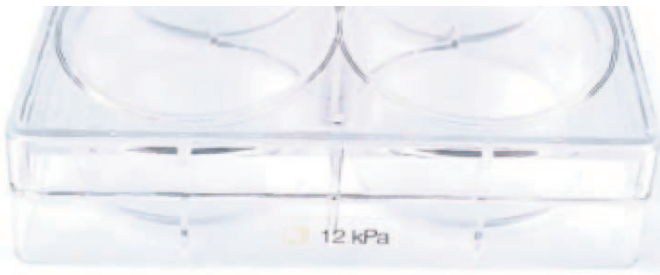




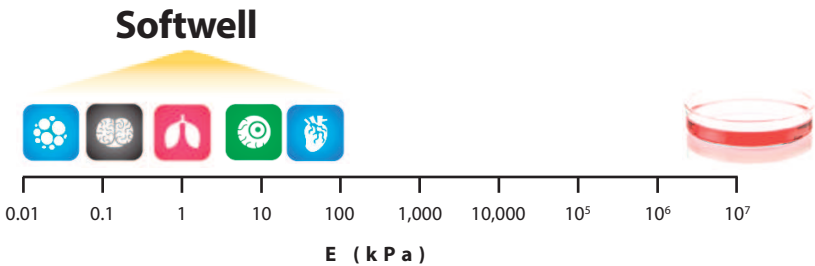
Softwell[®] 

Hydrogel-coated wells | **Product Guide**



Introducing Softwell

It's like a Petri dish. Only to a cell, it's much softer. And not just perceptibly so, but specifically tuned to the softness of the body's tissues. That means you can culture neurons in an environment as soft as the brain, cardiomyocytes on the stiffness of muscle, or whatever your cells' tissue of origin may be.



The stiffness of a material is commonly quantified by its elastic modulus (E). Conventional tissue culture plastic is nearly one billion times stiffer than the body's softest tissues.

Softwell is a transparent hydrogel bound to the surface of any cell culture well. It's less than a millimeter thick, so you might not notice it's there, but a cell can feel the difference. Importantly, it's compatible with most cell-based assays and detection methods, so you can make cell culture more physiologically relevant without complicating your life at the benchtop.

Stiffness matters



3. Chowdhury, F. et al. Soft substrates promote homogeneous self-renewal of embryonic stem cells via downregulating cell-matrix tractions. *PLoS ONE* 5, e15655 (2010).

4. Liu, F. et al. Feedback amplification of fibrosis through matrix stiffening and COX-2 suppression. *J. Cell Biol* 190, 693-706 (2010).

5. Schrader, J. et al. Matrix stiffness modulates proliferation, chemotherapeutic response, and dormancy in hepatocellular carcinoma cells. *Hepatology* 53, 1192-1205 (2011).

6. Engler, A.J. et al. Embryonic cardiomyocytes beat best on a matrix with heart-like elasticity: scar-like rigidity inhibits beating. *J. Cell. Sci* 121, 3794-3802 (2008).

7. Swift, J. et al. Nuclear lamin-A scales with tissue stiffness and enhances matrix-directed differentiation. *Science* 341, 1240104 (2013).

The influence of extracellular matrix stiffness has been documented across many cell types, including fibroblasts, cancer cells, stem cells, and even platelets.

The vast majority of these studies have utilized ECM-coated polyacrylamide gels, which mimic biological tissues in two critical ways: physical softness and porosity. The latter permits cells to feed basolaterally, which is not possible on substrates such as polystyrene, glass, or silicone (PDMS).

Here's a snippet of the many ways in which stiffness matters:

Mouse embryonic stem cells generate homogenous undifferentiated colonies in the absence of exogenous LIF on soft ($E=0.6$ kPa) substrates.³

Lung fibroblasts are relatively quiescent on substrates that approximate the stiffness of lung ($E=1$ kPa) but increase expression of fibrogenic markers on stiffer substrates.⁴

Hepatocellular carcinoma cells cultured on soft ($E=1$ kPa) substrates become dormant, but exhibit enhanced clonogenic capacity following chemotherapy.⁵

Embryonic cardiomyocytes beat optimally at 1 Hz and develop actomyosin striations on substrates that mimic the stiffness of muscle ($E=11$ kPa).⁶

Nuclear lamin-A is a 'mechanostat' that scales with ECM stiffness and stabilizes the nucleus to regulate transcription.⁷

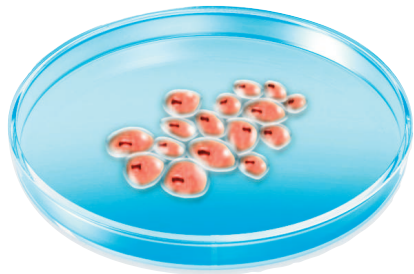
Scientists have long been using hydrogels formed from ECM components such as collagen, fibrin, and Matrigel™ to elicit cell phenotypes that are not expressed on rigid substrates. In fact, when Ross G. Harrison invented mammalian cell culture more than 100 years ago, he did so by growing neural explants within a matrix of clotted lymph.⁹ However, since hydrogels are typically impractical for routine or high-throughput applications, culturing cells on substrates such as glass and polystyrene became standard practice, and remains so today.

Softwell grew from a desire to simplify the practice of culturing cells on soft hydrogels. More than being vaguely soft, we sought to quantitatively replicate the stiffness of a broad range of biological tissues in conventional cell culture formats. Because cell behavior is also influenced by the presentation of ECM ligands, we developed an efficient method to couple them to the hydrogel. The result is a platform that provides control over matrix stiffness *and* ligand specificity.

To find the optimal condition for your cell type, we suggest screening across a range of hydrogel stiffness and ligand concentrations for a desired phenotype or response. Or, if the elastic modulus of your cells' native tissue is known, start there.

A practical solution

Hydrogel
stiffness
+
ECM
ligand



9. Harrison, R.G. The outgrowth of the nerve fiber as a mode of protoplasmic movement. *J. Exp. Zool.* 9, 787-846 (1910).

Soft, yet confident



Softwell is softer than an ordinary cell culture well. But you can treat it like one, because the hydrogels are:

Thin. Wash away unbound detection molecules and perform cell-based assays with minimal interference from the hydrogel.

Transparent. The hydrogels are optically clear and compatible with most types of microscopic imaging.

Bound to the well. You can gently aspirate, flick, or shake. Trypsinize, passage, and keep cells in culture as long as you'd like. With a gentle touch, you can even scrape cells off the surface.

A 2D system. Cells are restricted to the hydrogel surface, making them readily accessible for isolation and analysis.

Activated to bind ECM proteins. Specify the cell-matrix interaction by adding your desired ligand prior to cell seeding. Or, go straight to culture using hydrogels pre-coated with collagen.

Robust. Softwell is stable at room temperature from six months of the printed manufacture date.

Safe. Softwell is certified non-cytotoxic and pyrogen free.

Xeno-free. Easy Coat and Non-Activated hydrogels contain no animal-derived components.

Softwell hydrogels are available in multiwell plates, dishes, coverslips, and chamber slides, specifiable in 9 standard stiffness values, an ultrasoft range, three hydrogel functionalization schemes, and additional specialty options.

Choosing your well

Format

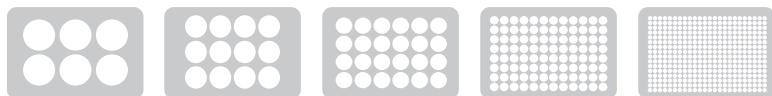
Softwell®

Hydrogels bound to 6, 12, 24, and 96 well polystyrene plates.



Softwell G™

Hydrogels bound to 6, 12, 24, 96, and 384 well glass bottom plates with a black polystyrene frame and #1.5 (0.16-0.19 mm thick) borosilicate glass.



Petrisoft™

Hydrogels bound to 35, 100, and 150 mm polystyrene dishes.



Softview™

Hydrogels bound to 35 mm dishes with a #1.5 glass bottom.



Softslip™

Hydrogels bound to glass coverslips in 6, 12, and 24 well plates. Coverslips are removable.



Softslide™

Hydrogels bound to Lab-Tek™ 16 well glass chamber slides.



Elastic Modulus (kPa)

0.2 0.5 1
soft

2 4 8
intermediate

12 25 50
stiff

Function

Easy Coat™

Hydrogels activated to bind virtually any protein, including ECM ligands such as collagen, fibronectin, and laminin.

Collagen I

Hydrogels bound with type I collagen from bovine skin or rat tail.

Non-Activated

Use as an ultra-low protein and cell attachment surface or couple ligands to the gel using your own methods.

Specialty Options



SoftTrac™

Hydrogels with fluorescent microspheres bound at the surface for traction force microscopy.



Adhesion Free™

Hydrogels that resist protein adsorption and are 100% nonadherent to cells. Ideal for suspension culture or generation of cell spheroids.



Ultrasoft™

Hydrogels as soft as mucus bound to glass substrates. Choose from elastic moduli of 30, 70, or 100 Pa.

Screen and High-throughput screen (HTS) options allow you to survey cell behaviors across a comprehensive range of elastic moduli. The Screen option is available in all formats and includes one unit of each standard stiffness + one hydrogel-free unit. HTS is available in 96 and 384 well plates and includes 8 and 32 wells of each standard stiffness, respectively, varying in a columnwise fashion.

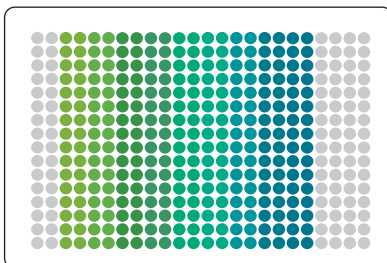
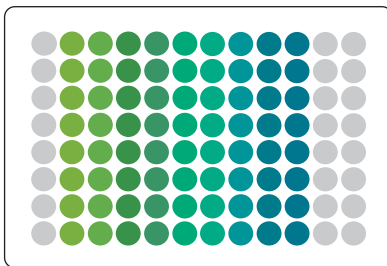
A new kind
of screen

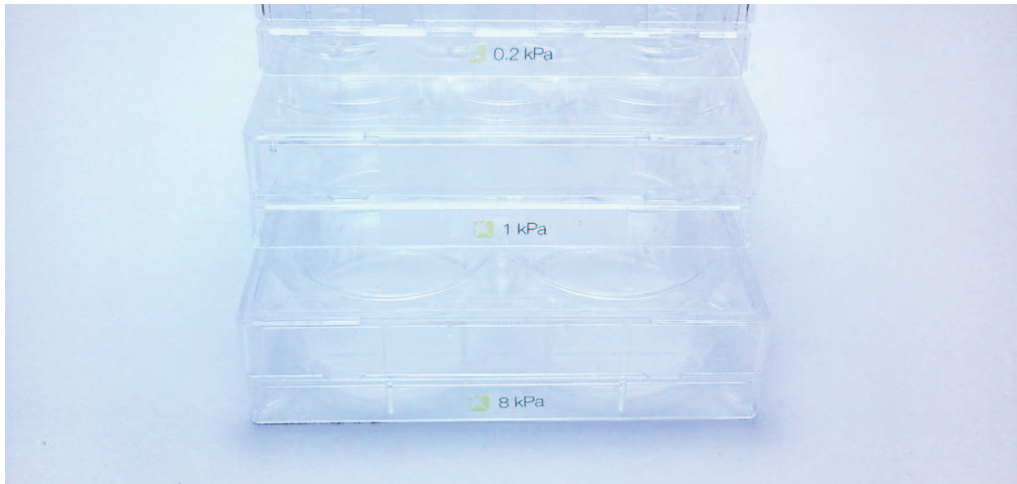
S | Screen



*No hydrogel. PS=polystyrene; G=glass

HTS | High-throughput screen

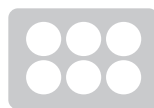




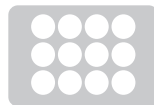
Softwell

Hydrogels bound to polystyrene plates

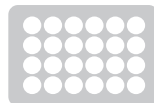
E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SW6-EC-0.2	SW6-COL-0.2	SW6-NA-0.2
0.5	SW6-EC-0.5	SW6-COL-0.5	SW6-NA-0.5
1	SW6-EC-1	SW6-COL-1	SW6-NA-1
2	SW6-EC-2	SW6-COL-2	SW6-NA-2
4	SW6-EC-4	SW6-COL-4	SW6-NA-4
8	SW6-EC-8	SW6-COL-8	SW6-NA-8
12	SW6-EC-12	SW6-COL-12	SW6-NA-12
25	SW6-EC-25	SW6-COL-25	SW6-NA-25
50	SW6-EC-50	SW6-COL-50	SW6-NA-50
polystyrene screen	POLY6-EC SW6-EC-S	POLY6-COL SW6-COL-S	POLY6-NA SW6-NA-S

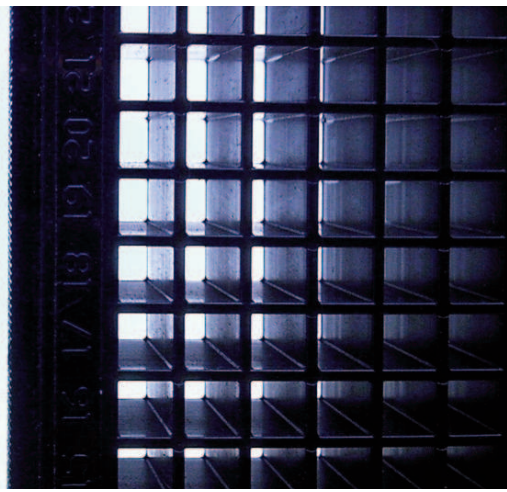
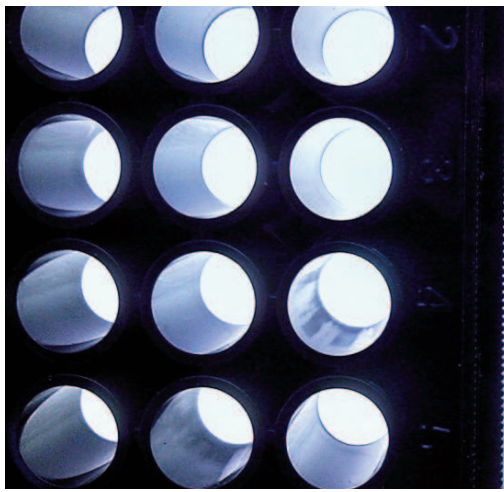


E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SW12-EC-0.2	SW12-COL-0.2	SW12-NA-0.2
0.5	SW12-EC-0.5	SW12-COL-0.5	SW12-NA-0.5
1	SW12-EC-1	SW12-COL-1	SW12-NA-1
2	SW12-EC-2	SW12-COL-2	SW12-NA-2
4	SW12-EC-4	SW12-COL-4	SW12-NA-4
8	SW12-EC-8	SW12-COL-8	SW12-NA-8
12	SW12-EC-12	SW12-COL-12	SW12-NA-12
25	SW12-EC-25	SW12-COL-25	SW12-NA-25
50	SW12-EC-50	SW12-COL-50	SW12-NA-50
polystyrene screen	POLY12-EC SW12-EC-S	POLY12-COL SW12-COL-S	POLY12-NA SW12-NA-S



E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SW24-EC-0.2	SW24-COL-0.2	SW24-NA-0.2
0.5	SW24-EC-0.5	SW24-COL-0.5	SW24-NA-0.5
1	SW24-EC-1	SW24-COL-1	SW24-NA-1
2	SW24-EC-2	SW24-COL-2	SW24-NA-2
4	SW24-EC-4	SW24-COL-4	SW24-NA-4
8	SW24-EC-8	SW24-COL-8	SW24-NA-8
12	SW24-EC-12	SW24-COL-12	SW24-NA-12
25	SW24-EC-25	SW24-COL-25	SW24-NA-25
50	SW24-EC-50	SW24-COL-50	SW24-NA-50
polystyrene screen	POLY24-EC SW24-EC-S	POLY24-COL SW24-COL-S	POLY24-NA SW24-NA-S

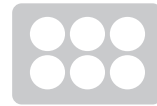




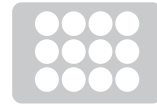
Softwell G

Hydrogels bound to glass bottom plates

E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SW6G-EC-0.2	SW6G-COL-0.2	SW6G-NA-0.2
0.5	SW6G-EC-0.5	SW6G-COL-0.5	SW6G-NA-0.5
1	SW6G-EC-1	SW6G-COL-1	SW6G-NA-1
2	SW6G-EC-2	SW6G-COL-2	SW6G-NA-2
4	SW6G-EC-4	SW6G-COL-4	SW6G-NA-4
8	SW6G-EC-8	SW6G-COL-8	SW6G-NA-8
12	SW6G-EC-12	SW6G-COL-12	SW6G-NA-12
25	SW6G-EC-25	SW6G-COL-25	SW6G-NA-25
50	SW6G-EC-50	SW6G-COL-50	SW6G-NA-50
glass	GLASS6-EC	GLASS6-COL	GLASS6-NA
screen	SW6G-EC-S	SW6G-COL-S	SW6G-NA-S



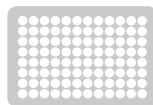
E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SW12G-EC-0.2	SW12G-COL-0.2	SW12G-NA-0.2
0.5	SW12G-EC-0.5	SW12G-COL-0.5	SW12G-NA-0.5
1	SW12G-EC-1	SW12G-COL-1	SW12G-NA-1
2	SW12G-EC-2	SW12G-COL-2	SW12G-NA-2
4	SW12G-EC-4	SW12G-COL-4	SW12G-NA-4
8	SW12G-EC-8	SW12G-COL-8	SW12G-NA-8
12	SW12G-EC-12	SW12G-COL-12	SW12G-NA-12
25	SW12G-EC-25	SW12G-COL-25	SW12G-NA-25
50	SW12G-EC-50	SW12G-COL-50	SW12G-NA-50
glass	GLASS12-EC	GLASS12-COL	GLASS12-NA
screen	SW12G-EC-S	SW12G-COL-S	SW12G-NA-S



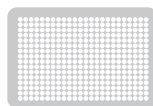
E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SW24G-EC-0.2	SW24G-COL-0.2	SW24G-NA-0.2
0.5	SW24G-EC-0.5	SW24G-COL-0.5	SW24G-NA-0.5
1	SW24G-EC-1	SW24G-COL-1	SW24G-NA-1
2	SW24G-EC-2	SW24G-COL-2	SW24G-NA-2
4	SW24G-EC-4	SW24G-COL-4	SW24G-NA-4
8	SW24G-EC-8	SW24G-COL-8	SW24G-NA-8
12	SW24G-EC-12	SW24G-COL-12	SW24G-NA-12
25	SW24G-EC-25	SW24G-COL-25	SW24G-NA-25
50	SW24G-EC-50	SW24G-COL-50	SW24G-NA-50
glass	GLASS24-EC	GLASS24-COL	GLASS24-NA
screen	SW24G-EC-S	SW24G-COL-S	SW24G-NA-S

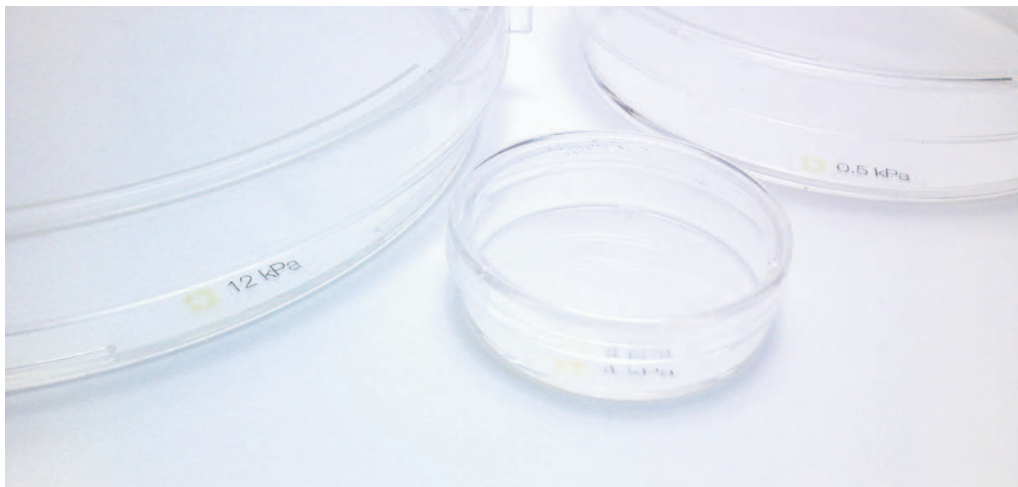


E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SW96G-EC-0.2	SW96G-COL-0.2	SW96G-NA-0.2
0.5	SW96G-EC-0.5	SW96G-COL-0.5	SW96G-NA-0.5
1	SW96G-EC-1	SW96G-COL-1	SW96G-NA-1
2	SW96G-EC-2	SW96G-COL-2	SW96G-NA-2
4	SW96G-EC-4	SW96G-COL-4	SW96G-NA-4
8	SW96G-EC-8	SW96G-COL-8	SW96G-NA-8
12	SW96G-EC-12	SW96G-COL-12	SW96G-NA-12
25	SW96G-EC-25	SW96G-COL-25	SW96G-NA-25
50	SW96G-EC-50	SW96G-COL-50	SW96G-NA-50
glass	GLASS96-EC	GLASS96-COL	GLASS96-NA
screen	SW96G-EC-S	SW96G-COL-S	SW96G-NA-S
HTS	SW96G-EC-HTS	SW96G-COL-HTS	SW96G-NA-HTS



E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SW384G-EC-0.2	SW384G-COL-0.2	SW384G-NA-0.2
0.5	SW384G-EC-0.5	SW384G-COL-0.5	SW384G-NA-0.5
1	SW384G-EC-1	SW384G-COL-1	SW384G-NA-1
2	SW384G-EC-2	SW384G-COL-2	SW384G-NA-2
4	SW384G-EC-4	SW384G-COL-4	SW384G-NA-4
8	SW384G-EC-8	SW384G-COL-8	SW384G-NA-8
12	SW384G-EC-12	SW384G-COL-12	SW384G-NA-12
25	SW384G-EC-25	SW384G-COL-25	SW384G-NA-25
50	SW384G-EC-50	SW384G-COL-50	SW384G-NA-50
glass	GLASS384-EC	GLASS384-COL	GLASS384-NA
screen	SW384G-EC-S	SW384G-COL-S	SW384G-NA-S
HTS	SW384G-EC-HTS	SW384G-COL-HTS	SW384G-NA-HTS





Petrisoft

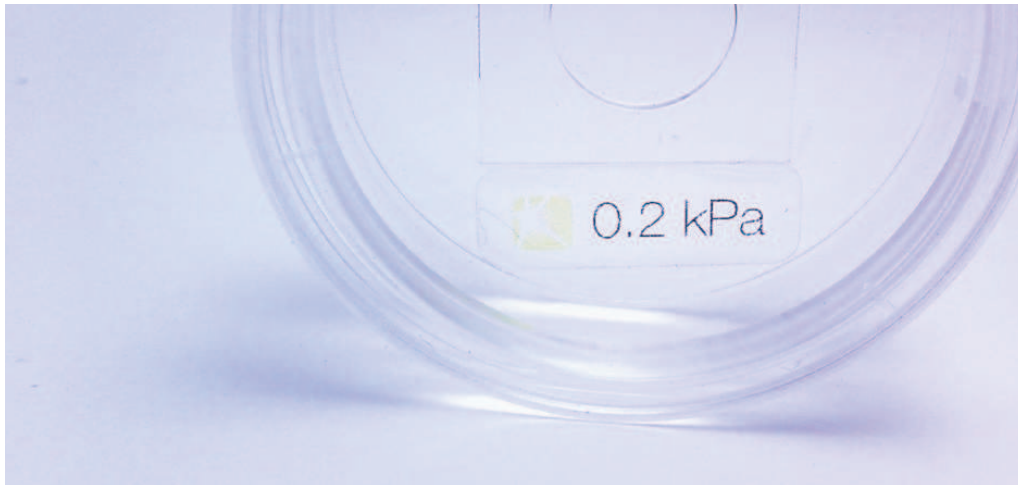
Hydrogels bound to tissue culture dishes

E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	PS35-EC-0.2	PS35-COL-0.2	PS35-NA-0.2
0.5	PS35-EC-0.5	PS35-COL-0.5	PS35-NA-0.5
1	PS35-EC-1	PS35-COL-1	PS35-NA-1
2	PS35-EC-2	PS35-COL-2	PS35-NA-2
4	PS35-EC-4	PS35-COL-4	PS35-NA-4
8	PS35-EC-8	PS35-COL-8	PS35-NA-8
12	PS35-EC-12	PS35-COL-12	PS35-NA-12
25	PS35-EC-25	PS35-COL-25	PS35-NA-25
50	PS35-EC-50	PS35-COL-50	PS35-NA-50
polystyrene	POLY35-EC	POLY35-COL	POLY35-NA
screen	PS35-EC-S	PS35-COL-S	PS35-NA-S

E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	PS100-EC-0.2	PS100-COL-0.2	PS100-NA-0.2
0.5	PS100-EC-0.5	PS100-COL-0.5	PS100-NA-0.5
1	PS100-EC-1	PS100-COL-1	PS100-NA-1
2	PS100-EC-2	PS100-COL-2	PS100-NA-2
4	PS100-EC-4	PS100-COL-4	PS100-NA-4
8	PS100-EC-8	PS100-COL-8	PS100-NA-8
12	PS100-EC-12	PS100-COL-12	PS100-NA-12
25	PS100-EC-25	PS100-COL-25	PS100-NA-25
50	PS100-EC-50	PS100-COL-50	PS100-NA-50
polystyrene	POLY100-EC	POLY100-COL	POLY100-NA
screen	PS100-EC-S	PS100-COL-S	PS100-NA-S

E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	PS150-EC-0.2	PS150-COL-0.2	PS150-NA-0.2
0.5	PS150-EC-0.5	PS150-COL-0.5	PS150-NA-0.5
1	PS150-EC-1	PS150-COL-1	PS150-NA-1
2	PS150-EC-2	PS150-COL-2	PS150-NA-2
4	PS150-EC-4	PS150-COL-4	PS150-NA-4
8	PS150-EC-8	PS150-COL-8	PS150-NA-8
12	PS150-EC-12	PS150-COL-12	PS150-NA-12
25	PS150-EC-25	PS150-COL-25	PS150-NA-25
50	PS150-EC-50	PS150-COL-50	PS150-NA-50
polystyrene	POLY150-EC	POLY150-COL	POLY150-NA
screen	PS150-EC-S	PS150-COL-S	PS150-NA-S





Softview

Hydrogels bound to glass bottom dishes

E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SV3510-EC-0.2	SV3510-COL-0.2	SV3520-NA-0.2
0.5	SV3510-EC-0.5	SV3510-COL-0.5	SV3520-NA-0.5
1	SV3510-EC-1	SV3510-COL-1	SV3520-NA-1
2	SV3510-EC-2	SV3510-COL-2	SV3520-NA-2
4	SV3510-EC-4	SV3510-COL-4	SV3520-NA-4
8	SV3510-EC-8	SV3510-COL-8	SV3520-NA-8
12	SV3510-EC-12	SV3510-COL-12	SV3520-NA-12
25	SV3510-EC-25	SV3510-COL-25	SV3520-NA-25
50	SV3510-EC-50	SV3510-COL-50	SV3520-NA-50
glass	POLY35-G10-EC	POLY35-G10-COL	POLY35-G10-NA
screen	SV3510-EC-S	SV3510-COL-S	SV3520-NA-S



10 mm glass bottom
35 mm dish

E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SV3520-EC-0.2	SV3520-COL-0.2	SV3520-NA-0.2
0.5	SV3520-EC-0.5	SV3520-COL-0.5	SV3520-NA-0.5
1	SV3520-EC-1	SV3520-COL-1	SV3520-NA-1
2	SV3520-EC-2	SV3520-COL-2	SV3520-NA-2
4	SV3520-EC-4	SV3520-COL-4	SV3520-NA-4
8	SV3520-EC-8	SV3520-COL-8	SV3520-NA-8
12	SV3520-EC-12	SV3520-COL-12	SV3520-NA-12
25	SV3520-EC-25	SV3520-COL-25	SV3520-NA-25
50	SV3520-EC-50	SV3520-COL-50	SV3520-NA-50
glass	POLY35-G20-EC	POLY35-G20-COL	POLY35-G20-NA
screen	SV3520-EC-S	SV3520-COL-S	SV3520-NA-S



20 mm glass bottom
35 mm dish

Softslip

Hydrogels bound to glass coverslips

E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SS6-EC-0.2	SS6-COL-0.2	SS6-NA-0.2
0.5	SS6-EC-0.5	SS6-COL-0.5	SS6-NA-0.5
1	SS6-EC-1	SS6-COL-1	SS6-NA-1
2	SS6-EC-2	SS6-COL-2	SS6-NA-2
4	SS6-EC-4	SS6-COL-4	SS6-NA-4
8	SS6-EC-8	SS6-COL-8	SS6-NA-8
12	SS6-EC-12	SS6-COL-12	SS6-NA-12
25	SS6-EC-25	SS6-COL-25	SS6-NA-25
50	SS6-EC-50	SS6-COL-50	SS6-NA-50
glass screen	POLY6-CS32-EC SS6-EC-S	POLY6-CS32-COL SS6-COL-S	POLY6-CS32-NA SS6-NA-S



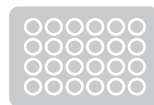
32 mm coverslips

E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SS12-EC-0.2	SS12-COL-0.2	SS12-NA-0.2
0.5	SS12-EC-0.5	SS12-COL-0.5	SS12-NA-0.5
1	SS12-EC-1	SS12-COL-1	SS12-NA-1
2	SS12-EC-2	SS12-COL-2	SS12-NA-2
4	SS12-EC-4	SS12-COL-4	SS12-NA-4
8	SS12-EC-8	SS12-COL-8	SS12-NA-8
12	SS12-EC-12	SS12-COL-12	SS12-NA-12
25	SS12-EC-25	SS12-COL-25	SS12-NA-25
50	SS12-EC-50	SS12-COL-50	SS12-NA-50
glass screen	POLY12-CS18-EC SS12-EC-S	POLY12-CS18-COL SS12-COL-S	POLY12-CS18-NA SS12-NA-S

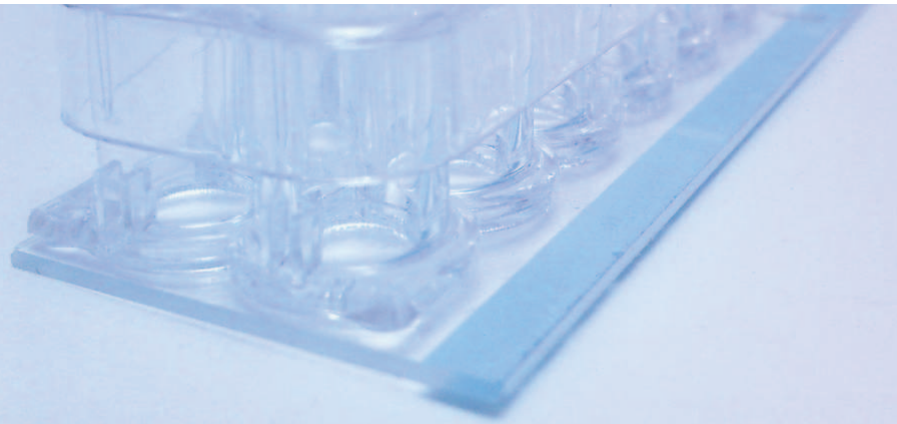


18 mm coverslips

E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SS24-EC-0.2	SS24-COL-0.2	SS24-NA-0.2
0.5	SS24-EC-0.5	SS24-COL-0.5	SS24-NA-0.5
1	SS24-EC-1	SS24-COL-1	SS24-NA-1
2	SS24-EC-2	SS24-COL-2	SS24-NA-2
4	SS24-EC-4	SS24-COL-4	SS24-NA-4
8	SS24-EC-8	SS24-COL-8	SS24-NA-8
12	SS24-EC-12	SS24-COL-12	SS24-NA-12
25	SS24-EC-25	SS24-COL-25	SS24-NA-25
50	SS24-EC-50	SS24-COL-50	SS24-NA-50
glass screen	POLY24-CS12-EC SS24-EC-S	POLY24-CS12-COL SS24-COL-S	POLY24-CS12-NA SS24-NA-S



12 mm coverslips



Softslide

Hydrogels bound to glass chamber slides*

E (kPa)	Easy Coat	Collagen I	Non-Activated
0.2	SSL16-EC-0.2	SSL16-COL-0.2	SSL16-NA-0.2
0.5	SSL16-EC-0.5	SSL16-COL-0.5	SSL16-NA-0.5
1	SSL16-EC-1	SSL16-COL-1	SSL16-NA-1
2	SSL16-EC-2	SSL16-COL-2	SSL16-NA-2
4	SSL16-EC-4	SSL16-COL-4	SSL16-NA-4
8	SSL16-EC-8	SSL16-COL-8	SSL16-NA-8
12	SSL16-EC-12	SSL16-COL-12	SSL16-NA-12
25	SSL16-EC-25	SSL16-COL-25	SSL16-NA-25
50	SSL16-EC-50	SSL16-COL-50	SSL16-NA-50
glass	SLIDE16-EC	SLIDE16-COL	SLIDE16-NA
screen	SSL16-EC-S	SSL16-COL-S	SSL16-NA-S



*with removable chamber walls.

SoftTrac

Hydrogels bound with fluorescent microspheres

Format

35 mm dish
35 mm dish / 10 mm glass bottom
35 mm dish / 20 mm glass bottom
6 well plate
12 well plate
24 well plate
96 well plate
6 well glass bottom plate
12 well glass bottom plate
24 well glass bottom plate
96 well glass bottom plate
384 well glass bottom plate
16 well glass chamber slide

Easy Coat

PS35-0.5R-EC-X
SV2510-0.5R-EC-X
SV3520-0.5R-EC-X
SW6-0.5R-EC-X
SW12-0.5R-EC-X
SW24-0.5R-EC-X
SW96-0.5R-EC-X
SW6G-0.5R-EC-X
SW12G-0.5R-EC-X
SW24G-0.5R-EC-X
SW96G-0.5R-EC-X
SW384G-0.5R-EC-X
SSL16-0.5R-EC-X

Collagen I

PS35-0.5R-COL-X
SV3510-0.5R-COL-X
SV3520-0.5R-COL-X
SW6-0.5R-COL-X
SW12-0.5R-COL-X
SW24-0.5R-COL-X
SW96-0.5R-COL-X
SW6G-0.5R-COL-X
SW24G-0.5R-COL-X
SW24G-0.5R-COL-X
SW96G-0.5R-COL-X
SW384G-0.5R-COL-X
SSL16-0.5R-COL-X



Red fluorescent
Ex/Em 580/605
0.5 mm diameter spheres

Format

35 mm dish
35 mm dish / 10 mm glass bottom
35 mm dish / 20 mm glass bottom
6 well plate
12 well plate
24 well plate
96 well plate
6 well glass bottom plate
12 well glass bottom plate
24 well glass bottom plate
96 well glass bottom plate
384 well glass bottom plate
16 well glass chamber slide

Easy Coat

PS35-0.5YG-EC-X
SV2510-0.5YG-EC-X
SV3520-0.5YG-EC-X
SW6-0.5YG-EC-X
SW12-0.5YG-EC-X
SW24-0.5YG-EC-X
SW96-0.5YG-EC-X
SW6G-0.5YG-EC-X
SW12G-0.5YG-EC-X
SW24G-0.5YG-EC-X
SW96G-0.5YG-EC-X
SW384G-0.5YG-EC-X
SSL16-0.5YG-EC-X

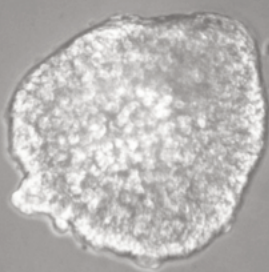
Collagen I

PS35-0.5YG-COL-X
SV3510-0.5YG-COL-X
SV3520-0.5YG-COL-X
SW6-0.5YG-COL-X
SW12-0.5YG-COL-X
SW24-0.5YG-COL-X
SW96-0.5YG-COL-X
SW6G-0.5YG-COL-X
SW24G-0.5YG-COL-X
SW24G-0.5YG-COL-X
SW96G-0.5YG-COL-X
SW384G-0.5YG-COL-X
SSL16-0.5YG-COL-X



Yellow-green fluorescent
Ex/Em 505/515
0.5 mm diameter spheres

X = 0.2, 0.5, 1, 2, 4, 8, 12, 25, or 50 kPa hydrogels



Adhesion Free

100% non-adherent to cells

Flat Bottom

Format	Base	Wall	Cat#
35 mm dish	Polystyrene	Clear	PS35-AF
100 mm dish	Polystyrene	Clear	PS100-AF
150 mm dish	Polystyrene	Clear	PS150-AF
6 well plate	Polystyrene	Clear	SW6-AF
12 well plate	Polystyrene	Clear	SW12-AF
24 well plate	Polystyrene	Clear	SW24-AF
96 well plate	Polystyrene	Clear	SW96-AF-FB
384 well plate	Polystyrene	Clear	SW384-AF-FB
6 well plate	Glass	Black	SW6G-AF
12 well plate	Glass	Black	SW12G-AF
24 well plate	Glass	Black	SW24G-AF
96 well plate	Glass	Black	SW96G-AF-FB
384 well plate	Glass	Black	SW384G-AF-FB



Round Bottom

Format	Base	Wall	Cat#
96 well plate	Polystyrene	Clear	SW96-AF-RB
384 well plate	Polystyrene	Clear	SW384-AF-RB
96 well plate	Glass	Black	SW96G-AF-RB
384 well plate	Glass	Black	SW384G-AF-RB





Ultrasoft

Hydrogels as soft as mucus

Format

35 mm dish / 10 mm glass bottom
 35 mm dish / 20 mm glass bottom
 6 well glass bottom plate
 12 well glass bottom plate
 24 well glass bottom plate
 96 well glass bottom plate
 384 well glass bottom plate
 6 well plate / 32 mm coverslip
 12 well plate / 18 mm coverslip
 24 well plate / 12 mm coverslip
 16 well glass chamber slide

Easy Coat

SV3510-EC-Y
 SV3520-EC-Y
 SW6G-EC-Y
 SW12G-EC-Y
 SW24G-EC-Y
 SW96G-EC-Y
 SW384G-EC-Y
 SS6-EC-Y
 SS12-EC-Y
 SS24-EC-Y
 SSL16-EC-Y

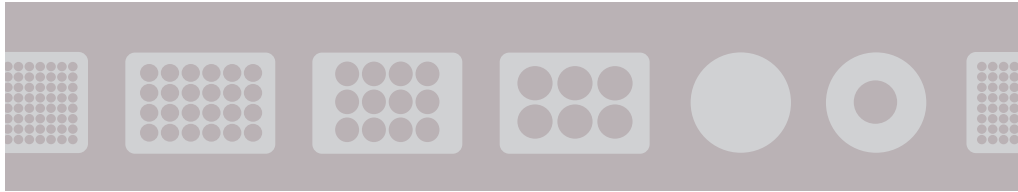
Collagen I

SV3510-COL-Y
 SV3520-COL-Y
 SW6G-COL-Y
 SW12G-COL-Y
 SW24G-COL-Y
 SW96G-COL-Y
 SW384G-COL-Y
 SS6-COL-Y
 SS12-COL-Y
 SS24-COL-Y
 SSL16-COL-Y

Non-Activated

SV3510-NA-Y
 SV3520-NA-Y
 SW6G-NA-Y
 SW12G-NA-Y
 SW24G-NA-Y
 SW96G-NA-Y
 SW384G-NA-Y
 SS6-NA-Y
 SS12-NA-Y
 SS24-NA-Y
 SSL16-NA-Y

Y = 0.03, 0.07, or 0.1 kPa hydrogels



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Softwell® 

Hydrogel-coated wells | **User's Guide**

Storage and shelf life

Easy Coat, Collagen I coated, and **Non-Activated** hydrogels should be stored at 4-25°C and used within six months of the printed manufacture date (MFD). Hydration is critical, so keep the hydrogels in the sealed package until ready for use. Unused hydrogels may be maintained in sterile water or buffer without loss of performance.

Adhesion Free products should be stored at 4-25°C and used within one year of the manufacture date. They do not require hydration.

Easy Coat

1 Resuspend ligand in sterile water, PBS, HBSS, or other buffer at pH 6-9. Immerse hydrogels and incubate at room temperature for ≥ 30 min.

2 Remove solution and seed cells.

Easy Coat hydrogels bind to collagen (types I and III), fibronectin and laminin. A suggested condition is 10 $\mu\text{g}/\text{ml}$ type I collagen in sterile water. Other molecules may bind, but have not been tested.

Collagen I

1 Seed cells.

Hydrogels are coated with type I collagen from bovine skin or rat tail.

Non-Activated

1 Seed cells for suspension culture or functionalize the hydrogel to enable cell adhesion.

Non-activated hydrogels resist protein and cell adhesion. To enable cell attachment and growth, a suitable ligand must be coupled to the gel via chemical crosslinking or other method.

Adhesion Free

1 Seed cells for suspension culture.

Adhesion Free hydrogels are 100% non-adherent to cells.

Hydrogel FAQs

How does 'Easy Coat' work?

Easy Coat hydrogels are populated with quinone groups, which form covalent bonds with molecules containing a primary amine, thiol, or strong nucleophile – essentially any protein. Be aware that once all the binding sites are reacted, additional molecules will not bind directly to the hydrogel.

Can I detach my cells with trypsin?

Yes, but prior to adding trypsin, incubate the hydrogel in serum-free media or buffer for ≥ 30 min at 37°C to remove serum absorbed in the gel. To bypass this step, use TrypLE™ (Life Technologies), which dissociates cells in serum-containing conditions.

How do I isolate RNA?

We recommend using a spin-based kit such as RNeasy® (Qiagen). Incubate the hydrogel with lysis buffer for 10 min on ice, collect the lysate, and repeat to recover RNA absorbed in the gel.

Can I scrape my cells off the hydrogel?

A cell scraper with a silicone rubber blade will do the trick (available from CytoOne®). Scrape with gentle, short strokes to avoid disrupting the hydrogel.

Can I fix my cells?

Softwell is compatible with fixatives such as formalin, glutaraldehyde, and methanol. Note that dehydrating agents will cause reversible gel opacity.

Can I image my cells?

The hydrogels are transparent and compatible with brightfield, phase contrast, and fluorescence microscopy. The combined thickness of the hydrogel and substrate is within the focal range of 40X objectives. For higher magnifications, use Softslip or Softslide hydrogels, which can be inverted onto a coverslip.

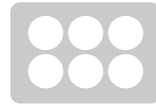
Is Softwell compatible with my assay?

The hydrogels are thin, transparent, and bound to the well, which maximizes compatibility with a wide range of cell-based assays. To ensure removal of unbound detection molecules, perform wash steps 3x longer than directed by standard protocols.

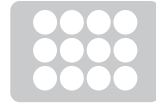
Is Softwell like Matrigel™?

Hydrogels < 1 kPa are as soft as Matrigel. But whereas Matrigel is comprised of tumor-derived proteins and growth factors, Softwell is based on a synthetic polymer.

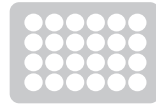
Recommended
volume per well / dish



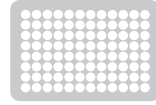
2 ml



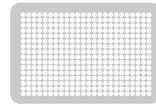
1 ml



0.5 ml



0.1 ml



0.025 ml



0.1 ml



35 mm

2 ml



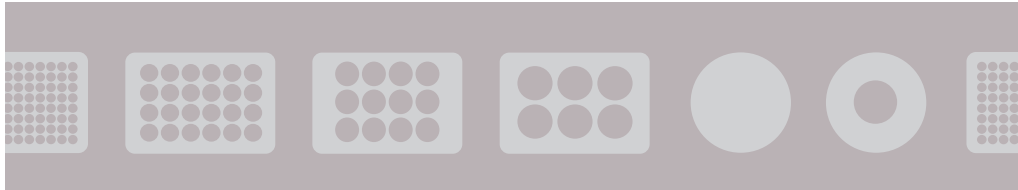
100 mm

10 ml



150 mm

20 ml



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