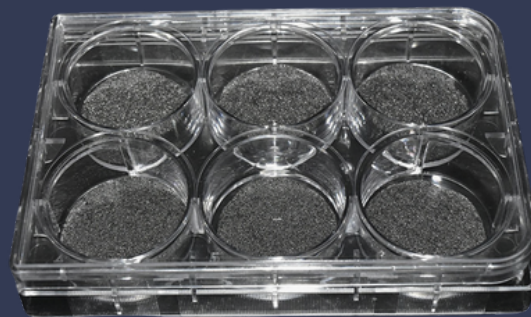


3D G-Scaffold

3D Graphene Foam for 3D Cell Culture



Highly conductive 3D graphene foam scaffold

The 3D G-Foam Scaffold is a carbon-based biomaterial that demonstrates significant promise as a support structure for cells to attach, grow, and differentiate.

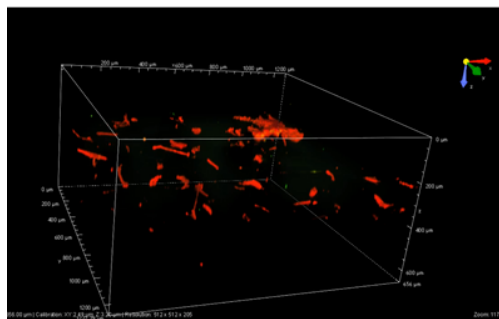
With an interconnected microporous network composed of conductive graphene sheets, the 3D G-Scaffold provides ideal biomechanical, biochemical, and electrical properties to grow healthy stem cells that maintain stemness and provide more relevant experimental outcomes.

Our 3D G-Scaffold has been tested with a variety of cells - including fibroblasts, induced pluripotent stem cells (iPSCs), and mesenchymal stem cells (MSCs) - across several tissues - including cardiovascular and bone cells.

Cells grown on 3D G-Scaffold exhibit a high degree of attachment, maintain their phenotype, and grow as an interconnected network. The 3D G-Scaffold has also demonstrated improved gene expression compared to 2D cell culture plastic and glass substrates.

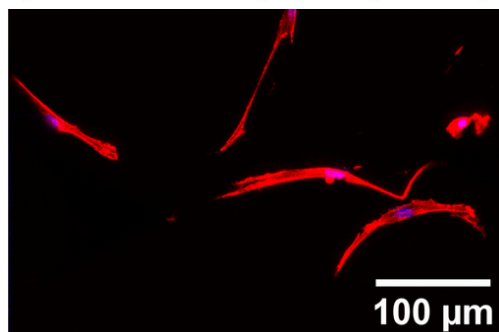


Lonza Mesenchymal Stem Cells (MSCs) are evenly distributed across the foam and are mostly found wrapping around the pores. Captured data on volume and sphericity shows cells spreading.



	Volume	Sphericity
Average	1470.245	0.444571
Standard Deviation	651.41	0.07

Lonza Mesenchymal Stem Cells (MSCs) demonstrate an elongated morphology while forming a mesh of interconnected cells adhered to the Graphene Foam.



With its highly conductive structure, our 3D G-Scaffold supports the use of external electric fields for in-depth studies on specific cell behaviors. This method offers a dynamic way to investigate electrical stimulation's impact on cells, enhancing our understanding of neural activity, cardiac function, and drug action mechanisms.

The biomechanical properties of 3D G-Scaffold - specifically its interconnected microporosity and nanoroughness - play a role in mediating a cell's ability to sense its extracellular environment, enhancing spatiotemporal and biological cell behavior.

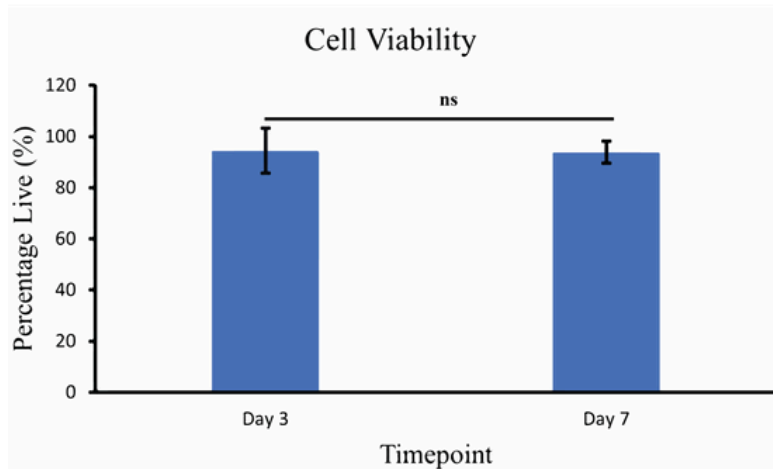
When compared to other commercially available scaffolds, 3D G-Scaffold has shown improved cytocompatibility, cell adhesion, cell morphology, and cell viability.

3D G-Scaffold is biocompatible and demonstrates negligible toxicity to MSCs.

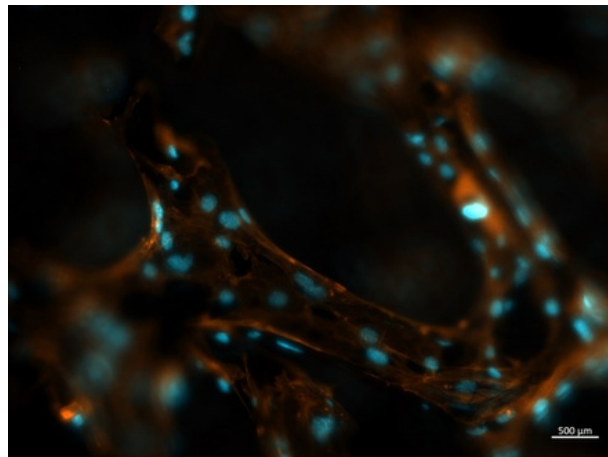
Cell Viability in 3D G-Scaffold

	Day 3 (n= 85)	Day 7 (n =94)
Average	94.4	93.8
std	8.75	4.33

Live-Dead Assay performed using Lonza Mesenchymal Stem Cells (MSCs) showed significantly high number of live cells - with only a 0.6% decrease in the number of live cells from Day 3 to Day 7.

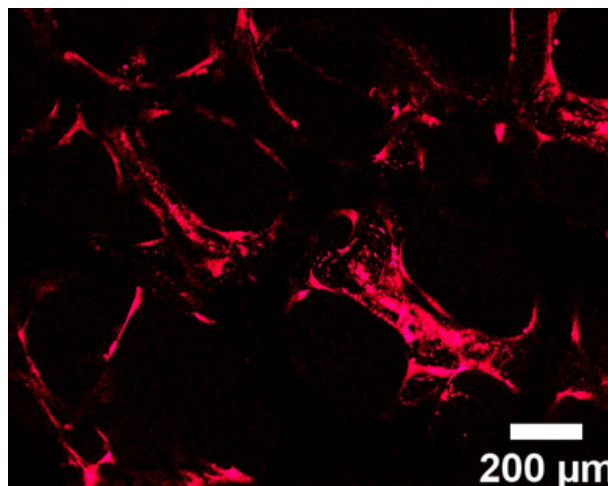


Fibroblast Cells were cultured for 24 hours on the graphene foam, demonstrating an elongated morphology without requiring an ECM protein coating. Actin cytoskeleton is stained with phalloidin (orange) and the nucleus with DAPI (light blue).



The 3D G-Scaffold eliminates the need for surface treatment or coating with biological materials, such as gelatin, poly L-Lysine, or Matrigel which can interfere with experimental results.

Cardiac Fibroblasts seeded on 3D G-Scaffold



This feature ensures that results are free from external influences during in vitro and in vivo experiments - leading to more reproducible outcomes without concerns over damage caused by the surface treatment or coating application.



Freestanding Graphene Foam



Packaged Graphene Foam

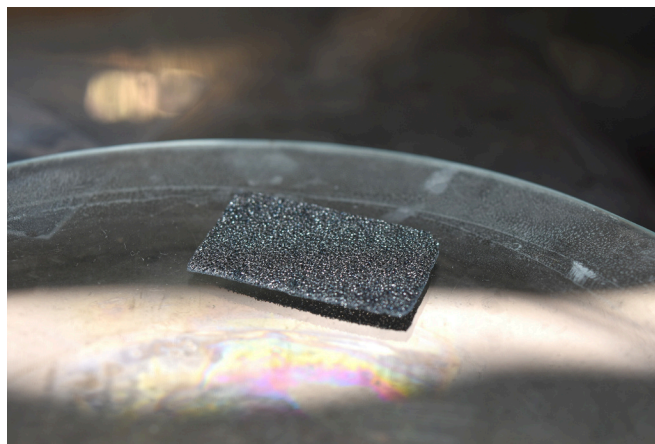
Product Specifications	
Format	<i>Freestanding graphene foam, graphene foam embedded in well plate or petri dish</i>
Dimensions (cm)	<i>3 x 3 x 0.16</i>
Density (mg/cm³)	<i>27 +/- 6</i>
Surface Area (m²/g)	<i>~ 400 [1]</i>
Pore Size (µm, average)	<i>5 - 500</i>
Yield Stress @ 0.5% Strain (kPa)	<i>3.7 +/- 2</i>
Compressive Modulus (kPa)	<i>120 +/- 80</i>
Supported Sterilization Protocols	<i>70% ethanol, UV, autoclave compatible</i>
Storage	<i>Room Temperature</i>

References

[1] DOI 10.1088/2053-1591/ab2e83

Related Products

For more information about the products offered by General Graphene Corporation, please visit www.generalgraphenecorp.com or contact us at sales@generalgraphenecorp.com.



About Us

General Graphene Corporation is a leading industrial-scale manufacturer of chemical vapor deposition (CVD) roll-to-roll graphene and carbon materials. Using proprietary CVD manufacturing technology, we provide application development partners with a scalable and cost-effective path towards the commercialization of graphene and carbon-based materials.

We support our customers with a unique CVD graphene and carbon-based materials portfolio that includes – CVD Graphene Films, 3D Graphene Foams, and Pyrolytic Carbon Films. General Graphene is at the forefront of advanced materials development, bringing reproducible, high-quality, and affordable CVD graphene materials in mass volumes to industries across the world. We celebrate diverse perspectives and drive creative thinking to achieve our goal of driving the real-world adoption of CVD graphene and carbon-based materials.

Contact us at sales@generalgraphenecorp.com if you are interested in using our CVD graphene and carbon-based materials to fulfill your research and product development needs.