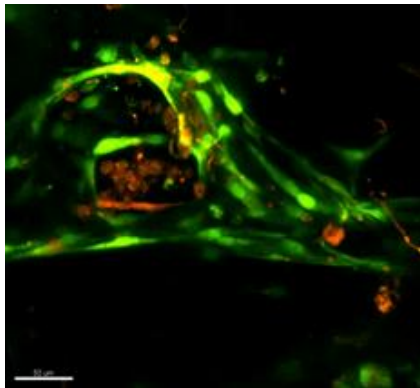


3D Biomimetic Platform

Technology Overview

A 3D biofabricated system that recapitulates the *in vivo* human tissue and organ environment and can rapidly and flexibly create anatomically and mechanically tunable, fully cellularized living tissue constructs, with vascular and lymphatic microvessel networks that can be perfused with pumps, with concurrent epithelialized ducts.

The inventors have successfully used this technology for recapitulating the complex 3D microenvironment that exists within tumors arising from breast cancer.



The figure above is a confocal micrograph of tumor induced angiogenesis in mechanically tuned (higher modulus) microenvironment using the 3D biomimetic platform.

This technology can also be used for drug screening. As an example, for breast cancer drug screens, the patient's breast epithelial and myoepithelial cells can be used to line breast ducts; endothelial cells, smooth muscle cells and pericytes can be used to establish a vascularized network, lymphatic endothelial cells can be used to establish into lymphatic channels, and fibroblasts, adipose derived stem cells and adipocytes can be seeded into the surrounding extracellular matrix.

Potential Applications

The system can be used for diagnostics, drug screening (including timed release) and biomedical research.

Advantages

The system can be cultured *in vitro* and implanted in a rodent model, and may even be anastomosed to and perfused by the host circulation.

Publications

- [2019 Conference Abstract](#): A novel 3D breast biomimetic platform for in vitro study of patient-derived BIA-ALCL
- [2018 Conference Abstract](#): A patient specific tissue engineered biomimetic platform for high throughput analysis of breast cancer therapeutic options
- [2017 Conference Abstract](#): Tissue engineering a biomimetic platform for the study of breast cancer metastasis

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Patents:
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