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Methods and materials for rapid preparation of 3D speroids/organoids

A rapid, reproducible hydrogel printing method standardizes the preparation of multicellular spheroids/organoids for high-throughput 3D cell culture assays.

Purdue University researchers developed a hydrogel printing method for fast and robust preparation of multicellular spheroids/organoids for use in 3D cell culturing. Current methods to generate spheroids/organoids lack reproducibility and robustness with respect to assay protocols for different cell lines. To remediate these pitfalls, researchers at Purdue have fabricated multicellular spheroids by loading hydrogel drops with different cell lines and strengtheners. After printing and gelation, the cells undergo culturing and are able to achieve spheroid sizes of ~500 ÂµM in less than a day. Contractility differences in the cell lines is responsible for spheroid growth. This reproducible, rapid-processing technique can serve as a new standardized protocol to address current limitations in spheroid/organoid generation.

Advantages:

-Rapid Preparation of Spheroids/Organoids

-Robust Preparation of Spheroids/Organoids

Potential Applications:

-3D Cell Culture

-Preparation of Spheroids

-Preparation of Organoids

Technology Validation: Pancreatic cells were transfected with red fluorescence protein and stromal cells with green fluorescence protein. After gelation and culturing, the cells were imaged using a fluorescence microscope and displayed red cells on the outside and green cells encompassing the inside of the spheroids.

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Category

Biotechnology & Life Sciences/Bioprocessing & Biomanufacturing

Materials Science & Nanotechnology/Biomedical & Bioinspired Materials

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