

Biotechnology | Medical Technology | Technology Offer

## Temporary Microwells – simple and efficient way to homogeneous cell distribution on cell arrays

### Field of application

Cell arrays are used in biological and medical research, e.g. to identify target structures for drugs, or in industrial drug development.

This invention makes it possible to produce cell arrays that combine the advantages of several conventional systems (multi-well plates and microarrays). In addition, the new arrays ensure homogeneous distribution of transfected materials and cells. They can also be used for solid phase transfection.

### State of the art

Cell arrays are used to carry out different studies on many cells simultaneously. In solid phase transfection, for example, transfection reagents are applied locally to a solid carrier material and dried. The cells, which are subsequently distributed as homogeneously as possible on the entire carrier, are transfected at these spots. A homogeneous distribution is decisive for comparative analysis.

In general, however, cells do not show the desired homogeneous distribution after seeding, but often accumulate at the edge ('coffee ring effect') or in the center of the array ('Marangoni effect').

### Innovation

As part of a project funded by the Baden-Württemberg Stiftung gGmbH, researchers at the BioQuant research institute (University of Heidelberg) have developed a simple method, which allows 'temporary microwells' to be created on cell substrates. This method enables homogeneous cell distribution with minimum technical effort. At the same time, it prevents sample crosstalk and cross-contamination.

This innovative technology is also easy to implement: Prior to cell seeding, two grids of different pore sizes are placed on top of each other and integrated into the plate. Based on the combination of the grids, whose pore sizes are perfectly positioned in relation to each other and to the spot sizes, temporary microstructures are formed on the large-format carrier material. These 'temporary microwells' specifically restrict cell and reagent movement. After cell seeding and grid removal, parallel processing of the cells can be resumed without interruption.

### Patent portfolio

An EP application (WO 2017/129367 A1) is pending.

### Your benefits at a glance

- ✓ Effective avoidance of
  - inhomogeneous cell distribution on any substrates
  - sample crosstalk
  - cross-contamination on cell arrays
- ✓ Parallel treatment using reagents is not inhibited by permanent microwells
- ✓ Enhanced analysis
- ✓ Development of new fields of application
- ✓ Price optimization

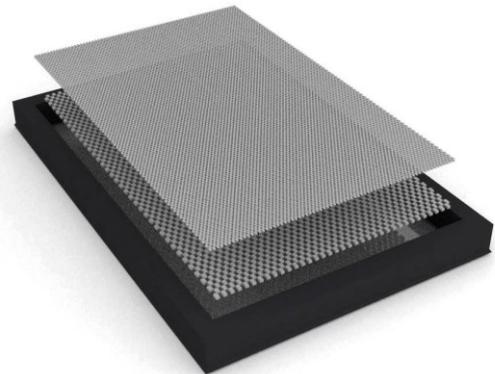


Figure: Preferred form of cell arrangement based on the present invention: Solid carrier (bottom), a first net (center) on the carrier surface and a second, finer net (top) on the first net [BioQuant, University of Heidelberg].

### Technology transfer

TLB GmbH manages inventions until they are marketable and offers companies opportunities for license and collaboration agreements.

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