

# Growing with the Gibco 3D workflow



gibco

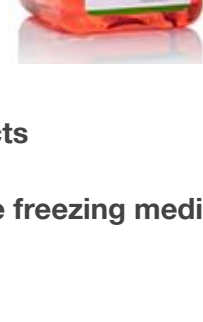
## Source: Grow cells for your desired 3D cell model

- The cell source is the basis of any 3D cell model
- The choice of cells dictates the biology of the model and the required materials needed to develop and maintain the model
- Different cell types can be used in monoculture or co-culture formats to produce a variety of 3D cell models



### Gibco™ cell culture reagents

- ➔ Designed to deliver reproducibility, Gibco cell culture reagents are infused with quality, customer-focused innovation, and service excellence from beginning to end. From the most basic formulations to the newest innovations, Gibco products offer exceptional quality, consistency, and performance - for results that you can count on every day.



- ➔ Examples:
  - Gibco™ fetal bovine sera (FBS) products
  - Gibco™ TrypLE reagents
  - Gibco™ Accutase recovery cell culture freezing medium
  - Gibco™ HEPES buffering agents
  - Gibco™ GlutaMAX products
  - Gibco™ PBS solutions

[Learn more](#)

### Gibco™ basal, stem cell, specialty media

- ➔ Examples:
  - Gibco™ Dulbecco's Modified Eagle Medium (DMEM) formulations
  - Gibco™ RPMI 1640 mediums
  - Gibco™ Ham's F10 media
  - Gibco™ L-15 StemFlex media
  - Gibco™ Essential 8™ medium
  - Gibco™ Essential 6™ medium
  - Gibco™ KSR William's E medium
  - Gibco™ serum free Media
  - Gibco™ Human Large Vessel Endothelial Cell Basal Medium (formerly Medium 200)



[Learn more](#)

### Thermo Scientific™ Nunc™ flasks



- ➔ Examples:
  - Thermo Scientific™ Nunc™ cell culture inserts
  - Thermo Scientific™ Nunc™ Sphera™ flasks
  - Thermo Scientific™ Nunc™ UpCell surface

[Learn more](#)

### Gibco™ cell lines

- ➔ Examples:
  - Gibco™ OncoPro Tumoroid Cell Lines
  - Gibco™ primary cells (hepatocytes, fibroblasts, endothelial cells)



[Learn more](#)

## Culture: Develop your 3D cell model of choice

- Once you have chosen the cell type, you must decide how you will create your model: with or without scaffold, in low attachment cultureware or cell culture inserts, etc
- To do this you will need cells, a particular culture vessel (plastics), scaffold or ECM, media/supplements, and sometimes growth factors



### Gibco™ OncoPro™ Tumoroid Culture Medium Kit

- ➔ Optimized for patient derived tumoroid cultures
- ➔ Streamlined media preparation and culture methods
- ➔ Adaptable for multiple cancer indications and downstream assays



[Learn more](#)

### Gibco™ StemScale™ PSC Suspension Medium

- ➔ Increases stem cell expansion capacity
- ➔ Simplifies and streamlines cell culture workflow
- ➔ Creates reliable and consistent PSC spheroids
- ➔ Maintains pluripotency across multiple PSC lines



[Learn more](#)

### Gibco™ PeproGMP™ recombinant proteins

- ➔ High quality cytokines and growth factors
- ➔ Broad range of supported organoid models
- ➔ Consistency and reliability backed by 35+ years of experience



[Learn more](#)

### Gibco™ Geltrex™ Flex Basement Membrane Matrices

- ➔ Quality you need in the volumes you want. Available in (3) formats and sizes
- ➔ Examples:
  - Geltrex™ Flex LDEV-Free Organoid Qualified Reduced
  - Geltrex™ Flex LDEV-Free hESC Qualified Reduced
  - Geltrex™ Flex LDEV-Free Reduced



[Learn more](#)

### Thermo Scientific™ Nunc™ flasks



- ➔ Examples:
  - Thermo Scientific™ Nunc™ cell culture inserts
  - Thermo Scientific™ Nunc™ Sphera™ flasks
  - Thermo Scientific™ Nunc™ UpCell surface

[Learn more](#)

### Gibco™ extracellular matrices

- ➔ Provides structural support for 3D model formation
- ➔ Examples:
  - Gibco™ Geltrex™ Flex matrices
  - Gibco™ Collagen I matrices
  - Gibco™ Alginate™ 3D Culture System



[Learn more](#)

## Characterize: Demonstrate cell health and relevancy

- Given that it takes time to create a 3D cell model, you want to verify that the model is healthy and performs as it should before testing in the presence of a drug
- You can monitor changes in cells present at different timepoints, verify that characteristics do not change over time, or you can determine if a change in the protocol affects the health and function of your model



### Ion Torrent™ Oncomine™ Comprehensive Assay v3

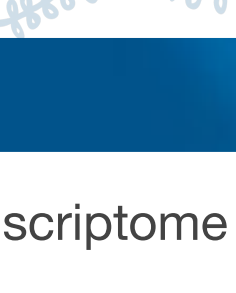
- ➔ The Oncomine Comprehensive Assay v3 GX is a targeted, next-generation sequencing (NGS) assay that enables the detection of relevant SNVs, CNVs, gene fusions, and indels from 161 distinctive genes to help inform drug discovery research and clinical trial research programs



[Learn more](#)

### Applied Biosystems™ TaqMan® assays

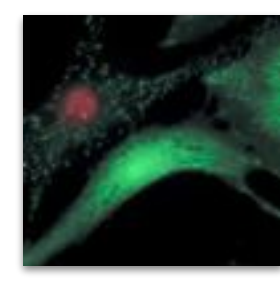
- ➔ Track development progress of your 3D cell model
- ➔ Probe for gene markers representing cells at different stages of growth to help ensure proper development.



[Learn more](#)

### Invitrogen™ cell health/viability assays

- ➔ Available in image-based or plate based formats
- ➔ Image-based assays allow for visualization and quantification of viability based on cellular membrane integrity, cellular function, or metabolic activity
- ➔ Microplate assays allow researchers to assess the health and viability of cells quickly and accurately in a high-throughput manner
- ➔ Assays can be multiplexed to detect multiple measures of cell health
- ➔ Examples:
  - Invitrogen™ PrestoBlue™ cell viability reagents
  - Invitrogen™ LIVE/DEAD™ viability kits
  - Invitrogen™ Dil stain
  - Invitrogen™ CellEvent™ Caspase-3/7 Detection Reagents
  - Invitrogen™ Image-iT™ hypoxia reagents



[Learn more](#)

### Ion Torrent™ Ion Ampliseq™ Transcriptome Human Gene Expression Kit

- ➔ Designed to simplify and streamline the NGS workflow by enabling the amplification of specific genomic regions of interest
- ➔ Ion AmpliSeq utilizes an ultrahigh multiplex polymerase chain reaction (PCR) approach to selectively amplify targeted regions, allowing for highly efficient and sensitive sequencing of specific gene panels or custom targets
- ➔ Widely adopted in various translational research and clinical research applications, including cancer research, inherited disease research, infectious disease research, and pharmacogenomics research



[Learn more](#)

## Engineer: Modify your created 3D cell model

- Engineering your 3D model is an optional step done prior to assaying
- 3D cell models can be modified to understand the role of particular genes, to express markers for downstream assays, or to create isogenic pairs allowing for a healthy and diseased phenotype from the same donor



### Invitrogen™ Neon™ NxT Electroporation System

- ➔ High efficiency & viability – transfect even challenging cell lines with strong results
- ➔ Save time – simple 3-step workflow, 1- or 8-channel pipette, up to 96 reactions in <15 min
- ➔ Flexible optimization – adjust parameters for cell types, densities, payloads, and protocols
- ➔ Protect samples – reduce transfer loss and contamination risk



[Learn more](#)

### Gibco™ LV-MAX™ Lentiviral Production System

- ➔ High titer - greater than 1 x 10<sup>8</sup> TU/mL
- ➔ Scalable suspension system - from 96 deep-well plate and beyond
- ➔ Serum-free - eliminating animal-origin components and associated risks
- ➔ Easy, robust culture and transfection protocols



[Learn more](#)

### Invitrogen™ Attune™ flow cytometers

- ➔ Discover the exceptional performance of the Attune Flow Cytometer family engineered to set a standard in flow cytometry.
- ➔ At the heart of each Attune Flow Cytometer lies our revolutionary acoustic focusing technology, which utilizes sound waves to meticulously align cells within the flow cell.
- ➔ This innovative approach surpasses traditional hydrodynamic methods, resulting in faster processing speeds, exceptional data quality, and increased sample throughput
- ➔ Examples:
  - Invitrogen™ Attune™ NxT Flow Cytometer
  - Invitrogen™ Attune™ CytPix™ Flow Cytometer
  - Invitrogen™ Attune™ Xenith™ Flow Cytometer



[Learn more](#)

### Invitrogen™ CRISPR-Cas9 and TALEN gene editing systems

[Learn more](#)

### Invitrogen™ iBlot™ Western Blot Transfer and Invitrogen™ iBright™ Imaging Systems

[Learn more](#)

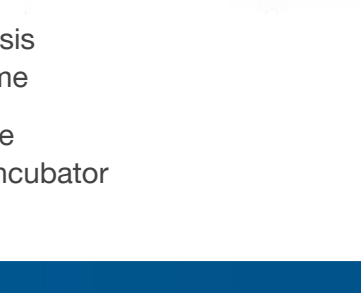
## Assay: Leverage 3D cell models for your distinctive research aim

- Once your developed model is ready to be tested in the presence of a drug or cell therapy, you need the tools to visualize and analyze the results
- We offer a range of microplate readers, imaging systems, qPCR instruments, flow cytometers, multiplex analyzers to satisfy your scale and throughput needs



### Thermo Scientific™ CellInsight™ CX7 LZR Pro High Content Screening Platform

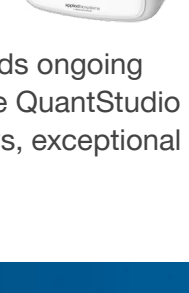
- ➔ Develop and automate high-content assays with 7-channel laser-based illumination for fluorescent imaging
- ➔ Rapid data analysis with Thermo Scientific™ HCS Studio™ 2.0 Cell Analysis Software analyzes your images in real time
- ➔ Fully integrated live cell imaging using the optional Invitrogen™ EVOS™ Onstage Incubator



[Learn more](#)

### Applied Biosystems™ QuantStudio™ 7 Pro Real-Time PCR System

- ➔ A comprehensive collection of QuantStudio Real-Time PCR (qPCR) systems to choose from, we empower you to shape the future of your research according to your own strategies and budget
- ➔ Our continuous innovation in qPCR technology yields ongoing advancements to maximize performance across the QuantStudio portfolio, including: faster results, smarter workflows, exceptional data quality, high efficiency



[Learn more](#)

### Thermo Scientific™ Varioskan™ LUX Multimode Microplate Reader

- ➔ Thermo Scientific™ microplate readers offer flexibility, reliable performance, and ease of use for a variety of assays. Whether you need to measure absorbance, fluorescence, luminescence, time-resolved fluorescence (TRF), or AlphaScreen assays, we can offer a microplate reader to meet the requirements of your specific workflow.



[Learn more](#)

### Invitrogen™ EVOS™ imaging systems

- ➔ Remarkably versatile and intuitive, EVOS™ microscopes are excellent for a broad range of imaging applications - including cell culture, time-lapse imaging, and high-resolution image capture from slides, dishes, flasks, and microplates
- ➔ EVOS™ systems deliver publication-quality images and data in no time, over time, every time at an exceptional value
- ➔ Examples:
  - Invitrogen™ EVOS™ M3000 System
  - Invitrogen™ EVOS™ M5000 System
  - Invitrogen™ EVOS™ M7000 System



[Learn more](#)

### Luminex assay kits and instruments

The Luminex platform represents a powerful combination of Luminex xMAP instruments and multiplex assays designed for the detection and measurement of RNA and proteins

[Learn more](#)

Learn more about 3D workflow solutions at [thermofisher.com/gibco](https://thermofisher.com/gibco)

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