

# Corning® Matrigel® Matrix For Organoid Culture

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Organoids have become increasingly popular in disease modeling and drug discovery as they resemble the composition and functionality of organs. Extracellular matrix (ECM) is an important component of the cell niche that provides biochemical cues and structural support, such as porosity and stiffness which mediates signaling for cell migration, cell behavior and polarization in organoid structures<sup>1,2</sup>.

Corning Matrigel matrix for organoid culture is an optimized matrix that has been verified to support organoid growth and differentiation. It provides the consistency and reliability needed for successful organoid culture by employing the following steps:

- ▶ Verified to support growth and differentiation of organoid cultures including:
  - Long-term expansion of mouse small intestinal organoids for more than 7 passages with typical organoid budding morphology and marker expression<sup>3</sup>.
  - Growth and differentiation of polarized 3D epithelium from primary human airway epithelial cells expressing typical markers<sup>4</sup>.
- ▶ Each lot is measured for its elastic modulus, indicative of matrix stiffness that supports an organoid workflow.
- ▶ Each lot is qualified to form stable “3D dome” structures commonly used in organoid culture.
- ▶ Demonstrated to successfully grow organoids from both healthy and diseased cell origins<sup>4</sup>.

As an optimized matrix, Corning Matrigel matrix for organoid culture reduces the need for time-consuming screening, while providing the reproducibility and consistency essential for organoid research.

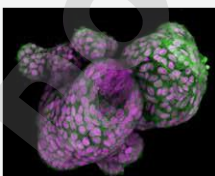


## Application Areas

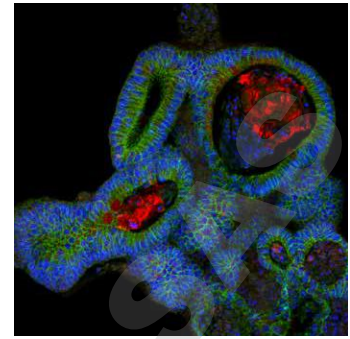
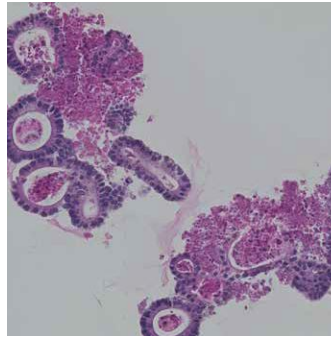
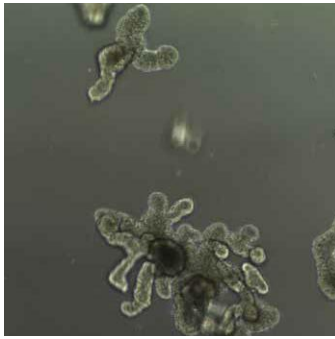
### Growth and differentiation of organoids.

Organoids support advancements in the study of organogenesis, disease modeling, and subsequently patient-specific therapies. Stem cells and/or organ progenitors from normal or diseased tissue are mixed with Corning Matrigel matrix to create mini-organs of the kidney, thyroid, liver, brain, lung, intestine, prostate, pancreas, breast, esophagus, and ovary.

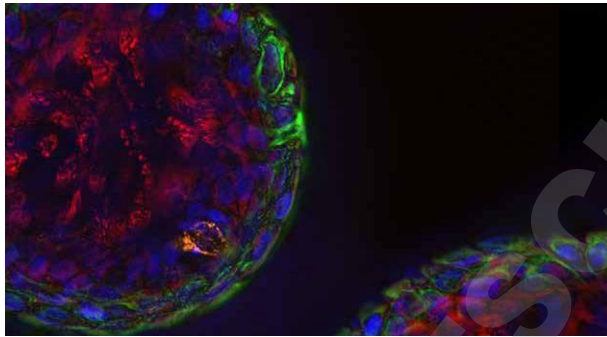
Corning Matrigel matrix is the most published hydrogel for organoid research due to its close resemblance to an *in vivo* environment, providing necessary growth factors, proteins, and the required matrix architecture.



Corning is collaborating with Hubrecht Organoid Technology (HUB), a pioneer institute that amplifies the work of Prof. Hans Clevers, whose lab published a landmark paper demonstrating the development of gastrointestinal organoids from single Lgr5+ stem cells. This collaboration brings together the expertise HUB has in generating organoid *in vitro* models and mimicking organ functionality with the knowledge Corning has in optimizing tools for organoid environments. Working together, the goal is to provide our research community with better tools and resources for organoid applications and to further the science of organoid models.



Intestinal organoids grown in Corning Matrigel matrix for organoid culture show typical budding morphology and marker expression (Vimentin, Mucin-2, Villin, Chromogranin, and Lysozyme)<sup>3</sup>.



Airway organoids grown in Corning Matrigel matrix for organoid culture shown to express typical differentiation markers of basal (green), ciliated (red) and goblet (orange) cells<sup>4</sup>.

### Ordering Information

Cat. No.	Description	Qty/Pk	Qty/Cs
356255	Corning® Matrigel® matrix for organoid culture, phenol red-free, LDEV-free, 10 mL	1	1

### References

- Hartman CD, et al. Extracellular matrix type modulates cell migration on mechanical gradients. *Experimental Cell Research*, 359(2):361-366, 2017.
- Bryant DM, et al. A molecular switch for the orientation of epithelial cell polarization. *Dev Cell*. 2014 Oct 27;31(2):171-87.
- Application Note (Corning Lit. Code CLS-AN-542): Culture of mouse intestinal organoids in Corning Matrigel matrix for organoid culture.
- Application Note (Corning Lit. Code CLS-AN-534): High throughput gene expression analysis of 3D airway organoids.

For more specific information on claims, visit the Certificates page at [www.corning.com/lifesciences](http://www.corning.com/lifesciences).

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