Instrumented Flexible Tissue Scaffolds

Sensor-embedded scaffolds that map cell activity in 3D for real-time tissue monitoring.

The continually growing engineered tissue market focusses on working to repair tissues or cells damaged by some of the world's most debilitating cancers and diseases. One major challenge in this field is monitoring and continuously testing performance of engineered tissues and cells used to replace damaged ones. Researchers at Purdue University have developed flexible tissue scaffolds that allow for real-time, long-term monitoring of engineered tissues and cells. This technology is a tissue scaffold with sensor arrays in a stackable design that can monitor electrophysiological activities of cells and tissues. Furthermore, the information provided by these scaffolds is made into 3D maps to track activity. Through usage of an ultra-buoyant scaffold design, the entire structure remains afloat on the cell culture medium, providing complete isolation of the electronic instrument from the wet conditions inside the body.

Advantages:

-Real-time, long-term monitoring

-3D mapping capabilities

Potential Applications:

-Engineered tissues and cells

-Drug screening

-Tissue development

TRL: 3

Intellectual Property:

Utility Patent, N/A, United States

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Category

Materials Science & Nanotechnology/Biomedical & Bioinspired Materials
Biotechnology & Life Sciences/Analytical & Diagnostic Instrumentation

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