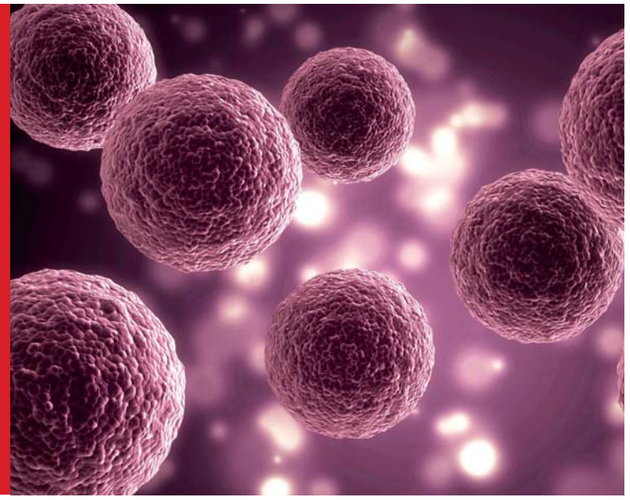
BIOFLOAT™

The anti-adhesive surface for spheroid culture

SARSTEDT

ADVANTAGES OF SPHEROID CULTURE

- ✓ Increased cell-cell contacts
- ✓ Pronounced extracellular matrix
- ✓ Improved *in vitro* model



In many areas of biomedical research, *in vitro* models are indispensable. The most conventional form is the two-dimensional cell culture, but discrepancies often occur when transferring the results to an entire organism. The aim of the three-dimensional cell culture is therefore to close this gap between the *in vitro* and *in vivo* situation.

Spheroid cultures offer a simple and cost-effective variant of 3D cell culture. The cells form a three-dimensional cellular aggregate with pronounced cell-cell and cell-matrix contacts.

The new BIOFLOAT™ cell culture surface makes it possible to produce perfect spheroids quickly and reproducibly.

BIOFLOAT™ is used in a variety of fields such as cancer and stem cell research, in the preclinical phase of drug research and in toxicological studies. Spheroid cultures improve the efficiency and reliability of preclinical cell models in these applications.

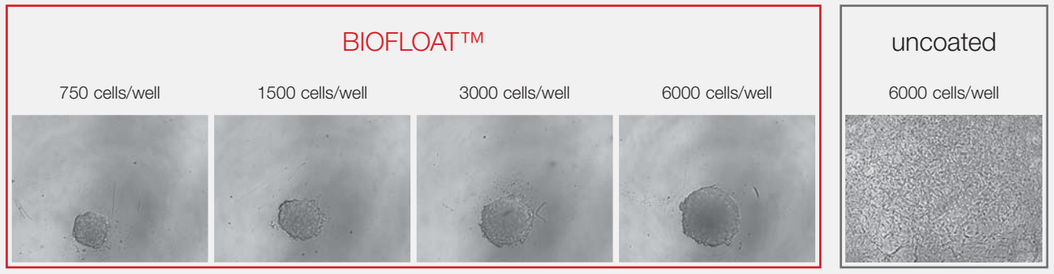


Fig. 1: Cells of a fibroblast cell line (3T3) were seeded in various cell counts on the BIOFLOAT™ cell culture plate. An uncoated plate serves as a control. The results were documented microscopically after three days. It can be clearly seen that spheroids are successfully formed using BIOFLOAT™. In addition, the size of the spheroid can be influenced by the number of cells/well. On the uncoated surface however, the fibroblasts can adhere and do not form spheroids.

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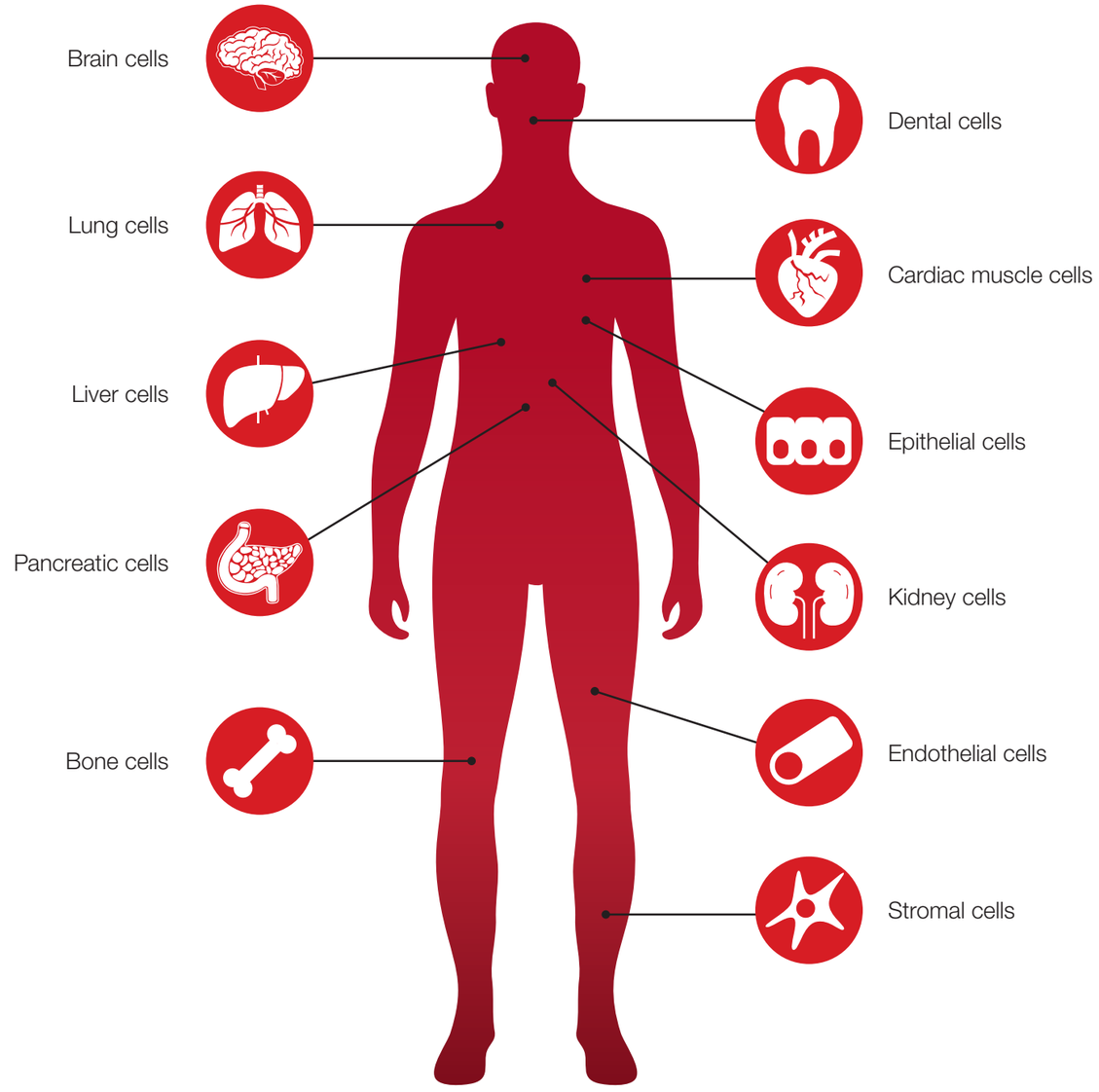
BIOFLOAT™ solves your spheroid culture challenges

Some challenging spheroid cultures have already been successfully established using the BIOFLOAT™ cell culture surface (e.g. spheroids from primary hepatocytes). A list of cell lines and cell types successfully tested with BIOFLOAT™ can be found on page 6.



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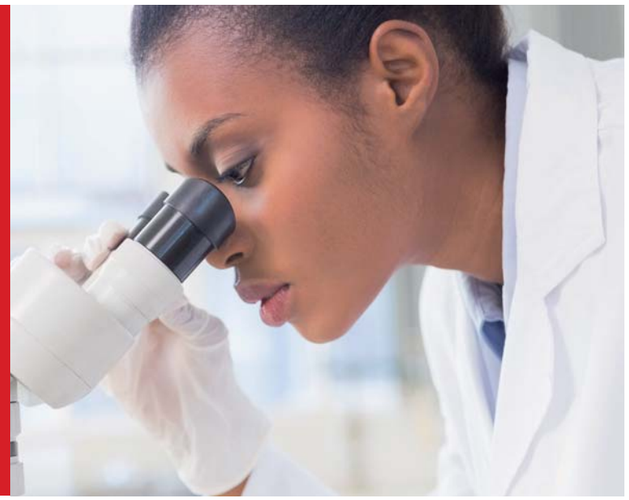
WHY BIOFLOAT™?

- ✓ Robust coating
- ✓ Defined composition
- ✓ Easy handling
- ✓ Fast results
- ✓ High reproducibility



The polymer coating of the BIOFLOAT™ surface modifies the plastic surface in a simple way. The inert coating contains molecules that are anchored to the polystyrene surface by strong physical interactions and self-organizing capability. This achieves a particularly uniform treatment.

The BIOFLOAT™ surface features a highly anti-adhesive property. This makes it possible for the cultivated adherent cells to form primarily cell-cell contacts without adhering to the surface of the vessel.

Spheroids cultivated using the BIOFLOAT™ surface have a very even round shape. Usually, the formation of exactly one spheroid per well is achieved. Both of these features lead to a high reproducibility of results. BIOFLOAT™ is thus particularly suitable for high throughput analyses where it is especially important to examine exactly one symmetrical spheroid per well.

The robustness of the BIOFLOAT™ coating greatly facilitates daily work. The performance of the BIOFLOAT™ cell culture surface is not impaired even by multiple washing steps or mechanical action from a pipette tip (see Fig. 2).

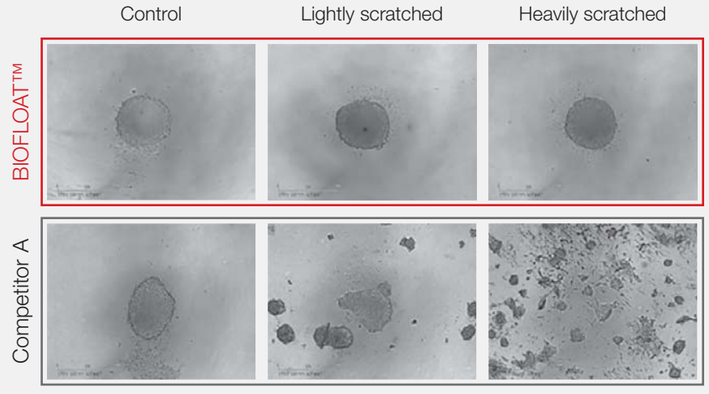


Fig. 2: The well bottom was lightly scratched using a standard pipette tip (once all around with moderate pressure) and heavily scratched (30 s with strong pressure). 200 µl of a suspension of 3T3 cells with a concentration of 30,000 cells/ml (corresponding to 6,000 cells/well) was then seeded per well.

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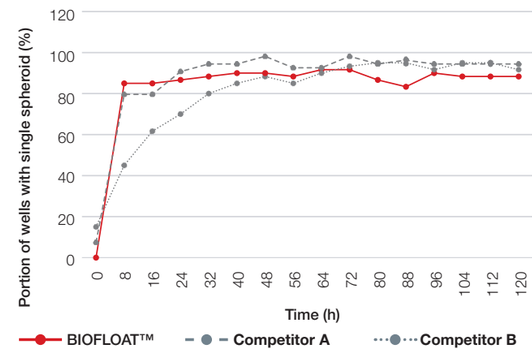
BIOFLOAT™ enables spheroid cultures – quickly, uniformly and reliably

Fast spheroid formation

The BIOFLOAT™ surface enables rapid spheroid formation. Depending on the cell line or cell type, the formation of the spheroids on the BIOFLOAT™ surface takes between 2 and 24 hours. Uniform spheroids have been shown to form more rapidly than on most anti-adhesive, cell-repellent surfaces (Fig. 3).

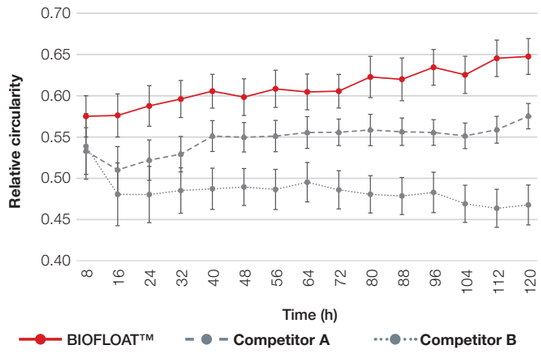
Fig. 3: 200 µl of a suspension of 3T3 cells with a concentration of 30,000 cells/ml (corresponding to 6,000 cells/well) was seeded per well. Wells with exactly one spheroid were identified and plotted in percent as a function of incubation time.



High reproducibility

Spheroids formed with the help of the BIOFLOAT™ surface have a high circularity, which enables a high data consistency (Fig. 4). No deposits, satellite aggregates or irregular aggregates are formed, which ensures a high reproducibility.

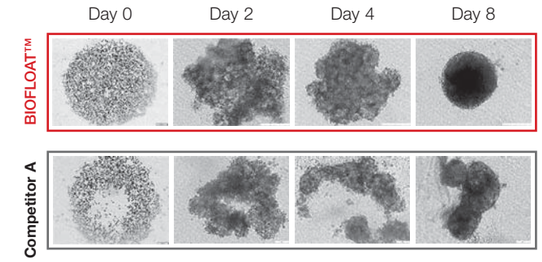
Fig. 4: 200 µl of a suspension of 3T3 cells with a concentration of 30,000 cells/ml (corresponding to 6,000 cells/well) was seeded per well. The relative circularity of the spheroids formed was determined and plotted as a function of time. The higher the value, the rounder the spheroid. A value of 1 would correspond to a perfect circle.



Reliable spheroid culture

The reliable quality of the BIOFLOAT™ cell culture surface enables the formation of perfect spheroids even for challenging cells. This also includes cells that do not form spheroids on existing products.

Fig. 5: 100 µl of a suspension of primary human hepatocytes with a concentration of 25,000 cells/ml (equivalent to 2,500 cells/well) was seeded per well. After spheroid formation, 50 µl of medium was exchanged every 48-72 h.



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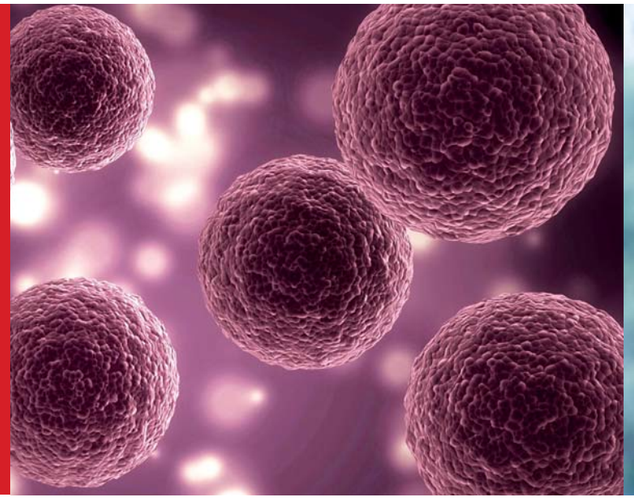
BIOFLOAT™ leads to successful and reliable spheroid formation even with challenging cells



The following cells have already been successfully tested for the BIOFLOAT™-mediated spheroid culture.

Name	Description
3T3	Fibroblasts *(M. musculus)*
A431	Squamous cell cancer cell line *(H. sapiens)*
B16	Melanoma cell line *(M. musculus)*
CaCo-2	Colon carcinoma cell line *(H. sapiens, Caucasian)*
Capan-1	Pancreatic adenoma cancer cell line *(H. sapiens)*
CHO	Ovarian cell line *(C. griseus)*
D492	Epithelial breast cancer cell line (stem cell-like) *(H. sapiens)*
D492HER	Tumourigenic breast epithelial stem cell line from D492 cells *(H. sapiens)*
DAN-G	Pancreatic cancer cell line *(H. sapiens)*
ESCs	Embryonic stem cells *(S. scrofa domesticus)*
FAMPAC	Pancreatic adenoma cancer cell line *(H. sapiens)*
H1975	Lung adenocarcinoma cell line *(H. sapiens)*
H2228	Lung adenocarcinoma cell line *(H. sapiens)*
H3122	Lung adenocarcinoma cell line *(H. sapiens)*
HCC1433	Breast cancer cell line *(H. sapiens)*
HCT-116	Colon cancer cell line *(H. sapiens)*
hDPSC	Primary dental pulp stem cells *(H. sapiens)*
hDPSC+Panc1	Pancreatic cancer cell line *(H. sapiens)*
HEK293	Embryonic kidney cells *(H. sapiens)*
HepG2	Hepatoma cell line *(H. sapiens)*
HT-29	Colon adenocarcinoma cell line (*H. sapiens*, Caucasian)

Name	Description
huARLT	Immortalized endothelial cells (from HUVEC cells) *(H. sapiens)*
HuOB	Immortalized osteoblasts *(H. sapiens)*
HUVEC	Venous endothelial cells *(H. sapiens)*
iPSC-Gata6	iPSC-derived hepatocytes
MCF10A	Breast cancer cell line *(H. sapiens)*
MCF-7	Breast cancer cell line *(H. sapiens)*
MDA-MB231	Breast cancer cell line *(H. sapiens)*
Mia-Paca	Pancreatic cell line *(H. sapiens)*
Panc1	Pancreatic cell line *(H. sapiens)*
Panc39	Pancreatic cell line *(H. sapiens)*
PRH with RHSteC	Hepatic stellate cells/Ito cells *(R. norwegicus)*
PRH+ HHSteC	Hepatic stellate cells/Ito cells *(H. sapiens)*
RPMI	B-lymphocyte cell line from myeloma patients *(H. sapiens)*
SFFV2	Immortalized astrocytes *(H. sapiens)*
-	Differentiated fatty cell organoids from pluripotent stem cells
-	Endometrial organoids from detached primary cells (non-human primates)
-	Fibroblast progenitor cells *(M. cerebralis)*
-	iPSC-derived cardiomyocytes *(H. sapiens)*
-	Liver organoids (differentiated) *(M. musculus)*
-	Neuronal stem cells (HN9 differentiated)
-	Primary hepatocytes *(H. sapiens, M. musculus, M. fascicularis, C. lupus familiaris)*

The SARSTEDT BIOFLOAT™ plate is individually sterile-packed in an aluminum bag. It is also endotoxin-free and non-cytotoxic.

Order information

Order no.	Name	Number of wells	Bottom shape	Packaging
83.3925.400	Cell culture plate, 96-well, surface: BIOFLOAT™, round bottom	96	U	1 pc./aluminum bag 4 Pcs./Inner carton 24 Pcs./Outer carton

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If you have any questions: We'd be happy to help!

Visit our website: www.sarstedt.com

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