

## Deterministic Culturing of Single Cells in 3D

**Track Code:** 2020-SAVR-69076

**Categories:**

- Biotechnology
- Materials and Manufacturing

**Keywords:**

- Biotechnology
- Breast Cancer
- Cancer Research
- Cancer Screening
- Cell Biology
- Cell Culture
- Cell Growth
- Drug Development
- Material Development
- Materials and Manufacturing
- Materials Science
- Seeding

Researchers at Purdue University have developed a new material and method for deterministic culturing of single cells in 3D. There is a growing need to create in vitro representations of cells for tissue research, such as for cancer detection. Purdue researchers meet this challenge by isolating and extracting single cells in cell cultures and seeding them into unique matrix gel islands tailored to their specific physiological conditions. In testing in vitro with breast cancer cells, researchers observed that intratumor heterogeneity increased over time and found a positive relationship between the size and heterogeneity of the nuclei of tumor cells and how quickly tumors grow. This technique can be implemented in a variety of biomedical applications including personalized medicine, drug discovery, and tumor management.

**Advantages:**

- Cell Isolation
- Enhanced Seeding

**Potential Applications:**

- Tumor Management
- Drug Discovery
- Personalized Medicine

**Technology Validation:**

Cancer cells including those of breast and colon cancers have been tested using the new apparatus and approach and once isolated patterns in tumor growth could be analyzed.

**Recent Publication:**

"Deterministic Culturing of Single Cells in 3D"

Scientific Reports

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**People:**

- Savran, Cagri Abdullah (Project leader)
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**Intellectual Property:**

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