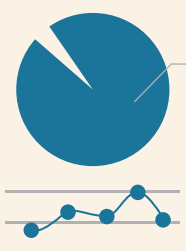
— The **Evolution** of —
Cell Culture with 3D Applications

The Problem



90% of drugs that use *in vitro* cell culture screening fail to meet the efficacy or safety margins required in clinical trials.

There are 2 major reasons for failure:

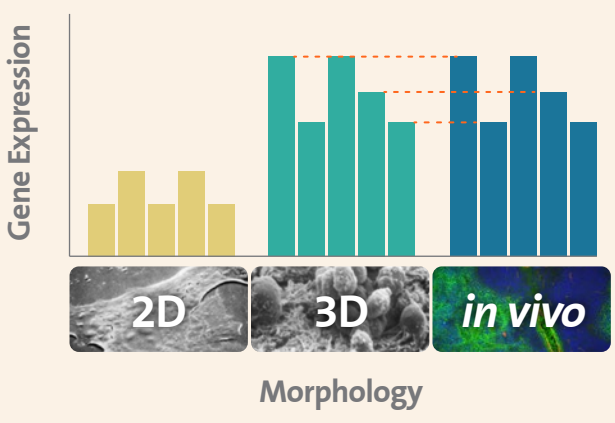
- **Toxicity**
- **Efficacy**

The Game Changer

2D CELL CULTURE plays a pivotal role in drug discovery and cell biology research, but it is limited in the context of *in vivo* conditions.

In vivo-like 3D models more effectively support biologically relevant experiments.

3D CELL CULTURE



Cells cultured in a 2D environment:
- Exhibit flattened morphology
- Divide aberrantly
- Lose their differentiated phenotype

When embedded in a 3D culture environment, some cell types can regain their:
- Physiological morphology
- Gene expression
- Functionality

The Idea Applied

Advancing Cell Culture »

3D cell culture methods have a major impact on many applications such as:

Stem Cell Culture and Differentiation

Tissue Engineering

Drug and Toxicity Screening

Cancer Cell Biology

Neurobiology

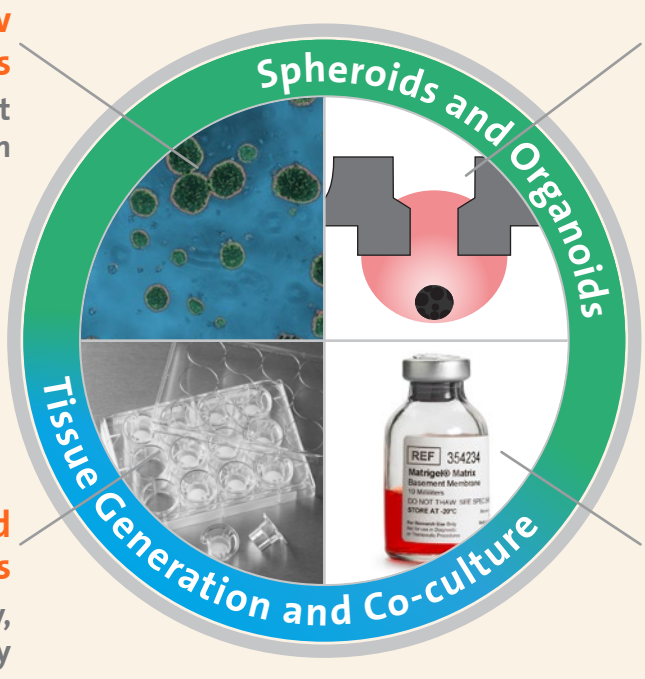
Visit **www.corning.com/3D** to learn more about the various research areas using 3D cell culture techniques.

The Environment

The spectrum of 3D cell culture models is vast and varied depending on your requirements, cell type, and application. Each option has advantages and disadvantages. The main tools available today include:

Ultra-Low Attachment Surfaces
Promotes cell contact and sphere formation

Hanging Drop and Levitation
Enables cell contact and sphere formation



Permeable and Solid Supports
Supports structure, polarity, and cell functionality

ECMs, Gels, and Scaffolds
Supports *in vivo*-like structure and functionality

There are many different techniques and approaches used to perform 3D cell culture. **Download** our literature review to learn more about 3D cell culture assays and systems.

The 3D Advantage

When grown in an optimal environment, 3D cells exhibit *in vivo*-like behaviors and functionality that may not be observed in a 2D system. 3D cell culture models are more capable of recapitulating *in vivo* functionality and responses.

The Impact

Research efficiencies are realized with the potential to improve results and decrease development timelines.

More biologically relevant environments for drug discovery

Pharmaceutical compound testing with higher success rates and faster path to market

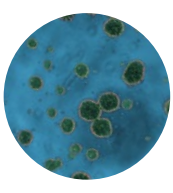
A better *in vivo* predictor of an effective pharmaceutical compound

Reducing development costs

Better outcomes with new drug discoveries

3D Cell Culture is complex. Finding a trusted, experienced partner is simple. Corning Life Sciences' 3D cell culture products include:

Corning® Matrigel® Matrix, ECMs, and Scaffolds



Spheroid Microplates with Ultra-Low Attachment Surfaces

Transwell® Permeable Supports

Download 3D cell culture resources by visiting **www.corning.com/3D**

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Order Corning products for advanced cell culture applications online at **www.corning.com/lifesciences**