



# Bio-Byblos Biomedical

## 3D Cell Culture

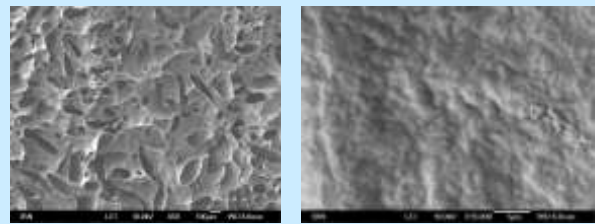
### 3D Cellusponge

## Cellusponge Series

US Patent Granted

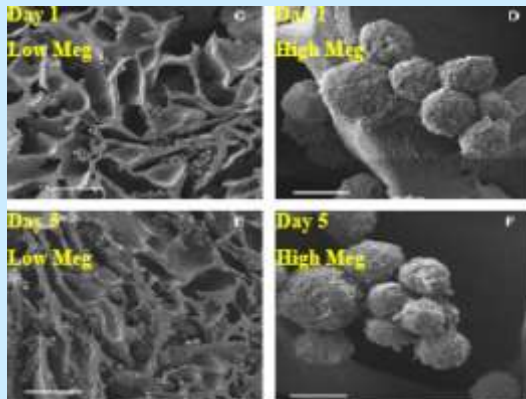
- Simple and efficient cell seeding procedure.
- Cells distributing well in the sponge pores and grow well easily.
- Compatible with well plate and insert.
- Exclusive patent license-Hydrogel-like microporous sponge.
- Appropriate spheroid size with prevented apoptosis in the spheroids center
- Good for cell cryopreservation.
- Form functional spheroids within 24-hours post-seeding and remain stable at least 40 days.

### Surface Nanofeatures



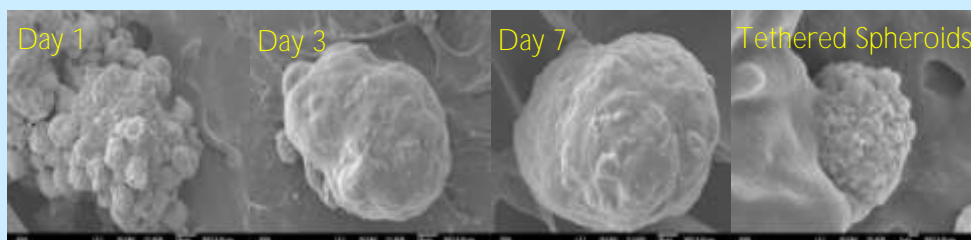
Easy Cell Seeding

### NIH 3T3 3D culture



### Advantages of Cellusponge Series

- Natural source.
- Spheroid size is controllable and under 200um.
- Seeding the same as in 2D cell culture and is required no extra steps.
- Cells grow rapidly with functions.
- Compatible to automatic equipment.

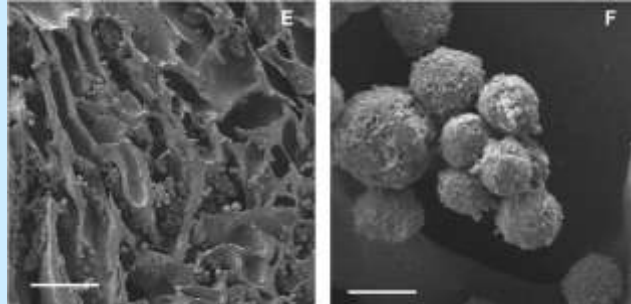


Spheroids Surface Morphology of Primary Rat Hepatocyte.

## Cellusponge

For cells requiring no specific ligand and various cancer cell lines

- MCF-7 & MDA-MB
- Mouse fibroblasts (NIH3T3)
- Human foreskin fibroblast (HFF)



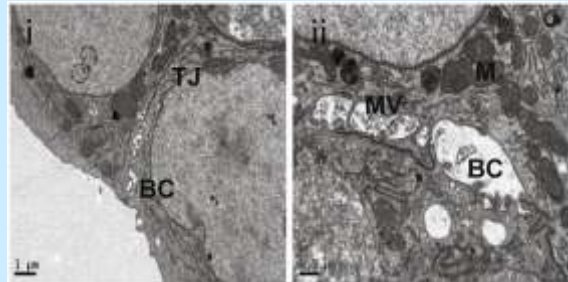
NIH3T3 cells 5 days post-seeding.

## Cellusponge-Gal

For hepatocytes used in *in vitro* drug testing and drug development

- Primary rat hepatocytes
- Primary human hepatocytes
- Hepatocyte cell lines

TJ: Tight Junction  
BC: Bile Canaliculi  
MV: Microvilli  
M: Mitochondrial



Transmission Electron Microscopy images at 48-hour post-seeding. (Scale bars for i and ii are 1  $\mu$ m and 0.5  $\mu$ m)

## Cellusponge-Coll

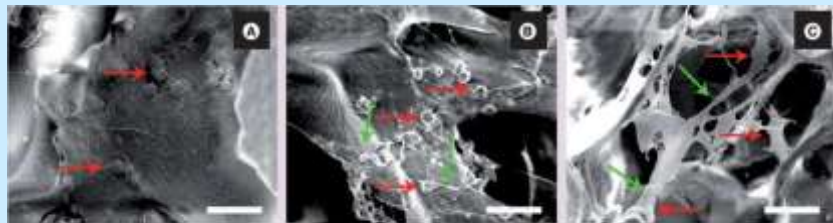
For cells requiring collagen substratum

- Mouse and human embryonic stem cells (mESC & hESC)
- Human mesenchymal stem cells
- Primary cells

Neuron cells differentiation from hMSC.

The red arrow is the cell body.

The green arrow is neurite.



Day 2

Day 7

Day 14

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