

VitroGel® ORGANOID

Usage restrictions: For Research Use Only. Not For Use In Diagnostic Procedures.


Product Description

VitroGel® ORGANOID is a xeno-free (animal origin-free) hydrogel that support the growth of patient-derived organoids or organoids developed from pluripotent stem cells (PSCs). The VitroGel ORGANOID KIT includes four types of hydrogels, which were formulated with various bio-functional ligands, mechanical strengths, and biodegradability, to fulfill the needs of different organoid culture conditions.

The hydrogel is ready-to-use at room temperature, has a neutral pH, transparent, permeable, and compatible with different imaging systems. The solution transforms into a hydrogel matrix by simply mixing with the cell culture medium.

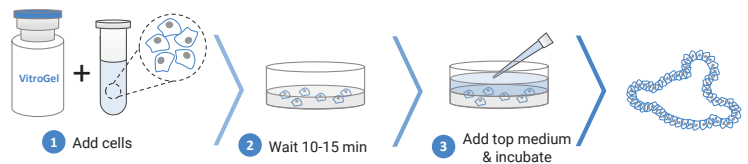
VitroGel ORGANOID hydrogels are suitable for both 3D cell culture and 2D hydrogel coating applications. The hydrogels can work together with VitroGel STEM (Cat# VHM02), a hydrogel system for 3D static suspension cultures and scale-up of human pluripotent stem cells, by transferring the stem cell spheroids from VitroGel STEM to VitroGel ORGANOID hydrogels for organoid differentiation. Key growth factors and molecules can be mixed directly with the hydrogel matrix or add on the top of the hydrogel. Organoids cultured in this system can be easily harvested out with our VitroGel Cell Recovery Solution.

VitroGel ORGANOID hydrogels provide a well-defined 3D microenvironment for the future of personalized medicine.

 VitroGel ORGANOID hydrogels are ready-to-use. Just mix with your cells. There is no cross-linking agent or the need to adjust the hydrogel concentration. Simple 20 minute protocol.

SPECIFICATIONS	
Formulation	Xeno-free. Polysaccharide based functional hydrogel
Use	Organoid culture
Operation	Ready-to-use at room temperature
Biocompatibility	Biocompatible, safe for animal studies
Injection	Injectable hydrogel for <i>in vivo</i> studies and laboratory automation
Cell Harvesting	Use VitroGel Cell Recovery Solution (Cat# MS03-100)
pH	Neutral
Storage	Store at 2-8°C. Ships at ambient temperature.
Stability	15 months from date of manufacture.
Uses	60 uses for each 2 mL bottle at 50 µL/test 300 uses for each 10 mL bottle at 50 µL/test

3D Organoid Culture Workflow "Just add cells"



Protocols

Visit www.thewellbio.com/faq-hydrogel for frequently asked questions on cell culture preparation and operation. More protocols can be found at www.thewellbio.com/protocols

CHOOSE THE CULTURE METHOD THAT FITS YOUR PROJECT

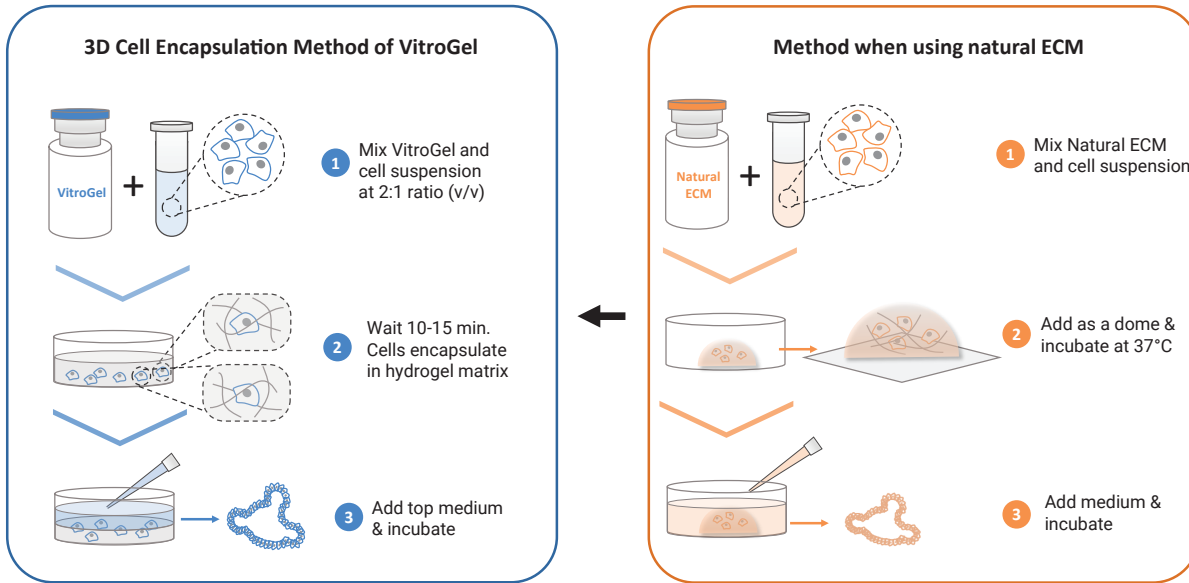
The VitroGel ORGANOID Discovery Kit provides four types of hydrogel for your experiment. By testing all four types, you can experiment with which version performs best for your organoid culture.

VitroGel ORGANOID system can culture organoids in variety of methods:

- 3D cell culture encapsulation
- 2D hydrogel coating
- Hydrogel-Cell droplet (A unique method only to VitroGel ORGANOID)

Review all the following VitroGel ORGANOID protocol methods and compare each to the natural ECM methods and choose the one that best fits your project.

3D Cell Culture Protocol



VitroGel ORGANOID-1 is used as an example below. Replace VitroGel ORGANOID-1 with other versions of choice.

- Bring VitroGel ORGANOID-1 hydrogels to room temperature or warm at 37°C.
- Prepare the cell/organoid suspension in the culture medium.
Optional: If cells cultured in medium supplemented with critical growth factors, prepare cell suspension with 3X critical growth factors.
- Add 1 mL VitroGel ORGANOID-1 hydrogel to 500 µL cell suspension and gently pipette up and down 5-10 times to mix thoroughly.
 - **Keep VitroGel and cell medium at 2:1 v/v mixing ratio**
- Transfer the hydrogel mixture to a well plate. Gently tilt/swirl the well plate to ensure there is an even coverage on the bottom of each well. The recommended volume of hydrogel for specific well plates is listed below.

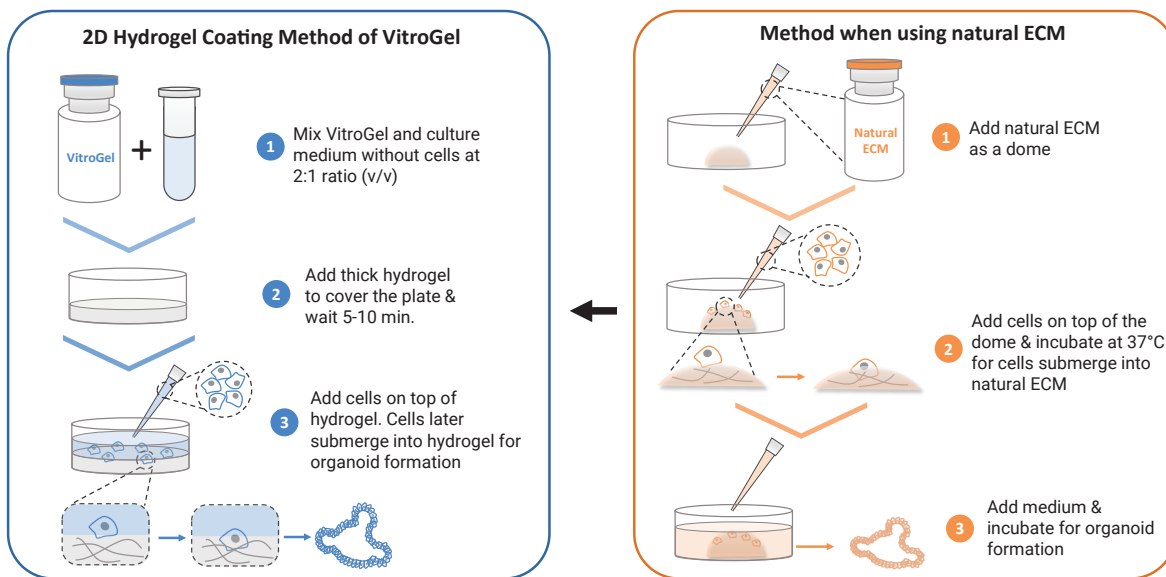
	6 well plate	12 well plate	24 well plate	48 well plate	96 well plate
Volume per well	1200 µL	600 µL	300 µL	150 µL	50 µL

- Wait 10-15 min at room temperature for a soft gel formation.
Note: During the hydrogel forming process, do not disrupt the hydrogel by tilting or shaking the well plate.
- Carefully cover the hydrogel with additional medium. The recommended volume of cover medium for specific well plates is listed below.

	6 well plate	12 well plate	24 well plate	48 well plate	96 well plate
Volume per well	1200 µL	600 µL	300 µL	150 µL	50 µL

- Place the well plate in an incubator and change the top medium according to the experiment design.
Note: Recommend changing 50-80% of the same type of top medium without disturbing the hydrogel. However, change 100% of the top medium if switching to a different medium during organoid culture.

2D Hydrogel Coating Protocol



VitroGel ORGANOID-1 is used as an example below. Replace VitroGel ORGANOID-1 with other versions of choice.

- Bring VitroGel ORGANOID-1 hydrogels to room temperature or warm at 37°C.
- Add 1 mL VitroGel ORGANOID-1 hydrogel to 500 µL cell culture medium and gently pipette up and down 5-10 times to mix thoroughly.
 - Keep VitroGel and cell medium at 2:1 v/v mixing ratio.
 - Optional: If critical growth factors are need in the hydrogel to support the organoid culture, prepare the cell culture medium with 3X critical growth factors.
- Transfer the hydrogel mixture to a well plate. Gently tilt/swirl the well plate to ensure there is an even coverage on the bottom of each well. The recommended volume of hydrogel for specific well plates is listed below.

	6 well plate	12 well plate	24 well plate	48 well plate	96 well plate
Volume per well	1200 µL	600 µL	300 µL	150 µL	50 µL

- Wait 10-15 min at room temperature for a soft gel formation.

Note: During the hydrogel forming process, do not disrupt the hydrogel by tilting or shaking the well plate.
- Carefully add medium with cells on top of the hydrogel.

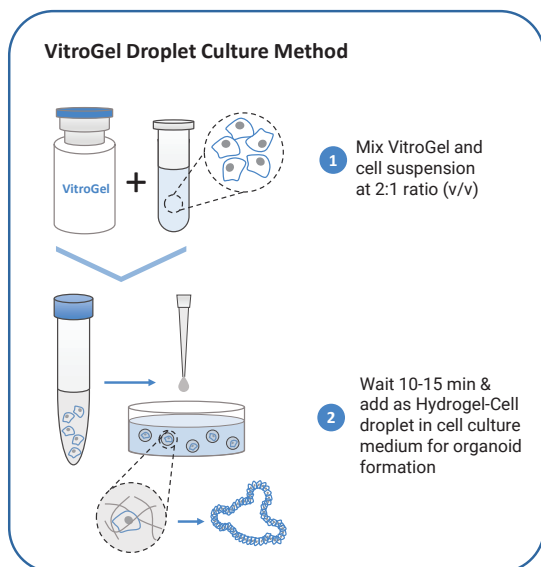
The recommended volume of cell medium for specific well plates is listed below.

	6 well plate	12 well plate	24 well plate	48 well plate	96 well plate
Volume per well	3000 µL	1500 µL	750 µL	300 µL	100 µL

- Place the well plate in an incubator and change the top medium according to the experiment design.

Note: Recommend changing 50-80% of the same type of top medium without disturbing the hydrogel. However, change 100% of the top medium if switching to a different medium during organoid culture.

Hydrogel-Cell Droplet Protocol



(UNIQUE METHOD ONLY TO VITROGEL)

VitroGel ORGANOID-1 is used as an example below. Replace VitroGel ORGANOID-1 with other versions of choice.

- Bring VitroGel ORGANOID-1 hydrogels to room temperature or warm at 37°C.
- Add 1 mL VitroGel ORGANOID-1 hydrogel to 500 μ L cell suspension and gently pipette up and down 5-10 times to mix thoroughly. Let mixture stabilize at room temperature for 10-15 min.
 - Keep VitroGel and cell medium at 2:1 v/v mixing ratio.
 - Optional: If critical growth factors are need in the hydrogel to support the organoid culture, prepare the cell culture medium with 3X critical growth factors.
- Add cell culture medium to the well plate. The recommended volume of hydrogel for specific well plates is listed below.

	6 well plate	12 well plate	24 well plate	48 well plate	96 well plate
Volume per well	3000 μ L	1500 μ L	750 μ L	300 μ L	100 μ L

- Carefully add the Hydrogel-Cell mixture into the well plate as droplets. (roughly 5-10 droplets per 100 μ L of Hydrogel-Cell mixture).

Optional Tips:

 - Control the size of Hydrogel-Cell beads by adjusting the volume of the droplets.
 - For small beads, 1-5 μ L per droplet
 - For large beads, 20-50 μ L per droplet
 - Create a droplet on the pipette tip. Lower the droplet and allow to contact the surface of the culture medium to release the droplet.
- Place the well plate in an incubator and change the medium according to the experiment design without disrupting the hydrogel beads. Note: Recommend changing 50-80% of the same type of medium without disturbing the hydrogel. However, change 100% of the top medium if switching to a different medium during organoid culture.

Related Products

- VitroGel® STEM (VHM02)
 - VitroGel® Cell Recovery Solution (MS03-100)
- Other versions of VitroGel - www.thewellbio.com/hydrogels

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