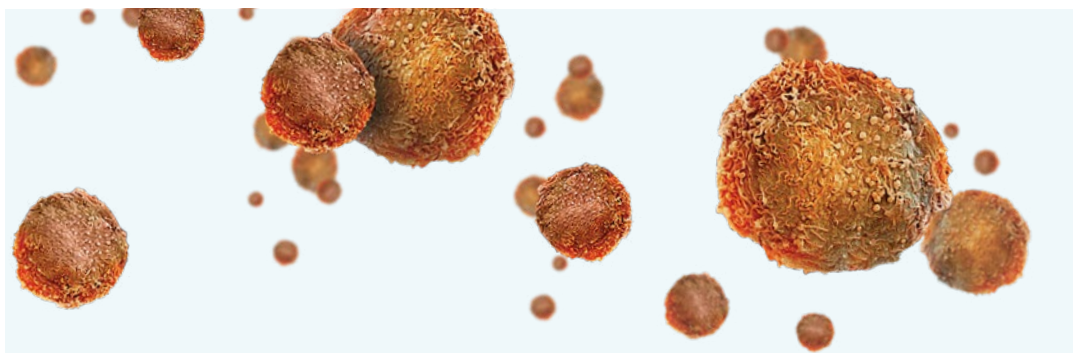




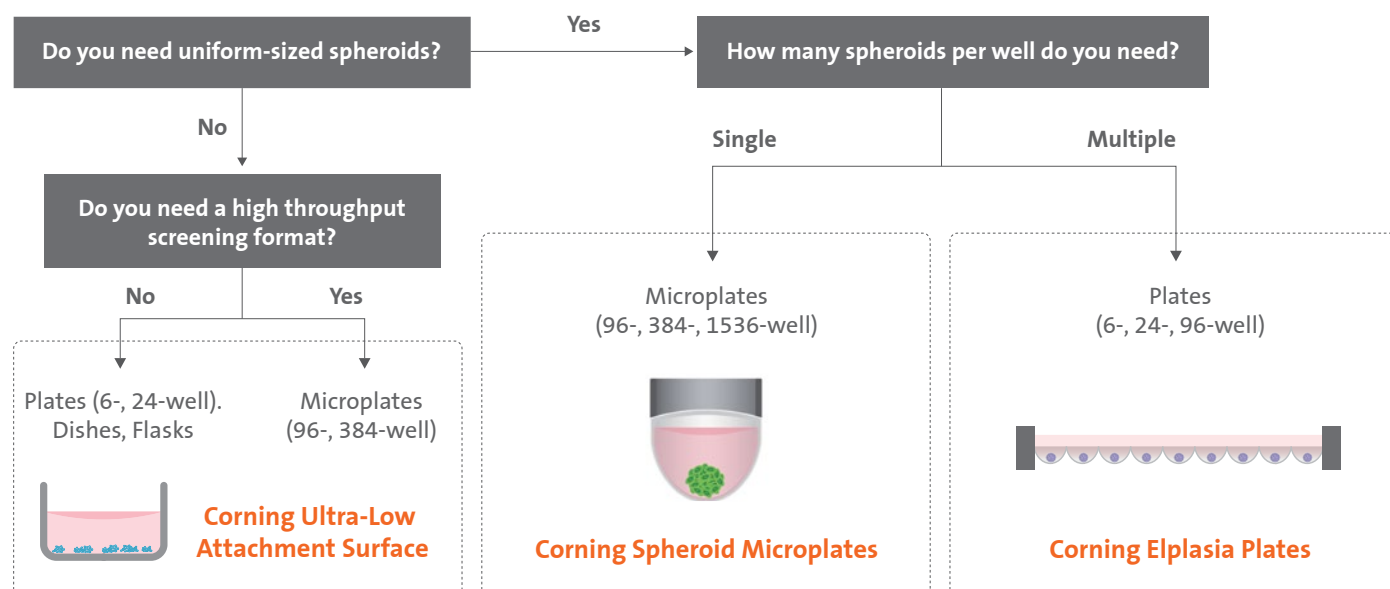
CORNING

Introduce Your Cells to a Third Dimension

Corning® Ultra-Low Attachment Surface Product Selection Guide

Common scaffold-free techniques for generating 3D spheroids include suspension cultures in media, hanging drop methods, or attachment-resistant cell culture surfaces such as Corning Ultra-Low Attachment (ULA) surface, Corning spheroid microplates, and Corning Elplasia® plates. The Corning vessels feature a biologically inert ultra-low attachment surface that minimizes cell attachment and promotes the formation of 3D multicellular spheroids employed in cancer research, stem cell biology, and drug screening.

How do I decide between Corning Ultra-Low Attachment surface, Corning spheroid microplates, or Corning Elplasia plates?



- Proprietary, animal-free covalently bonded hydrogel surface that is hydrophilic and neutrally charged
- Minimizes cell attachment, protein absorption, and enzyme activation
- Non-cytotoxic and non-degradable
- Promotes the formation and easy harvesting of anchorage-dependent scaffold-free spheroids
- Available in a variety of cell culture formats and configurations

- Novel and proprietary well geometry coupled with Corning ULA surface aids formation of a single spheroid in the center of well
- Ideal to generate and analyze uniform single spheroids in the same microplate with no need for transfer
- Unique design that shields each well to minimize well-to-well cross-talk which makes the microplates optimal for visualization
- Easy for media or buffer exchange

- Microcavity technology featuring Corning ULA surface that simplifies high volume spheroid production
- Highly reproducible bulk spheroid formation across microcavity wells— from 79 to 2,285 spheroids per well under the same culture conditions
- Increase signal and data points per well without an increase in spheroid size per well
- Black opaque sidewalls reduce well-to-well cross-talk

What formats are available for different assays and what are the characteristics of the spheroids formed?

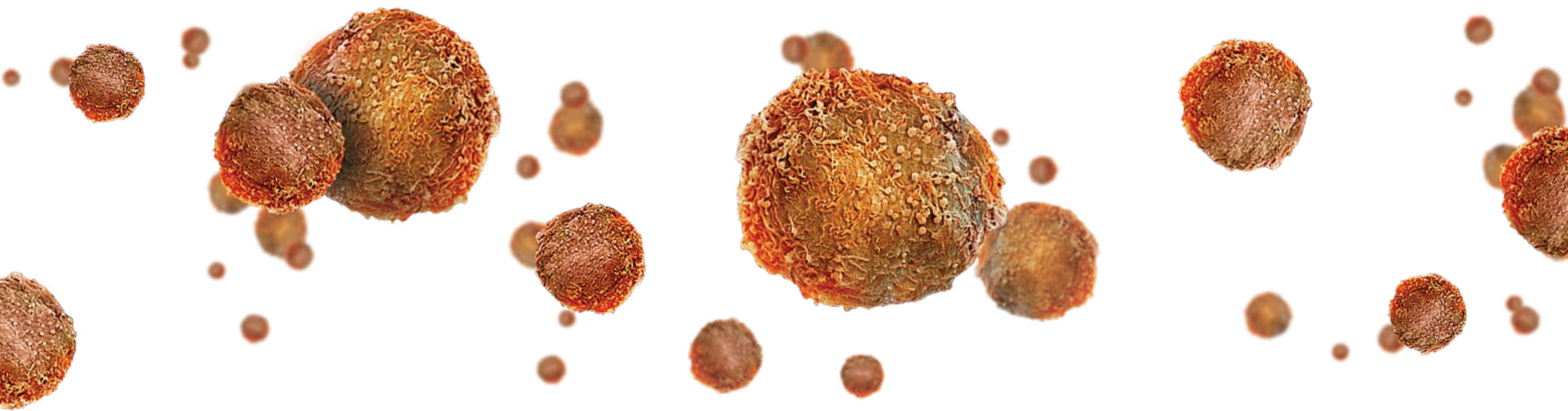
Vessel	Well/Dish/Flask Shape Cat. No.		Plate Type Cat. No.			Assay Type ^a					Spheroid Formation				Product		
	Flat	Round Bottom	Clear	Black	Black/Clear	HTS ^b	HCI ^b	Colormetric	Fluorescence	Luminescence	Multiple Spheroid/Well	Individual Spheroid/Well	Uniform Spheroid Size	Center of Well	Corning® Ultra-Low Attachment Surface	Corning Spheroid Microplates	Corning Elplasia® Plates
Plates	6-well	3471	3471					■	■	■	■				■		
		4440			4440				■ ^c	■ ^c	■ ^c		■				■
	24-well	3473	3473					■	■	■	■				■		■
		4441			4441				■ ^c	■ ^c	■ ^c		■				■
	96-well	3474	3474			■		■	■	■	■				■		
		4591		4591					■	■	■	■ ^d					
		7007	7007					■	■	■	■	■ ^d					
		4515, 4520			4515, 4520	■	■		■ ^c	■ ^c		■	■	■		■	
		4442			4442	■			■ ^c	■ ^c	■ ^c		■				■
	384-well	4588			4588	■			■	■	■				■		
		3830, 3830BC, 4516			3830, 3830BC, 4516	■	■		■ ^c	■ ^c		■	■	■		■	
	1536-well	4527, 4637			4527, 4637	■	■		■ ^c	■ ^c		■	■	■		■	
Dishes	60 mm	3261									■				■		
	100 mm	4615									■				■		
Flasks	T-25	4616									■				■		
	T-75	3814									■				■		
	Corning CellSTACK®	3303									■				■		

^aAssays indicated are recommended based on plate format; plates may be compatible with other assays. For more information, contact Corning Scientific Support.

^bHTS: High Throughput Screening; HCI: High Content Imaging.

^cPreferred format for assay.

^dPossible for single spheroid formation.



What applications can Corning® Ultra-Low Attachment surface, Corning spheroid microplates, or Corning Elplasia® plates be used for?

Application*	Product*		
	Corning Ultra-Low Attachment Surface	Corning Spheroid Microplates	Corning Elplasia Plates
3D spheroid formation (tumor/normal cells)	■	■	■
Cancer biology	■ 1,2	■ 4,5	■ 16,17,18
Stem cell biology (e.g., embryoid body formation)	■ 1,3	■ 6	■ 19
Neurobiology (e.g., neurosphere formation)	■	■ 7,8,9	■
Tissue engineering	■ 1	■	■
Drug discovery and screening	■ 2	■ 4,6,9,10,11,12,13	■ 17,18
Toxicity screening	■ 2	■ 4,9,12,13	■ 17
Metabolism studies		■	■
Co-culture		■ 4,12,14	
Exosome studies			■
Immune cell therapy		■ 12,14	
Blood brain barrier modeling		■ 15	
Organ culture	■ 1		
Blood cell activation and inactivation studies	■ 1		
Bacterial growth studies	■ 1		

*Applications listed include most commonly cited; products may be suitable for other applications. For more information contact Corning Scientific Support.
 *References based on selected Corning literature.

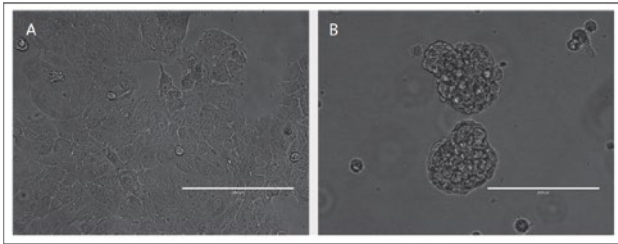


Figure 1. MCF-7 cells cultured on Corning Ultra-Low Attachment surface form tumor spheroids. MCF-7 were seeded onto the T-25 TC-treated (A) and Ultra-Low Attachment surface (B) vessels and a representative image was taken using an AMG EVOS® FI microscope. Scale bars represent 200 μm².

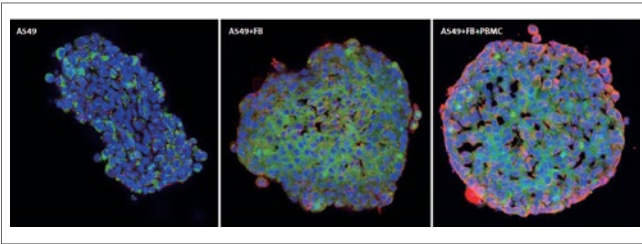


Figure 3. Immunohistochemical images of mono-, co-, and tri-culture spheroids in a 96-well spheroid microplate. A549, fibroblast, and peripheral blood mononuclear cells were seeded at specific ratios and stained with DAPI nuclei counterstain (blue), anti-Cyk7 (green), and anti-FAP (red). Image was taken using a Leica confocal microscope⁷.

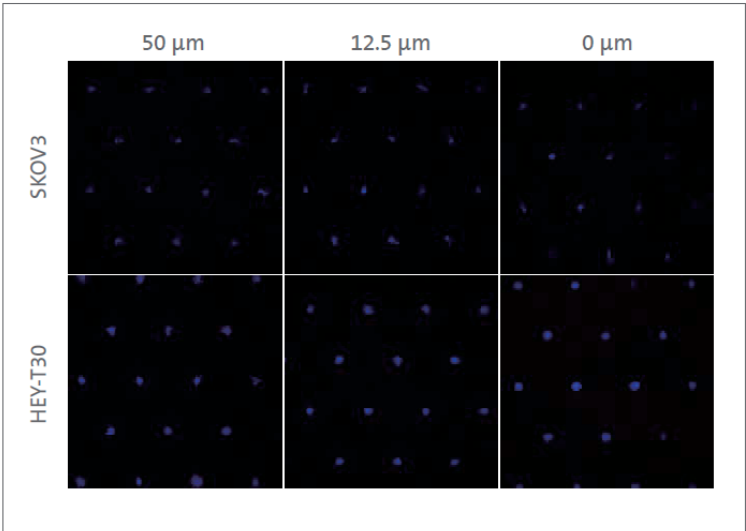
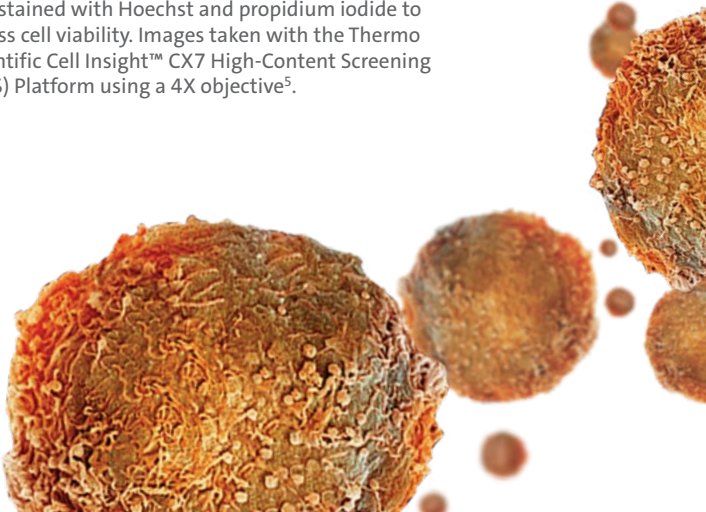


Figure 2. High content imaging of spheroids within a Corning Elplasia plate. Representative Z-stack images of SKOV3 (top) and HEY-T30 (bottom) spheroids exposed to varying concentrations of cisplatin and stained with Hoechst and propidium iodide to assess cell viability. Images taken with the Thermo Scientific Cell Insight™ CX7 High-Content Screening (HCS) Platform using a 4X objective⁵.



Ordering Information

Corning® Ultra-Low Attachment (ULA) Surface Products

Cat. No.	Description	Qty/Pk	Qty/Cs
3261	60 mm style dish, ULA surface, sterile	5	20
4615	100 mm style dish, ULA surface, sterile	5	40
3471	6-well plate, clear, flat bottom, with lid, ULA surface, sterile	1	24
3473	24-well plate, clear, flat bottom, with lid, ULA surface, sterile	1	24
3474	96-well microplate, clear, flat bottom, ULA surface, sterile	1	24
7007	96-well microplate, clear, round bottom, with lid, ULA surface, sterile	1	24
4591	96-well microplate, black, round bottom, with lid, ULA surface, sterile	1	24
4588	384-well microplate, black/clear, flat bottom, low flange, with lid, ULA surface, sterile	20	100
4616	25 cm ² flask, ULA surface, canted neck, vent cap, sterile	5	25
3814	75 cm ² flask, ULA surface, U-shaped, canted neck, vent cap, sterile	4	24
3303	Corning CellSTACK®, 1-stack, ULA surface, sterile	1	8

Corning Spheroid Microplates

Cat. No.	Description	Qty/Pk	Qty/Cs
4515	96-well microplate, black/clear round bottom, with lid, ULA surface, sterile	1	5
4520	96-well microplate, black/clear round bottom, with lid, ULA surface, sterile	10	50
4516	384-well microplate, black/clear round bottom, with lid, ULA surface, sterile	1	5
3830	384-well microplate, black/clear round bottom, with lid, ULA surface, sterile	10	50
3830BC	384-well microplate, black/clear round bottom, with lid, ULA surface, sterile	10	50
4637	1536-well microplate, black/clear round bottom, with lid, ULA surface, sterile	1	5
4527	1536-well microplate, black/clear round bottom, with lid, ULA surface, sterile	10	50

Corning Elplasia® Round Bottom Plates

Cat. No.	Description	Number of Spheroids/Well (Average)	Microwell Size (Diameter/Depth in µm)	Qty/Pk	Qty/Cs
4440	Corning Elplasia 6-well round bottom plate, with lid, ULA surface	2,885	500/400	1	5
4441	Corning Elplasia 24-well round bottom plate, with lid, ULA surface	554	500/400	1	5
4442	Corning Elplasia 96-well round bottom microplate, with lid, ULA surface	79	500/400	1	5

References

1. Corning Ultra-Low Attachment Surface Bibliography (CLS-AN-080).
2. Corning Ultra-Low Attachment Surface Promotes Spheroid Formation in MCF-7 Human Breast Cancer Cell Line (CLS-AN-206).
3. Corning Ultra-Low Attachment Surface Bibliography: Stem Cell Applications (CLS-AN-191).
4. Co-culturing and Assaying Spheroids in the Corning Spheroid Microplate (CLS-AN-390).
5. Analysis of RNA Transcript Levels Reveals Upregulation of Hypoxia Markers for Pancreatic Cancer Cells Cultured in 3D (CLS-AN-597).
6. A Novel Method for Generating Single, Intestinal Organoids for High Throughput Screening (CLS-AN-464).
7. Formation of Embryonic Bodies to Produce Neural Stem Cells from iPSCs Using the Corning Spheroid Microplate (CLS-AN-492).
8. Neurosphere Formation, Differentiation, and Migration of Human Neural Stem Cells Cultured in Corning Spheroid Microplates (CLS-AN-334).
9. Image-based Analysis of a Human Neurosphere Stem Cell Model for the Evaluation of potential Neurotoxicants (CLS-AN-407).
10. High-throughput, Three-Dimensional Assay Development with Corning 1536-well Spheroid Microplates and INTEGRA Biosciences' VIAFLO 384 and VIAFILL Liquid Handlers (CLS-AN-529).
11. 3D Imaging of Optically Cleared Spheroids in Corning Spheroid Microplates (CLS-AN-509).
12. A Novel Three Dimensional Immune Oncology Model for High Throughput Testing of Tumoricidal Capability (CLS-AN-425).
13. 3D Primary Human Hepatocytes (PHH) Spheroids Demonstrate Increased Sensitivity to Drug-induced Liver Injury in Comparison to 2D PHH Monolayer Culture (CLS-AN-514).
14. CAR-T Cell Screening in Tumor Spheroids using Corning Spheroid Microplates and the KILR Cytotoxicity Assay (CLS-AN-447).
15. A Novel Three-Dimensional Glioma Blood Brain Barrier Model for High Throughput Testing of Tumoricidal Capability (CLS-AN-505).
16. Advantages of Performing 3D Assays with the Corning Elplasia Plates (CLS-AN-585).
17. Corning Elplasia Plates Assays Requiring Multiple Spheroids per Well (CLS-AN-570).
18. Liquid Handling in a 96-well Corning Elplasia Plate using the INTEGRA VIAFLO 96/384 (CLS-AN-579).
19. Reproducible Production of Well-defined and Uniform Embryoid Bodies using Corning Elplasia Plates (CLS-AN-615).

For more specific information on claims, visit www.corning.com/certificates.

Warranty/Disclaimer: Unless otherwise specified, all products are for research use or general laboratory use only.* Not intended for use in diagnostic or therapeutic procedures. Not for use in humans. These products are not intended to mitigate the presence of microorganisms on surfaces or in the environment, where such organisms can be deleterious to humans or the environment. Corning Life Sciences makes no claims regarding the performance of these products for clinical or diagnostic applications. ***NOTE:** The following products and their sterile accessories are considered US class I medical devices: Tissue culture plates, flasks and dishes (area >100 cm²), multilayer flasks, spinner flasks, Erlenmeyer flasks, Corning HYPERFlask and HYPERStack vessels, Corning CellSTACK chambers, centrifuge tubes, cell culture tubes, cryogenic vials, roller bottles, polystyrene microcarrier beads. Falcon IVF products are US class II and CE marked per the EU medical device directive 93/42/EEC.

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