

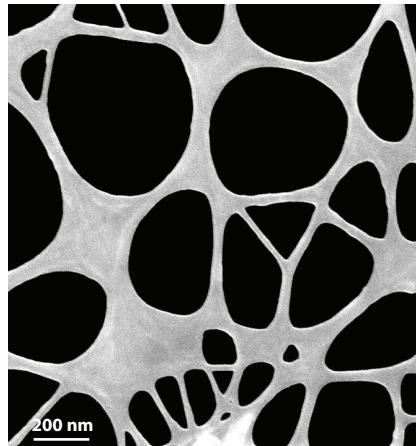
# VitroGel 3D & VitroGel 3D-RGD

ready-to-use tunable hydrogel system for 3D cell culture and beyond

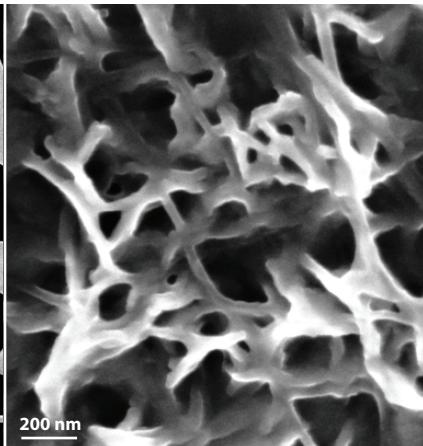
An animal origin-free polysaccharide hydrogel closely mimicking the natural extracellular matrix (ECM) environment, which brings many advantages that bridge *in vitro* and *in vivo* studies.

**VitroGel 3D-RGD** is VitroGel 3D modified with RGD peptide for better cell adhesion.

- ▶ Perform procedure at room temperature with a simple mixing step.
- ▶ Pure synthetic. Better batch to batch consistency.
- ▶ Adjustable hydrogel strength.



SEM image of VitroGel 3D hydrogel



SEM image of VitroGel 3D-RGD hydrogel

20  
MIN ↘

**3D cell culture process can be done in 20 min**  
(includes a 10-15 min waiting time for hydrogel stabilization)



#### Ready-to-use

Just mix with your cells and you are DONE!



#### Transparent

The hydrogel system is transparent and compatible to different imaging systems for cell observation.



#### Without undesired proteins

VitroGel 3D is an animal origin-free polysaccharide hydrogel system.



#### Easy Cell harvesting

After 3D cell culture, cells can be easily harvested from the hydrogel by using standard centrifuge methods.



#### Room temperature stable

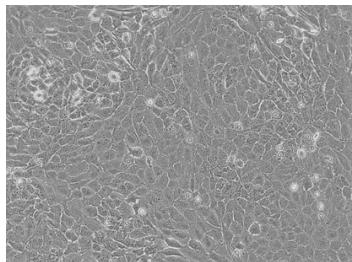
The hydrogel system is room temperature stable with neutral pH. Get rid of your ice bucket!



#### Injectable

Using the right mixing ration, the hydrogel becomes injectable, suitable for *in vivo* studies.

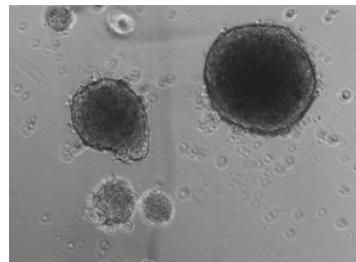
## VitroGel 3D Example of 3D cell culture: Betalox 5 cells 2D vs 3D



2D cell culture on regular well-plate (control)

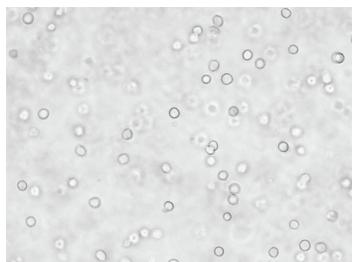


3D cell culture on VitroGel 3D (day 1)

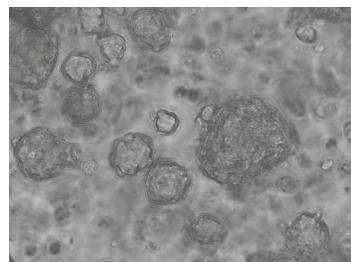


3D cell culture on VitroGel 3D (day 7)

## VitroGel 3D-RGD Example of 3D cell culture: Ins-1 Cells

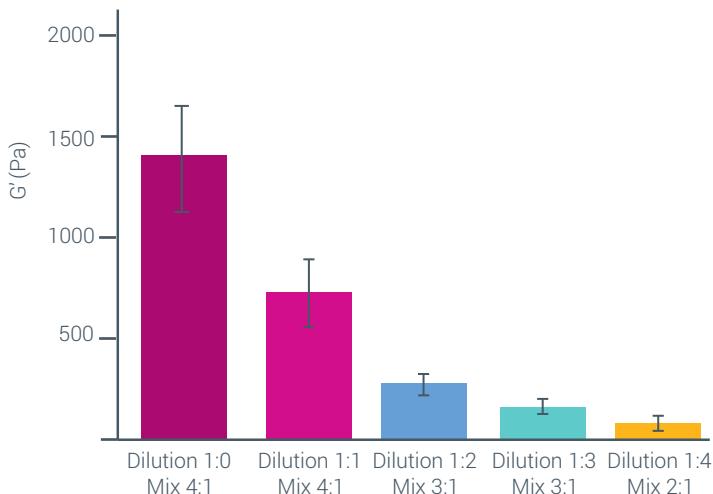


Day 1



Day 14

### Hydrogel Strength at Different Dilutions and Mixing Ratios



Hydrogel strength of VitroGel 3D with DMEM medium at different dilutions and mixing ratios (The dilution or mixing ratio is v/v ratio). Different mixing ratios of diluted hydrogel solution and cell culture medium affect the speed of hydrogel formation and the final gel strength. At the same dilution of hydrogel solution, hydrogel formation is faster when mixed with higher volume of cell culture medium (The hydrogel forming speed: 2:1 > 3:1 > 4:1 of mixing ratio).

Ins-1 cells were 3D cultured on VitroGel 3D-RGD system at high density (about  $2 \times 10^6$  cells/mL) with RPMI 1640 medium. The dilution 1:3 (v/v), mixing ratio 1:1 (v/v).

**Dilution:** The dilution of the ready to use VitroGel (v/v).

**Mixing ratio:** The mixing ratio of the VitroGel solution with the cell suspension (v/v)

### Characteristics Comparison Chart

	VitroGel 3D	Basement membrane matrix	Polymer matrix	Hanging Drop Plate
Ready-to-use	✓	✗	✓	✓
Mimic Natural ECM	✓	✓	✗	✗
No undesired growth factors	✓	✗	✓	✓
Room temperature operation	✓	✗	✓	✓
Neutral pH	✓	✗	N/A	N/A
Cell harvesting	✓	✗	✗	✓
Transparent	✓	✓	✗	✓
Modifiable for cell adhesion	✓	✓	✓	✗
Control hydrogel stiffness	✓	✓	✗	✗
Injectable	✓	✓	✗	✗

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Not For Use in Diagnostic Procedures.

Manufactured by TheWell Bioscience.