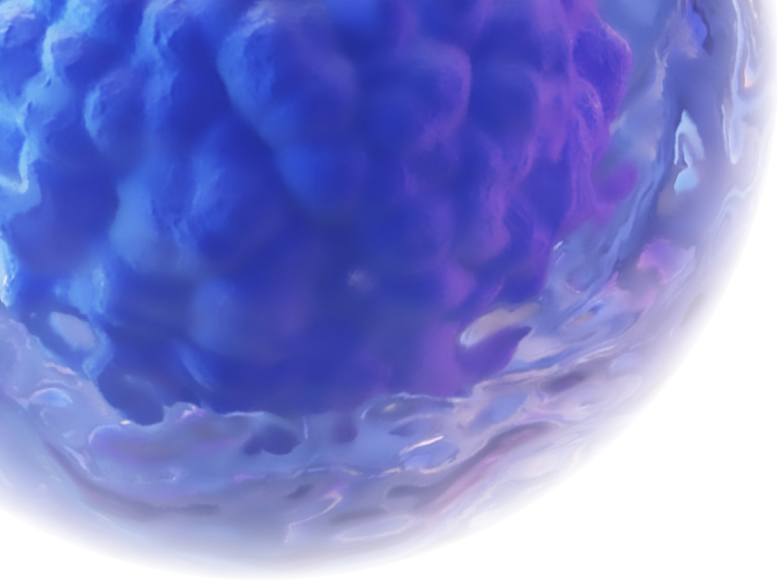


gibco




Join forces with Gibco
bioprocessing solutions


ThermoFisher
SCIENTIFIC





Join forces with the trusted pioneer of scalable bioprocessing solutions to dramatically advance your path from process development to patient.


From pioneering the use of serum, through our leadership in media analytics testing, to solving tomorrow's challenges—we are with you every step of the way. Our world-leading products and expertise have reliably supported the development and manufacture of over 230 commercial biologics, including cell and gene therapies, mAbs, and vaccines. We strive to keep you at the forefront of the evolving bioprocessing industry. Our best-in-class products and services can help you:

-  **Increase productivity** and decrease time to market with industry-leading technologies

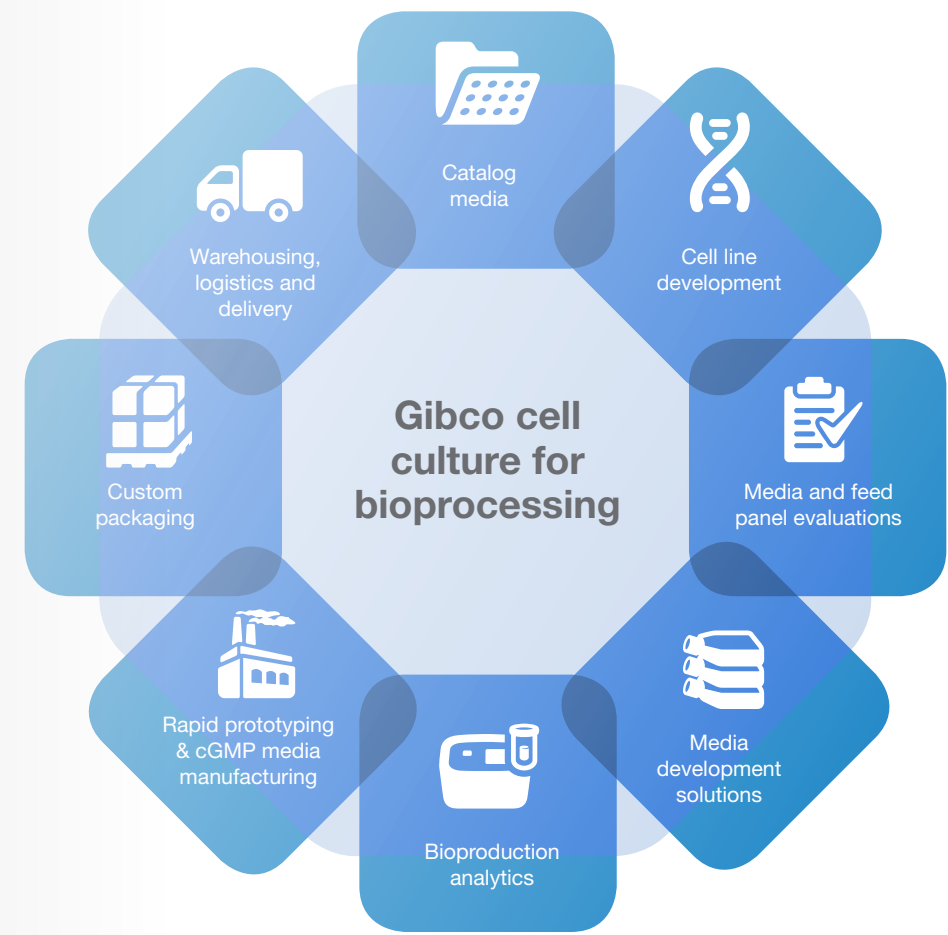
-  **Reduce risk** through high-quality raw material sourcing and strict characterization

-  **Streamline scale-up** with world-class media manufacturing options and supply redundancy

-  **Accelerate timelines** with access to leading scientific, business, and regulatory experts

-  **Minimize costs** and maintain consistent quality through strict standards and practices

consistent | **collaborative** | **pioneering**



Delivering the most extensive portfolio of consistent, technically supported products—expertly designed for your bioprocessing needs.

With our kaleidoscopic portfolio of high-impact products and services, we can deliver unrivaled support across all areas of upstream and downstream bioproduction.

Our quality is reflected in your quality; the consistency of our products means you can deliver a dependable and scalable solution from batch to batch. Not only that, our manufacturing infrastructure allows for continuity of supply and global redundancy, so this quality is mirrored worldwide.

As part of the wider Thermo Fisher Scientific network, our logistical craftsmanship helps generate meaningful and fully compliant results every time, just in time.

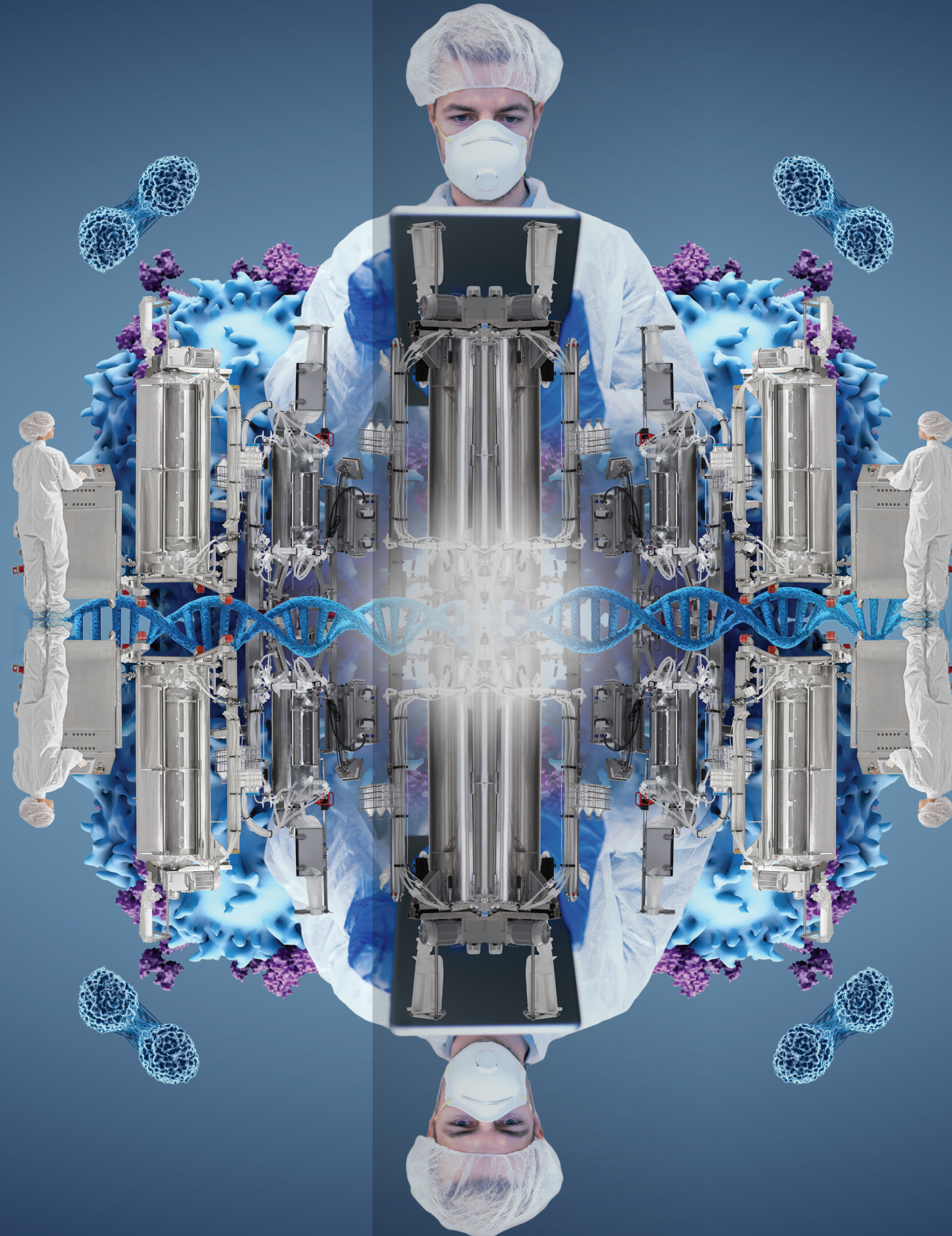
We collaborate with you in perfect symmetry, from navigating the drug approval maze, to utilizing our powerful analytical capabilities to maximize your outputs and minimize variability.

When collaborating with our team of bioproduction experts, the future is always bright.

gibco conquering

We are a future thinking organization with an outstanding track record of success. From our leading analytical services to our unrivaled portfolio of innovative cell culture media, supplements, and services, we help keep you at the forefront of the evolving bioprocessing industry.

With almost 60 years of experience solving complex bioprocessing challenges, while helping to develop over 200 commercial biologics, our industry-leading technologies will help increase productivity, while decreasing time to market.



Enhanced outputs with the trusted pioneer in bioprocessing



Designed to keep you at the forefront of the evolving bioprocessing industry, our extensive range of industry-leading technologies helps enhance your outputs and streamline your workflows, all while maximizing quality and reducing costs.

Advanced Granulation Technology (AGT) dry media format

Along with our high-quality bulk liquid media formats for advanced bioprocessing, we offer two advanced Gibco powder formats—Standard Dry Powder Media (DPM) and our cutting-edge Advanced Granulation Technology (AGT™) dry media—to simplify handling and reconstitution in production.

AGT is the most advanced media format available for cell culture on the market today. It offers outstanding consistency and productivity in all stages of production, from development through commercial manufacturing—accelerating time to market and helping maintain product success. Features of AGT include dust-free addition, pre-adjusted pH and osmolality, and a fast dissolution and mixing time, helping increase user safety and overall efficiency, alleviating a number of DPM-associated problems.

We can manufacture your AGT formulation as serum-free, protein-free, or even chemically defined in a dry media format. Additionally, we can seamlessly transfer your proprietary DPM to AGT, increasing productivity and flexibility while reducing production or regulatory risks.

Offering all of the benefits of liquid media without the cost, storage, and transportation issues, incorporating AGT dry media format into your processes will dramatically improve your outputs.

Gibco ExpiCHO Stable Production Medium

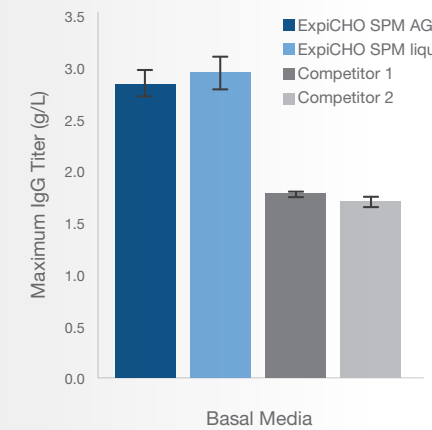
Gibco™ ExpiCHO™ Stable Production Medium (SPM) simplifies your cell line development process from transient to stable production with minimal effort and a high degree of confidence. It supports consistency and scalability to large-scale bioproduction without the need for any further process optimization or loss in titer. Designed to deliver superior protein yields when compared to alternative transient systems, the Gibco ExpiCHO SPM will save you space, time, and costs.

Whether it's bench-level experiments or large-scale biomanufacturing processes, we offer specialized formats, packaging, and quality. Gibco ExpiCHO SPM is always tailored to your specific needs, giving you the power to streamline the transfer to commercial scale manufacturing in a single medium.



ExpiCHO-S Clone A Titters in ExpiCHO SPM

Maximum titer in a microbioreactor



Time course in 50 L Thermo Scientific Hyperforma Bioreactor

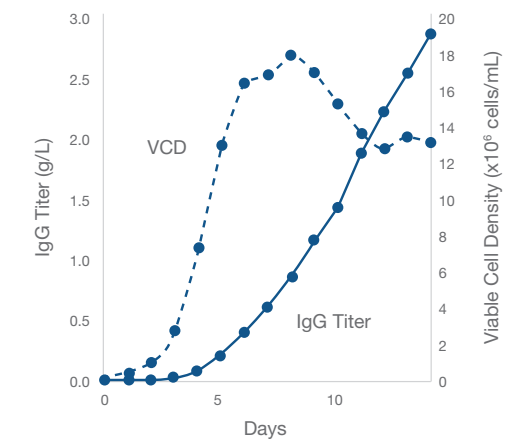


Figure 1. Comparable titer using AGT and liquid media formats. ExpiCHO SPM with Efficient Feed C+ yielded fed-batch titers 50 to 70% higher than competitor media/feeds.

Figure 2. Scalability into large bioproduction processes. ExpiCHO-S clone shows comparable performance in the 50 L bioreactor and the microbioreactor (Figure 1). The titers steadily increased over 18 days to reach 3.5g/L in the 50 L bioreactor.

Gibco PD-Express Services

Gibco™ PD-Express™ Services offer unique bioproduction solutions developed to meet your early phase needs and advance your goals. By combining our unmatched portfolio of high-impact Gibco products, extensive process knowledge, and proven ability to deliver projects on time, you can more easily achieve your objectives and get to market quickly.

Cell line development

Our custom cell line development projects can go from sequence optimization to archiving in master cell banks. We offer the testing and documentation needed to support your regulatory filings—all for a one-time licensing fee.

Panel evaluations

Media and feed panel evaluations provide rapid access to a diverse media library, combined with technical support, to help identify optimal media for target clones leading to improved productivity and titers.

Media development

Using our broad media and process capabilities, we are able to provide customized media and process development projects to help you achieve your unique cell culture goals.

Bioproduction analytics

Let us help optimize your cell culture systems with both standard and custom analytics to support troubleshooting, as well as media and process optimization.

Rapid prototyping

Whether you are looking for rapid manufacturing of a prototype formulation, thinking of making a raw material change, or looking to try one of our industry-leading media formats, our non-cGMP rapid prototyping facility provides rapid turnaround of small-scale prototypes.

Peptone supplements

Rich in amino acids, peptides, vitamins, carbohydrates, nucleosides, minerals, and other components, Gibco peptones are well suited for use as supplements and feeds. They provide critical nutritional and environmental support for mammalian cell culture. When used in microbial fermentation they can even serve as a medium, improving overall productivity and consistency between batches. Our extensive portfolio of nutritionally diverse animal origin (AO) and animal origin-free (AOF) peptones can be used as:

- **An alternative to serum** – offering essential nutrients with proven ability to enhance production in a variety of applications
- **A performance enhancer** – reducing time to market with high-performance products that meet stringent quality standards and rigorous raw material sourcing policies
- **A protective additive** – fortifying cell culture media to improve cultivation, productivity, and anti-apoptosis properties during scale-up

Gibco peptones are currently used in over 150 commercial biologics, including 15 blockbuster drugs, with many more in the pipeline. Our analytical capabilities help us support you in identifying the key performance drivers for your processes, suggesting a tailored peptone scheme to help increase titers (> 10 g/L) and reduce production costs.

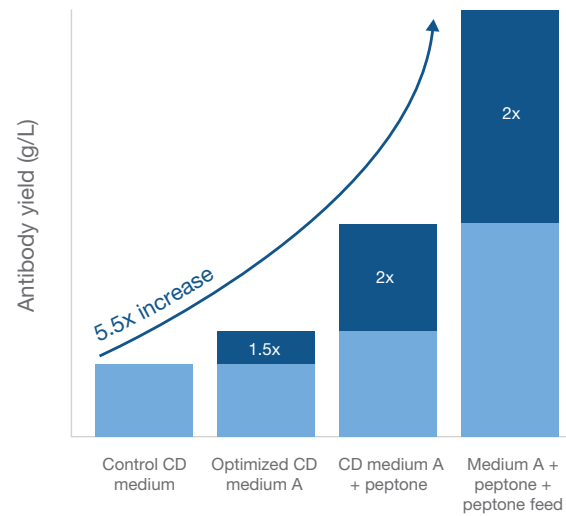
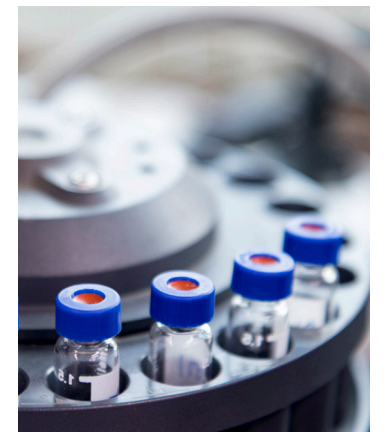
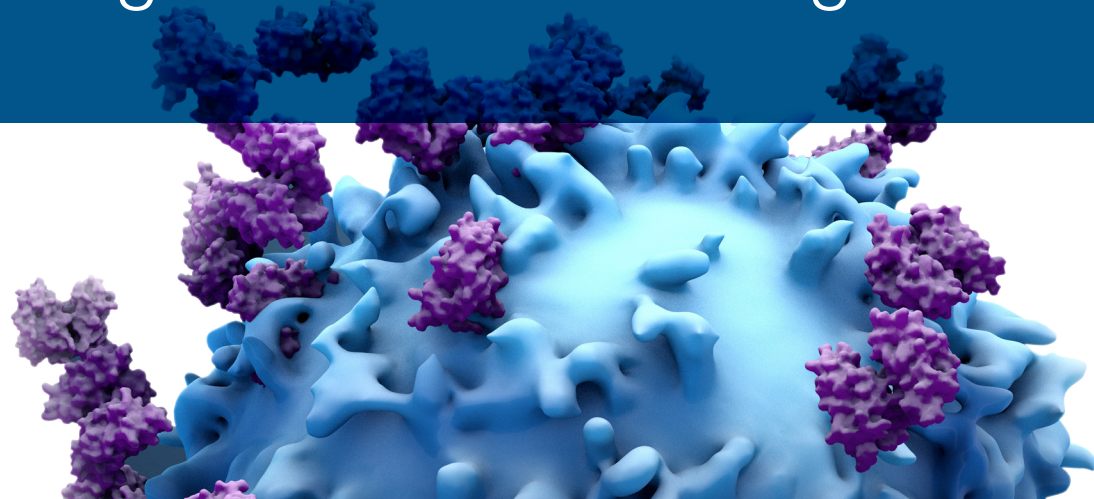


Figure 3. From starting with a standard chemically-defined (CD) medium, through process scale-up, optimization, and the addition of a peptone, an overall 5.5-fold increased yield was achieved relatively quickly for this CHO line.



Gibco peptones are currently used in over 150 commercial biologics, including 15 blockbuster drugs





New product spotlight: Introducing our new perfusion medium

As part of our commitment to innovation, we have recently launched an innovative medium solution for all types of perfusion processes. Perfusion manufacturing has existed in the biopharmaceutical industry for decades, but with the advent of automation, it has gained renewed interest in recent years. Perfusion has been shown to be particularly effective for sensitive proteins (i.e., blood clotting factors) or biologic toxins in fed-batch conditions. As technology and the biopharmaceutical industry have evolved, perfusion manufacturing has become an area of interest due to the process benefits, including reduced costs, improved flexibility, quality, and productivity.

Our innovative, chemically defined, animal origin-free (AOF), cGMP medium—**Gibco™ High-Intensity Perfusion (HIP) CHO Medium**—is one of the first off-the-shelf perfusion medium solutions optimized to provide powerful support for all perfusion processes with a single product. The formulation is designed

for ease-of-use and cost-effective performance, and the AGT™ format supports fast, simple, and low risk reconstitution. The flexible reconstitution enables the medium to function as both as a seed train medium and a production medium. It is also capable of supporting high cell densities and productivity at a 1 vessel volume per day (VVD) medium exchange rate. HIP CHO can support more than 1 g/L/day continuous productivity with high cell density and viability at 1 VVD. With quick preparation, less vessel volume exchanges, high performance, and scalable production pricing, HIP CHO can deliver cost savings, enabling you to bring your product to market. HIP CHO cell culture medium, when paired with our Single Use Technology (SUT) reactors, mixers, BioProcess Containers (BPCs), bioprocessing equipment and automation hardware, offers our customers a complete upstream solution.

Could utilizing our perfusion medium offer an opportunity to improve your perfusion process?

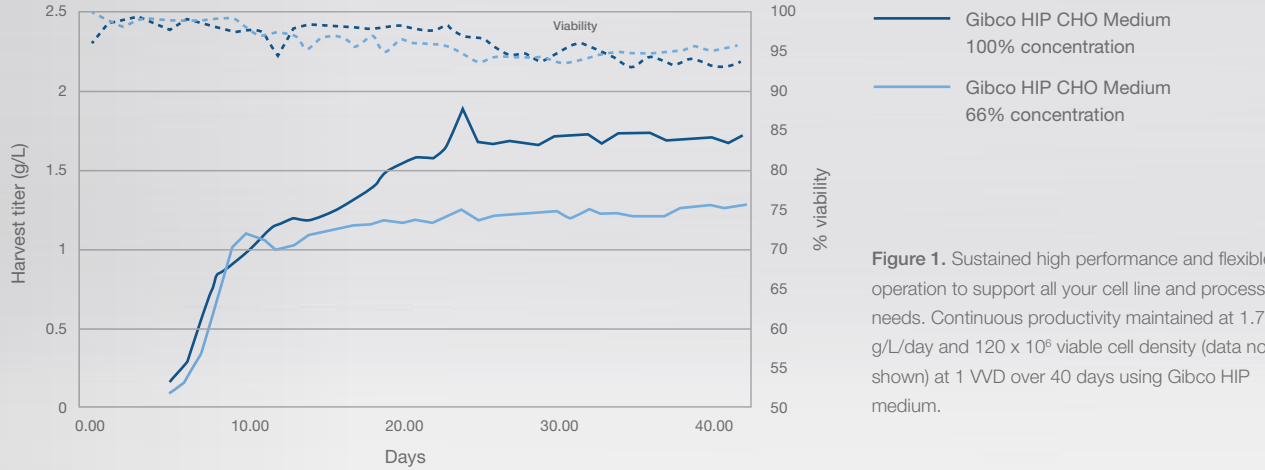


Figure 1. Sustained high performance and flexible operation to support all your cell line and process needs. Continuous productivity maintained at 1.7 g/L/day and 120×10^6 viable cell density (data not shown) at 1 VVD over 40 days using Gibco HIP medium.

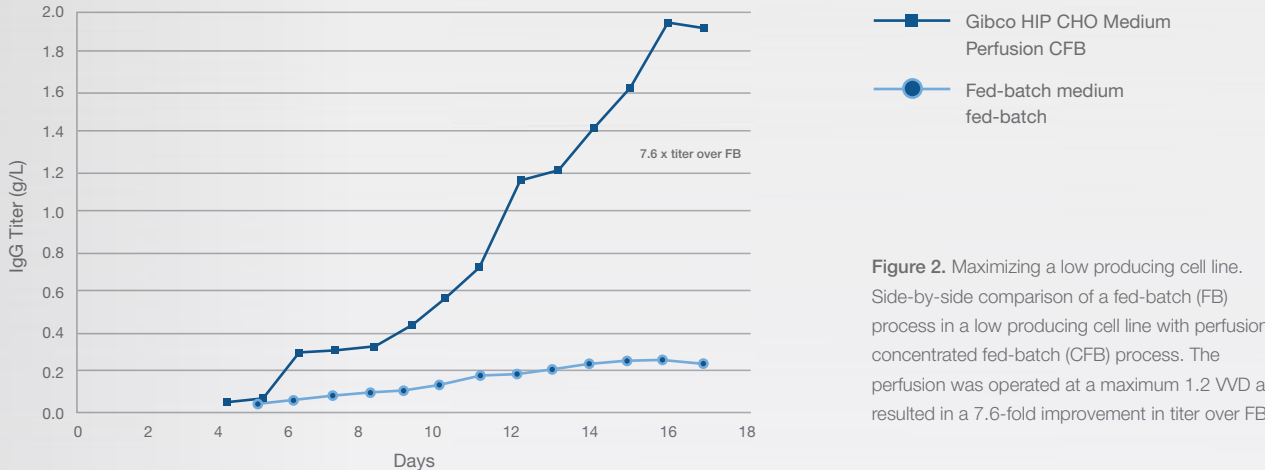
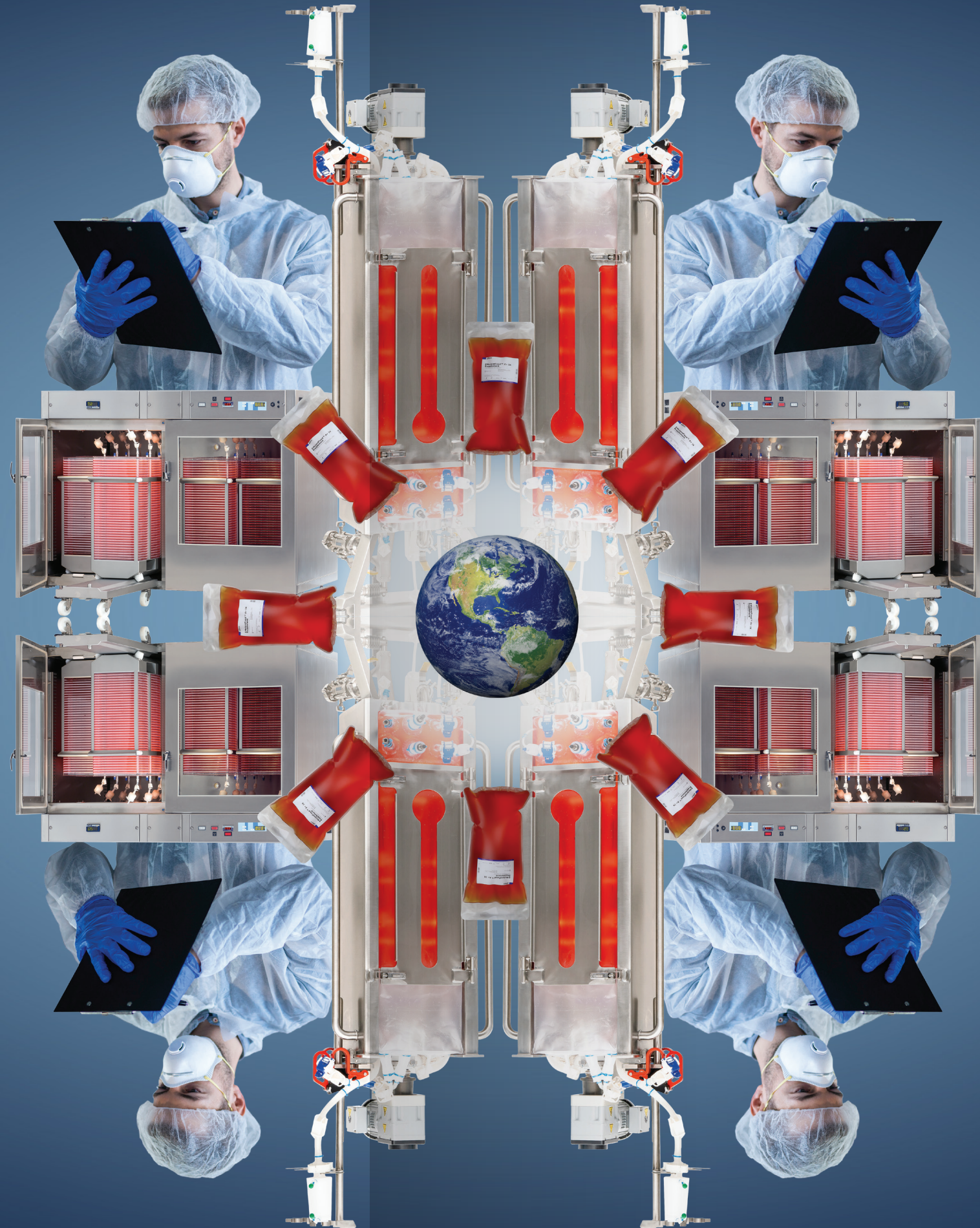


Figure 2. Maximizing a low producing cell line. Side-by-side comparison of a fed-batch (FB) process in a low producing cell line with perfusion concentrated fed-batch (CFB) process. The perfusion was operated at a maximum 1.2 VVD and resulted in a 7.6-fold improvement in titer over FB.

gibco consistency

We are a steadfast and reliable organization. With agile logistical and manufacturing services in facilities worldwide, rigorous raw material characterization, and best-in-class media, feeds, and supplements, we can help advance your path from process development to patient.

We help reduce risk in your bioprocessing workflows with total harmonization in everything we do. From batch to batch and year to year, whatever your bioprocessing needs or project goals, you get the same quality wherever you are. And, by providing outstanding value, we can keep costs down while getting you to market quicker and helping you maintain product success.



Our quality is reflected in your quality



Quality is embedded into every aspect of our bioprocessing products and services, with our world-class facilities receiving over 200 audits each year to confirm compliance. Fully harmonized across the wider Thermo Fisher network, our rigorous standards are maintained through our global facilities to provide consistent quality worldwide.

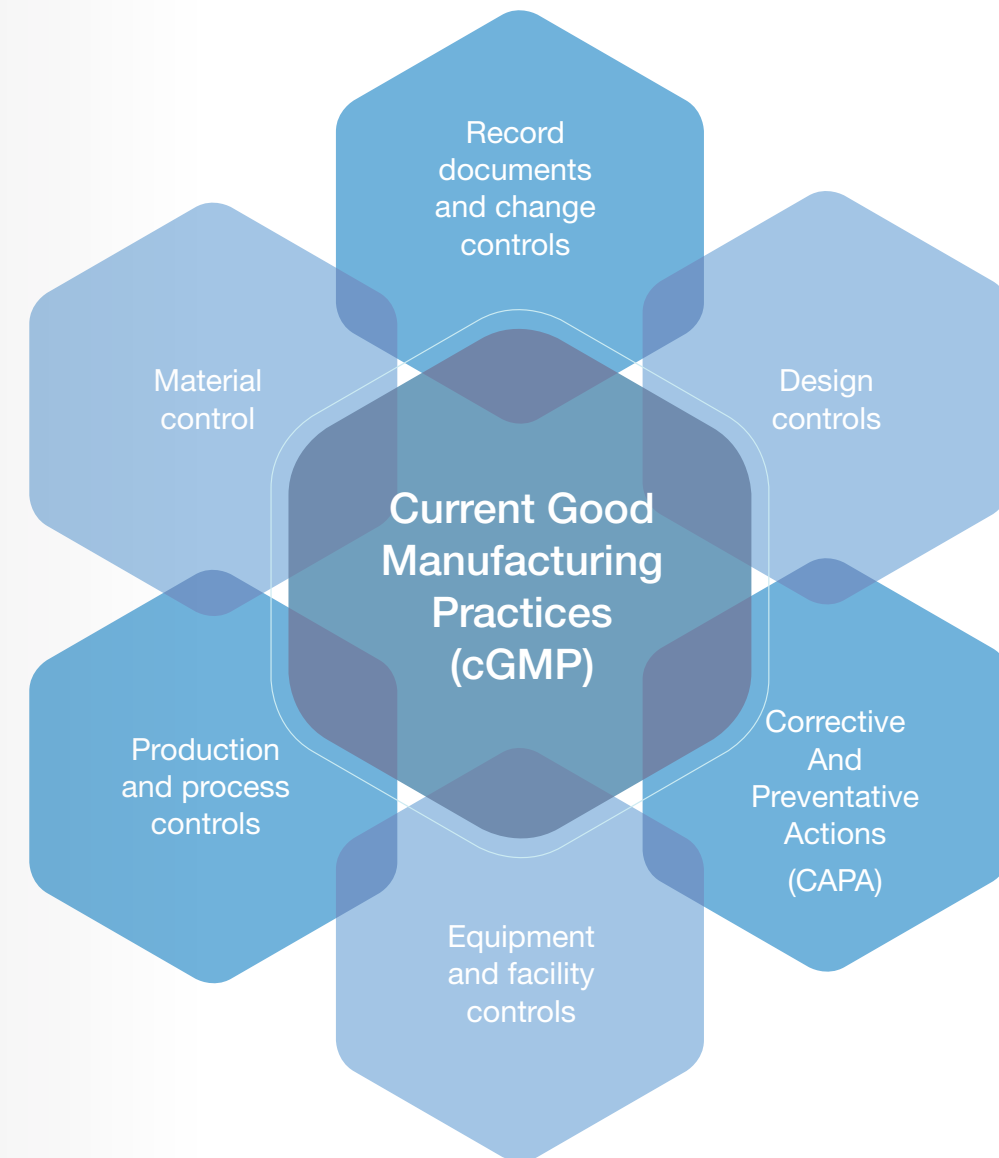
We understand the importance of strict raw materials characterization in streamlining your process development, especially when scaling up. This stringent control is enabled through deep analytical expertise and quality control, sourcing high-quality materials from established markets and delivering all of this with detailed CoAs.

Our extensive cGMP testing explores a range of key parameters:

- pH
- Osmolality
- Sterility
- Stability
- Mycoplasma
- Trace element analysis
- Water-soluble vitamin analysis
- Amino acid analysis



- Endotoxin
- Virus testing
- Bioburden
- Solubility/Appearance
- Glucose





North America

- **Grand Island, New York**
 - Media, reagents, sera
 - Media & analytical services
 - Pilot labs
 - ISO 13485, 21 CFR 820
 - MDSAP certified
 - FDA registered

- **Miami, Florida**
 - Media, reagents
 - Animal-free facility
 - ISO 9001

- **Detroit, Michigan**
 - Peptones
 - ISO 13485

- **Baltimore, Maryland**
 - Media & analytical services
 - Pilot labs

Europe

- **Paisley, Scotland**
 - Media, reagents, sera
 - ISO 13485, 21 CFR 820
 - FDA registered

- **Vilnius, Lithuania**
 - Magnetic beads

Asia-Pacific

- **New Zealand & Australia**
 - Sera, animal proteins
 - ISO 13485, 21 CFR 820
 - FDA registered

- **Shanghai, China**
 - Media Development Services

- **Singapore**
 - Media Development Services



Keeping you on time and track with our economies of scale and global footprint

We work with you, providing the utmost transparency and support to meet your evolving bioprocessing needs. Our worldwide capabilities and redundancy deliver pioneering Gibco products—and peace of mind—no matter where you are.

A Global Footprint

Our global network of large capacity, purpose built, and segregated (AO and AOF) manufacturing facilities are strategically located to help ensure ultimate redundancy for your supply continuity. With key capabilities harmonized between these facilities, you will always receive the same level of quality and support.

We understand the importance of supply chain transparency for better visibility of, and access to, your supply base. As part of Thermo Fisher Scientific, we employ a multi-layered business continuity and risk mitigation plan for our partners, including:

- Emergency response, disaster recovery, and business recovery protocols
- Back-up power of our critical environmental systems for up to seven days
- Detailed customer notification program for changes in product specifications

This means that you always maintain control of your processes—through continuous visibility and open and active communication—to help you bring life-changing therapeutics to those who need them.

Our economies of scale

As the largest volume media manufacturer in the world, we provide maximum value through our economies of scale. We make over 15 million liters of liquid media per year, and close to 3 million kilograms of dry media formats.

With world-class logistics and distribution solutions as part of Thermo Fisher Scientific, we offer a high level of security and transparency to streamline your supply chains. Our strict quality standards and practices are maintained throughout our global facilities to deliver consistent quality worldwide.

The capital and logistical benefits of collaborating with our team are far reaching:



Reducing costs

You won't be able to produce media at a more cost-effective rate. As the highest volume media manufacturer in the world, we provide maximum value.



Mitigating risk

We focus on raw material control so you don't have to. Production of our bulk process liquids and powders in large batches means greater consistency and therefore less variability in your process, reducing overall risk.



Increasing productivity

We help you improve your media titers with our deep technical expertise in media optimization.

Uninterrupted supply with Gibco manufacturing excellence

Media Format	Grand Island, NY	Paisley, Scotland	Miami, FL	Detroit, MI
Advanced Granulation Technology (AGT™)	✓	✓		
Animal Origin-Free Dry Powder	✓	✓	✓	
Animal Origin Dry Powder	✓	✓		
Animal Origin Peptones				✓

Pin mill and FitzMill™ milling technology offered

Our experienced team and wide manufacturing network can provide you with additional capacity when scaling up your processes. Whether you choose us as your primary or secondary supplier, we will support you throughout.



gibco collaborate

We are a true partner that keeps our customers at the heart of everything we do. With open communication and a customer-centric approach to program management, we collaborate with you to help meet your unique strategic, technical, and quality needs.

Not only is our team of scientific and business professionals on hand to help, but we also deliver paramount regulatory support to help you navigate the drug approval maze. Our deep understanding of the regulatory process for biologics, combined with the regulatory bodies' familiarity with our products, will certainly benefit and possibly accelerate the approval process of your life-changing therapeutics.



Working as an extension of your team

Our experienced team will support you along your unique bioprocessing journey

Our team will assist you from multiple angles, with advice tailored to your evolving needs. Acting as an extension of your team, our all-encompassing support will enable you to expedite your project from process development to patient. No matter the size of your organization, the media volume required, or the preferred level of supplier involvement in your process, our experienced team will support you along your unique bioprocessing journey.

Field Application Scientists (FAS)

Wherever you are located in the world, our field-based bioproduction scientists are always on hand to support you. The Gibco FAS team has broad experience in cell culture, process characterization, scale-up, analytics, product development, process optimization, and tech transfer.

Manufacturing Scientists & Feasibility Team

Our media manufacturing and feed experts can help you select and develop processes and products that suit your aims and objectives. And if you already possess your own proprietary media formulation, we can provide assistance in manufacturing as you scale up. Moreover, if you need CDMO support, our Thermo Fisher network can offer you access to some of the largest and most experienced contract development organizations in the world—Patheon and Brammer Bio.

Global Business Enablement Managers

Offering nuanced insight specific to your challenges, our astute experts collaborate with you to develop a custom business path to conquer often dynamic and competitive marketplaces.

Project Management Team

Our dedicated PMP-certified project managers will help you hit all your key milestones, making sure your project meets its timelines, providing regular progress updates along the way.

Regulatory Support Team

Our products are used in more than 200 commercial drugs, and with many more currently undergoing clinical development, we understand what it takes to succeed in this space. Let us help you navigate the complex approval maze with the support of our experienced team and close relationships with regulatory bodies. Our regulatory team has expertise within protein expression, viral vectors and vaccine production, as well as cell and gene therapy—areas with an evolving regulatory landscape.





gibco

Add your development journey to our
consistent track record of success.

Find out more at thermofisher.com/joinforces

ThermoFisher
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