

Corning® 3D Clear Tissue Clearing Reagent



The improved *in vivo* relevancy of 3D cell culture has driven the adoption of these models in drug discovery. However, the imaging techniques used to characterize these models are highly limited. Due to the thickness and opacity of these 3D cellular structures, current imaging technologies cannot penetrate to the center of the tissues, resulting in only the outer 2 to 3 layers of cells being detected. This causes the dark centers often seen in images of 3D cell culture models, which proves highly problematic for accurate analysis as these outer cells are most exposed to compounds, nutrients and oxygen, and thus do not reflect the entire cell population.

Corning 3D Clear tissue clearing reagent can be used as a tissue clearing technique designed specifically to support imaging for 3D cell culture models and plate-based high throughput processing. When paired with fluorescent labeling (e.g., fluorescent protein, immunofluorescence, chemical dyes) and high content confocal microscopy, Corning 3D Clear reagent allows for complete 3D cell culture model characterization and more accurate drug screening.

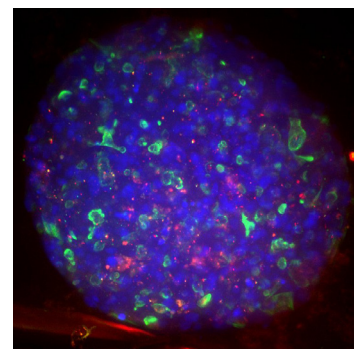
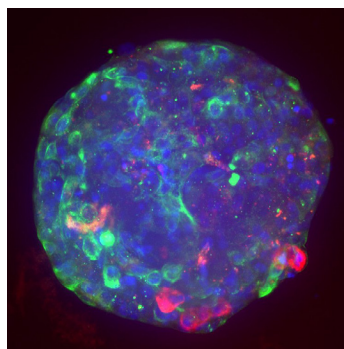
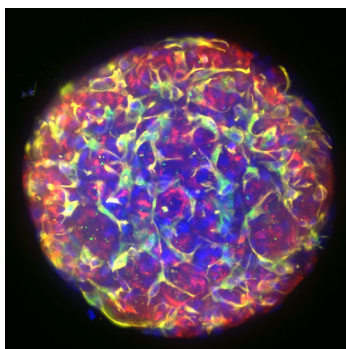
Why use Corning 3D Clear Tissue Clearing Reagent?

While there are dozens of tissue clearing techniques described in literature, there are few that have been demonstrated for use with 3D cell culture models. Additionally, most of these tissue clearing techniques are not designed for compatibility with microplates (e.g., iDISCO, BABB, uDISCO, 3DISCO) or high throughput processing (e.g., CLARITY), and many are not compatible with immunofluorescent labeling (ScaleS4, CUBIC) or have high toxicity (e.g., ClearT). Therefore, the Corning 3D Clear tissue clearing technique was designed to be a rapid, easy-to-use process that is compatible with microplates imaging, fluorescent protein and immunofluorescence.

To get started with Corning 3D Clear tissue clearing reagent, you can purchase the Corning 3D Clear starter kit or you can purchase the Corning 3D Clear reagent, and then make the required buffer reagents yourself.

Benefits of Corning 3D Clear Tissue Clearing Reagent

- ▶ Rapid tissue clearing
- ▶ Easy-to-use
- ▶ No special equipment required
- ▶ Compatible with immunofluorescent (IF), fluorescent protein (FP), and other fluorescent labels
- ▶ Microplate and automation compatible
- ▶ Reversible for follow up 2D H&E/IHC



Complete Model Characterization

The use of Corning® 3D Clear tissue clearing reagent enables researchers to visualize 3D cell culture models in their entirety through the use of confocal microscopy which results in a 3 to 4 times increase in the number of cells detected. The technique is compatible with Corning flat bottom microplates as well as Corning spheroid microplates, Corning Elplasia® plates, and Corning Matrigel® matrix-3D plates.

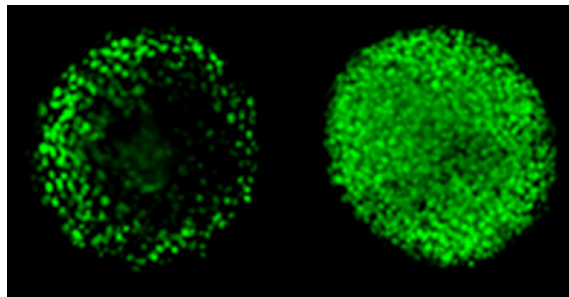


Figure 1. Imaged spheroid before (left) and after (right) tissue clearing.

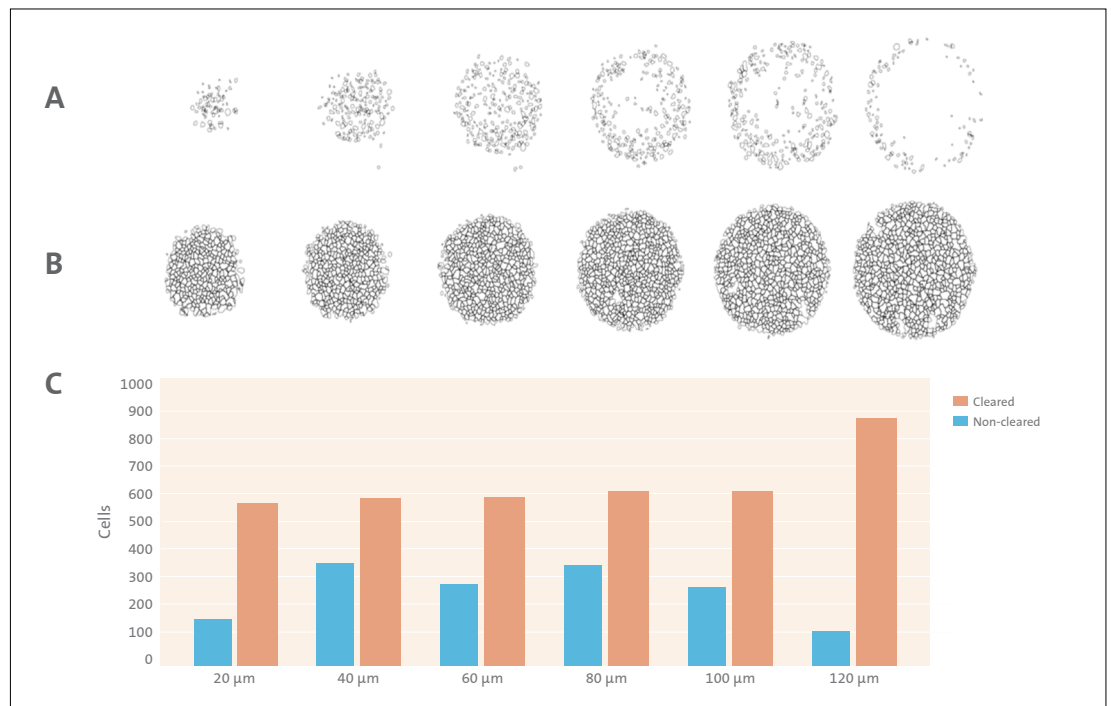


Figure 2. Tissue clearing combined with confocal microscopy allows for a 3 to 4 times increase in cells detected (C) when compared to a 3D cell culture model cleared with Corning 3D Clear reagent (B) and a 3D cell culture model imaged in PBS without clearing (A).

Increased Dose Response Sensitivity

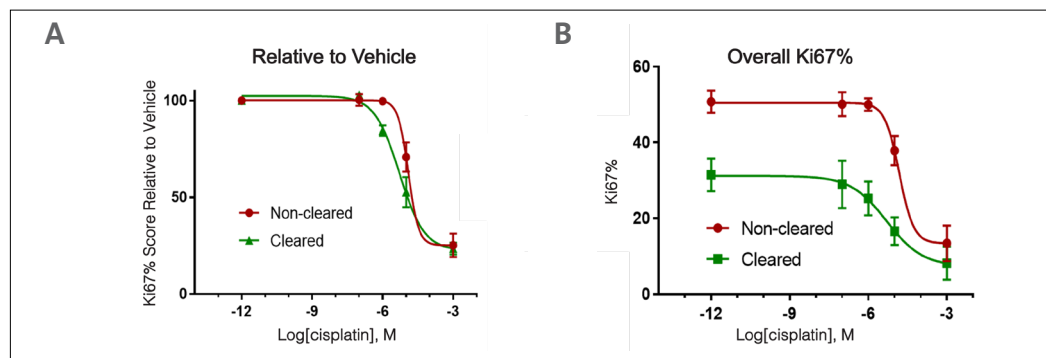


Figure 3. The use of Corning 3D Clear tissue clearing reagent allows for a significant increase in dose response sensitivity (left), as the technique allows for the entire population of cells within a 3D cell culture model to be characterized. Furthermore, due to interrogation of the entire cell population, assessment of drug effect is more accurate. Without clearing, only the exterior cells are surveyed, and as such, measurements of cell proliferation are overestimated, since the outer layers of cells show more proliferation than the interior cells.


Ordering Information

VWR Cat. No.	Corning Cat. No.	Description	Qty/Pk	Qty/Cs
76423-678	5730	Corning® 3D Clear tissue clearing reagent starter kit Includes: Corning 3D Clear reagent (30 mL), Corning 3D Clear antibody buffer (30 mL), Corning 3D Clear blocking buffer (30 mL), Corning 3D Clear penetration buffer (30 mL), Corning 3D Clear washing buffer 10X (70 mL)	--	1 kit
76423-680	5731	Corning 3D Clear tissue clearing reagent, 10 mL	1	1
76423-682	5732	Corning 3D Clear tissue clearing reagent, 30 mL	1	1
76423-684	5733	Corning 3D Clear tissue clearing reagent, 100 mL	1	1
76423-686	5734	Corning 3D Clear antibody buffer, 30 mL	1	1
76423-688	5735	Corning 3D Clear antibody buffer, 100 mL	1	1
76423-690	5736	Corning 3D Clear blocking buffer, 30 mL	1	1
76423-692	5737	Corning 3D Clear blocking buffer, 100 mL	1	1
76423-694	5738	Corning 3D Clear penetration buffer, 30 mL	1	1
76423-696	5739	Corning 3D Clear penetration buffer, 100 mL	1	1
76423-698	5740	Corning 3D Clear washing buffer 10X, 70 mL	1	1
76423-700	5741	Corning 3D Clear washing buffer 10X, 200 mL	1	1

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