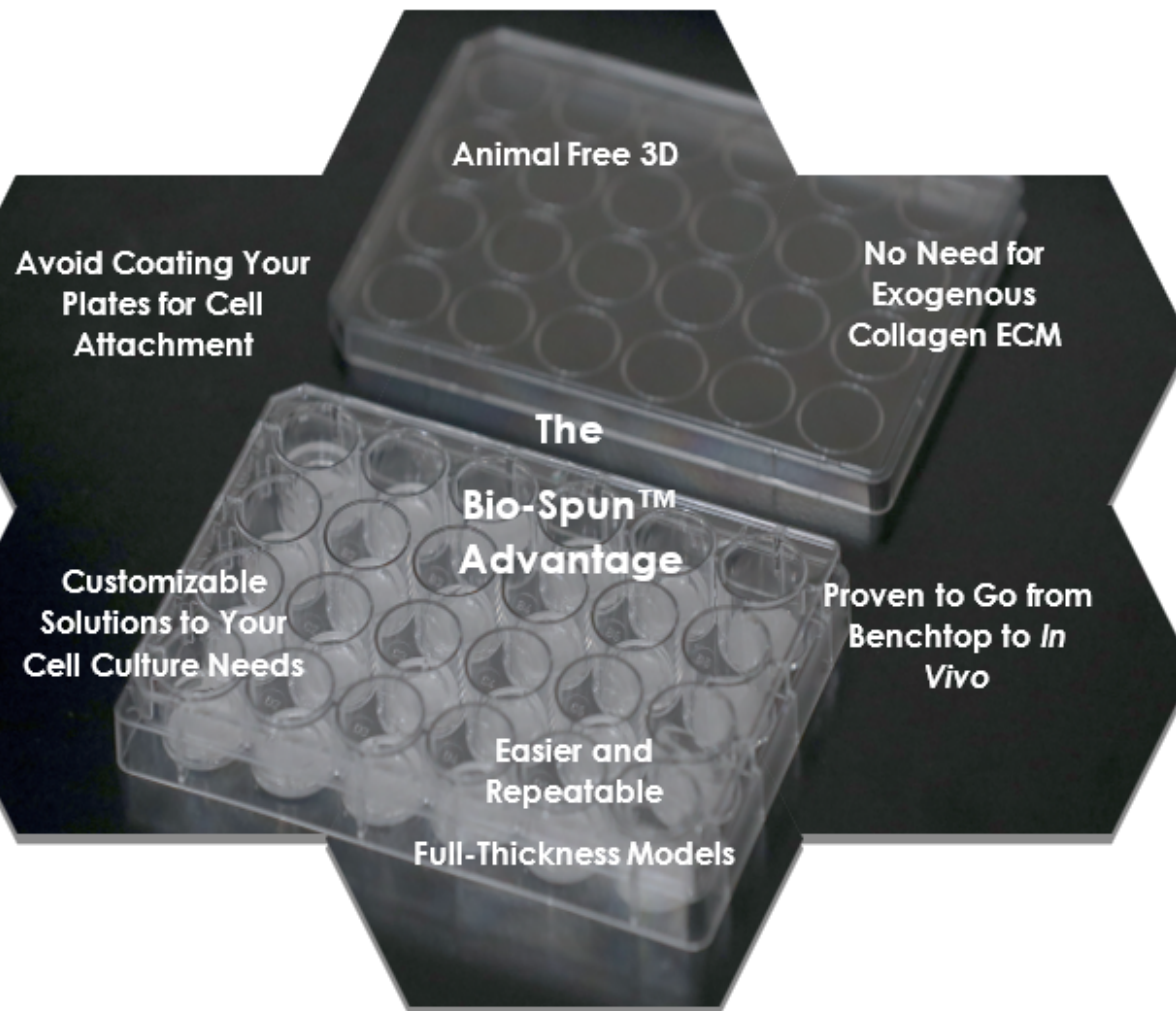




BioSurfaces, LLC



Bio-Spun™ Scaffolds –
A 100% Animal-Free,
Customizable, and
Human Relevant Tool
for More Accurate Cell
Culture Testing



Introduction

The way that cell culture is performed is long overdue for a change. That change is starting to happen now.

2D scaffolds and animal models have been used for over 60 years with little successful innovation. Researchers across all industries have relied on the results via these methods which simply hasn't translated well to humans. The reason for this is that 2D surfaces or animal related cells are not biologically similar enough to generate success. With a failure rate of about 92% from preclinical to clinical trials, it is evident something needs to change.

Say goodbye to the old way and hello to human relevant data with 3D Bio-Spun™ Scaffolds - the customizable solution to all your cell culture needs. Our innovative technology eliminates batch variation caused by animal collagen, reducing both time and cost.

- Achieve consistent and reliable release profiles for drugs, growth factors, and proteins, while optimizing cell adherence or non-adherence through surface modifications.
- Go from benchtop to in vivo, providing a more accurate representation of *in vivo* interactions for identifying appropriate clones for drug development.
- Create full-thickness, animal-free models by leveraging open-source protocols and purchase supplies.

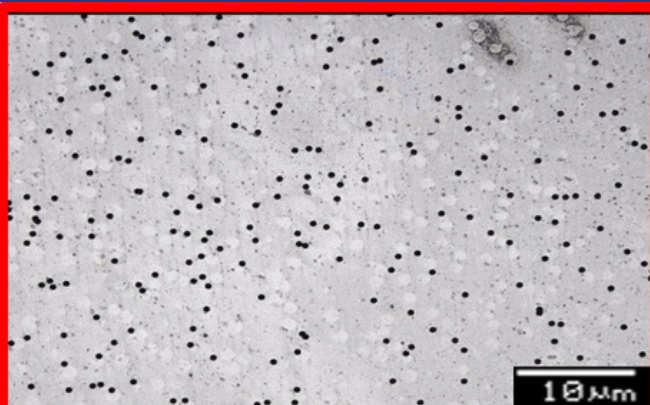
Applications



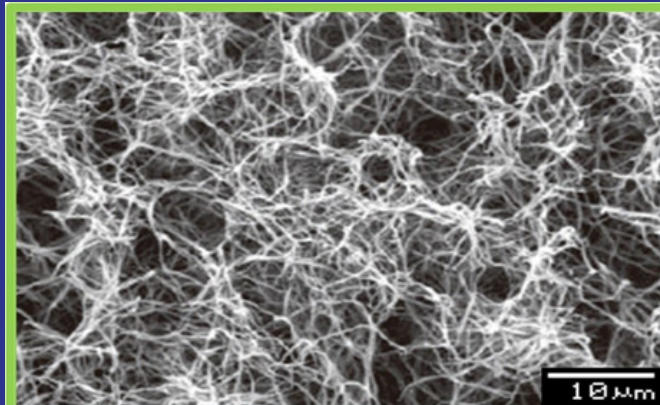
Bio-Spun™ scaffolds are made via our electrospinning technology, which creates a randomized, nanofibrous 3D structure that closely resembles the natural 3D extracellular matrix of the human body. The Bio-Spun™ scaffolds come in different formats and material types, allowing for you to grow whatever cells you need to perform your necessary tests.

Some Applications Already Done Include:

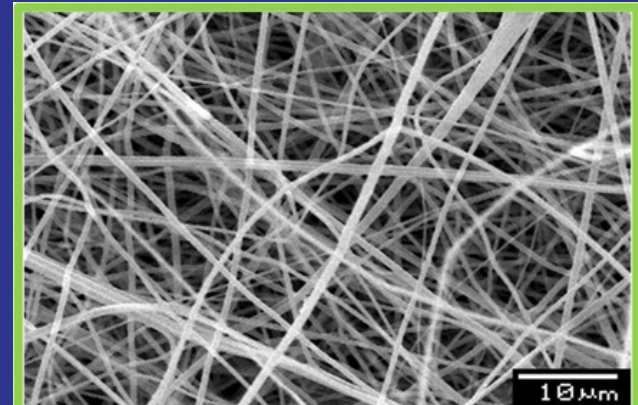
- Dermal (Skin Irritation, Skin Sensitization, Wound Healing)
- Respiratory (Infection, Toxicology, Inhaled Drug-Delivery)
- Ocular
- Cancer
- Skeletal Muscle
- Neuronal
- Blood-Brain Barrier
- Hepatic



Current Industry Standard



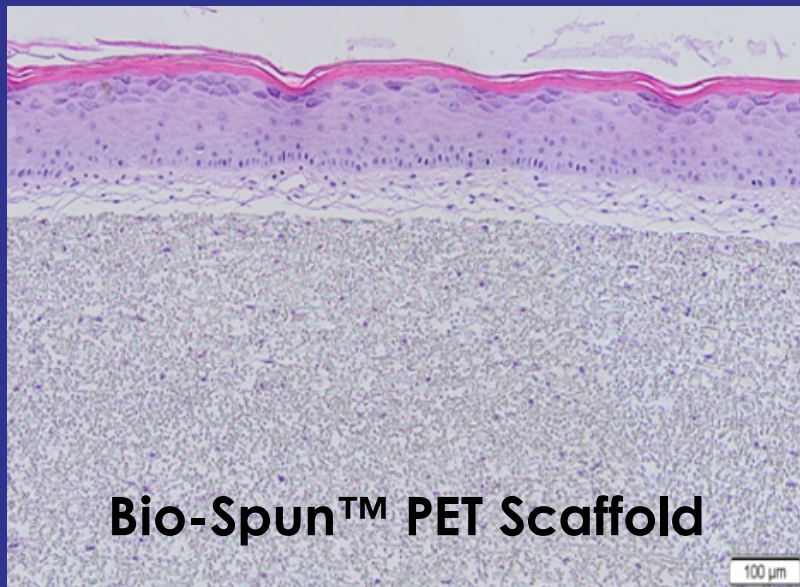
Body's Natural Scaffold



Bio-Spun™ Scaffold



Full-Thickness Skin Model – Synthetic Scaffold vs. Animal-Derived

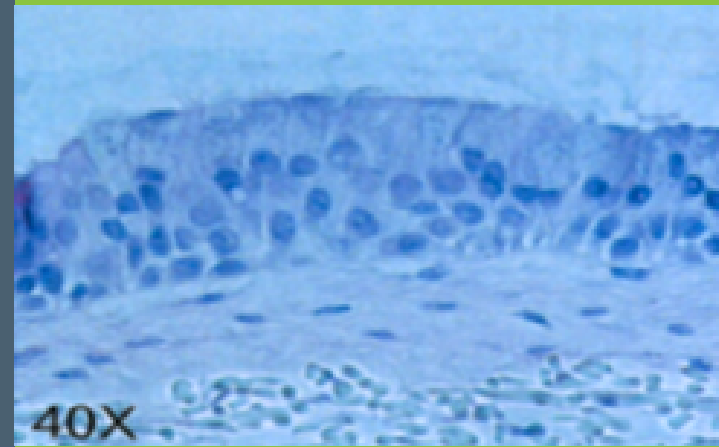
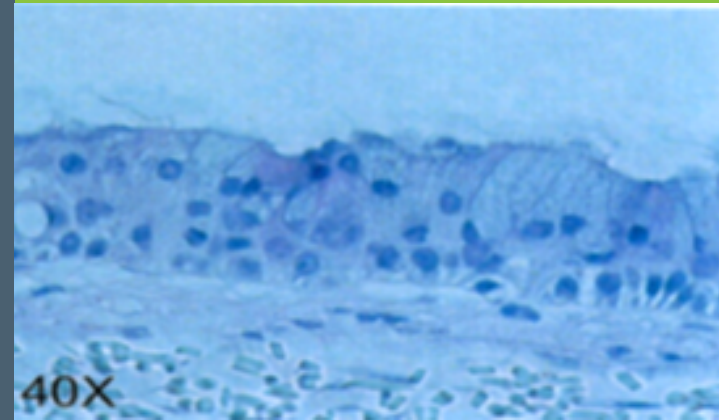
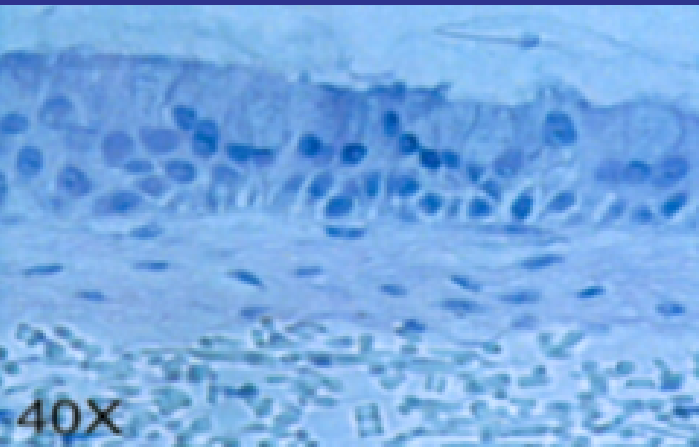
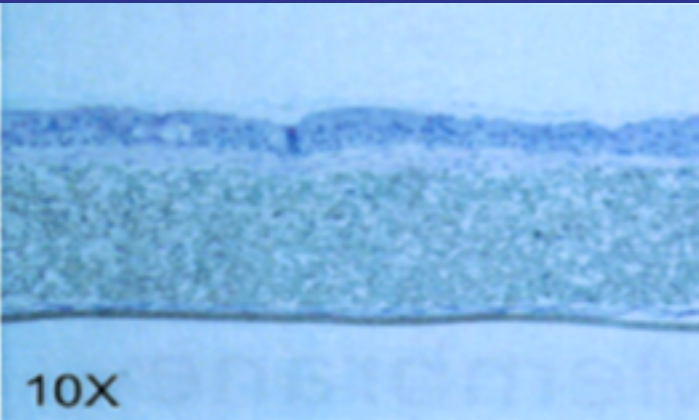


Goal: Form Human-Derived *In Vitro* Skin Equivalent

- Bio-Spun™ scaffolds are seeded with human skin cells
- Dermal compartment contains human fibroblast-derived matrix components
- Unwanted contraction of dermal component is avoided
- Fully developed epidermis and fibroblast populated dermal development is comparable to animal collagen-derived scaffolds

Goal: Form Human-Derived *In Vitro* Airway Equivalent

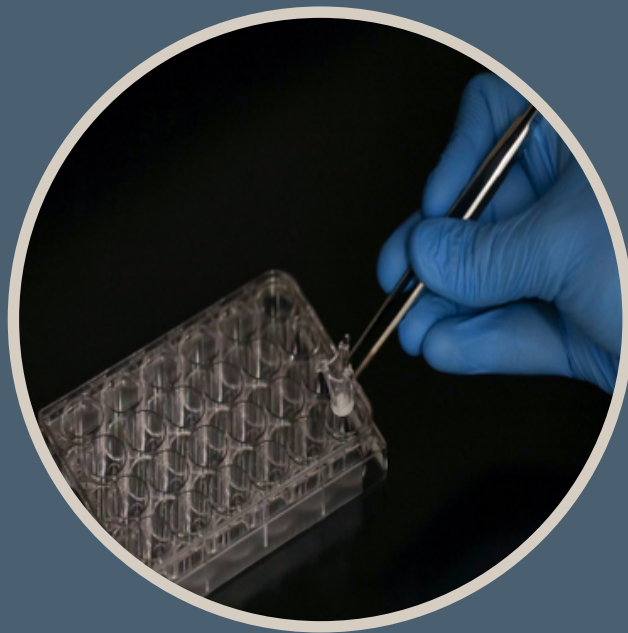
- Bio-Spun™ Biomimetic Scaffolds are seeded with human airway cells
- Subepithelial matrix compartment contains human pulmonary fibroblast-derived matrix components
- Unwanted contraction of matrix component is avoided
- Formed fully-developed mucociliary epithelium and fibroblast populated sub-epithelial component
- Research applications include:
 - Respiratory Infection (Viral/Bacterial Pathogens)
 - Drug Delivery
 - Inhalation Toxicology
 - Tobacco Research





BIO-SPUN™ PRODUCTS

- 6-well Individual Insert - PET, PU, or Bilayer (PDLGA/PLLA)
- 12-well Individual Insert - PET, PU, or Bilayer (PDLGA/PLLA)
- 24-well Individual Insert - PET, PU, or Bilayer (PDLGA/PLLA)
- 24-well High Throughput Screening - PET, PU, or Bilayer (PDLGA/PLLA)
- 96-well High Throughput Screening - PET, PU, or Bilayer (PDLGA/PLLA)

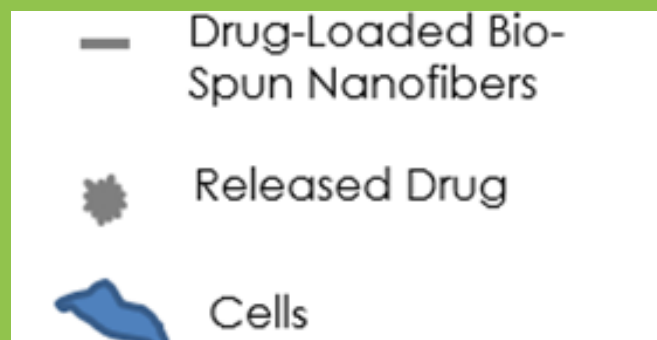
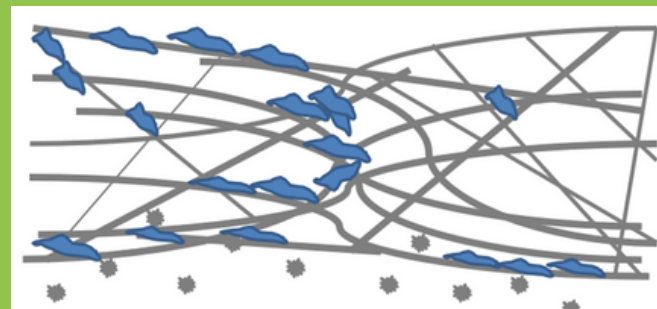


PRODUCT INFO

All products with our Bio-Spun™ scaffolds are available readily with thicknesses of 150um for PET, 20um for PU, and 12 or 100um for Bilayer (PDLGA/PLLA). Scaffolds for inserts can be attached to Corning or CellQART products. Scaffolds for HTS plates can be attached to Corning or MilliporeSigma plates. If you are looking for a different thickness, material type, or plastic insert/plate, please contact us for more information.

DEEP DIVE INTO THE TECHNOLOGY

BioSurfaces is a pioneering company in engineering biology with synthetic cellular matrices using patented electrospinning technology. Their Bio-Spun™ materials offer improved biocompatibility and physical properties and can be shaped uniquely. Controlled thickness, porosity, and fiber size allow for tailored products. Their materials are manufactured at room temperature, enabling easy incorporation of drugs or bioactive agents directly into nanofibers. These drug-loaded electrospun polymers demonstrate consistent drug release and seamless device integration in both lab and animal testing.





How We Can Help

Don't wait to start your next experiment. The Bio-Spun™ scaffolds are a unique, animal-free product that can help you transition better from benchtop to clinical trial.

Our materials have already been tested in pre-clinical trials with success. Our scaffolds provide an easier approach to testing, by saving you time and money in the long run. Our dedicated team of experts are happy to help you in any way we can. Interested in customizing or other products? Please feel free to reach out to us to set up a call.

To Learn More About Our Products:

www.biosurfaces.us/ivrt

Contact Us Directly:

Nathaniel Long, Director of Business Development

nate.long@biosurfaces.us

Cameron Phaneuf, Director Marketing and Sales

cameron.phaneuf@biosurfaces.us