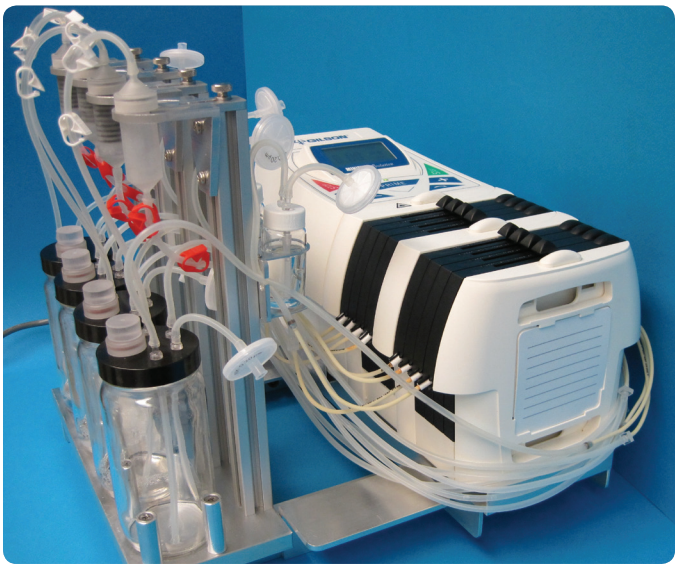
Dynamic 3D Cell Culture

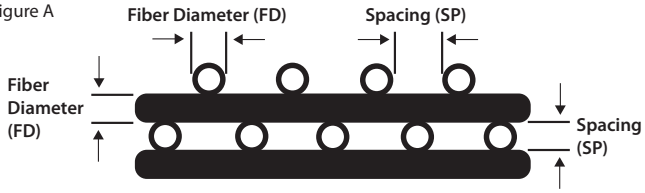
3D Perfusion Bioreactor Available Now from Sigma® Life Science



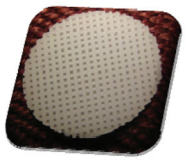
3D Perfusion Bioreactor

The bioreactor consists of multiple independent, autoclavable polycarbonate chambers (4 chambers as shown in the picture).

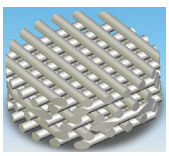
Figure A



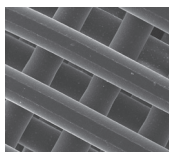
3D Structure Parameters



3D Insert Structure



3D Insert Scaffold



3D Insert Scaffold (magnified 80X)

3D Perfusion Bioreactor

The transition towards 3D cell culture is revolutionizing traditional cell culture around the world. 3D cell culture provides a more *in vivo* like environment, thereby allowing the cellular responses from cells cultured in 3D to be more realistic. Furthermore, studies have demonstrated cells grow significantly better under dynamic culture conditions as a result of the continuous cycling of nutrients, as well as the removal of metabolic wastes. In some instances, the shear force produced by the flowing medium can act as a mechanical stimuli signal that further promotes stem cell differentiation toward certain cell lineages.

Perform Dynamic Cell Culture Using 3D Biotek's Novel 3D Perfusion Bioreactor and Your Choice of 3D Insert™

As the leader in providing 3D cell culture products and technologies, 3D Biotek is proud to introduce its novel 3D Perfusion Bioreactor. This unique 3D Bioreactor is a perfect combination of 3D cell culture and dynamic cell culture technologies. The 3D Perfusion Bioreactor consists of multiple independent, autoclavable polycarbonate chambers. The chambers are interchangeable and specially designed to be compatible with 3D Insert scaffolds of varying sizes ranging from 96-well to 6-well. Cell culture medium is 100% perfused through the open porous structure of the scaffolds using a pulsatile pump. The entire unit, excluding the pump, is autoclavable and can be used as a single-use bioreactor system.

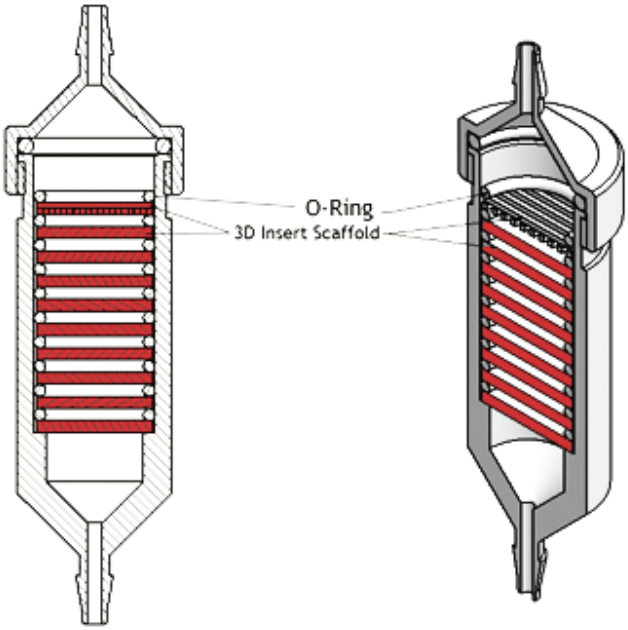
3D Insert Technology

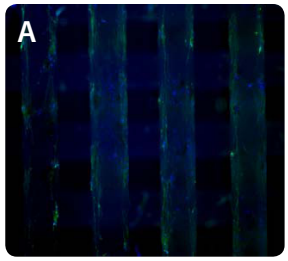
Porous polymer scaffolds are engineered using 3D Biotek's Proprietary 3D Precision Microfabrication Technology and provide both a 3D cell culture environment as well as a significantly greater total cell growth area than traditional tissue culture plates. These scaffolds are available in both biodegradable (polycaprolactone, PCL - **Figure A**) and non-biodegradable (polystyrene, PS) polymers.

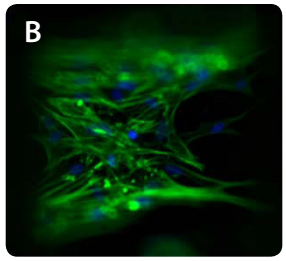
For more informaion, visit
sigma-aldrich.com/3dbioreactor

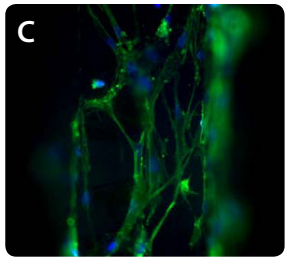
SIGMA-ALDRICH
Labware

Chamber/Scaffolds Assembly









Fluorescent images of hMSC-osteo at Week 1 on 3D PCL 3030 scaffolds (F-actin: green, DAPI: blue, A: 40X, B-C: 200X).

- The bioreactor consists of four independent, autoclavable polycarbonate chambers that hold up to 10 scaffolds each.
- The chambers are interchangeable and compatible with 3D Insert™-PCL scaffolds ranging in size from 96-well to 6-well.
- Within each chamber there is a 1.5 mm distance separating each scaffold. This distance, combined with the offset fiber configuration, ensures the perfusion of medium. Slow perfusion of both sterile CO_2 and medium is achieved with a low pump speed at the same time.
- Chambers containing scaffolds can be easily removed and disassembled.
- The entire unit (except for the pump) is autoclavable and can be used as a single-use bioreactor system.

For more informaion, visit
sigma-aldrich.com/3dbioreactor

For a price quote or other information, contact:

Lisa Masterson
Product and Business Development Manager
Phone: (314) 236-8978
lisa.masterson@sial.com

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