

High-Throughput Bioprinting of Liver Microtissues

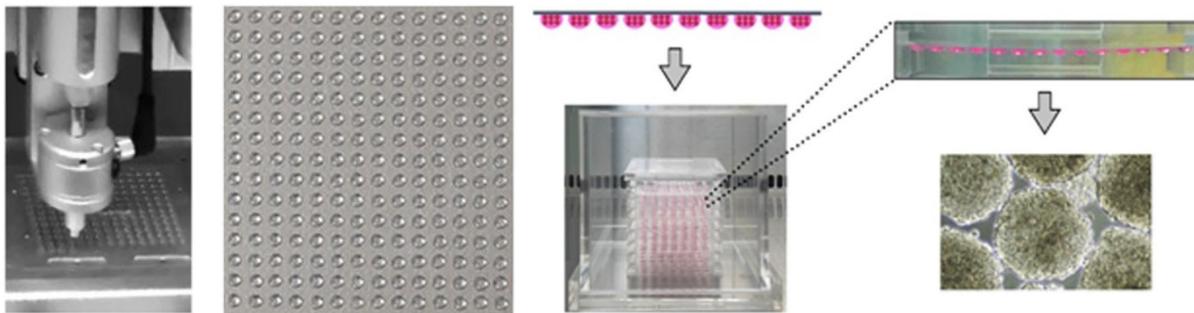


Roopesh PR, Muthusamy S, Velayudhan S, Sabareeswaran A, Anil Kumar PR. High-throughput production of liver parenchymal microtissues and enrichment of organ-specific functions in gelatin methacrylamide microenvironment. *Biotechnol. Bioeng.* 119, 1018– 1032.

Overview

Liver parenchymal microtissues are classical models for studying drug metabolism (drug-induced liver injury) and liver diseases. However, the complexity of preserving their long-term structural-functional integrity and the lack of simple and rapid techniques for their mass production limit their exploitation in drug screening processes.

In this study, a high number of low-volume cell-laden droplets were generated on PET substrates with a drop-on-demand bioprinting technique. Then, they were placed inside a novel Hanging-drop Culture Chamber to form viable liver microtissues.



Results

- ✔ Significant increase in glucose uptake, active response towards hormonal stimuli
- ✔ Inclusion in GelMA enhanced liver-specific functions while preserving their 3D structure



REGENHU's bioprinting technology enables:

Efficient tissue formation

Higher microtissue formation with bioprinting than with manual dispensing (97.4% vs. 62.8%)

Miniaturization

1600 microtissues (size 200–300 μ m) per chamber

Interested to know more ?

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