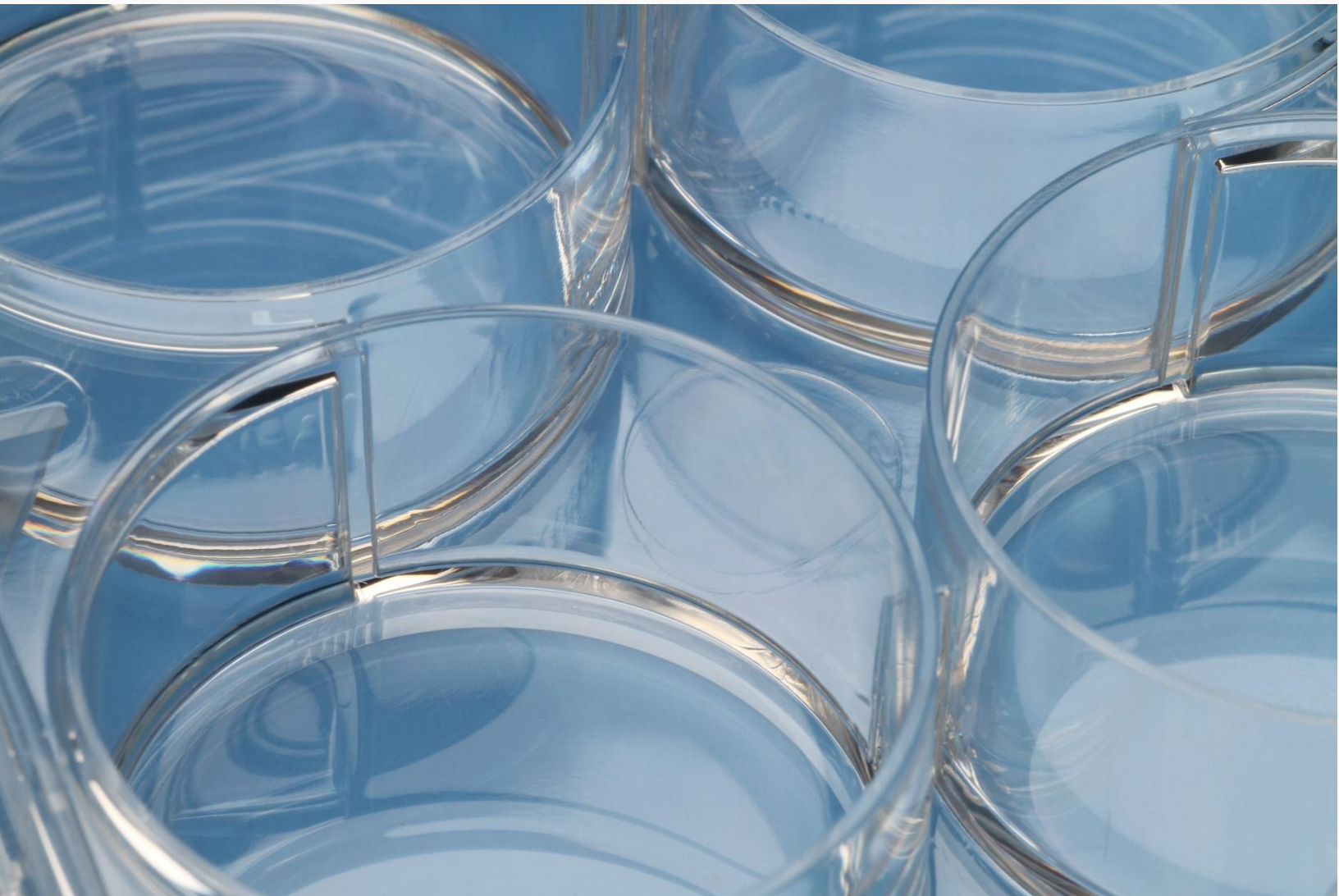
Advanced BioMatrix

CytoSoft®

Culturing Cells on an *In Vivo* Softness



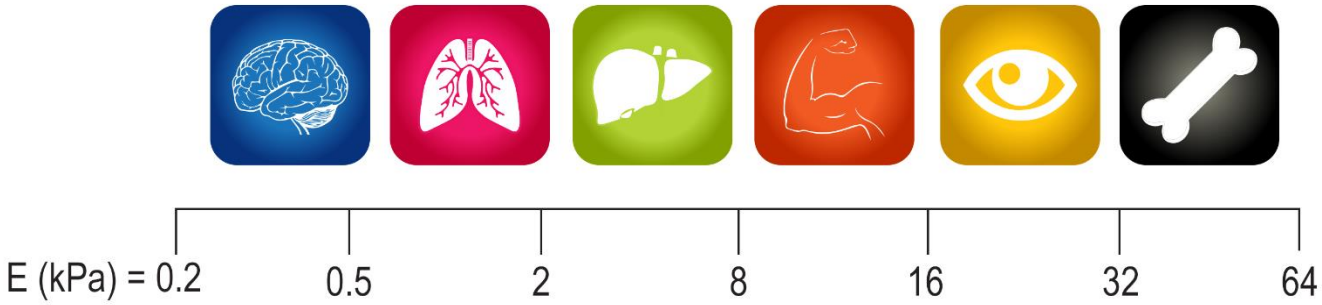
The Technology

Mechanotransduction refers to the processes through which cells sense and respond to mechanical stimuli by converting them to biochemical signals that elicit specific cellular responses. For example, changing to a stiffer substrate alters the differentiation potential of human mesenchymal stem cells to favor bone formation over cartilage and adipose tissues.

CytoSoft® plates have a thin layer of functionalized silicone with a stiffness between 0.2-64 kPa, allowing you to culture cells on a physiologically relevant matrix.

Why CytoSoft®?

- Various areas throughout the body have significantly different degrees of matrix stiffness (ie. brain tissue ~0.2 kPa vs cartilage >64 kPa).
- Plastic and glass are >100,000X stiffer than physiological tissues.
- Culturing cells on an *in vivo* stiffness helps create *in vivo*-like results.
- Substrate stiffness affects propagation, gene expression, morphology, pluripotency, migration, differentiation, lineage specification

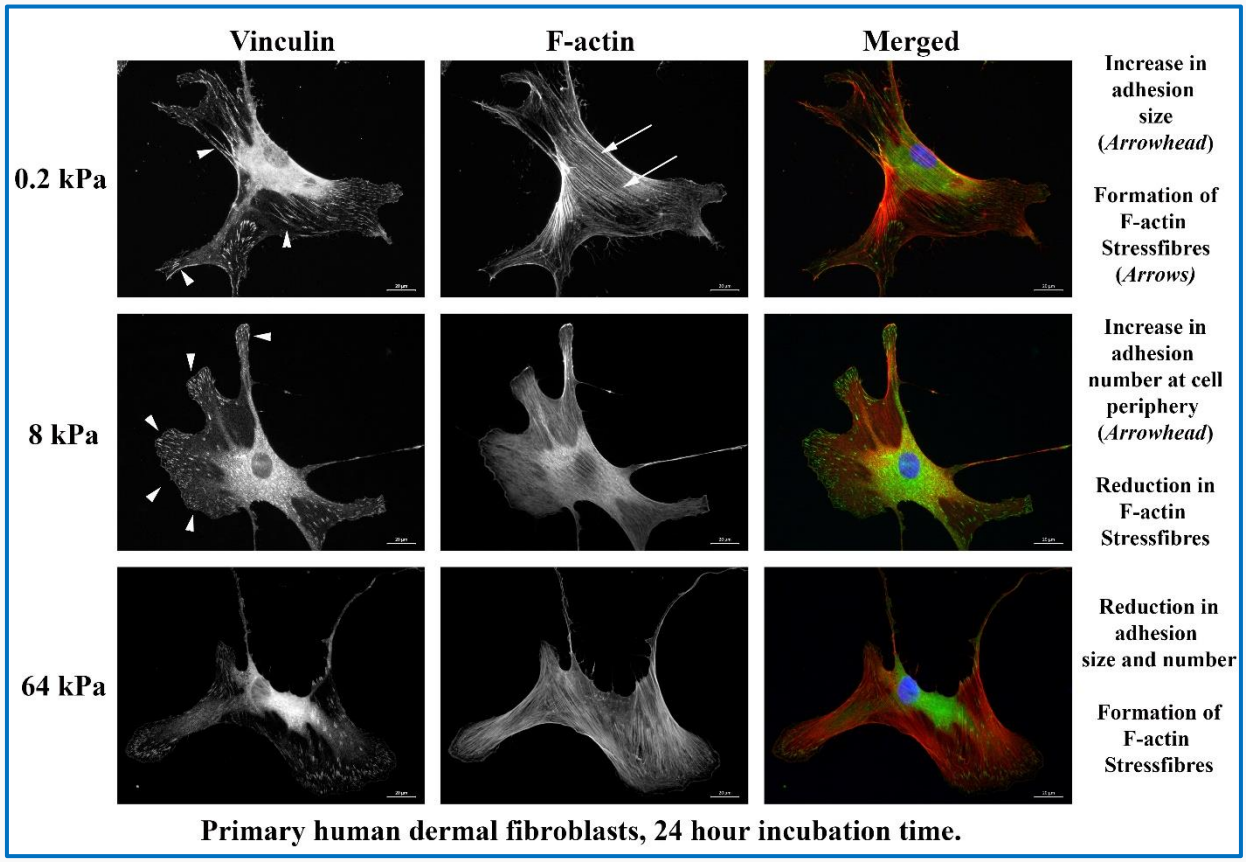


Step 1: CytoSoft® Discovery Kit

Discovering the Optimal Substrate Stiffness

The CytoSoft® Discovery Kit comes in a 7-pack of 6-well plates covering the entire physiological range of stiffness, including 0.2, 0.5, 2, 8, 16, 32 and 64 kPa.

- Seed cells across entire range in one experiment.
- Note differences in cells, as seen below.



Primary human dermal fibroblasts, 24 hour incubation time.

As seen above, primary human dermal fibroblasts were cultured on 0.2, 8 and 64 kPa CytoSoft® plates. Fibroblasts grown on the 0.2 kPa and 64 kPa experienced high levels of F-actin stressfibers. Fibroblasts grown on the 8 kPa had an increase of adhesion sites and reduction of stressfibers.

Step 2: CytoSoft® 6-Well Plates

Further Research or Long-Term Cell Culture

- Buy an individual stiffness in a 5-pack of 6-well plates.
- Further identify cellular behaviors in a more narrow range of stiffness.
- Transition from long-term cell culture on plastic plates to CytoSoft® plates

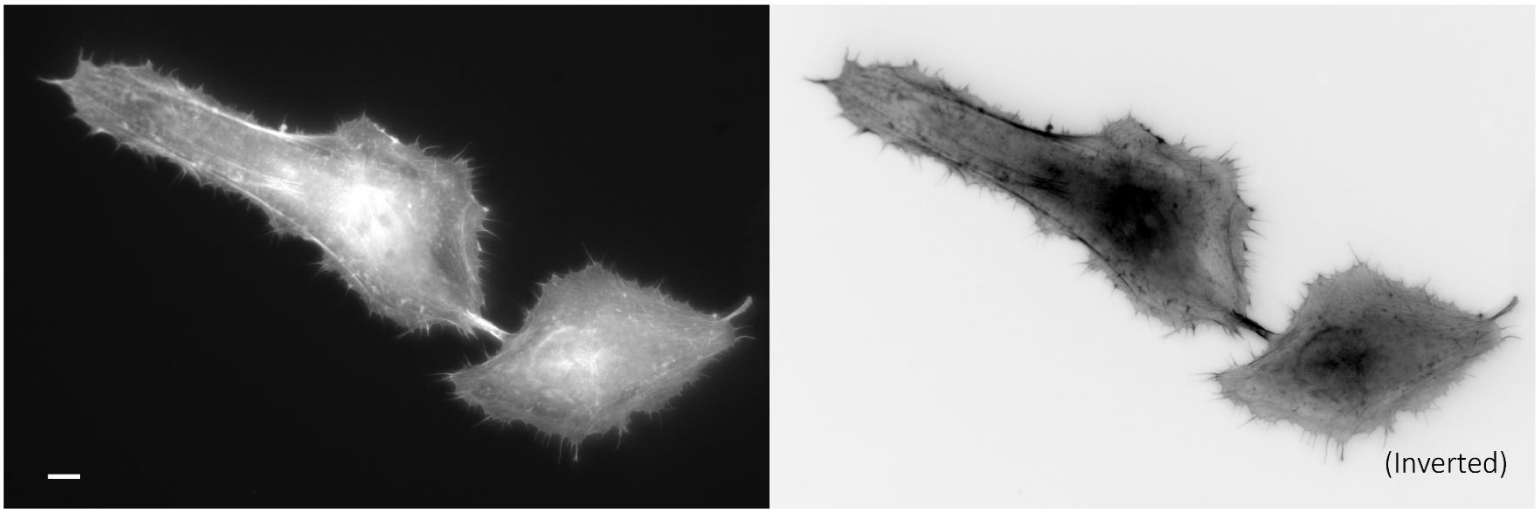
The following cells have been cultured on CytoSoft® plates:

Adipose-Derived Stem Cell
Astrocyte
Fibroblast
HeLa
HUVEC
Cardiac fibroblast
Mesenchymal Stem Cell
MDCK
Myocyte
Neural Stem Cell
Glial cell
Cardiomyocyte
Longitudinal Smooth Muscle

Step 3: CytoSoft® Imaging Plates

High Resolution, Publication Quality Images

- #1.5 glass base
- Thinner silicone layer
- 24 and 96-well formats
- Obtain high resolution images



Live HeLa cells expressing fluorescent marker F-actin (lifeact-GFP). 60X 1.4NA oil objective. Scale bar 10 microns
These images were taken on an 8 kpa *CytoSoft® Imaging* plate to demonstrate high resolution imaging capability

Ditch the plastic plates and begin culturing cells on CytoSoft® today.

Product	Catalog #
CytoSoft® Discovery Kit	#5190-7EA
CytoSoft® 6-well Plate, Elastic Modulus 0.2 kPa	#5165-5EA
CytoSoft® 6-well Plate, Elastic Modulus 0.5 kPa	#5140-5EA
CytoSoft® 6-well Plate, Elastic Modulus 2 kPa	#5141-5EA
CytoSoft® 6-well Plate, Elastic Modulus 8 kPa	#5142-5EA
CytoSoft® 6-well Plate, Elastic Modulus 16 kPa	#5143-5EA
CytoSoft® 6-well Plate, Elastic Modulus 32 kPa	#5144-5EA
CytoSoft® 6-well Plate, Elastic Modulus 64 kPa	#5145-5EA
CytoSoft® Imaging 24-well Plate, Elastic Modulus 0.2 kPa	#5183-1EA
CytoSoft® Imaging 24-well Plate, Elastic Modulus 0.5 kPa	#5184-1EA
CytoSoft® Imaging 24-well Plate, Elastic Modulus 2 kPa	#5185-1EA
CytoSoft® Imaging 24-well Plate, Elastic Modulus 8 kPa	#5186-1EA
CytoSoft® Imaging 24-well Plate, Elastic Modulus 16 kPa	#5187-1EA
CytoSoft® Imaging 24-well Plate, Elastic Modulus 32 kPa	#5188-1EA
CytoSoft® Imaging 24-well Plate, Elastic Modulus 64 kPa	#5189-1EA
CytoSoft® Imaging 96-well Plate, Elastic Modulus 0.2 kPa	#5255-1EA
CytoSoft® Imaging 96-well Plate, Elastic Modulus 0.5 kPa	#5256-1EA
CytoSoft® Imaging 96-well Plate, Elastic Modulus 2 kPa	#5257-1EA
CytoSoft® Imaging 96-well Plate, Elastic Modulus 8 kPa	#5258-1EA
CytoSoft® Imaging 96-well Plate, Elastic Modulus 16 kPa	#5259-1EA
CytoSoft® Imaging 96-well Plate, Elastic Modulus 32 kPa	#5260-1EA
CytoSoft® Imaging 96-well Plate, Elastic Modulus 64 kPa	#5261-1EA

To order product or learn more, visit our website at

www.AdvancedBioMatrix.com

CytoSoft® plates require an extracellular matrix coating for cell attachment. Here are our recommended matrices:

PureCol® Type I Collagen #5005-100ML is the most widely used ECM for coating CytoSoft® plates.

- >99.9% Purity
- Cited in >2000 Publications
- Lot-to-Lot Consistency

Type III Human Collagen Solution, 10 mg	#5021-10MG
Type IV Human Collagen, Lyophilized, 5 mg	#5022-5MG
Fibronectin, Human, Lyophilized, 5 mg	#5080-5MG
Vitronectin, Human, Solution, 0.1 mg	#5051-0.1MG

References

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