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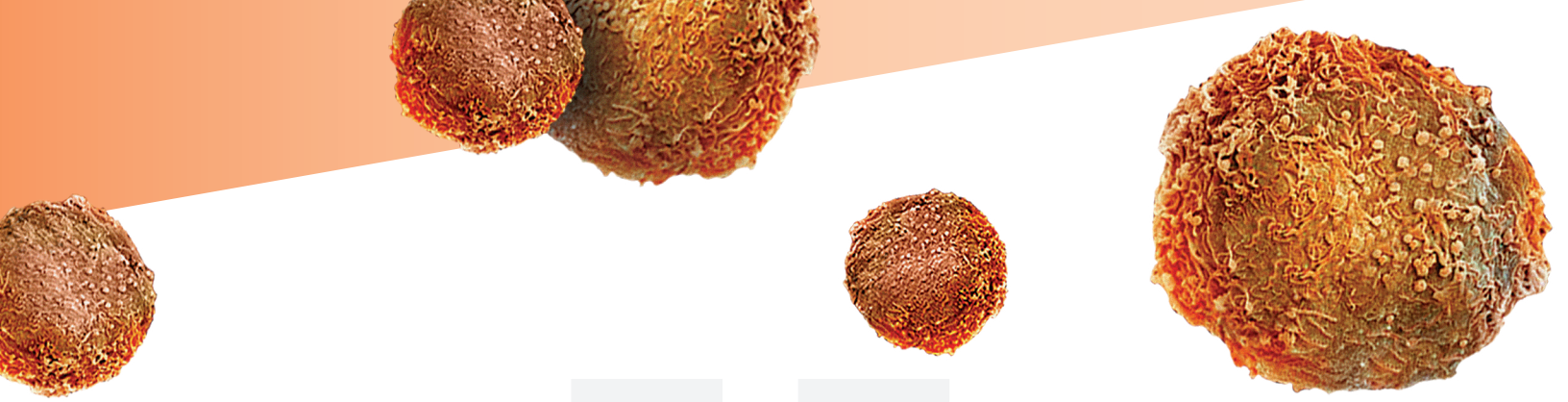


"We targeted miniaturization, trying to make things go bigger, faster, better, cheaper. It became obvious to me that we needed to engage other partners in developing microplates for our 1536-well capable systems. And that's where I got introduced to Corning.

Working closely alongside our Scripps team, Corning was able to develop ultra-low attachment source spheroid microplates that were amenable to automation in 1536-well formats."

Timothy Spicer, Ph.D.

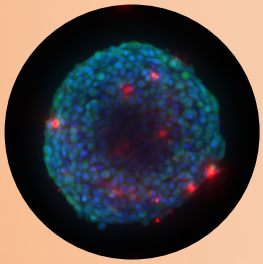
Senior Scientific Director
Dept. of Molecular Medicine
Scripps Research, Florida

Let's 3D. Create *in vivo*-like models.

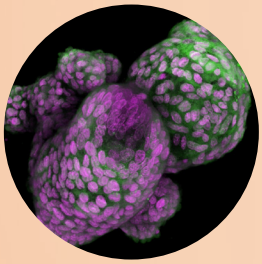
Whether you're just getting started in 3D cell culture, looking for proven ways to scale up, or moving to high throughput screening, Corning can help you break through the barriers to create more *in vivo*-like environments and predictive models. Quickly and efficiently.

For more than 30 years, Corning has delivered innovations that have advanced the science of 3D cell culture. We pioneered the development of novel tools providing easier access to *in vivo*-like 3D models, such as Corning® **Matrigel® matrix** and **Transwell®** permeable supports. And we continue to support you with a diverse and evolving portfolio of innovative 3D cell culture products such as the Corning Matribot® bioprinter and the Corning Elplasia® 12K flask as well as workflow solutions, protocols, and expertise. Corning is committed to working with you in critical areas like cancer biology, tissue engineering, and regenerative medicine – to help you bring safe, effective drugs and therapies to market in less time with greater certainty.

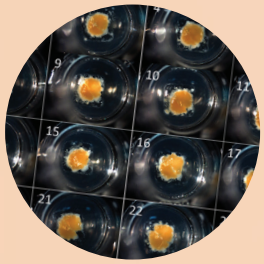
Whatever your application, we have the body of 3D cell culture knowledge and depth of resources to help you achieve your goals. It's no wonder so many scientists working in academic and biopharma labs look to Corning for solutions, guidance, and support when it's time to get started in 3D cell culture.



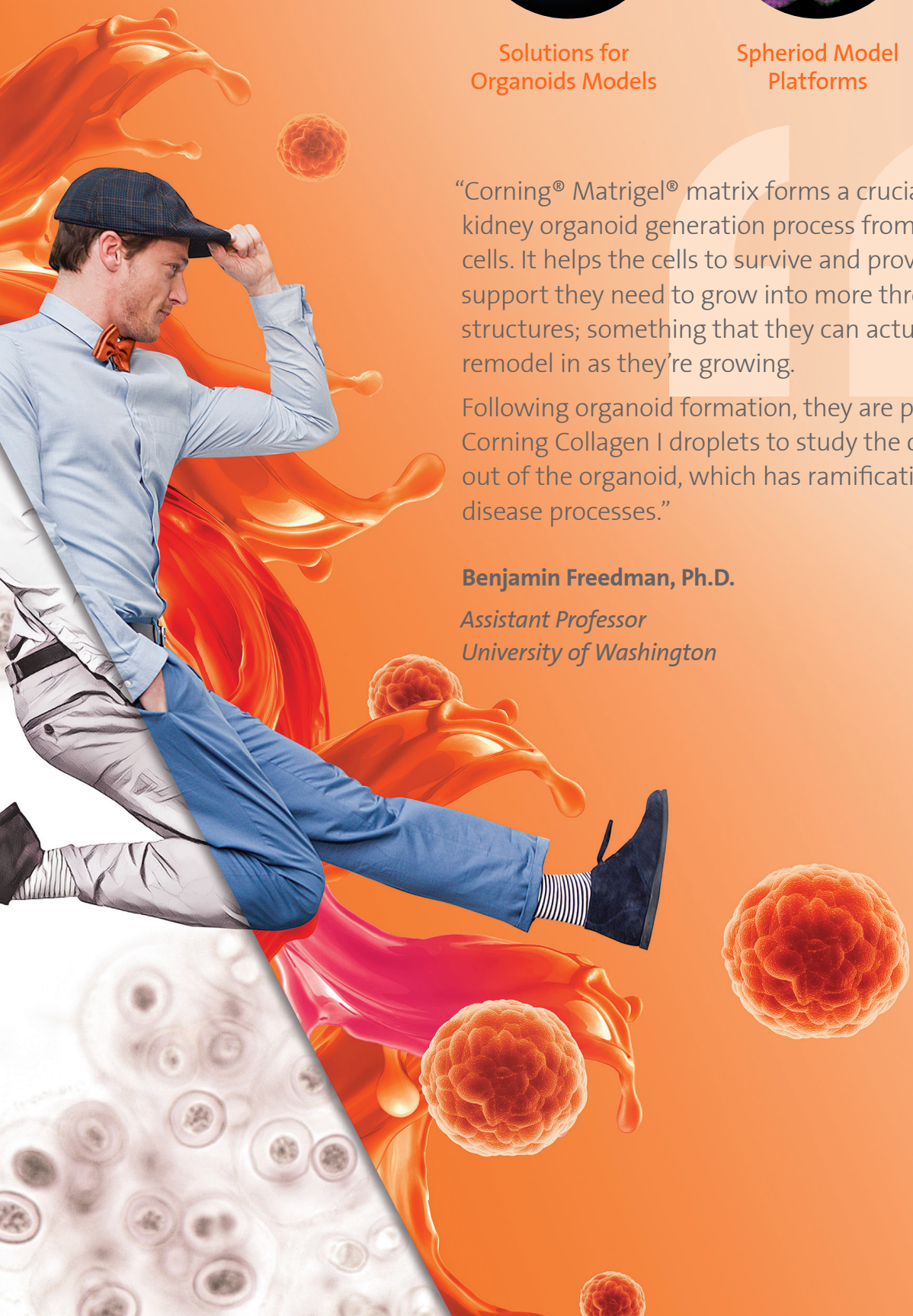
Solutions for Organoids Models



Spheriod Model Platforms



Tools for 3D Tissue Microenvironments



"Corning® Matrigel® matrix forms a crucial component of our kidney organoid generation process from pluripotent stem cells. It helps the cells to survive and provides the malleable support they need to grow into more three-dimensional structures; something that they can actually change and remodel in as they're growing.

Following organoid formation, they are placed inside larger Corning Collagen I droplets to study the cells ability to migrate out of the organoid, which has ramifications for certain disease processes."

Benjamin Freedman, Ph.D.

Assistant Professor
University of Washington

2D or 3D? It's no longer a question.

Why have so many research scientists embraced 3D cell culture? Because cells grown in 3D more closely mimic *in vivo* behavior in tissues and organs than cells grown in a 2D culture model. 3D cell culture environments create more biologically relevant models for drug discovery which may lead to more predictive results, higher success rates for drug compound testing, a faster path to market, and reduced development costs.

Attribute	2D	**3D**
Growth Substrate	Rigid, inert	Mimics natural tissue environment
Cell Shape Growth	Loss of cell polarity and altered shape	Maintains *in vivo*-like morphology and polarity
Architecture	Not physiological, cells partially interact	Physiological, promotes close interaction between cells, ECMs, and growth factors
Growth Factor Diffusion	Rapid	Slow – biochemical gradients regulate cell-to-cell communication and signaling
Gene Expression	Different patterns of gene expression	Maintenance of *in vivo*-like expression patterns

Corning 3D cell culture: Decades of experience with proven results.

Explore 3D Spheroid Model Environments

Spheroids are simple, widely used multicellular 3D models that form due to the tendency of adherent cells to aggregate. They can be generated from a broad range of cell types including tumor spheroids, embryoid bodies, hepatospheres, neurospheres, and mammospheres.

3D multicellular spheroids can develop metabolic gradients that create heterogeneous cell populations with superior cell-to-cell and cell-to-ECM interactions.[1] They offer a more physiologically relevant model as compared to 2D cell culture and can successfully mimic the microenvironment of a variety of tissue types in disease states.

Featured Solutions:

- Corning Elplasia® 12K flask
- Corning Elplasia plates
- Corning Spheroid microplates
- Corning 3D Tissue Clearing reagent
- Corning CellSTACK® 1-chamber vessel with Ultra-Low Attachment surface
- Corning Synthegel® 3D matrix kits
- Corning Disposable spinner flasks

Explore Organoid Model Environments

Organoids are generated from both pluripotent stem cells (PSCs) and adult stem cells (ASCs). Self-renewal and differentiation of stem cells is influenced by growth factors and extracellular matrices (ECM) that provide the required scaffold to support cell attachment and growth during organoid formation. Hydrogels such as Corning Matrigel Matrix and Corning Collagen are popular scaffold choices to support cell expansion in organoid cultures. Stem cells and/or organ progenitors from normal or diseased tissue can be mixed with Matrigel matrix or Collagen to create mini-organs of the kidney, thyroid, liver, brain, lung, intestine, prostate, and pancreas. Organoids support advancements in the study of organogenesis, disease modeling, and subsequent patient-specific therapies. Organoids are also being used as physiologically relevant models for the development of new therapeutic drug candidates.

Featured Solutions:

- Corning Matrigel® matrix
- Corning Matrigel matrix for organoid culture
- Corning Collagen
- Corning Matribot® bioprinter
- Corning Matrigel matrix-3D plates
- Organoid counting software for the Corning Cell Counter

Explore Tissue Environments with Solid Synthetic Scaffold Models

Mimic a broad range of 3D tissue microenvironments using solid synthetic scaffold models. Because synthetic scaffolds are devoid of animal-derived materials, they are free of potential pathogens and other issues found with biologic products. Polymers are a common choice for generating solid scaffolds of diverse size, structure, and porosity. They can be fabricated using lithography, electrospinning, bioprinting and, in the case of permeable supports, microporous membranes. For studies where endogenous factors are required to more realistically mimic the cellular in vivo environment, they can be combined with extracellular matrices (ECMs) as a coating to create effective complex matrices for 3D cell culture. apically and basolaterally when growing cells to mimic the *in vivo* environment.

- Transwell® and Falcon® permeable supports
- Corning FluoroBlok™ inserts
- Corning Matrigel matrix
- Corning Matribot bioprinter

1. Fang Y and Eglen RM. Three-Dimensional cell cultures in drug discovery and development. SLAS Discovery (2017) 22:456-472.

What's next?

In the complex research world, Corning is an experienced and reliable partner committed to working with you to help shape the future of 3D cell culture. Together.

Get Real with Corning 3D Cell Culture.

Find out how Corning can help you create more *in vivo*-like 3D models, conduct more biologically relevant experiments, and better predict how your next discovery will behave in the real world. Visit www.corning.com/3D.

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