



# HyStem™ Cell Culture Scaffolds

## The First Customizable Synthetic ECM

Sigma® Life Science is pleased to introduce HyStem, the first customizable synthetic ECM that closely mimics *in vivo* conditions, to enable three-dimensional culture of stem cells.

### Customizable

The HyStem platform offers you, the researcher, control over growth factor incorporation, attachment factor incorporation, ECM protein incorporation, rigidity of the hydrogel, and cell encapsulation vs. top plating.

### Synthetic

Because HyStem is a synthesized matrix and not a biological extract, researchers are able to closely control the composition of their cells' environment. HyStem's components include chemically synthesized HyStem (thioated Hyaluronic acid), Extralink (thio-reactive crosslinker), degassed water, and biologically purified Gelin-S (denatured collagen).

### Biologically Accurate

HyStem kits are optimal for culturing stem cells whose natural environments are rich in hyaluronic acid. The HyStem hydrogel scaffold closely mimics the rich, natural extracellular matrix environment, complete with hyaluronic acid and collagen fibrils, while offering the flexibility to customize with appropriate growth factors, attachment factors, and proteins.

## The Hystem Platform Includes Three Unique Members



### HyStem

Cell Culture Scaffold Kit: For researchers who require an animal component free system, for researchers who will customize with their own attachment factors and/or ECM proteins/peptides, and for researchers who require a minimal number of cell attachment sites.



### HyStem-C

Cell Culture Scaffold Kit: For researchers who require a large number of generalized cell attachment sites for their stem cell culture(s).



### HyStem-HP

Cell Culture Scaffold Kit: For researchers planning to incorporate and gradually release growth factors into the stem cell environment.

#### Ordering Information

Cat. No.	Product Description	Volume of Hydrogel Produced
HYS010-1KT	HyStem Cell Culture Scaffold Trial Kit	2.5 mL
HYSC010-1KT	HyStem-C Cell Culture Scaffold Trial Kit	2.5 mL
HYSHP010-1KT	HyStem-HP Cell Culture Scaffold Trial Kit	2.5 mL
HYS020-1KT	HyStem Cell Culture Scaffold Kit	7.5 mL
HYSC020-1KT	HyStem-C Cell Culture Scaffold Kit	7.5 mL
HYSHP020-1KT	HyStem-HP Cell Culture Scaffold Kit	7.5 mL
H2666-1EA	HyStem-C 96-well plate	96 wells

To learn more, visit  
[sigma.com/hystem](http://sigma.com/hystem)



HyStem™ closely mimics the natural extracellular environment

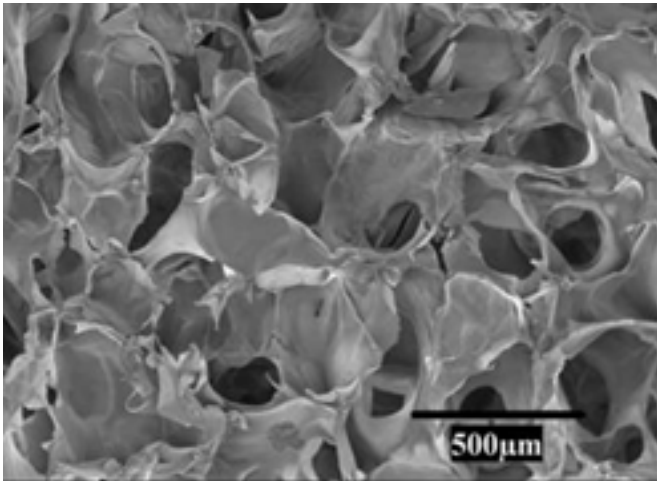
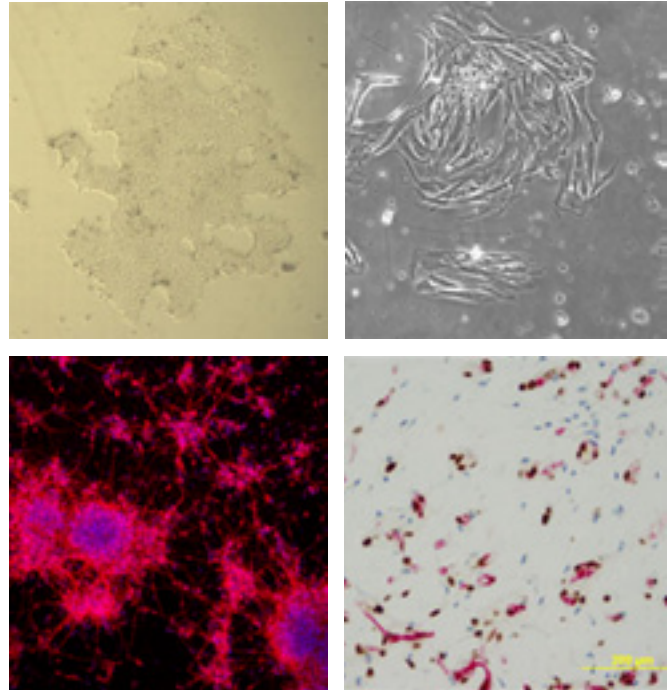


Figure 1: HyStem provides a complex, three-dimensional environment, rich in hyaluronic acid, for culturing stem cells.

## Application Data



Clockwise from top left:

Figure 3: H9 human embryonic stem cells plated on HyStem hydrogels containing CVFL and grown for 3 days.

Figure 4: Human mesenchymal stem cells grown (5 days) on the surface of a HyStem hydrogel with collagen I non-covalently incorporated.

Figure 5: Endothelial progenitor cells cultivated in HyStem-HP. Blue = mouse cell nuclei, brown = human cell nuclei, red = CD31 protein (courtesy of Robert Grove, Endgenitor Technologies, Inc., Indianapolis, IN)

Figure 6: Neurosphere-derived human embryonic stem cells (H9) seeded in HyStem-C and grown for 5 days. Red = Beta III Tubulin. Blue = Draq-5.

## Natural Extracellular Environment

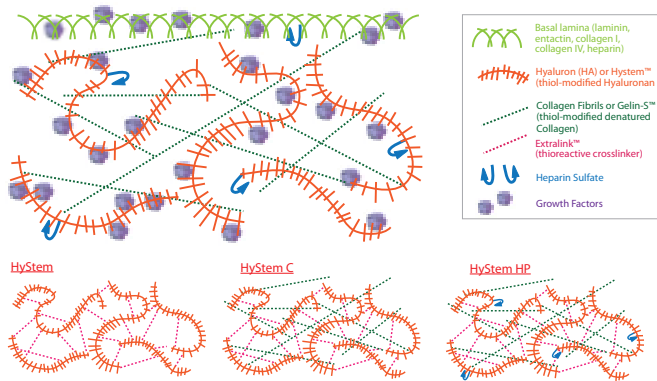


Figure 2: HyStem closely mimics the natural extracellular environment

Enabling Science to  
Improve the Quality of Life

Order/Customer Service (800) 325-3010 • Fax (800) 325-5052  
 Technical Service (800) 325-5832 • [sigma-aldrich.com/techservice](http://sigma-aldrich.com/techservice)  
 Development/Custom Manufacturing Inquiries **SAFC**® (800) 244-1173  
 Safety-related Information [sigma-aldrich.com/safetycenter](http://sigma-aldrich.com/safetycenter)

World Headquarters  
 3050 Spruce St.  
 St. Louis, MO 63103  
 (314) 771-5765  
[sigma-aldrich.com](http://sigma-aldrich.com)

©2011 Sigma-Aldrich Co. LLC. All rights reserved. SIGMA, SAFC, SIGMA-ALDRICH and ALDRICH are trademarks of Sigma-Aldrich Co. LLC, registered in the US and other countries. Sigma brand products are sold through Sigma-Aldrich, Inc. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see product information on the Sigma-Aldrich website at [www.sigmaaldrich.com](http://www.sigmaaldrich.com) and/or on the reverse side of the invoice or packing slip. HyStem and Where bio begins are trademarks of Sigma-Aldrich Co. LLC.