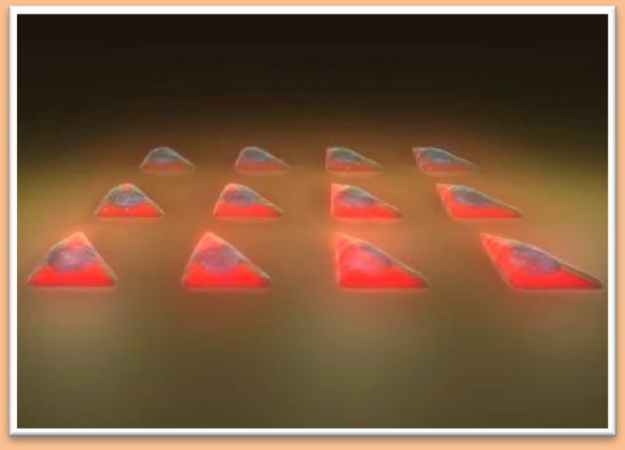
CENTER FOR PHYSICAL SCIENCES AND TECHNOLOGY

BALTFAB

CELL CHIPS



Our standard cell chips consist of micropatterns made of extracellular matrix (ECM) proteins (i.e. fibronectin) on a 20 nm thick, stable, bio inert hydrogel layer deposited on glass substrate.

Baltfab offers to make both custom pattern and custom protein chips.

CELL IMMOBILIZATION

ECM protein patterns provide preferential cell attachment sites:

- Cells remain fixed and fully functional at the same time.
- Easily applicable to standard cell cultures, i.e. HELA
- Allows evaluating by optical and biochemical methods
  - cell structure,
  - cell count,
  - cell life cycle
  - intracellular processes

CELL STANDARDIZATION

The shape, number and surface density of the cells are defined by the ECM protein pattern

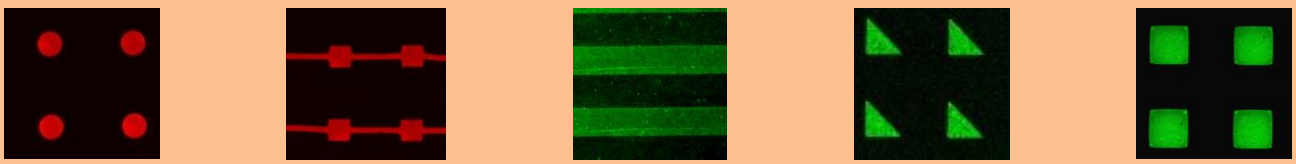
↓

The cell size, shape and surface density becomes the same across the chip

↓

This reduces variability and allows collecting statistically significant data with less observations and experimentation.

Chip sizes	Standard 20×20×0,180 mm Custom: from 5 mm to 5 cm
Pattern sizes	From 1 µm to 500 µm
Minimal solution volume applied for one chip	10 µl
Stable in	Air, aqueous buffer and ethanol solutions



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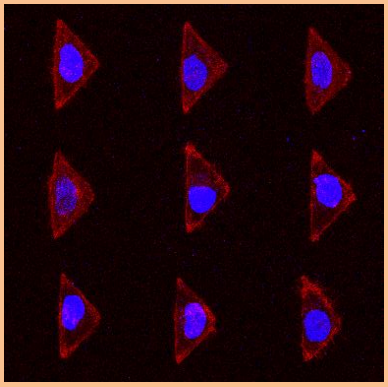
CELL VIABILITY

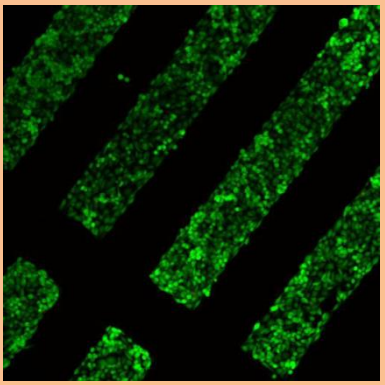
Cell chips allow changing cell state via shape to:

- stable
- natural
- compressed

whichever is the most active to the compound under investigation in cell culture.



HeLa on Fn patterns, courtesy of Dr. Holger Erfle, University of Heidelberg



Human corneal epithelium cells on Fn patterns, courtesy of Prof. May Griffith, Linköping university

CELL REACTIONS

Cells chips containing different proteins offer possibility to rapidly investigate if the cells react to the underlying proteins (e.g. different modifications) and also to determine the most suitable material.

CELL COMMUNICATION

The chips can have different pattern spacing (1 to 100 µm) to quantify the effects of intercellular communication.

We offer a variety of Cell Chips:

- Single protein chips
- Multiple protein chips (2 and more different proteins on the same substrate)
- Different patterns on the same chip
- Protein gradient on the chip

RAPID OPTIMIZATION

Cell chips can contain multiple patterns on the same substrate:

- different sizes
- different shapes (triangle, square, circle, lines)
- custom patterns by request

PROTEIN GRADIENTS

The protein gradient chip allows exploring cell activity at up to 5 different proteins/concentrations in a single experiment.

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