gibco

# Gibco cell culture reagents

Designed to deliver reproducibility and performance
for results you can count on every day

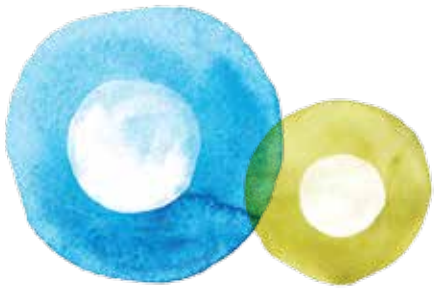
ThermoFisher
SCIENTIFIC

# Gibco media—over 50 years of cell culture expertise

Gibco™ media, sera, supplements, cells, and cell culture reagents are designed to deliver reproducibility and performance for results you count on.

Regardless of whether you are performing cell culture in a research lab or production facility, need a special or defined formulation, or are growing cell lines, primary cells, or stem cells, Gibco products offer a reliable solution.

# Contents



# Cell culture reagents—media

## Time-tested and trusted, Gibco media include products designed to support the growth and maintenance of a variety of mammalian cells and cell lines

We've developed ready-to-use media products as well as powdered and concentrated liquid formulations to fit your experimental setup and budget. Classical media products include DMEM, RPMI 1640, MEM, IMDM, and Opti-MEM™ I media.

| Classical media product | Summary | Web link |
|---|---|---|
| DMEM | Growth of a spectrum of mammalian cell lines | thermofisher.com/dmem |
| RPMI 1640 | Enriched media with extensive applications for mammalian cells | thermofisher.com/rpmi |
| MEM | Patterned after Eagle's Media, well suited for mammalian cells | thermofisher.com/mem |
| IMDM | Highly enriched media well suited for rapidly proliferating, high-density cell cultures | thermofisher.com/imdm |
| Opti-MEM I medium | Ideal for use during cationic lipid transfections | thermofisher.com/optimem |

**In addition to these classical media, we have developed products to upgrade your cell culture:**
Upgrade basal media to Advanced media, upgrade L-glutamine to GlutaMAX media, and upgrade PBS/DMEM to FluoroBrite DMEM.

# Culture cells with Advanced media

### Consistent cell growth, less serum, lower cost

Enriched with normal-serum constituents, Gibco™ Advanced™ media can be used in combination with your fetal bovine serum (FBS), and feature:

- Formulations that support common cell lines (e.g., Advanced DMEM, DMEM/F-12, MEM, RPMI 1640)
- Fewer lot-to-lot changes of serum, which means less variability
- Reduced cost due to lower serum usage and fewer lots tested
- Equivalent cell growth/no change in morphology of common cell lines (Figure 1)

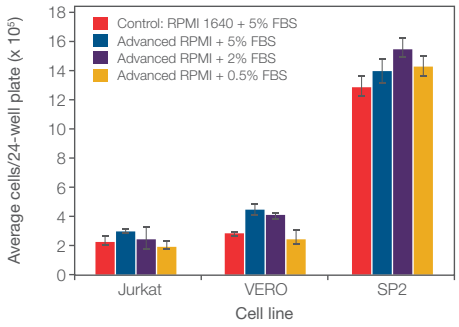



**Figure 1. Growth of cell lines in Advanced media.** Growth comparison of multiple cell lines in standard RPMI 1640 supplemented with 5% FBS to Advanced RPMI 1640 supplemented with 0.5%, 2%, and 5% FBS.

Select your Advanced media at **thermofisher.com/advanced**

# Culture cells with GlutaMAX media

### More stable than L-glutamine—keeping your cells healthier for longer

L-glutamine can degrade in culture media to form toxic ammonia, which decreases cell viability. Gibco™ GlutaMAX™ Supplement is a stabilized form of L-glutamine, and features:

- Superior stability—helps prevent degradation during storage or in the presence of cells, which happens with L-glutamine (Figure 2)
- Flexibility—available as a stand-alone supplement or as a component in Gibco™ basal media products

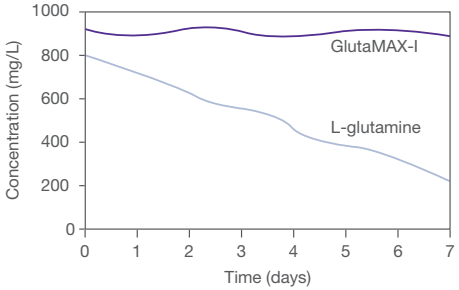



**Figure 2. Stability of Gibco™ CTS™ GlutaMAX™-I Supplement vs. L-glutamine in DMEM.** DMEM was supplemented with GlutaMAX-I Supplement or L-glutamine, aliquotted into vials, and stored at 37°C. Samples were taken daily and frozen at –20°C. Levels of GlutaMAX-I Supplement and L-glutamine were determined by HPLC.

Select your GlutaMAX media or supplement at **thermofisher.com/glutamax**

# Image cells with FluoroBrite DMEM

### Reduces background fluorescence in cell imaging while preserving cell viability

Gibco™ FluoroBrite™ DMEM is a culture medium designed for imaging cells, and features:

- Background autofluorescence 90% lower than the phenol red–free DMEM equivalent (Figure 3)
- Improved signal-to-noise ratio compared to the phenol red–free DMEM equivalent

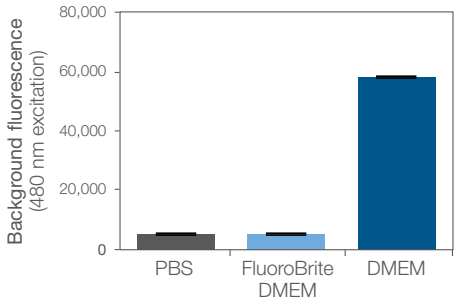



**Figure 3. Fluorescence of PBS, FluoroBrite DMEM, and phenol red–free DMEM at 509 nm (excitation at 480 nm).**

Select FluoroBrite DMEM at **thermofisher.com/fluorobrite**

# Cell culture reagents—media: stem cells

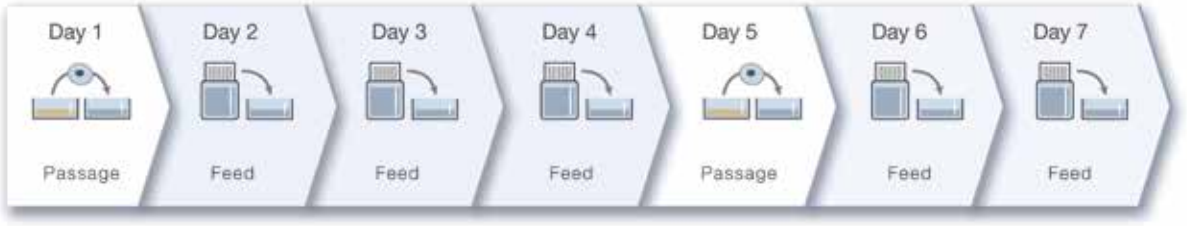
## Manage your pluripotent stem cell (PSC) culture schedule and eliminate daily feeding

Gibco™ Essential 8™ Flex Medium is formulated to extend the activity of key heat-sensitive components found in PSC medium, including FGF2, to enable a truly weekend-free culture feeding schedule.

- **Flexible feeding schedule**—maintain pluripotency over a full 2-day period without feeding cells
- **Easy to transition**—same setup, applications, and protocol as the original Essential 8 Medium formulation, just without the daily feeding
- **Proven**—based on the original Essential 8 Medium formulation, maintains pluripotency and normal karyotypes in long-term culture

Weekend-free feeding is possible—compare your PSC feeding schedule to Essential 8 Flex Medium.

The old way: feed your cells every day, 7 days a week




**The Flex way: eliminate daily feeding**


Learn more at **thermofisher.com/essential8flex**

# Cell culture reagents—supplements

## Gibco media supplements help ensure reliability and consistency of your cell culture research

Advantages of using media supplements include customizing the growth conditions of your cells, improving cell viability and growth, and keeping cells healthier longer.

### Gibco media supplements include:

| | | |
|---|---|---|
| 2-Mercaptoethanol | Insulin | Amino acids |
| N-2 Supplement | B-27 Supplement | Primary cell supplements |
| BSA | Sodium pyruvate | Glutamine or GlutaMAX media |
| Transferrin | G-5 Supplement | |

Select your media supplement at **thermofisher.com/mediasupplements**


### Culture neural cells with Gibco B-27 Supplement

**The most cited neuronal cell culture supplement**

- Gibco™ B-27™ Supplements support the culture of primary neurons in low or high densities in both short- and long-term cultures
- Several additional formulations have been developed for specific customer applications, including stem cell differentiation and enhanced electrophysiology experiments
- For over 20 years, B-27 products have been manufactured under cGMP guidelines to help ensure reliability, traceability, and lot-to-lot consistency to minimize variability

Choose your B-27 Supplement at **thermofisher.com/b27**

# Cell culture reagents—sera

## Gibco sera have earned the trust of researchers around the world due to consistent quality, superior confidence, and award-winning support

Gibco sera help meet your research needs and budget requirements, offering the best value for basic cell culture, specialty research, and specific assays. We are dedicated to providing you with the right fetal bovine serum (FBS) for your specific cell culture need and your lab budget.

Select your serum at **thermofisher.com/fbs**

### Origin and traceability reassurance like no other

**We continue to take the necessary steps to be the unrivaled quality leader in FBS**

Over the past few years, we've provided researchers more transparency into the collection and manufacturing process of Gibco FBS. We consider it imperative that our customers know exactly what they're getting and have confidence that our products will enable the results they demand.

### International Serum Industry Association (ISIA) traceability certification

**Effective February 12, 2014, ISIA traceability certification was awarded to Thermo Fisher Scientific**

This certification provides researchers with peace of mind and the confidence that Gibco sera are manufactured under the highest traceability standards, offering quality and performance for your research.

### Gibco FBS fingerprinting, powered by Oritain

**We have developed a technology in partnership with Oritain that helps ensure the quality of sera obtained from low–viral risk regions**

Gibco FBS fingerprinting powered by Oritain measures the naturally occurring elements in the environment that are absorbed by plants, animals, and soils, and then compiles those measurements into a "fingerprint." Using this fingerprint, we can link serum to its specific geographical location—providing a robust means to verify if a product is genuine.

Gibco sera are the first to be offered with this technology, giving scientists reassurance regarding the origin of each serum.

Find out more about ISIA certification and FBS fingerprinting at **thermofisher.com/trustfbs**

## The right sera for all your cell culture needs

| Gibco serum category* | Standard | Performance |
|---|---|---|
| | Sera for cell culture with robust cell lines—excellent value for basic research | Low-endotoxin sera for general cell culture with common cell lines |
| **Recommended products** | FBS Qualified, USDA-approved origins, South America, Canada | FBS Qualified, US |
| **Endotoxin specification/standard** | Typically ≤50 EU/mL | ≤10 EU/mL |
| **Quality and performance testing (including standard tests: growth, cloning, plating)** | Standard testing | Standard testing, plus exclusive BVDV screening of raw material (FBS) |
| **Popular catalog numbers/standard** | 10437028 FBS Qualified, USDA-approved origins<br>10270106 FBS Qualified, South America | 26140079 FBS Qualified, US<br>16140071 FBS Qualified, heat inactivated, US |

| Gibco serum category* | Performance Plus | Secure** | Specialty |
|---|---|---|---|
| | Lowest-endotoxin and most highly characterized sera; good for broad range of cell types, especially sensitive cell lines | Sera sourced from BSE-negligible regions for preclinical, industrial, and academic research applications requiring low risk | Sera qualified for specialty research and specific assays, including stem cell research, immunoassays, antibodies, and others |
| **Recommended products** | FBS Certified, US | FBS Qualified, Australia<br>FBS Qualified, New Zealand<br>DBS, New Zealand | FBS and other sera for specialty research and assays |
| **Endotoxin specification/standard** | ≤5 EU/mL | ≤10 EU/mL for FBS, donor bovine sera (DBS) | Per Certificate of Analysis |
| **Quality and performance testing (including standard tests: growth, cloning, plating)** | Standard testing, plus analytical tests for hormone and biochemical profiles and exclusive BVDV screening of raw material (FBS) | Standard testing, plus exclusive BVDV screening of raw material (FBS) or donor animals (DBS) | Standard testing, plus exclusive BVDV screening of raw materials (FBS) or donor animals (DBS) prior to final manufacturing |
| **Popular catalog numbers/standard** | 16000044 FBS Certified, US<br>10082147 FBS Certified, heat inactivated, US | 10099141 FBS Qualified, Australia<br>10100147 FBS Qualified, heat inactivated, Australia<br>10091148 FBS Qualified, New Zealand | 16141079 FBS ES Cell Qualified, US<br>12676029 FBS, Charcoal Stripped, USDA-approved origins |

* All products may not be available in all regions due to importation regulations. Contact your local sales representative regarding product availability in your country.
** All Secure sera can be gamma irradiated upon request to comply with EU and US regulations and guidelines.

# Cell culture reagents—dissociation reagents

Gibco cell dissociation products are ideal for use with tissues and cell monolayers. Trypsin and TrypLE reagents come in a wide variety of formats to meet the diverse needs of researchers performing adherent cell culture:

| | Fast, general purpose | Gentle and convenient for research use | Gentle and convenient for bioproduction/industrial applications |
|---|---|---|---|
| | **Trypsin** | **TrypLE™ Express (1X)** | **TrypLE™ Select (1X)** |
| **Source origin** | Animal origin (porcine) | Animal origin–free (AOF) | Animal origin–free (dedicated AOF machinery) |
| **Storage temperature** | Frozen (–5 to –20° C) | Ready to use (room temp. stable) | Ready to use (room temp. stable) |
| **Higher cell viability** | | Yes | Yes |
| **Inactivation method** | Requires trypsin inhibitors or neutralizers | Inhibition by dilution (no inhibitors needed) | Inhibition by dilution (no inhibitors needed) |

## Detach cells with TrypLE Express reagent

### Cell detachment that is gentle on cell surface proteins

Gibco™ TrypLE™ reagents are highly purified, recombinant cell-dissociation enzymes that replace porcine trypsin. These reagents are ideal for dissociating attachment-dependent cell lines in both serum-containing and serum-free conditions. They can directly substitute for trypsin without protocol changes, and are:

- **Stable at room temperature**—no need to thaw
- **Gentle on cells**—help protect your cells' surface proteins (Figure 4)
- **Animal origin–free**—important if you need a product without animal-derived components

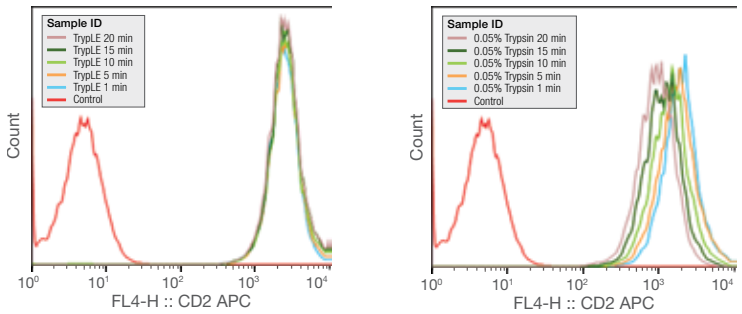



**Figure 4. Comparison of cell dissociation reagents.** Jurkat cells were used to demonstrate the effects of cell dissociation reagents on detection of the cell surface epitope CD2. **(A)** Time course of treatment with 1X Gibco™ TrypLE™ Express reagent. There is no reduction in the CD2 fluorescence signal. **(B)** Time course of treatment with 0.05% trypsin-EDTA. There is a time-dependent reduction in CD2 detection.

Select your TrypLE reagents at **thermofisher.com/tryple**

Discover the full range of dissociation reagents at **thermofisher.com/celldissociation**

# Cell culture reagents—balanced salts

## All Gibco balanced salt solutions are manufactured in state-of-the-art cGMP, ISO-certified facilities, helping ensure the highest quality and consistency for reproducible results

Balanced salt solutions can provide an environment that maintains the structural and physiological integrity of cells *in vitro.*

To ensure consistency, Gibco balanced salt solutions are tested for osmolality, pH, stability, the absence of bacterial and fungal contamination, and endotoxin. All powdered balanced salt solutions are produced without sodium bicarbonate to increase stability.

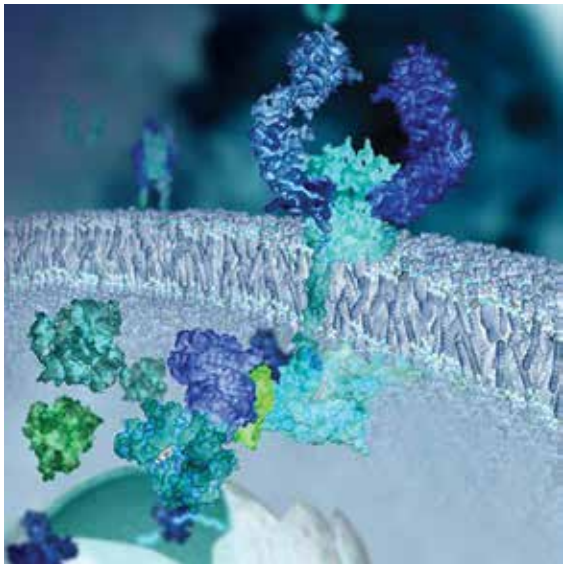
**Our most popular balanced salts are below:**

| DPBS | HBSS | PBS | EBSS |
|---|---|---|---|
| DPBS, Dulbecco's Phosphate Buffered Salines | HBSS, Hanks' Balanced Salt Solutions | PBS, Phosphate-Buffered Salines | EBSS, Earle's Balanced Salt Solutions |

Select your balanced salts at **thermofisher.com/balancedsalts**

# Cell culture reagents—growth factors

## Select pure, high-quality growth factors to help you achieve consistent cell culture



Growth factors are the unique cell signaling molecules that play important roles in cell proliferation and development. Gibco growth factors are designed to give you:

- **High biological activity**—more results with less protein
- **High purity**—minimized interference from proteins or other contaminants
- **Proven compatibility**—Gibco proteins bioassayed with Gibco media

**Some popular growth factors are below:**

### BDNF

Brain-Derived Neurotrophic Factor (BDNF) is used in the maintenance of motor neurons and the differentiation of both cholinergic and dopaminergic neurons.

### bFGF

bFGF (also known as fibroblast growth factor-basic, FGF-basic, FGF-ß, FGF2, or heparin binding growth factor) is used in studies of angiogenesis, mitogenesis of fibroblasts, neurite outgrowth in PC-12 cells, receptor binding, and tyrosine protein kinase phosphorylation.

### EGF

Epidermal Growth Factor (EGF) has a profound effect on the differentiation of specific cells *in vivo* and is a potent mitogenic factor for a variety of cultured cells of both ectodermal and mesodermal origin.

Select your Gibco growth factor, cytokine, or chemokine at **thermofisher.com/growthfactors**

# Cell culture reagents—antibiotics

## Protecting your precious cultures or selecting for antibiotic resistance

### Culture protection

Gibco™ cell culture reagents offer a wide range of antibiotics and antimycotics that can help control or eliminate cell culture contamination arising from bacteria, fungi, mycoplasma, and yeast.

### Choose from these popular antibiotics:

Actinomycin D
Ampicillin
Gentamicin
Kanamycin
Neomycin
Penicillin Streptomycin (Pen Strep)
Streptomycin

These and other antibiotics can be selected at **thermofisher.com/antibiotics**

### Culture selection

Selection antibiotics for eukaryotic expression hosts provide:

- Fast selection of stable eukaryotic cell lines
- Selection in multiple organisms
- Dual selection

### Eukaryotic selection antibiotics:

**Blasticidin**—resistance to blasticidin is conferred by the product of the *bsd* gene from *Aspergillus terreus*. Cell death occurs rapidly, and blasticidin-resistant stable mammalian cell lines can be generated in less than one week.

**Geneticin (G-418)**—Gibco™ Geneticin™ Selective Antibiotic exhibits higher purity so you can use less antibiotic and produce greater selection pressure with minimal toxicity from contaminants. Commonly known as G418 or G-418, the dominant-acting neomycin resistance gene used on common mammalian expression vectors contain elements derived from either transposons Tn601 (903) or Tn5. Stable colonies of mammalian cells expressing these resistance markers can be generated in 10 to 14 days.

**Hygromycin B**—a different mode of action from Geneticin Selective Antibiotic, Blasticidin S, or Zeocin™, makes Hygromycin B perfect for dual-selection experiments when used in conjunction with another selection agent. Resistance to Hygromycin B is conferred by the *E. coli* hygromycin resistance gene (*hyg* or *hph*).

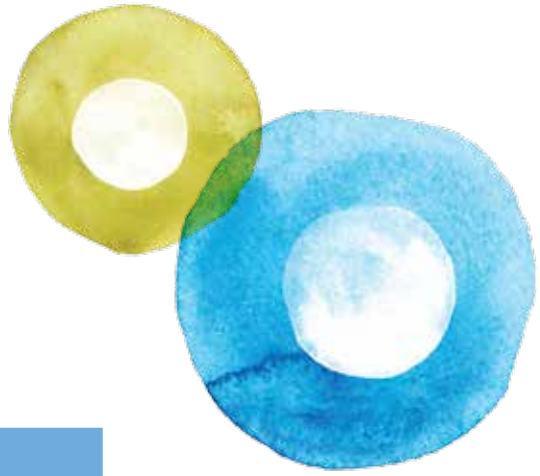
**Puromycin**—resistance to puromycin is conferred by the puromycin N-acetyl-transferase gene (*pac*). Puromycin has a fast mode of action, causing rapid cell death at low antibiotic concentrations. Puromycin-resistant stable mammalian cell lines can be generated in less than one week.

**Zeocin**—resistance to Zeocin is conferred by the *Sh ble* gene product. Effective in multiple cell types, eukaryotic expression vectors only need to carry one drug selection marker, which reduces the overall size of the vector and makes subcloning and transfection easier and more efficient.

Select your selection antibiotics at **thermofisher.com/selectionantibiotics**

# Cell culture reagents—cryopreservation

## Upgrade home-brew freezing recipes to a complete, ready-to-use freezing medium



Cell lines in continuous culture are prone to genetic drift, finite cell lines are fated for senescence, all cell cultures are susceptible to microbial contamination, and even the best-run laboratories can experience equipment failure. Because an established cell line is a valuable resource and its replacement is expensive and time-consuming, it is vitally important that cells are frozen down and preserved for long-term storage.

Three ready-to-use Gibco freezing media are available for a range of different cell lines:

| | Recovery™ Cell Culture Freezing Medium | Synth-a-Freeze™ Cryopreservation Medium | PSC Cryopreservation Kit |
|---|---|---|---|
| **Description** | Complete freezing medium for cryopreservation of a wide variety of mammalian cells | Intended for freezing and storing a variety of cell types | Cryopreservation medium and recovery supplement optimized to enable maximum pluripotent stem cell viability |
| **Tested cell types** | CHO-S, CHO-K1, HEK 293, Jurkat, NIH 3T3 | Human keratinocytes, ESCs, MSCs, NSCs, other primary cell types | PSCs (iPSCs and ESC), PBMCs, iPSC-derived cardiomyocytes |
| **Chemical composition** | Contains FBS | Animal origin–free (AOF) | Xeno-free |
| **Size** | 50 mL | 50 mL | 50 mL bottle + 5 mL vial |

Select your cryopreservation reagent at **thermofisher.com/cryopreservation**

# Reach for recovery

## Gibco Recovery Cell Culture Freezing Medium is a complete, ready-to-use freezing medium for a wide variety of commonly used mammalian cell lines

- No need to combine multiple products each time to make a home-brew freezing solution
- Improved viability of cells after thawing from cryostorage (Figure 5)

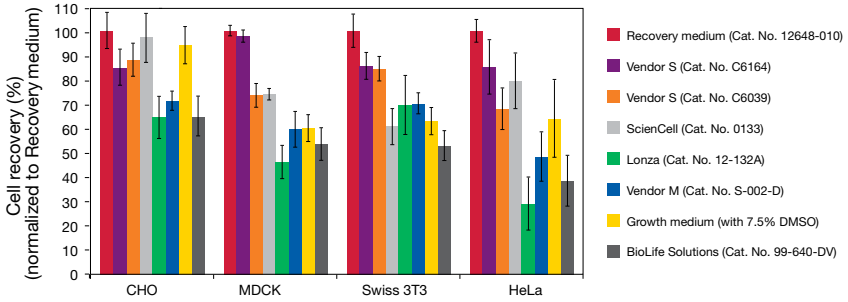



**Figure 5. Comparative analysis of Recovery Cell Culture Freezing Medium vs. currently available cryopreservation technologies.** For each of four different cell lines, the same number of cells was frozen in liquid nitrogen. Upon thawing, each cell sample was diluted into the same volume of a growth medium and seeded in 12-well plates (recovery was tested in eight different growth media). The initial seeding densities were $2.3 \times 10^4$ cells/well for adherent cell lines, and $6.0 \times 10^5$ cells/well for nonadherent cell lines, based on cell counts determined at the cryopreservation step. When the leading condition for a particular cell line had reached late log growth and none of the other conditions from that cell line had passed peak density, cells growing in all conditions for that cell line were harvested and the data analyzed. Thus, different cell lines were analyzed on different days: CHO, day 6; MDCK, day 6; Swiss 3T3, day 5; HeLa, day 6. Results were normalized to Recovery Cell Culture Freezing Medium and plotted with standard error bars (n = 4).

### Mr. Frosty Freezing Container

Combine a ready-to-use Gibco cell freezing medium with a Thermo Scientific™ Mr. Frosty™ Freezing Container—optimal cryopreservation for superior cell recovery and viability post-thaw. Freeze cells in tubes from 1 to 5 mL using the Mr. Frosty Freezing Container. The simple-to-use system is designed to achieve a rate of cooling very close to –1°C/minute, the optimal rate for cell preservation.

### Features:

- Easy to use—requires only 100% isopropyl alcohol and a mechanical freezer
- Holds 12–18 tubes

Meet Mr. Frosty at **thermofisher.com/mrfrosty**

Reach for Recovery Freezing Medium at **thermofisher.com/recovery**

# Cell culture reagents—matrices

## The consistent base for your cell cultures

Gibco extracellular matrices, 3D scaffolds, and attachment proteins are essential tools for providing enhanced cell function resulting in more *in vivo*–like cell morphology, physiologically relevant environments, and better intercellular interactions.

- Proven technologies essential for cell attachment
- Lot-to-lot product consistency for ease of use and greater confidence
- Broad range of applications including liver and skin biology, stem cell research, neuroscience, and oncology

**Geltrex™ Matrix**—free of lactate dehydrogenase-elevating virus (LDEV), making Geltrex Matrix ideal for all types of cell culture and mouse *in vivo* cell culture research.

**Collagen**—one of the most widely used extracellular matrix proteins for cell culture, facilitating cell attachment, growth, differentiation, migration, and tissue morphogenesis.

**Laminin**—major glycoprotein component of basement membranes. Mouse laminin facilitates the attachment and expansion of embryonic stem cells (ESCs), induced pluripotent stem cells (iPSCs) and neural stem cells (NSCs).


Select these and other matrices at **thermofisher.com/3D-cellculture**

# Cell culture—custom media

## For times when cells require a unique media

Whether you need to customize an existing Gibco catalog product or have your own formulation that we can produce for you, we are committed to providing you with the products your research demands.

Not all projects are alike—each experiment can present unique needs and challenges. We are committed to providing you with cell culture products that are customized to your individual requirements:

- Tailor the format or package for special equipment
- Modify an existing formula (public or proprietary Gibco media)
- Derive your own formula from scratch
- Create media and packaging that perfectly fit your project

Learn more at **thermofisher.com/custommedia**

# Cell culture—equipment and instrumentation

## Water baths

**Precision redefined for your lab**

Simplify workflows and maximize productivity with the new generation of Thermo Scientific™ Precision™ water baths. Enhanced designs and added features, combined with rugged construction and advanced microprocessor technology, make them the smart choice for your lab.

Select your water bath at **thermofisher.com/waterbath**

## Biological safety cabinets

**Protection that never takes a day off**

With Thermo Scientific™ biological safety cabinets, the certified performance and protection you get on Day 1 stays with you every day. With our proven reliability, ergonomics, and energy efficiency, the ideal choice is the one you can trust completely.

Select your biosafety cabinet at **thermofisher.com/biosafetycabinets**

## $CO_2$ incubators

**Discovery thrives in a culture of confidence**

More scientists worldwide trust their valuable cultures to Thermo Scientific™ $CO_2$ incubators than any other brand. They depend on proven reliability, outstanding contamination prevention, and optimal growth conditions. The reason is simple: our $CO_2$ incubators let you culture with confidence—day after day, year after year.

Select your $CO_2$ incubator at **thermofisher.com/co2**

## Centrifuges

**Take your samples for a spin**

Separations are a critical step in your workflows. That's why it's important to consider the centrifuge requirements and technical specifications for your applications, from selecting the appropriate speed and g-force to exploring the latest trends in centrifugation. Select your centrifuge at **thermofisher.com/centrifuges**

## Freezers and refrigerators

**Protect your samples**

Proven cold-storage sample protection solutions from +4°C high-performance lab refrigerators to –196°C cryogenic freezers. Concentrate on your work without worrying about your valuable samples. Researchers worldwide protect more than two billion samples inside Thermo Scientific™ cold-storage equipment. Learn more about our temperature storage solutions at **thermofisher.com/cold**

## Automated cell counters

**Accurate cell counts in just a few seconds**

We offer two high-performance automated cell counters designed to meet the needs of any lab. The Invitrogen™ Countess™ II and Countess™ II FL Automated Cell Counters contain advanced autofocusing and counting algorithms to allow you to quickly and accurately identify and count cells within a population. Applications include cell counting, viability, and transfection efficiency. Choose your Countess II instrument at **thermofisher.com/countessII**

# Gibco Education

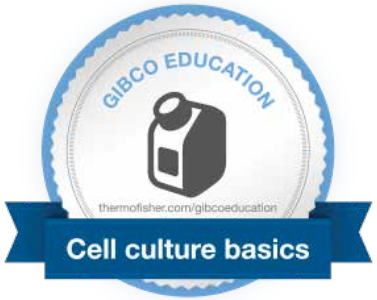
## Culture your career

Gibco™ Education was developed out of our commitment to helping you achieve superior cell culture practices and outcomes every time you enter the lab. Our approach takes you from textbook concepts to successful cell culture practice in your lab.

## Virtual labs

These courses offer a unique, interactive cell culture training experience. Learn everything from the fundamentals of cell culture to key techniques for primary and stem cell cultures and successful protein expression. As you progress through each lab, you can certify your knowledge by taking in-lab quizzes.

Explore the virtual labs to earn badges at **thermofisher.com/gibcoeducation**




## Handbooks

The Gibco™ cell culture handbooks help your lab attain reproducible results every day.

**Cell culture basics**—download your copy at **thermofisher.com/cellculturebasics**
**Protein expression**—download your copy at **thermofisher.com/expressionguide**
**Pluripotent stem cells**—download your copy at **thermofisher.com/pschandbook**
**Transfect your cells**—download your copy at **thermofisher.com/transfectionhandbook**

# Culture then transfect

Combine Lipofectamine transfection reagents with Gibco cell culture reagents for optimal efficiency and viability

## Lipofectamine 3000

**Single reagent kit with superior performance in the widest range of difficult- and easy-to-transfect cell types**

- 10-fold higher transfection efficiency in difficult-to-transfect cells
- Lower cost per reaction vs. other transfection reagents

Learn more at **thermofisher.com/3000**

## Lipofectamine RNAiMAX

**Superior transfection for your gene knockdown studies**

- Transfect using less siRNA, resulting in lower cost
- Low cytotoxicity
- Works across multiple cell types

Learn more at **thermofisher.com/rnaimax**

## Lipofectamine CRISPRMAX™

**Achieve up to 85% cleavage efficiency with CRISPR-Cas9 protein delivery**

- First optimized lipid nanoparticle transfection reagent for CRISPR-Cas9 protein delivery
- Gentle on cells
- Cost-effective

Learn more at **thermofisher.com/crisprmax**

## Opti-MEM™ I

- Reduced-serum media ideal for use during cationic lipid transfections

Select your Opti-MEM media at **thermofisher.com/optimem**

# Culture then express

## Experience a fully optimized transient CHO expression system

The Gibco™ ExpiCHO™ Expression System combines Gibco cell culture media expertise with specialized cells and a unique transfection reagent to create an optimized system for protein expression.

- Achieve protein yields up to 3 g/L
- Express proteins in CHO cells from discovery to manufacture, providing an efficient and seamless drug development workflow
- Most cost-effective transient expression system available (more protein per dollar)

Discover the ExpiCHO Expression System at **thermofisher.com/expicho**

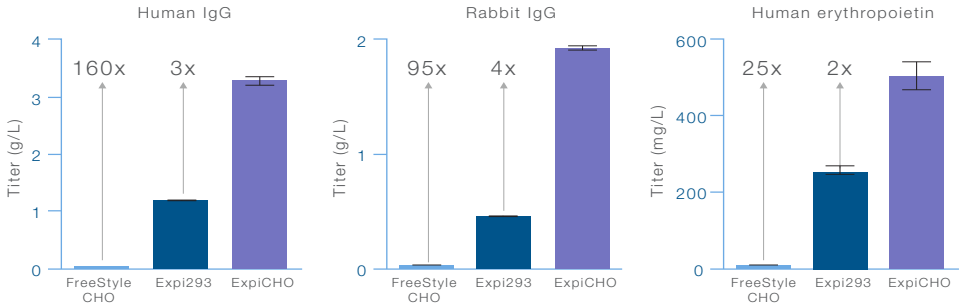



**Figure 6. Recombinant protein titers in FreeStyle CHO, Expi293, and ExpiCHO systems.** Expression levels of human IgG, rabbit IgG, and erythropoietin in the Gibco™ FreeStyle CHO, Gibco™ Expi293, and Gibco™ ExpiCHO transient expression systems are shown. Titers in the ExpiCHO system range from 25x to 160x those of the FreeStyle CHO system, and 2x to 4x those obtained using the Expi293 system.

# Notes

# Notes

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