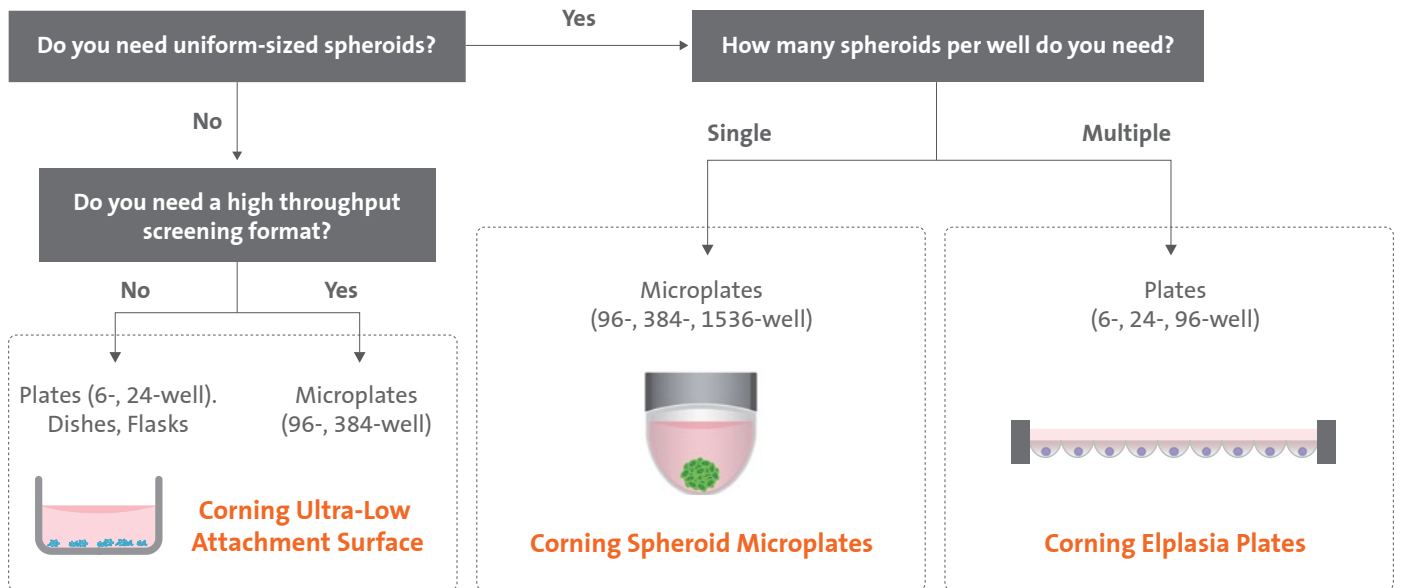


Introduce Your Cells to a Third Dimension

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?

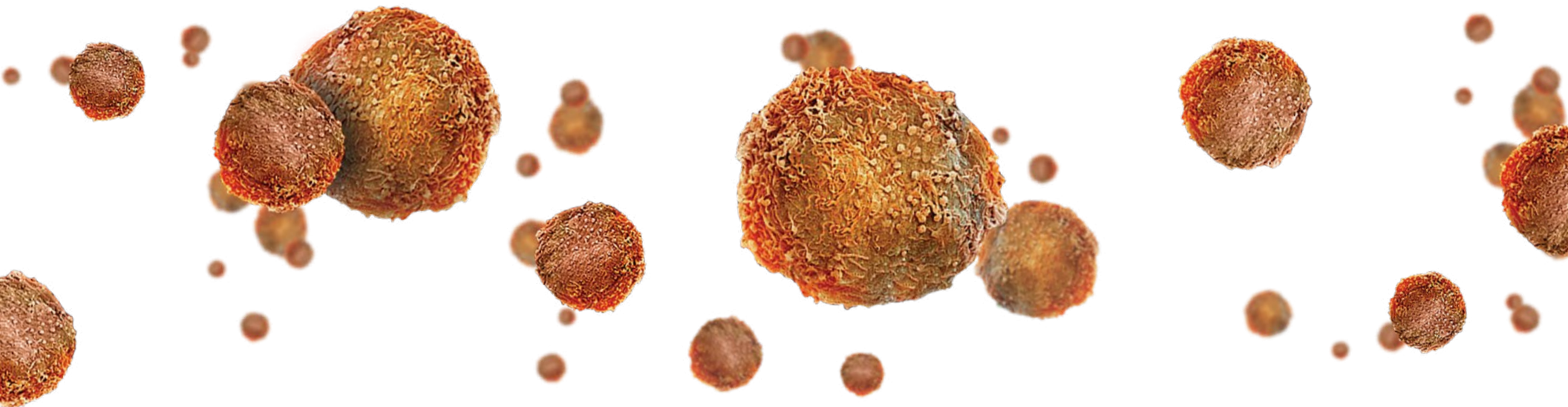
Vessel	Well/Dish/Flask Shape Cat. No.		Plate Type Cat. No.			Assay Type ^a					Spheroid Formation				Product				
	Flat	Round Bottom	Clear	Black	Black/Clear	HTS ^b	HCI ^b	Colormetric	Fluorescence	Luminescence	Multiple Spheroid/Well	Individual Spheroid/Well	Uniform Spheroid Size	Center of Well	Corning® 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	■ ^c		■	■	■		■	■
			4442			4442	■			■ ^c	■ ^c	■ ^c		■					■
	384-well	4588				4588	■			■	■	■			■				■
		3830, 3830BC, 4516			3830, 3830BC, 4516	■	■		■ ^c	■ ^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.

¹References based on selected Corning literature.

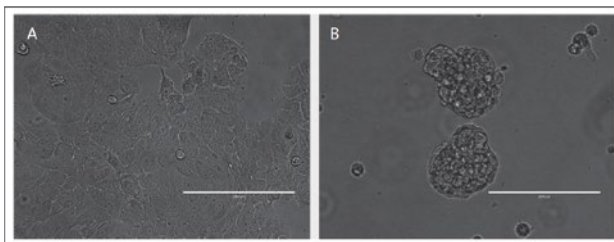


Figure 1. MCF-7 cells cultured on Corning Ultra-Low Attachment surface form tumor spheroids. MCF-7 were seeded onto the T-25 TC-treated (A) and Ultra-Low Attachment surface (B) vessels and a representative image was taken using an AMG EVOS® FI microscope. Scale bars represent 200 μm^2 .

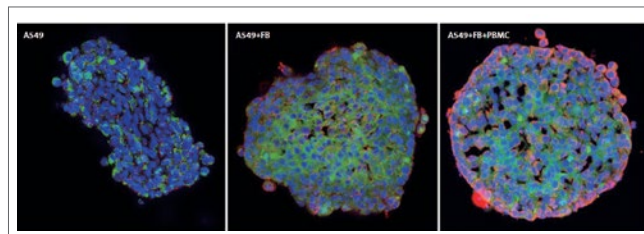


Figure 3. Immunohistochemical images of mono-, co-, and tri-culture spheroids in a 96-well spheroid microplate. A549, fibroblast, and peripheral blood mononuclear cells were seeded at specific ratios and stained with DAPI nuclei counterstain (blue), anti-Cyk7 (green), and anti-FAP (red). Image was taken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

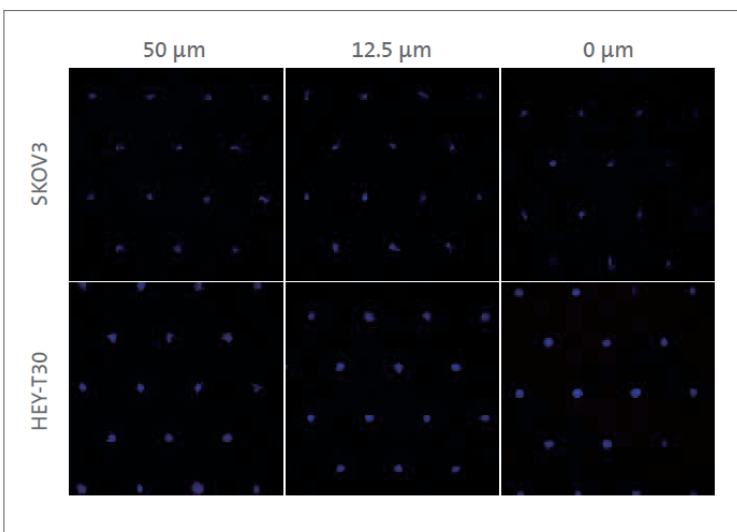


Figure 2. High content imaging of spheroids within a Corning Elplasia plate. Representative Z-stack images of SKOV3 (top) and HEY-T30 (bottom) spheroids exposed to varying concentrations of cisplatin and stained with Hoechst and propidium iodide to assess cell viability. Images taken with the Thermo 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.

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CORNING

Corning Incorporated
Life Sciences
www.corning.com/lifesciences

NORTH AMERICA
t 800.492.1110
t 978.442.2200

ASIA/PACIFIC
Australia/New Zealand
t 61 427286832
Chinese Mainland
t 86 21 3338 4338

India
t 91 124 4604000
Japan
t 81 3-3586 1996
Korea
t 82 2-796-9500
Singapore
t 65 6572-9740
Taiwan
t 886 2-2716-0338

EUROPE
CSEurope@corning.com
France
t 0800 916 882
Germany
t 0800 101 1153
The Netherlands
t 020 655 79 28
United Kingdom
t 0800 376 8660

All Other European Countries
t +31 (0) 206 59 60 51

LATIN AMERICA
grupoLA@corning.com
Brazil
t 55 (11) 3089-7400
Mexico
t (52-81) 8158-8400