## UCI Beall

Applied Innovation

## A Micro-Bubble Plate For Patterning Biological and Non-Biological Materials

Tech ID: 29375 / UC Case 2006-209-0

## BRIEF DESCRIPTION

A method for creating a 3D micro-bubble plate for patterning biological and non-biological materials. Because each sample is at a known location, large numbers of samples may be studied and allow for significant statistical data sets, which will aid in diagnosing unknown agents or diseases inexpensively.

## FULL DESCRIPTION

This plating technique may be used to diagnose unknown pathogens. Cavities on the plate form gas bubbles, and wet regions are a site where cells will permanently attach. The cells that stick to the wet surface will grow, which will result in a patterned formation on a raised surface over the cavities for study and diagnosis.

Bubbles on the plate will prevent materials from adhering to the cavities. Gas bubbles are made from holes when the plate is submerged in liquid, and the gas bubbles form due to surface tension. The gas bubbles provide temporary scaffolding for tissue growth. The gas bubbles are then washed away, leaving behind cells that adhere to wet regions not coated with gas.

Cell fixation methods may also be used to cross-link the molecules in the living 3D tissue structures to produce hardened structures. Chemical additives may be added to further harden the plate.

## SUGGESTED USES

## Cellular assay

Tissue engineering
Micromechanical fabrication
Creation of complex tissue structures

## ADVANTAGES

Allows for plating cells, tissues, and chemical reactions at specific sites.
Directs tissue growth in a layered 3D structures for inexpensive disease diagnosis.
Allows one to building structures from living organisms that may be converted into non-living structures.
Uses holes with wet and dry regions for highly selective tissue growth

- Solves the issue of expensive, leaking stencils, which reduce pattern resolution and are difficult to manufacture.

Solves issues of techniques that use biodegradable polymer scaffolds which often erode and lack selectivity.

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## PATENT STATUS

| Country | Type | Number | Dated | Case |
| :--- | :--- | :--- | :--- | :--- |
| United States Of America | Issued Patent | $9,012,193$ | $04 / 21 / 2015$ | $2006-209$ |
| United States Of America | Issued Patent | $8,383,378$ | $02 / 26 / 2013$ | $2006-209$ |

## STATE OF DEVELOPMENT

## Patented

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