



TECHNOLOGY

3D Printed Molds for 3D Tissue Culture Scaffolds

OVERVIEW

Background

Cellular and tissue culture is an important aspect of biological research. Having specific cell or tissue types in a controlled environment allows for development and refinement of the efficacy and safety of biological treatments. However, as researchers study more complex conditions, standard monolayer (2D) cell culture is less representative of the final treatment environment. In recent years there has been a push toward developing cell culture in three dimensions (3D), thus more accurately representing the natural cellular environment. While there are numerous methods for 3D tissue culture, they are often expensive and create random 3D environments. This randomness makes it more difficult to compare results across multiple cell or tissue culture dishes. The ability to quickly manufacture 3D cell or tissue culture inserts that create the same conditions every time they are used would potentially lower the number of dishes needed for studies, saving time and money.

Innovative Technology

Researchers at the University of Maryland have utilized 3D printing techniques to create molds for tissue culture scaffolds. Using 3D printing, they are able to create controlled and precise scaffolds on the micrometer scale. These scaffolds are then inserted into cell culture dishes, creating a 3D environment for cell and tissue growth. By using the molds there is greater reproducibility between scaffolds, creating identical 3D environments across multiple culture plates. Manufacturing the molds and scaffolds uses common and cheap biocompatible materials. These common materials and simple manufacturing procedures keep the cost of making a scaffold extremely low, even in small-scale production.

APPLICATIONS

- Cell culture
- Tissue culture

ADVANTAGES

- Reproducibility from one scaffold to the next
- Uses well known biocompatible materials
- Cheap and easy manufacturing process
- Modifiable mold process allows for tuning of scaffolds for different cell or tissue types

CONTACT INFO

UM Ventures
0134 Lee Building
7809 Regents Drive
College Park, MD 20742
Email: umdtechtransfer@umd.edu
Phone: (301) 405-3947 | Fax: (301) 314-9502

Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Pending

LICENSE STATUS

Available for exclusive or non-exclusive license

CATEGORIES

- Biological
- Research Tools, Antibodies, & Reagents

EXTERNAL RESOURCES

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