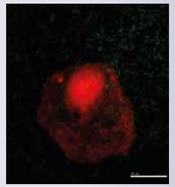
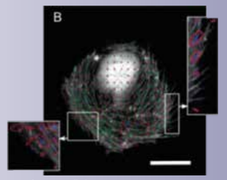
Applications

MecaTract

1) Fluorescence image of the beads near the surface of the hydrogel.
2) Intensity profile of the fluorescent beads.
Michel Moussus' thesis (LTM)



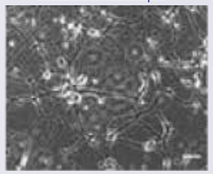
HUVECS cells transfected with LifeAct Dye (Actin).
Beads Ø.2 µm.
Curtesy of Alice Nicolas (LTM lab)



Intracellular stress pattern.
HUVECS, 5 kPa.
Soft Matter. Moussus et al, 2014

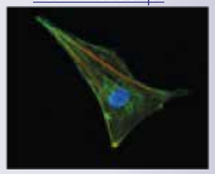
MecaChips®

Brain Mecachips™



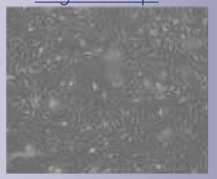
Mice neuronal cells growth on soft Laminin/ Poly-L-Lysine coated matrix.

Heart Mecachips™



iPSC-derived contractile cardio-myocyte on soft fibronectin coated matrix.

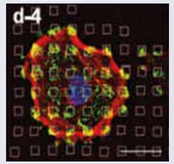
Lung Mecachips™



Human bronchial epithelial cells on soft collagen I coated matrix.

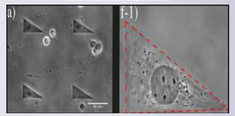
µpattern MecaChips®

Sub-cellular scale



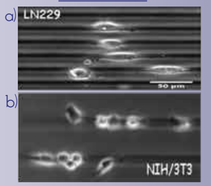
REF52 cell line YFP paxillin. Dots 3 µm.

Cellular scale



REF52 cell line
µpattern 80 µm by 40 µm.

Tissue scale



a) stiff stripes 10 µm/ soft stripes 90 µm.
b) stiff stripes 10 µm/soft stripes 40 µm.

Cell&Soft culture plates are dedicated to

Cell culture & Cell-based assays

Drug discovery

Stem cells

Microscopy & Time-lapse

Contact

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Cell&Soft

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Product Catalog

Soft culture plates for pleased cells

Robust — Repeatability
Reliable — Reproducibility
Ready to use — Time saving
Easy to use — Use it as a standard plate

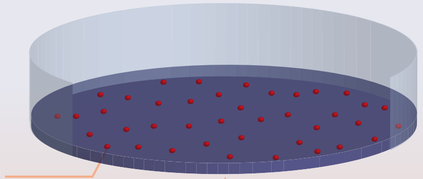
Soft plates for cell culture

MecaTract

Cell-contractile forces generated by the actomyosin cytoskeleton and transmitted to the extracellular matrix (ECM) drive cell adhesion, spreading and migration. These forces are known to be critical during embryo morphogenesis, wound healing, immune response as well as pathological processes such as cancer metastasis. Traction force microscopy (TFM) is a recognized experimental technique that measures the surface forces, also termed as tractions, that cells exert on a given substrate. It relies on the computational analysis of the direction and magnitude of elastic substrate deformations to reconstruct cell-generated traction forces. These deformations can be tracked and quantified by recording the displacement of fluorescent beads already embedded in the substrate, as a result of the mechanical stress induced by an adherent cell.

Applications

Traction Force Microscopy



Fluorescent beads
Size: 0.2 µm
Fluorophore: Dark red
Wavelength (Exit. / Emiss): 660/680 nm
Cell seeding surface: 6.15 cm^2
(Specific beads on request)

STORAGE
Temperature: +4°C
Shelf life: 3 months

ONE FORMAT: PD35

CHOOSE YOUR STIFFNESS
Standard stiffnesses:
- 8 kPa
- 10 kPa
- 12 kPa

(Specific stiffness on request)

CHOOSE YOUR COATING
Culture-dedicated surface chemistry:
- Vitronectin (human, recombinant truncated)
- Fibronectin (human, plasma)
- Collagen I (rat, tail)
- Laminin (mouse, EHS sarcoma)
- Poly-Ornithine/ Laminin
- Poly-Ornithine

BENEFITS
- Robust and reliable
- Ready and easy to use
- No biological risk (synthetic matrix)
- Glass bottom: ideal for microscopy
- Stiffness and coating are decoupled

Polyacrylamide gel with fluorescent carboxylate-modified microspheres uniformly dispersed inside

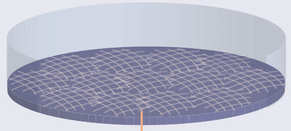
Soft plates for cell culture

MecaChips®

In vivo, cells lay in soft tissues with distinct physical properties. Rigidity plays a major role in a myriad of cellular mechanisms, such as carcinogenesis and metastasis formation, as well as stem cells differentiation and drug effectiveness. Mecachips® soft and flat matrices are new and physiological solutions for *in vitro* cell culture. They mimic the soft mechanical features of all human or animal tissues, thus preserving the cells *in vivo* characteristics.

Applications

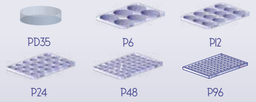
Areas: basic research, stem cells, oncology, neurology, cardiology, compatible with HCS/HTS platforms.
Tools: cell biology, molecular biology, biochemistry.



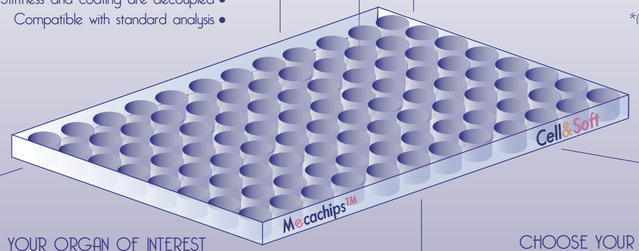
Hydrogel + ECM

BENEFITS
Scalable to screening workflow (no topography)
No biological risk (synthetic matrix)
Glass bottom: ideal for microscopy
Stiffness and coating are decoupled
Compatible with standard analysis

CHOOSE YOUR FORMAT*



(P384 on request)



CHOOSE YOUR ORGAN OF INTEREST

(Specific stiffness on request)

STORAGE
Temperature: +4°C
Shelf life: 3 months

CHOOSE YOUR COATING
Culture-dedicated surface chemistry:
- Vitronectin (human, recombinant truncated)
- Fibronectin (human, plasma)
- Collagen I (rat, tail)
- Laminin (mouse, EHS sarcoma)
- Poly-Ornithine/ Laminin
- Poly-Ornithine

Mecachips® Starter Kit

Get a pack of 3 plates to familiarize yourself with our substrates:

1. Select 3 organs of interest
2. Choose your coating for each of them
3. Choose between 3 formats: PD35, P6, P96

To be representative, in vitro cell devices should selectively provide culture conditions as close as possible to the mechanical microenvironment of targeted tissues.

Soft plates for cell culture

µpattern MecaChips®

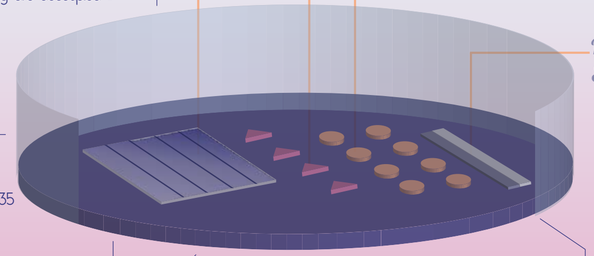
In vivo tissues are soft, elastic and mechanically textured. Living tissues rigidity properties present microscale variations that can play a crucial role in cell response (in a same tissue, rigidity varies from Pa/mm to kPa/µm). Relying on unique patented technologies and know-how derived from the microelectronic field, the mechanical properties of Mecachips® matrices can be finely tuned up to the µm scale to replicate such variations.

Applications

Areas: basic research, stem cells, oncology, neurology, cardiology.
Tools: adhesion, cell shape standardization, cell confinement, cell migration.

BENEFITS
No biological risk (synthetic matrix)
Glass bottom: ideal for microscopy
Stiffness and coating are decoupled

Stripes of rigidity
Geometric patterns
Rigidity Steps



ONE FORMAT: PD35

STIFFNESS ON REQUEST

CHOOSE YOUR COATING
Culture-dedicated surface chemistry:
- Vitronectin (human, recombinant truncated)
- Fibronectin (human, plasma)
- Collagen I (rat, tail)
- Laminin (mouse, EHS sarcoma)
- Poly-Ornithine/ Laminin
- Poly-Ornithine

STORAGE
Temperature: +4°C
Shelf life: 3 months

SHAPES
- Subcellular to cellular scale (1 - 100 µm): geometric patterns (dots, triangles, stripes)
- Tissue scale (Pa/mm to kPa/µm): steps, gradients

(Custom patterns on request)

Control your mechanical cell environment at the micrometer scale.