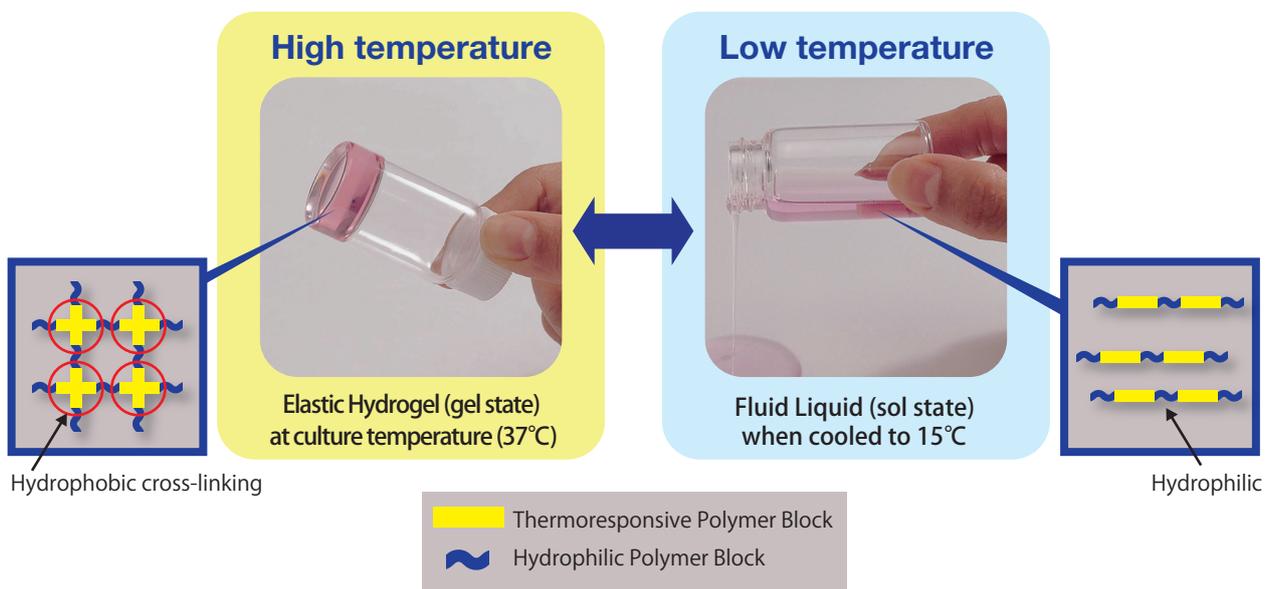


Mebiol® Gel

**For 3D Cell Culture
And Other Applications**

Thermoreversible Hydrogel Thermoreversible Gelation Polymer (TGP)

Hydrogels are a diverse class of polymeric materials characterized by their network-like structure and high water content. Hydrogels of many kinds have found a wide variety of applications in medicine and life science research weighted towards, but not at all limited to three-dimensional cell culture, tissue engineering, and drug delivery. Properties highly favorable to cell culture and tissue engineering applications prompted the commercialization of Mebiol® Gel, a copolymer of poly (N-isopropylacrylamide) and poly (ethylene glycol) (PNIPAAm-PEG) for research purposes in the early 2000's.



Mebiol® Gel's defining feature, in contrast to other commercially available hydrogels, is its temperature reversible sol-gel transition. When cooled, Mebiol® Gel is a sol (handles like a liquid) but becomes a rigid hydrogel at higher temperatures. In practice, this means extremely easy cell handling. Cultures are seeded into cooled Mebiol® Gel and recovered conveniently by cooling the culture vessel and centrifugation. In the gel state, the highly lipophobic environment of the Mebiol® Gel presents an efficient niche for cell proliferation, cell communication, gas and mass exchange, and protection of cells and tissue from shear forces.

Mebiol® Gel Features

- Easy handling
- Non-toxic, biocompatible
- 100% synthetic, pathogen free
- High transparency for cell observation
- Proven performance



Mebiol® Gel comes packaged as a dry powder in sterile culture flasks. Use Mebiol® Gel in the supplied flask or other culture vessels such as multi-well plates

Mebiol® Gel published applications include :

- Stem cells and pluripotent stem cell culture, expansion, and differentiation
- Spheroid culture
- Cell implantation
- Organ and tissue regeneration
- Drug delivery
- Non-cell culture applications
- Physical Properties



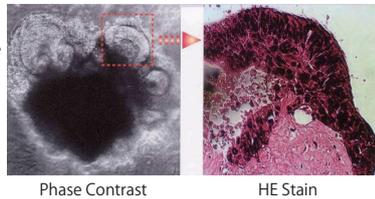
Application examples

1. Culture of primary cancer cells in Mebiol® Gel

In collagen and other 3D gel cultures, proliferation of primary cancer cells may be inhibited by fibroblast overgrowth. Importantly, fibroblasts do not readily grow in Mebiol® Gel, allowing selective proliferation of primary cancer cells for further analysis and characterization.

Figure 1

Cancerous human colon tissue cultured in Mebiol® Gel for 10 days. (Courtesy of Dr. S. Kubota, Dept. of General Surgery, St. Marianna University School of Medicine)



2. Stem Cell Culture

Macaca embryonic stem cells cultured on Mebiol® Gel without LIF (right panel) show morphology and alkaline phosphatase staining characteristic of undifferentiation compared to 2D feeder layer cultures (left panel).

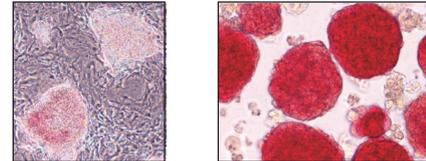


Figure 2 Courtesy of Dr. K. Hishikawa, Dept of Clinical Renal Regeneration, University of Tokyo.

3. Spheroid Formation

Mebiol® Gel supports spheroid formation of cancer cell lines and iPS cells.

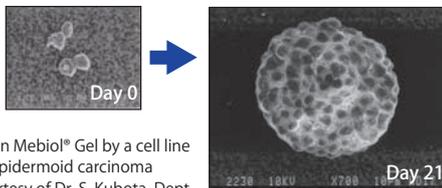


Figure 3

Spheroid formation in Mebiol® Gel by a cell line derived from mucoepidermoid carcinoma (cholangioma). (Courtesy of Dr. S. Kubota, Dept. of General Surgery, St. Marianna University School of Medicine)

4. Tissue Structure Preservation

Mebiol® Gel's protective environment helps to preserve tissue structure over long term culture.

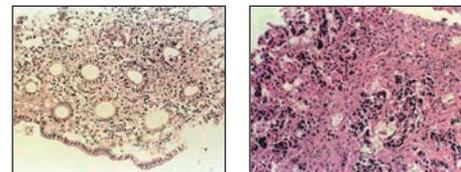
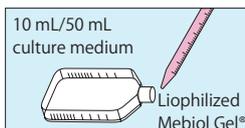


Figure 4 Left panel: Normal colonic mucosal tissue after culture on Mebiol® Gel for 7 days.
Right panel: Metastatic hepatic carcinoma tissue after culture in Mebiol® Gel for 21 days.

(Courtesy of Dr. S. Kubota, Dept. of General Surgery, St. Marianna University School of Medicine)

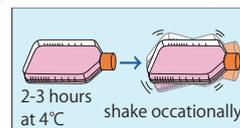
Preparation

1) Add culture medium



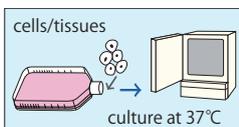
Open package in a clean bench and add 10 mL/50 mL culture medium to lyophilized Mebiol® Gel in a flask.

2) Dissolve Mebiol® Gel



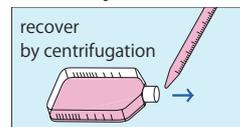
Lay the flask stationary at 4°C for about three hours. Then dissolve Mebiol® Gel in culture medium by shaking occasionally the flask gently with keeping it at low temperature.

3) Cultivation of cells/tissues



Add cells/tissues into sol state Mebiol® Gel and then culture it at 37°C in CO₂ incubator.

4) Recovery of cells/tissues



To recover cells/tissues after cultivation, liquefy Mebiol® Gel containing cultured cells/tissues at low temperature and dilute it with 30-40 mL/150-200 mL of cold saline or medium. This dilution prevents gelation so, suspended cells/tissues can be easily recovered by centrifugation.

Description	Cat. No.	Quantity	Storage
Mebiol® Gel	MBG-PMW20-1001	1x10 mL	Room temperature
	MBG-PMW20-1005	5x10 mL	
	MBG-PMW20-5001	1x50 mL	
	MBG-PMW20-5005	5x50 mL	

