional models fall short in recreating the human's complexity. Recently, three-dimensional placental microphysiological systems (PMPS) have been developed using microfluidic systems to mimic the maternal-fetal environment. PMPS are used for studies such as preeclampsia evaluation and toxicological screening. This work reviews of the latest PMPS models, their main features and their limitations. Other relevant models such as organoids and endometrium microphysiological systems are also discussed. Consequently, this work highlights the importance of PMPS models for our understanding of pregnancy.

As featured in:



See Hirokazu Kaji *et al.*,
Lab Chip, 2025, **25**, 979.