Bioprinted Lung Models for Respiratory Diseases

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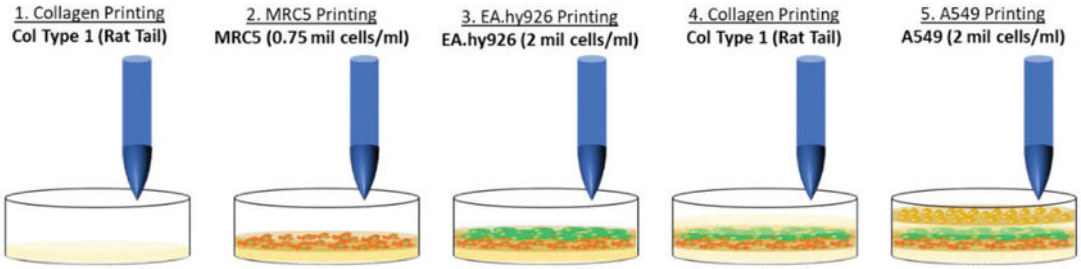
Ng WL, Ayi TC, Liu YC, Sing SL, Yeong WY, Tan BH. Fabrication and Characterization of 3D Bioprinted Triple-layered Human Alveolar Lung Models. Int. J. Bioprint. 2021;7(2):332.

Overview

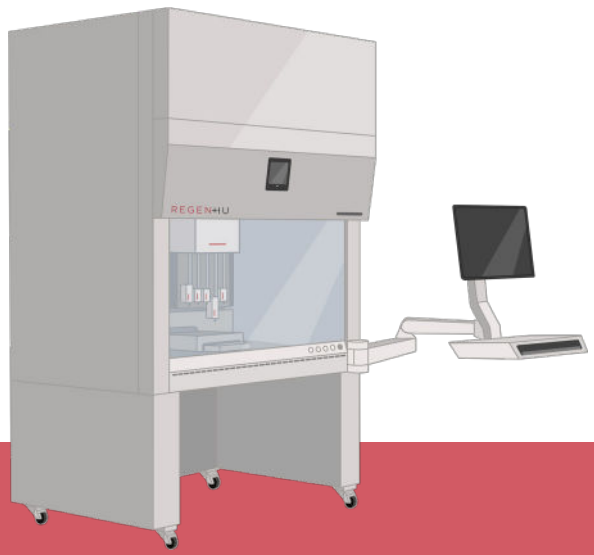
The surge in infective respiratory diseases, such as COVID-19, drives the demand for realistic in vitro alveolar lung models. Those models mimick the native microenvironment and facilitate critical cell-cell and cell-matrix interactions. Fabricating them in a highly repeatable, reliable, and automated manner is crucial for potential scalable production.

In this study, in vitro human alveolar lung models were developed with 3D bioprinting techniques, combining multiple drop-on-demand technologies. This approach facilitated the formation of distinct cell layers (human lung epithelial, endothelial cells, and fibroblasts).



Results

- Highly repeatable and robust fabrication of 3D in vitro human alveolar lung models
- Long-term cell viability and retained functionality



REGENHU's bioprinting technology enables:

High cell viability
Post-printing values: 97.1 ± 1.4%, 97.1 ± 1.5%, and 97.4 ± 2.6% (for 3 cell populations)

Technology convergence
Precise deposition of 3 different cell types and collagen matrix with 4 printheads

Interested to know more ?

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