

**Thermo Fisher**  
SCIENTIFIC

The world leader in serving science



Biotech

# Biotech essentials

High-performance, flexible, and reliable products  
that will set you up for success



Techniques like cell growth, modification and analysis, sample preparation, synthetic biology, polymerase chain reaction (PCR), real-time PCR (qPCR), sequencing, electrophoresis, and western blotting are the building blocks of your projects. Getting these fundamentals right the first time is critical to moving quickly and efficiently toward your end goal.

In order to do this, you need a partner who can supply all the right products and services. They need to be reliable, flexible, scalable, and save you time so that you can minimize development and product costs, reduce risk, and reach your next milestone faster.

We have a whole range of solutions dedicated to serving these needs ranging from off-the-shelf and customizable reagents and instruments to outsourcing services and manufacturing solutions.

We'll work with you every step of the way to ensure you're set for success.

[thermofisher.com/biotechessentials](https://thermofisher.com/biotechessentials)

# Contents

Cell growth, scale-up, and modification	2
Cellular analysis	4
Cellular analysis screening	6
Sample preparation	10
Synthetic biology	14
PCR	16
Electrophoresis	18
RNA extraction and cDNA synthesis for qPCR	19
Real-time PCR	20
Sanger sequencing and fragment analysis	22
Next-generation sequencing	24
Mass spectrometry and immunoassays	26
Western blotting	28
Laboratory essentials	32
Outsourcing services	38
Custom manufacturing and commercial supply	39
Jump Start for Biotech new lab program	40

# Cell growth, scale-up, and modification

Whether you are culturing or modifying your cells, our range of Thermo Scientific™, Invitrogen™, and Gibco™ products will deliver the quality, consistency, and performance you need at every step of your journey from discovery to commercialization.



[thermofisher.com/media](http://thermofisher.com/media)

## Cell growth and scale-up Gibco™ media and supplements

From the basic formulations to the newest innovations, Gibco products provide superior quality, consistency, and performance—to enable you to get it right the first time.

- **Gibco cell culture media** are designed to support the growth and maintenance of a variety of mammalian cells and cell lines. We've developed ready-to-use products as well as powdered and concentrated liquid formulations to fit your experimental setup and budget.
- **Gibco™ BenchStable™ Medium** is stored at room temperature so you don't have to wait for your media to warm up—saving you valuable time. It also frees up your cold storage space and uses more sustainable packaging so you use less energy.
- **Gibco supplements** including balanced salt solutions, cell dissociation reagents, antibiotics, and more are designed to deliver reproducibility.
- **Gibco™ StemScale™ PSC Suspension Medium** delivers 5–10 fold expansion per passage and 3x the expansion capability of other suspension media, a simplified workflow, and consistency across cell lines so you can generate large volumes of high-quality human pluripotent stem cells (PSCs) in suspension culture.



## Thermo Scientific™ Nunc™ and Nalgene™ cell culture plastics

Get robust results from your cell culture work with Nunc and Nalgene cell culture plastics. Manufactured using only high-quality raw materials that comply with USP Class VI testing and tested with Gibco media, our plastics offer optimal cell growth across multiple cell lines.

Choose from a range of surfaces and formats all designed to make your cell culture work easier and more scalable—flasks, dishes, plates, conical tubes, and serological pipettes.

[thermofisher.com/cellcultureplastics](http://thermofisher.com/cellcultureplastics)

## Gibco™ fetal bovine serum

Used by 14 of the top 15 pharma companies and accounting for 45% of all FBS citations,\* Gibco FBS offers you the performance, quality, and consistency you need to reduce the unknowns in your work and move quickly toward your goals.



[thermofisher.com/fbs](http://thermofisher.com/fbs)

We propose differentiated workflow solutions from specialty serum to innovative packaging like the aliquot-free **Gibco™ One Shot™ FBS 50 mL bottle**.



[thermofisher.com/neon](https://thermofisher.com/neon)

## Cell modification Invitrogen™ Neon™ Transfection System

Obtain superior transfection efficiency regardless of your lab's size, budget, and needs with a system that will flex around your changing work:

- Efficient—up to 90% transfection and gene-editing efficiency in extremely difficult cells, including immune, primary, and stem cells
- Flexible—open system allows electroporation parameters to be optimized freely; easily transfect from  $2 \times 10^4$  cells to  $6 \times 10^6$  cells per reaction
- Simple—single reagent kit for all cell types
- Versatile—can be used to deliver DNA, RNA, and protein



## Invitrogen™ Lipofectamine™ 3000 Transfection Reagent

Get superior transfection performance with our most advanced lipid nanotechnology:

- Superior performance—highest efficiency into the broadest spectrum of difficult-to-transfect and common cell types
- Improved cell viability—gentle on your cells, with low toxicity
- Versatility—single kit for DNA, RNA, and cotransfection

[thermofisher.com/lipofectamine3000](https://thermofisher.com/lipofectamine3000)



## Invitrogen™ TrueDesign™ Genome Editor

Easily create accurate and successful knock-in experiments. Our free design tool has an intuitive point-and-type interface that provides unrivaled flexibility and support for creating genome edits. The simple step-by-step program allows you to:

- Generate a complete knock-in design in minutes
- Edit up to 30 bases in any human gene using CRISPR-Cas9 or TALENs to create SNP or amino acid changes
- Add a GFP or RFP tag and create adaptor primers for Invitrogen™ TrueTag™ Donor DNA Kits to produce a donor template without cloning
- With a single click you can download comprehensive documentation

[thermofisher.com/truedesign](https://thermofisher.com/truedesign)

## Cellular analysis

Our cellular analysis product portfolio combines the strengths of Invitrogen™ fluorescent reagents and versatile analysis instrumentation. Discover more about your samples with automated cell counting, automated multiwell plate scanning, long-term live-cell imaging, and powerful image analysis.



### Cell counting

#### Invitrogen™ Countess™ 3 FL Automated Cell Counter

This device utilizes a machine-learning algorithm taught by our experienced cell biologists to enable highly accurate and precise cell counts, even for challenging cell samples.

Perform cell viability using trypan blue or **Invitrogen™ ReadyCount™ Green/Red Viability Stain**.

Obtain apoptosis and viability data with a viability dye such as **Invitrogen™ SYTOX™ Red Dead Cell Stain**, in combination with an apoptosis indicator that measures caspase activation, such as **Invitrogen™ CellEvent™ Caspase-3/7 Green Detection Reagent**.



[thermofisher.com/countess](http://thermofisher.com/countess)



[thermofisher.com/evosm7000](http://thermofisher.com/evosm7000)

[thermofisher.com/microscopyreagents](http://thermofisher.com/microscopyreagents)

[thermofisher.com/cellstructure](http://thermofisher.com/cellstructure)

### Fluorescence imaging

#### Invitrogen™ EVOS™ M7000 Imaging System

**A powerful, fast, and fully automated system for reliable results.**

Bring high performance and fast, automated imaging right to your lab bench with the EVOS M7000 Imaging System. This system has been designed with advanced capabilities to simplify demanding cell-based imaging applications such as live-cell analysis, image stitching, and Z-stacking, so you can focus on acquiring images and data rather than instrument operation.

When combined with the **Invitrogen™ EVOS™ Onstage Incubator**, the EVOS M7000 Imaging System is ideal for long-term monitoring of cell cultures and time-lapse imaging at high resolution.

Extensive quantitative imaging and statistical analysis can be performed in combination with **Invitrogen™ Celleste™ Image Analysis Software**, an optional advanced software package offering powerful tools for image segmentation and classification including 2D, 3D deconvolution, visualization, and analysis.



[thermofisher.com/varioskanlux](http://thermofisher.com/varioskanlux)

## Cellular quantification/ microplate detection Thermo Scientific™ Varioskan™ LUX Multimode Microplate Reader

This instrument was designed for the highest performance and highest quality of results in a wide variety of applications. Automatic dynamic range selection adjusts the optimal reading gain based on signal intensity; smart safety controls alert users to potential errors before they happen, all to help save your time, avoid experimental errors, and get you to your goals faster.

The Varioskan LUX instrument includes a range of measurement technologies: absorbance, fluorescence intensity, luminescence, TRF (time-resolved fluorescence), and the AlphaScreen™ method. Fast readout of signals across a range of measurement modes (endpoint, kinetic, multipoint, spectral scanning, and kinetic spectral scanning), enables a variety of cellular assays.

An integrated gas module enables precise control of CO<sub>2</sub> and O<sub>2</sub> levels for optimal cell growth.

Intuitive **Thermo Scientific™ SkanIt™ Software** provides powerful data analysis and calculations such as cell viability percentages and cytotoxic potency. For additional benefit and ease of use, SkanIt Software includes several ready-made protocols for cell health assays, such as for the **Invitrogen™ alamarBlue™** and **PrestoBlue™** assays, multiplexing, ATP assays, DLR assays, and the NanoBRET™ assay. SkanIt Drug Discovery Edition Software is also available, which incorporates CFR 21 Part 11 compliance features for regulated environments.

The Varioskan LUX instrument can be combined with the EVOS M7000 Imaging System for the fluorescence-based quantification and imaging of complex biological systems, without requiring separate assay optimization.

## Fluorescent secondary antibodies for imaging Invitrogen™ Alexa Fluor™ Plus Secondary Antibodies

Make your low-abundance targets visible, spend less time optimizing, and make every one of your precious samples count. Alexa Fluor Plus conjugate technology provides higher signal-to-noise ratios with minimized cross-reactivity for fluorescent imaging. Available across the fluorescent spectra, Alexa Fluor Plus secondary antibodies provide flexibility in experimental design to fit the needs of your instrumentation or when expanding the number of readouts for multiplexing applications.

[thermofisher.com/alexafluorplus](http://thermofisher.com/alexafluorplus)

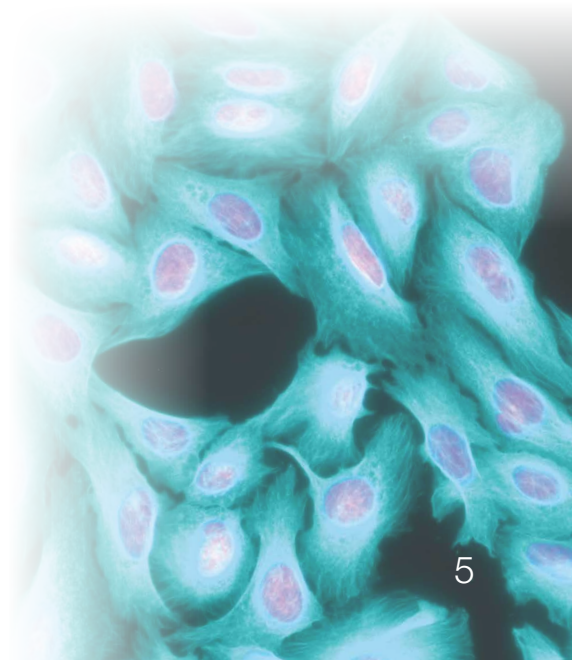


[thermofisher.com/readyprobes](http://thermofisher.com/readyprobes)

## Cell stains Invitrogen™ ReadyProbes™ imaging reagents

Ready-to-use imaging reagents are the easiest and quickest way to image your cells. They are designed to allow you to stain cells with no calculations, no dilutions, and no pipetting—simply apply and image.

- Dropper bottle formats
- Stable at room temperature
- Simplified protocols
- No dilutions, resuspensions, calculations, or aliquoting necessary





[thermofisher.com/attune](http://thermofisher.com/attune)

## Cellular analysis screening

### Invitrogen™ Attune™ NxT Flow Cytometer

This benchtop flow cytometer uses a revolutionary technology—acoustic focusing—to align cells prior to interrogation with a laser for your multicolor flow cytometry analysis. Now with the flexibility to create a customized 4-laser, 14-color system, the Attune NxT Flow Cytometer is designed to accommodate existing experimental protocols and lab budgets.

- Conserve sample and quickly run experiments with sample flow rates ranging from 12.5–1,000  $\mu\text{L}/\text{min}$
- Intuitive software interface and easy-to-follow workflow that is quick to learn, teach, and use, including the optional 21 CFR Part 11 compliance software upgrade for preclinical security, auditing, and e-signatures; IQ/OQ service available
- Save time and minimize cell handling with faster protocols and walk-away automation with the Invitrogen™ CytKick™ Max Autosampler:
  - Runs a 96-well plate in 22 minutes
  - Passive cooling component
  - Running 1 and 2 mL tubes
  - Compatible with Thermo Fisher Scientific automation and robotics
- Expand your capabilities with up to 6 channels of detection off the violet laser

Choose from over 20,000 flow antibody conjugates, compensation beads, and viability reagents by visiting [thermofisher.com/flowcytometry](http://thermofisher.com/flowcytometry)

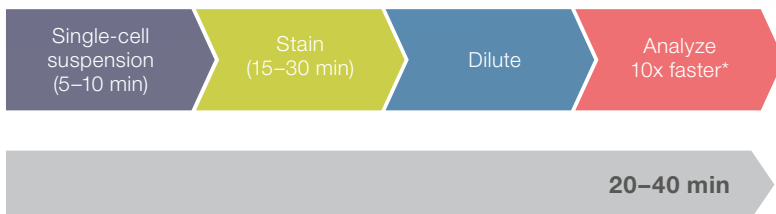


## Save up to 90 minutes in preparation time with your whole blood samples

### Generic sample preparation workflow



### No-wash, no-lyse sample preparation workflow



Up to  
**65%**  
reduction in  
prep time

\* Compared to conventional cytometers.

## Internal data standard

Equivalent Reference Fluorophore (ERF) beads are particles labeled with specific fluorophores to provide a fluorescent intensity reference. These beads provide a method to accurately compare data from different types of instruments at different locations or data run on the same instrument on different days.

Benefits include:

- Standardized ERF values assigned by the National Institute of Standards and Technology (NIST), an independent organization
- Values for 26 channels collected from emitted fluorescence from 415–910 nm
- ERF values for a particular channel under a specified set of instrument conditions are comparable between instruments and over time, even when different manufacturers' calibration beads are used

## Fixation reagents

Fixatives are necessary for saving samples to be used later or for looking at intracellular or intranuclear targets. Ready-to-use fixation kits are optimized for flow cytometry applications.

Benefits of using these kits include the following:

- Methods used to stain cells take into consideration the location of the target proteins
- The fixation and permeabilization methods keep the morphological light-scattering characteristics of the cell intact
- Reagents in the kits help reduce background staining

Learn more at [thermofisher.com/flowcalibration](https://www.thermofisher.com/flowcalibration)



[thermofisher.com/cx7lzs](http://thermofisher.com/cx7lzs)

[thermofisher.com/cx7](http://thermofisher.com/cx7)

## High-content screening Thermo Scientific™ CellInsight™ CX7 LZR HCS Platform

Bring automated quantitative cell analysis to your screening lab. The CellInsight CX7 system offers a powerful and integrated way to develop and automate high-content assays, using a combination of 5-color brightfield and 7-color fluorescence imaging. With laser illumination, the platform enables rapid imaging in both wide-field and confocal modes, with deep penetration into 3D samples.

- Faster scan times—up to 5x faster than confocal imaging, EurekaScan™ Finder enables average 14.6-fold faster screening of rare events
- Quantifiably brilliant data—laser-based lighting provides superior spheroid illumination
- Enhanced speed and sensitivity for superior performance—seven independent lasers provide superior multiplexing with minimal bleed through

**A scalable system that will flex around your changing needs:**

### Scalable cell biology

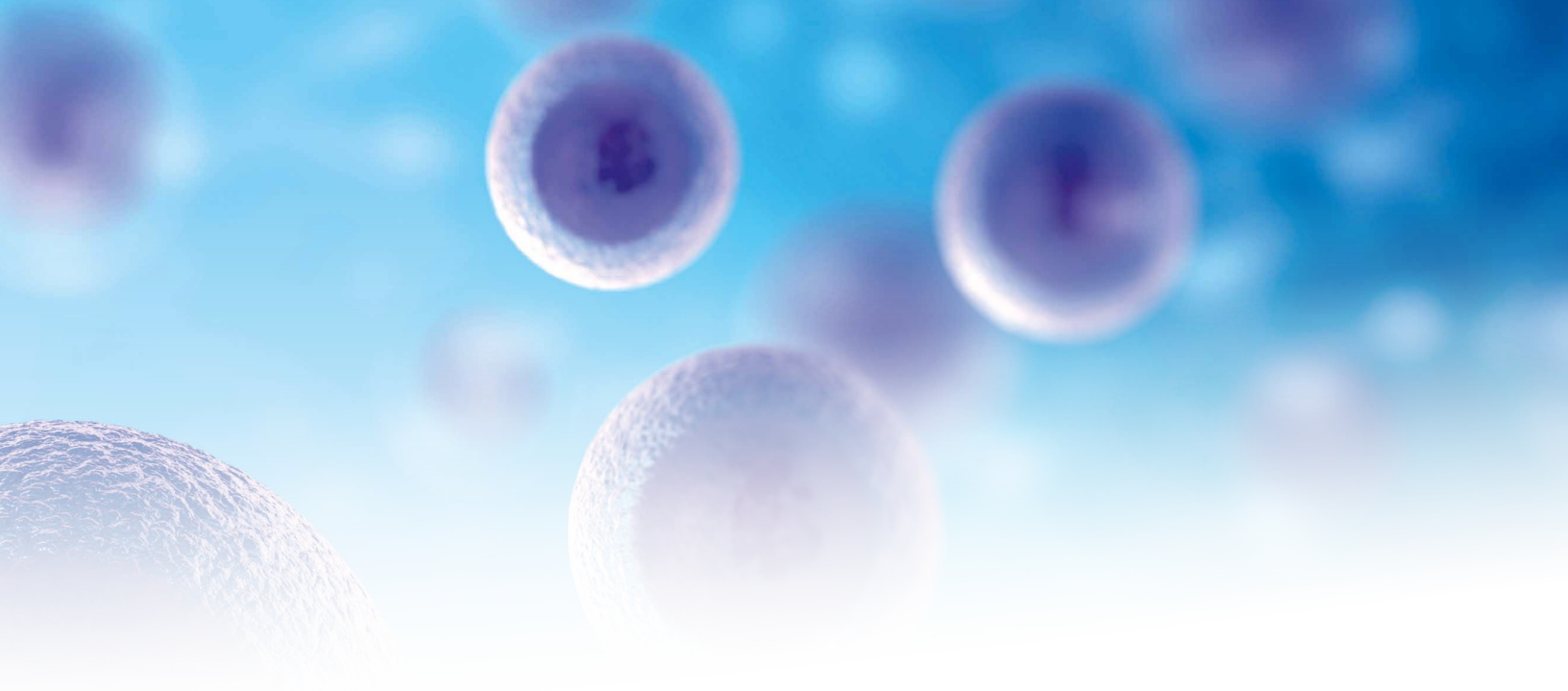
Connect directly to the **Thermo Scientific™ Orbitor™ RS Microplate Mover** to increase processing capacity up to 80 plates

### Screen thousands of samples

HCS Studio Cell Analysis software accelerates your study with “on-the-fly” real-time analysis, enabling faster acquisition of data

### Scalable image storage

Store Image and Database Management Software expands to a server-based platform, allowing huge amounts of images and data to be managed



## Invitrogen™ Qubit™ fluorometers and assays

Quickly and specifically quantify DNA, RNA, or non-degraded proteins.

- Invitrogen™ Qubit™ assay dyes bind selectively to DNA, RNA, or protein, making it more sensitive than UV absorbance
- Devices use as little as 1  $\mu$ L of sample, even with very dilute samples
- Invitrogen™ Qubit™ 4 Fluorometer for single-sample quantification and Invitrogen™ Qubit™ Flex Fluorometer for quantification of up to 8 samples
- Save your results to a USB memory device, local area network, or the Thermo Fisher™ Connect Platform



## Services and support for instruments

### Because science can't wait

There's no time for downtime in your lab. Built on more than 35 years of service expertise, our superior services and support solutions and applications help keep your lab up and running. More than 1,400 trained professionals make up the industry's largest network, ready to assist you when you need it. And smart features such as remote instrument services help keep you productive and focused on making the next discovery.

[thermofisher.com/instrumentservices](http://thermofisher.com/instrumentservices)



## Sample preparation

Consistently extract and purify your nucleic acids, proteins, and cells with maximum yield, purity, and integrity from virtually any sample type. At Thermo Fisher Scientific, we are dedicated to innovation, so you can get it right the first time.

### Automated sample preparation Thermo Scientific™ KingFisher™ purification systems

KingFisher instruments provide the most versatile benchtop automation in the lab with consistent extraction and purification of DNA, RNA, protein, and cells.

- Vary your throughput—process 6 or 96 samples per run depending on the instrument model:
  - Thermo Scientific™ KingFisher™ Duo Prime instrument (6 or 12 samples per run)
  - Thermo Scientific™ KingFisher™ Flex and Thermo Scientific™ KingFisher™ Presto instruments (24 or 96 samples per run)


- Change between formats—choose 24- or 96-well plates so you can process a wide range of input volumes
- Customize your protocol—easily edit, modify, or create new protocols
- Use optimized reagents—Applied Biosystems™ MagMAX™ isolation kits or Invitrogen™ Dynabeads™ magnetic beads


They help you to save valuable time by removing manual steps and reducing overall processing time, even when compared with other instruments.

### Simplify your protocol



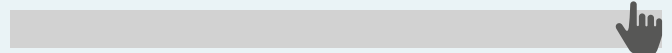
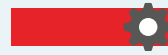
## Consistent results, in less time

 Average time required using our automated solutions

 Average time for manual sample prep

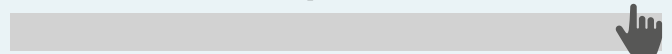
gDNA  
from blood

**75%**  
less touch time



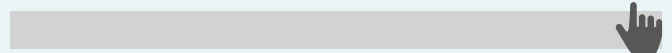
cfDNA

**50%**  
less touch time



RNA

**75%**  
less touch time



[thermofisher.com/kingfisher](http://thermofisher.com/kingfisher)



## Not ready for automation?

Check out our manual nucleotide sample prep options at [thermofisher.com/rocktheprep](http://thermofisher.com/rocktheprep)

## Kits and reagents for KingFisher instruments

### Applied Biosystems™ MagMAX™ DNA/RNA purification kits

- Superior binding capacity—the large surface area of a magnetic bead and thorough exposure to the target during mixing enables superior binding and washing efficiency
- Less clogging—due to mobile dispersion and regular density
- Improved elution—efficient elution in small volumes
- Greater sample range—of inhibitors from a wide range of samples with different viscosities

### Invitrogen™ Dynabeads™ magnetic beads

- Dynabeads beads offer the best balance of high yield and reproducibility with low nonspecific binding for immunoprecipitation and cell isolation
- Multiple ligands available for different protein purification strategies, including immobilized protein A/G, Ni-NTA, glutathione, and anti-FLAG
- Dynabeads beads also have solutions for cell isolation, activation, and exosomes



[thermofisher.com/kingfisher](http://thermofisher.com/kingfisher)



## Invitrogen™ RiboMinus™ Bacteria 2.0 Transcriptome Isolation Kit

A complete and automatable kit that enables efficient and selective removal of bacterial and archaeobacterial ribosomal RNA from intact total RNA (100 ng to 5 µg) in less than two hours.

- Efficient—the included Invitrogen™ RiboMinus™ Pan-Prokaryote Probe Mix has consistently shown less than 10% of reads mapping to 16S and 23S rRNA reads
- Wide range of targets—designed with >150 probe designs targeting 16S, 23S, and 5S rRNA targets from >76 representative species of bacteria and archaeobacteria from common phyla and sub-phyla
- Convenient— Invitrogen™ Dynabeads™ MyOne™ Streptavidin C1 magnetic beads and bead cleanup module and protocols included for KingFisher instruments



# Synthetic biology

From DNA and RNA oligonucleotides to complete gene synthesis and protein production, we have it all. With a variety of custom and pre-designed products for CRISPR gene editing, RNAi, and other applications, our innovations can get you to your next milestone quickly.

## Invitrogen™ oligonucleotides

### 1. Custom DNA and RNA oligos

The Invitrogen™ Custom Oligo Service has been supporting researchers all over the world for over 20 years. We offer a complete range of custom-synthesized oligonucleotide primers, probes, and genes. Our oligos can be used in a variety of applications, including:

- Research: PCR, qPCR, cloning, sequencing, RNAi, and gene synthesis and detection
- Diagnostics: diagnostic tests
- Target screening

### 2. Pre-designed DNA oligos and primers

In addition to our custom synthesis, we offer a selection of other high-quality, pre-designed DNA primers and oligos that are commonly used in a variety of molecular biology and genomic applications, such as:

- Expression analyses
- Epigenetic research
- Next-generation sequencing (NGS)

### 3. Invitrogen™ CRISPR-Cas9™ products and services

Precise gene editing, fluorescent tagging, and gene knockout for loss-of-function are powered by the Invitrogen™ TrueDesign™ online CRISPR design tool and accompanying nuclease and guide RNA reagents. Our products and custom gene editing services support:

- Disease model generation
- Gene functional analysis
- Cell line engineering



## Invitrogen™ GeneArt™ Gene Synthesis and Protein Services

Conventional PCR and cloning techniques require optimization and troubleshooting, which take up valuable lab time and resources (Figure 1, next page). GeneArt Gene Synthesis tools go beyond traditional gene synthesis by enabling expression optimization for maximum performance.

Custom gene synthesis circumvents the limitations of PCR-based workflows. With this technique, synthetic biology has made it possible to reliably, safely, and cost-effectively obtain customized DNA constructs with 100% verified sequence accuracy.

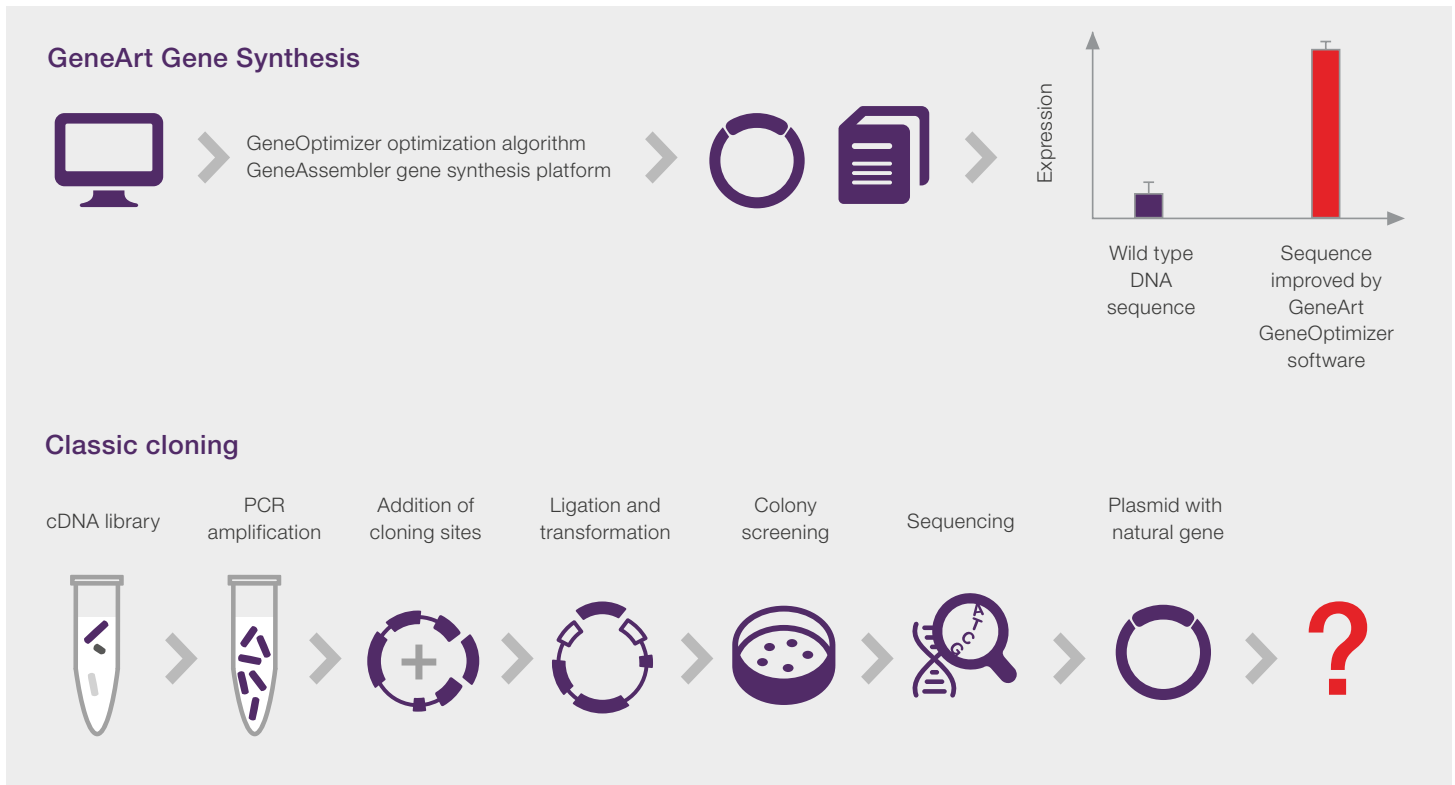
GeneArt Services also include

- Subcloning, including into your own vector, and express cloning directly into expression vectors, saving days
- Plasmid service providing highly pure and homogenous plasmid DNA that is transfection-ready
- DNA libraries, including combinatorial, controlled randomization, and site-saturation mutagenesis for rational protein design
- A complete gene-to-protein workflow to go from digital sequence all the way to purified protein

Get a complete overview of GeneArt Services at [thermofisher.com/geneart](https://www.thermofisher.com/geneart)



Figure 1. GeneArt Gene Synthesis and optimization are faster than classic cloning methods and can provide better results.



Get a complete overview of GeneArt Services at [thermofisher.com/geneart](http://thermofisher.com/geneart)

### Invitrogen™ GeneArt™ Strings™ Gene Fragments

In addition to fully cloned genes and protein services, GeneArt Strings DNA Fragments are also available to save time and effort. These are dsDNA, linear fragments that are delivered fast and ready for cloning (Table 1).

Only a minimal number of colonies (~3) will need to be picked.

GeneArt Strings DNA Fragments	
<b>How to order</b>	GeneArt portal or GeneArt Strings Assistant
<b>Benefits</b>	Faster turnaround time
<b>Length</b>	200–3,000 bp
<b>Accuracy (error per base)</b>	Less than 1 in 5,000
<b>GC content</b>	30–70% GC
<b>Total reliability</b>	95%
<b>Production time</b>	From 3 business days
<b>Delivery amount (lyophilized DNA)</b>	Minimum >200 ng Average 900 ng

**No time to place an order?**  
Check out our fast, cost-effective way to order your oligos at [thermofisher.com/valueoligos](http://thermofisher.com/valueoligos)

Table 1.



[thermofisher.com/proflex](https://thermofisher.com/proflex)

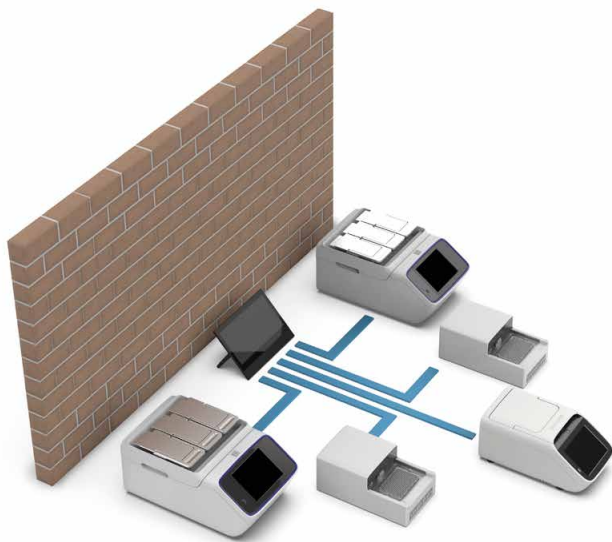
## PCR

Consistently arrive at results quicker, with more confidence and less optimization using our scalable systems, innovative DNA polymerases, and reliable PCR plastics.

### Thermal cyclers Applied Biosystems™ ProFlex™ PCR System

Ultimate flexibility that scales up or down, supporting the evolution of your assay development.

- Interchangeable block formats—3 x 23-well, 96-well, dual 96-well, dual 384-well, and dual flat 96-well
- Run up to 6 experiments at once and up to 3 different users
- Precise control of the PCR temperature thanks to patented Applied Biosystems™ VeriFlex™ Block temperature control technology
- Cloud-enabled system



[thermofisher.com/fleetcontrol](https://thermofisher.com/fleetcontrol)

### More than one thermal cycler? Ultimate control with Fleet Control Software

View and control your thermal cycler inventory in your facility securely behind your firewall with a central “server” computer.

- Create customer permissions and rules for users, methods, and instruments
- Confirm data integrity with audit trail

# PCR plastics and DNA polymerases

## Applied Biosystems™ MicroAmp™ PCR plastics

- Validated on Applied Biosystems™ thermal cyclers for optimal fit and performance
- Available in all formats to support your needs



[thermofisher.com/findplastics](http://thermofisher.com/findplastics)

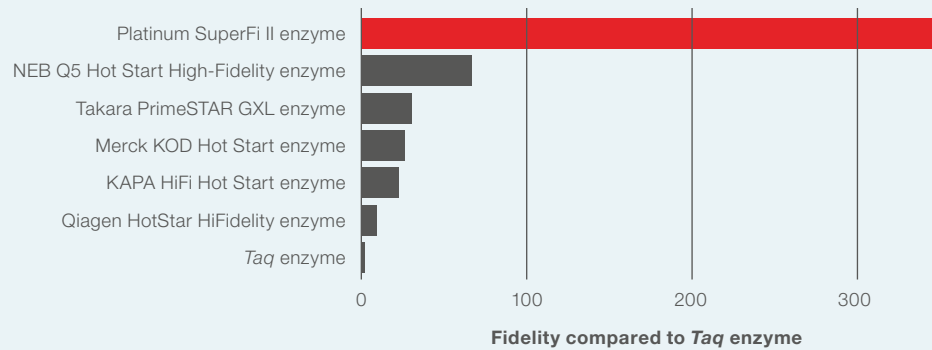
## Invitrogen™ Platinum™ SuperFi™ II DNA Polymerase

- Exceptional accuracy—higher than 300x *Taq* fidelity as determined by NGS
- Simplified workflow—buffer formulated for primer annealing at 60°C (no need for a  $T_m$  calculator)
- Increased PCR success—robust amplification of GC-rich targets, DNA of suboptimal purity, and long sequences
- Automation enabled—high specificity and benchtop stability for 24 hours after reaction setup, enabled by Invitrogen™ Platinum™ hot-start technology
- Reduced pipetting—master mix options available with or without direct gel-loading dyes



[thermofisher.com/platinumsuperfi](http://thermofisher.com/platinumsuperfi)

Get it right the first time with an extremely low error rate



[thermofisher.com/platinumiiataq](http://thermofisher.com/platinumiiataq)

## Invitrogen™ Platinum™ II *Taq* Hot-Start DNA Polymerase

- Innovative universal primer annealing buffer—simplifies optimization of primer annealing and helps to circumvent multiple PCR runs
- Engineered *Taq* DNA polymerase—allows fast cycling and successful amplification even in the presence of inhibitors
- Platinum hot-start technology—enhances specificity, sensitivity, and yields; allows for room-temperature reaction setup

# Electrophoresis

Using precast agarose gels can simplify and speed up your nucleic acid electrophoresis workflow. There are no gels to pour, buffers to make, staining or destaining steps to perform, or gel boxes to assemble. Just load your samples and start the run.



[thermofisher.com/powersnap](http://thermofisher.com/powersnap)

## Invitrogen™ E-Gel™ Power Snap Electrophoresis System

Combine rapid, real-time nucleic acid analysis with high-resolution image capture for superior convenience.

- Analyze faster—sample loading to image capture in 15 minutes
- Simple operation—intuitive user interface with large touchscreen and integrated operating system
- Safer handling—minimize handling of hazardous chemicals with Invitrogen™ E-Gel™ precast gel cassettes



[thermofisher.com/egel](http://thermofisher.com/egel)

## Invitrogen™ E-Gel™ precast gels

- Minimize time-consuming and messy prep work
- Run up to twice as fast as conventional handcast gels
- Available in a variety of agarose percentages, well formats, and throughput capacities to suit your applications

## Need a higher throughput?

Accelerate high-throughput electrophoresis analysis with E-Gel 48 and E-Gel 96 precast gels run on the expandable Invitrogen™ E-Base™ Electrophoresis System. The integrated design of the Invitrogen™ Mother E-Base™ and Daughter E-Base™ devices saves space and allows for up to 384 samples to run at one time.

# RNA extraction and cDNA synthesis for qPCR

Kits and reagents that save time and deliver superior performance with even the most challenging samples.

## Invitrogen™ SuperScript™ IV CellsDirect™ cDNA Synthesis Kit

Designed to synthesize first-strand cDNA directly from mammalian cell lysates without first isolating the RNA. With lysis and reverse transcription performed in the same tube, the resulting first-strand cDNA is ready to use in many downstream applications such as PCR and qPCR.

- Time-saving—save up to 2 hours in overall workflow time
- Superior sensitivity—easy detection of low-abundance targets
- Direct convenience—no need to isolate RNA
- qPCR compatibility—superior performance with Applied Biosystems™ PowerTrack™ SYBR Green Master Mix



[thermofisher.com/cellsdirect](https://thermofisher.com/cellsdirect)

## Invitrogen™ SuperScript™ IV Reverse Transcriptase

Engineered to deliver superior performance even with challenging RNA samples.

- Super efficient—up to 100x higher cDNA yield
- Super robust—transcribes even from low-abundance, degraded, or inhibitor-containing RNA samples
- Super fast—10 min cDNA synthesis protocol
- Super convenient—available in a variety of formats
- Extensive quality testing



## Invitrogen™ SuperScript™ IV VIL0™ Master Mix

- Formulated to deliver exceptional performance in qRT-PCR applications
- Improved  $C_t$ —up to 8 fewer cycles compared to other RT reagents
- Superior linearity—works with a broad range of input RNA
- Super reliable—improved qRT-PCR data reproducibility due to single-tube master mix format
- Super safe—integrated, easy, and RNA-friendly genomic DNA (gDNA) removal
- Extensive quality testing

[thermofisher.com/ssiv](https://thermofisher.com/ssiv)

[thermofisher.com/4vilo](https://thermofisher.com/4vilo)



[thermofisher.com/quantstudiopro](http://thermofisher.com/quantstudiopro)

## Real-time PCR

Applied Biosystems™ real-time PCR (qPCR) solutions are integrated and scalable and help ensure you get it right. High-performing consumables and innovative qPCR instruments with Cloud access give you anywhere, anytime access to your data and world-class service and support.

### qPCR systems

#### Applied Biosystems™ QuantStudio™ 6 and 7 Pro Real-Time PCR Systems

The QuantStudio 6 and 7 Pro qPCR systems are designed to improve efficiency and streamline your workflow with excellent reliability. Analyze more samples in less time with a smart workflow experience that brings lab-changing innovations to your research:

- Ease and convenience with pre-aliquoted assays in 384-well Applied Biosystems™ TaqMan® Array Cards
- Manual error reduction—compatible with Applied Biosystems™ TaqMan® Array Plates with RFID
- Smart features—hands-free functionalities like voice commands and facial authentication
- Superior service and support with Smart Help and Smart Remote Support

### qPCR assays

#### Applied Biosystems™ TaqMan® Assays

TaqMan Assay technology is the gold standard for real-time PCR, delivering the specificity, sensitivity, and reproducibility you need across applications, from gene expression and microRNA analysis to SNP genotyping and CNV studies.

Rapidly generate results with easy-to-use and convenient 384-well TaqMan Array Cards. Customize your array content choosing from more than 20 million predesigned TaqMan Assays or choose from preconfigured content formulated to work right out of the box and backed by our **TaqMan Assay performance guarantee**.\*

Pre-designed TaqMan Assays, available in 5 different formats for 29 species, will help you spend your time generating results, not designing and optimizing assays.

[thermofisher.com/taqman](http://thermofisher.com/taqman)

\* Terms and conditions apply. For complete details go to [thermofisher.com/taqmanguarantee](http://thermofisher.com/taqmanguarantee)

## qPCR reagents

Our optimized master mixes deliver accuracy and specificity the first and every time.

### Recommended high-performing qPCR reagent for 2-step gene expression:

#### Applied Biosystems™ TaqMan® Fast Advanced Master Mix

Superior accuracy, dynamic range, and specificity compared to standard master mixes for gene expression and miRNA detection experiments.

TaqMan Fast Advanced Master Mixes are optimized for multiplexing and for reduced run times on standard and fast instruments and are stable at room temperature for up to 72 hours in preassembled reactions. Use with TaqMan Assays.



[thermofisher.com/qpcrmm](https://thermofisher.com/qpcrmm)

### Recommended high-performing qPCR reagent for genotyping:

#### Applied Biosystems™ TaqPath™ ProAmp™ Master Mix

Accurate results from both pure and crude samples containing PCR inhibitors for your SNP genotyping and copy number variation experiments.

TaqPath master mixes are general purpose reagents manufactured in an ISO 13485–certified facility and labeled “For Laboratory Use.” Use with TaqMan Assays.



[thermofisher.com/proamp](https://thermofisher.com/proamp)

### Recommended high-performing qPCR reagent for 1-step real-time PCR:

#### Applied Biosystems™ TaqMan® Fast Virus 1-Step Master Mix

Fast, accurate results from pure and challenging samples (e.g., blood, stool) that may contain PCR inhibitors. The optimized multiplex formulation and convenient, single-vial format make it ideal for high-throughput RT-qPCR applications.

The 4X formulation provides enhanced detection of both RNA and DNA viruses, even with low target input. Use with TaqMan Assays.



[thermofisher.com/qpcrmm](https://thermofisher.com/qpcrmm)

## Other multiplex gene expression platforms

### Invitrogen™ QuantiGene™ Plex assay

- Accurate and precise RNA quantitation of up to 80 gene transcripts in a single well (96- and 384-well format)
- Direct from lysate quantitation with no RNA purification required
- Works with difficult sample type such as FFPE tissues and whole blood
- Standardized platform with a simple ELISA-like workflow

Learn more at [thermofisher.com/quantigene](https://thermofisher.com/quantigene)



[thermofisher.com/sanger](https://thermofisher.com/sanger)

## Sanger sequencing and fragment analysis

Applied Biosystems™ genetic analyzers are a trusted standard for Sanger sequencing and fragment analysis by capillary electrophoresis (CE). Versatile and innovative, our genetic analyzers have been designed with you in mind to meet the demands of your genetic testing needs.

### Sanger sequencing applications

Sanger sequencing is the gold standard for sequencing technology since it provides a high degree of accuracy, long-read capabilities, and the flexibility to support a diverse range of applications in many research areas including:

- CRISPR and TALEN-mediated genome editing with Sanger sequencing
- Sanger sequencing solutions for SARS-CoV-2 research
- NGS confirmation with Sanger

### Fragment analysis applications

Analysis of DNA fragments enables a variety of applications, from cell line authentication to detection of aneuploidy. While sequencing techniques such as NGS also enable these applications, researchers choose fragment analysis for features such as detection of multi-repeat regions, a faster turnaround time, and a higher sensitivity and resolution.



## Applied Biosystems™ SeqStudio™ Genetic Analyzer

Obtain gold-standard sequencing and fragment analysis without the hassle of capillary setup or technical know-how.

Simply add your sequencing samples to the cartridge, click it in place, and get your results without having to wait in the laboratory.

- Universal all-in-one cartridge—this novel system design allows for an on-instrument reagent life of four to six months for maximum convenience
- Reduced setup time—combine sequencing and fragment analysis runs on the same plate
- Speed—receive data for up to 4 samples within 4 hours
- Results fast—with our cloud-based platform, Connect, you will be able to easily access, analyze, and share data anytime, anywhere

[thermofisher.com/seqstudio](http://thermofisher.com/seqstudio)

## Applied Biosystems™ 3500 Genetic Analyzer

Delivers superior performance, flexibility, and scalability for the work you do every day.

- Improved data uniformity across instruments, runs, and capillaries
- Flexibility to upgrade from 8 to 24 capillaries, to meet your increasing throughput needs
- Increased multiplexing with 6-dye capability

[thermofisher.com/3500](http://thermofisher.com/3500)



## Applied Biosystems™ 3730 Genetic Analyzer

The highest-throughput capillary electrophoresis instrument built for customers who require an economical, automated, and scalable instrument to process large numbers of sequencing or fragment analysis samples. It is now enabled with the Microsoft™ Windows™ 10 operating system and Cloud connectivity.

[thermofisher.com/3730](http://thermofisher.com/3730)



## Next-generation sequencing

Ion Torrent™ NGS technology helps you implement a fast and simple workflow that scales to your research needs across multiple applications including complex inherited disease, oncology, infectious diseases, and more.

### Ion Torrent™ Genexus™ System

The first turnkey NGS solution that automates the specimen-to-report workflow and delivers results in a single day with just two user touchpoints:\*

- Unmatched ease of use for all users to get up and running quickly with significantly less training
- Insights from challenging samples with fast, automated workflows
- Ability to analyze individual samples cost-effectively and deliver results faster than ever

\* Specimen-to-report workflow will be available after the Ion Torrent™ Genexus™ Purification System and integrated reporting capabilities are added in 2021.



### Ion GeneStudio™ S5 System

The Ion GeneStudio S5 System is a scalable, targeted NGS workhorse with wide application breadth and throughput capability.

- Ion Torrent™ semiconductor sequencing optimizes cost and throughput for small and large NGS projects
- Sequencing and analysis in as little as 3 hours
- Automated and simplified workflow with the Ion Chef™ System
- Transform data to accurate insights using Ion Reporter™ software



[thermofisher.com/genestudio](https://thermofisher.com/genestudio)



## Identify new biomarkers with Ion AmpliSeq™ panels for targeted NGS

Sequencing success with a simple workflow and low input of DNA or RNA.

- Small sample input—lowest DNA or RNA input requirement for targeted NGS
- Scalable—one to hundreds of gene targets in a single run
- Fast, automated workflow—from sample to data in as little as 24 hours, with just 45 minutes of hands-on time

[thermofisher.com/ampliseq](http://thermofisher.com/ampliseq)

[thermofisher.com/oncomine](http://thermofisher.com/oncomine)

[oncomine.com](http://oncomine.com)

## Oncomine™ Solutions for precision oncology clinical research

Oncomine Solutions offer end-to-end workflows that address specific challenges when implementing NGS for clinical oncology research.

- Broad menu of targeted and pan-cancer assays for biomarker testing
- Low sample input requirements and robust performance with challenging samples
- End-to-end workflow, including bioinformatics and a reporting solution

## Invitrogen™ Collibri™ NGS library preparation kits for Illumina™ systems

The Collibri portfolio of library prep kits and accessories generates libraries more quickly, with less bias, in order to match the speed and capacity of Illumina instruments. Advantages available only from Collibri library prep kits:

- Visual feedback for higher library prep success
- Shorter total workflow times, greater support
- Reduced bias in genomic interpretation from whole-genome sequencing
- Clean data reveals transcriptome complexity from whole-transcriptome sequencing
- Reduce the cost of sequencing by up to 90% for gene expression studies using the Invitrogen™ Collibri™ 3' mRNA library prep kits



- Quantify any library that is intended for sequencing on Illumina systems using the Invitrogen™ Collibri™ library quantification kits
- Amplify NGS libraries with greater accuracy using the Invitrogen™ Collibri™ library amplification kits

[thermofisher.com/collibri](http://thermofisher.com/collibri)

# Mass spectrometry and immunoassays

We offer a wide range of products for discovery to targeted protein quantitation by mass spectrometry.



[thermofisher.com/easypep](https://thermofisher.com/easypep)

## Thermo Scientific™ EasyPep™ Mass Spectrometry (MS) sample prep kits

Optimized, rapid protein extraction and digestion of samples for MS analysis:

- Save precious time by processing sample for MS analysis in less than 4 hours
- Reagents and protocol verified for cells, plasma, and tissue for 10 µg to 2 mg samples
- Multiple formats available including for high-throughput sample processing applications



## Thermo Scientific™ TMTpro™ Labeling Reagents

Next generation of tandem mass tags for the identification and quantification of proteins:

- Concurrent MS analysis of up to 16 samples derived from cells, tissues, or biological fluids
- Increased multiplex capability results in fewer missing quantitative values among samples and within replicates for better quantitative accuracy and precision
- Amine-reactive reagents enable efficient labeling of all peptides regardless of protein sequence or proteolytic enzyme specificity
- Optimized for use with high-resolution Thermo Scientific™ Orbitrap™ platforms with data analysis fully supported by Thermo Scientific™ Proteome Discoverer™ 2.4 software

[thermofisher.com/tmtpro](https://thermofisher.com/tmtpro)



[thermofisher.com/ms-targeted-assays](http://thermofisher.com/ms-targeted-assays)

## Thermo Scientific™ SureQuant™ Kits

SureQuant kits enable multiplex immunoprecipitation to mass spectrometry (mIP-MS) for the simultaneous enrichment and quantitation of multiple total and phosphorylated proteins.

- Complete solution for successful monitoring of the MS system performance, sample preparation, and the absolute or relative quantitation of target proteins/peptides
- Fully validated antibodies, peptides, and control lysate to enable successful quantitation of each target peptide
- Quantitate multiple targets (including isoforms and phosphorylated states) from the pathways

## Immunoassays

### Invitrogen™ ProcartaPlex™ multiplex immunoassays

Profile more biomarkers with less sample.

- Helps reduce costs and labor, and saves precious samples through multiplexing
- Individually tested for specificity and endogenous, native protein detection
- Scalable and reproducible performance regardless of plex size
- Available in multiple formats across six species to meet the needs of your research



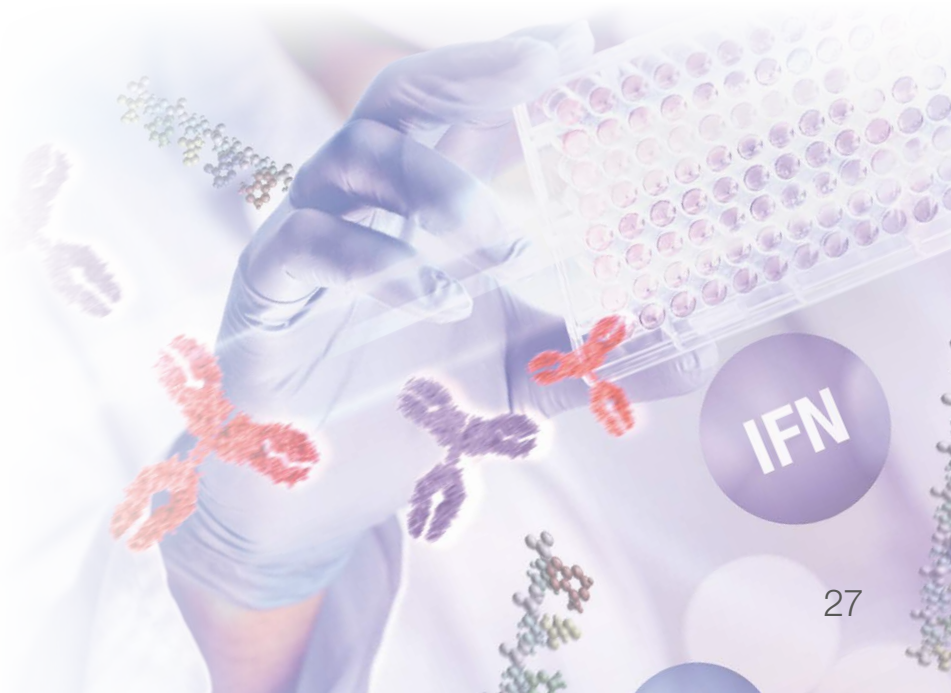
[thermofisher.com/procartaplex](http://thermofisher.com/procartaplex)

[thermofisher.com/elisa](http://thermofisher.com/elisa)

### Invitrogen™ ELISA kits

Immunoassays designed to enable you to quantitate with confidence.

- Wide selection of targets with simplified online selection tool
- Available for multiple sample types and kit formats to provide flexibility
- Bulk and custom service options to meet all your specific project needs



## Western blotting

We offer a comprehensive suite of solutions for every step of your western blotting workflow, so you can get to your next milestone faster with maximum results and minimum hands-on time.



[thermofisher.com/proteingelguide](http://thermofisher.com/proteingelguide)

## Higher-throughput western blotting

Processing many samples or blots can often become laborious and time-consuming. With our higher-throughput solutions, you can separate, transfer, process, and quantitatively detect up to 2 x 26 samples per run and with less hands-on work. It is designed to help you get more high-quality data in less time, with less work.

### Separate—run up to 2 x 26 samples per run Invitrogen™ precast midi protein gels

Precast midi gels have a wider format, enabling one to load up to 26 samples on a single gel. Three gel chemistry options and a variety of well formats are available to meet your higher-throughput electrophoresis needs.

### Invitrogen™ SureLock™ Tandem Midi Gel Tank

Designed for easy and consistent vertical protein gel electrophoresis of 1 or 2 Invitrogen™ midi gels. When paired with the Invitrogen™ SureLock™ Tandem Midi Blot Module, this tank performs efficient, 30-minute, room-temperature, wet protein transfers.

### Invitrogen™ PowerEase™ Touch 350W Power Supply

Designed for high-throughput gel electrophoresis, allowing you to run up to 8 midi gels or transfer up to 4 midi gels simultaneously. With a bright LCD touchscreen interface, you can enter in custom programs, or use the preprogrammed protocols for Invitrogen™ protein gels and gel transfers.



[thermofisher.com/surelocktandem](http://thermofisher.com/surelocktandem)



[thermofisher.com/powerease](http://thermofisher.com/powerease)



[thermofisher.com/powerblotter](https://thermofisher.com/powerblotter)

**Transfer—up to 2 midi gels in only 10 minutes**  
**Invitrogen™ Power Blotter XL System**

Designed for rapid 5–10 min transfer of proteins from polyacrylamide gels to nitrocellulose or PVDF membranes, the Power Blotter XL System allows you to transfer up to 2 midi gels or 4 mini gels simultaneously.

**Probe and detect—process and capture up to 2 midi blots at a time**

**Invitrogen™ Bandmate™ Automated Western Blot Processor**

A programmable blot rocking system that automates the tedious hands-on blocking, washing, and antibody incubation steps of western blot processing. It can process up to 2 midi blots or 4 mini blots using your current optimized reagents and protocols for blot processing, freeing up time for other important tasks.



[thermofisher.com/bandmate](https://thermofisher.com/bandmate)

**Invitrogen™ iBright™ Imaging Systems**

iBright Imaging Systems feature a large functional imaging area that enables the simultaneous capture and analysis of up to 2 midi or 4 mini blots in a single image. The flagship Invitrogen™ iBright™ FL1500 Imaging System features five fluorescence channels, permitting up to four-color fluorescent western blot multiplexing—expanding your possibilities for studying multiple proteins in a single blot. Each iBright Imaging System model is also now offered with a 21 CFR Part 11 compliance support package.



[thermofisher.com/ibright](https://thermofisher.com/ibright)



[thermofisher.com/iwestern](http://thermofisher.com/iwestern)

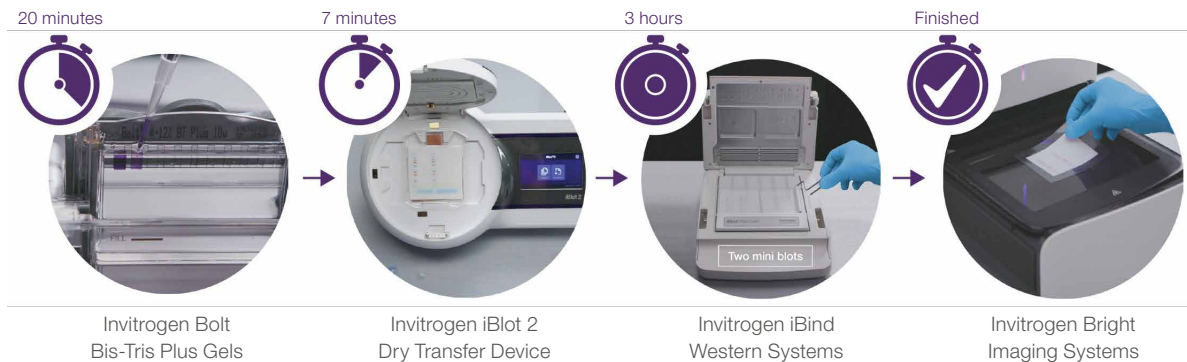
## High-efficiency western blotting for mini gels Invitrogen™ iWestern™ workflow

The iWestern workflow bundle features innovative, modern products designed to address processing efficiency, reproducibility, and robustness of results. Combined, these products synergize to help you achieve exceptional western blotting results, from start to finish in as little as 4 hours.

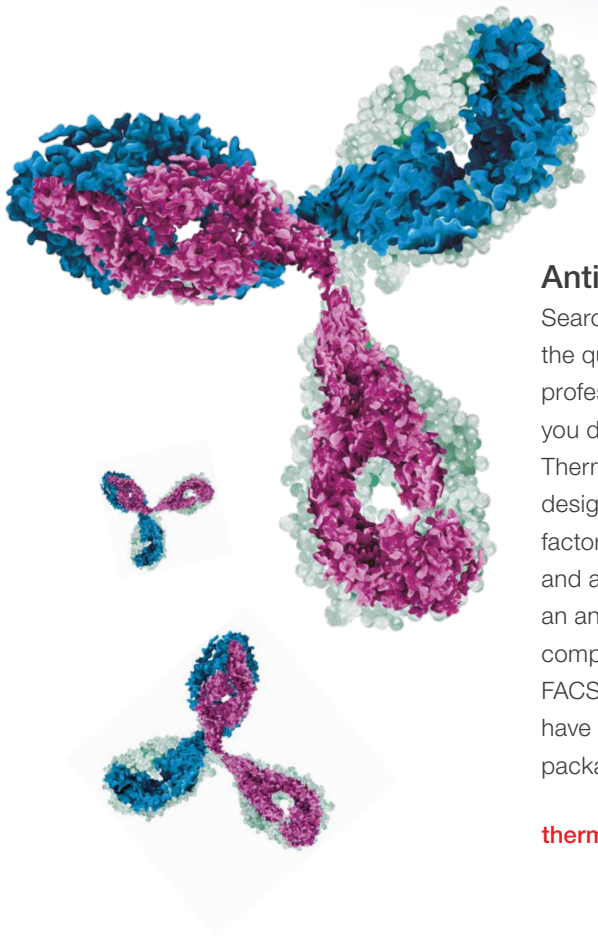
Our standard bundle contains all of our core innovative iWestern workflow devices, including the necessary consumables and reagents to get started:

- Invitrogen™ Bolt™ Welcome Pack (including Mini Gel Tank)
- Invitrogen™ iBlot™ 2 Starter Kit
- Invitrogen™ iBind™ Western Starter Kit
- Invitrogen™ iBright™ FL1500 Imaging System

### Western blot analysis in as little as 4 hours







## Antibodies

Search hundreds of thousands of primary and secondary antibodies online to find the quality target you need for your research. Or let our team of antibody production professionals help you reach your custom antibody goals with the services to help you develop a novel polyclonal, monoclonal hybridoma, or recombinant antibody. Thermo Fisher delivers exceptional antibody development solutions from antigen design to purification and screening. Our detailed knowledge of antigen determining factors allows us to develop custom antibodies with superior specificity, affinity, and assay utility. This service helps increase the probability that you will obtain an antibody capable of distinguishing among even highly related proteins within complex mixtures to characterize protein expression patterns using IHC, ICC, IF, FACS, ELISA, western blotting, or immunoprecipitation (IP, Co-IP, ChIP). We also have a team of project managers that can help support licensing and bulk packaging inquiries.

[thermofisher.com/antibodies](https://thermofisher.com/antibodies)

## Laboratory essentials

Thermo Scientific™ instruments and consumables are the essential infrastructure of science. From the laboratory to the field, our products are the foundation of scientific innovations taking place everywhere. As a trusted partner to scientists, clinicians, and engineers around the world, we simplify processes and enable discovery with our laboratory products and solutions. And that means as a customer you can focus on what you do best—making breakthroughs that improve and save lives.



[thermofisher.com/cryotubes](https://thermofisher.com/cryotubes)

### Thermo Scientific™ Matrix™ 2D tubes

Rely on Matrix 2D tubes to help ensure your samples are easy to locate and identify:

- Unique—no duplicates
- Laser-etched—permanently affixed to the tube for traceability and will not fall off
- High-contrast—allows for fast scanning



### Thermo Scientific™ Nalgene™ Rapid-Flow™ filters

Increase sample protection and filtration efficiency:

- Process and store volumes from 50 mL to 1 L
- Available in PES, SFCA, NYL, CN
- Provides fast flow rates and high throughput

[thermofisher.com/filtration](http://thermofisher.com/filtration)



### Thermo Scientific™ Multidrop™ dispensers

Versatile features and flexibility with excellent performance:

- Run tests faster by filling plates in seconds
- Enables excellent precision and reproducibility

[thermofisher.com/multidrop](http://thermofisher.com/multidrop)



### Thermo Scientific™ ALPS5000™ Automated Plate Heat Sealer

Fast, reliable, and quiet automated plate:

- Quickly and easily seal both Thermo Scientific™ KingFisher™ and PCR plates
- Precise control over sealing parameters to ensure repeatability and a consistent seal
- Up to 2 plates per minute can be sealed in hand-fed, benchtop, or high-throughput robotic applications

[thermofisher.com/alps5000](http://thermofisher.com/alps5000)

## Thermo Scientific™ Heracell™ Vios™ System 160i CO<sub>2</sub> Incubator with Cell Locker™ System

Combine the Heracell Vios CO<sub>2</sub> incubator recovery and contamination-prevention technologies with the Cell Locker System for these additional benefits:

- Stability—preserve an undisturbed environment in Cell Locker Systems when neighboring chamber is opened, minimizing sample variability
- Protection—security from cross contamination due to culture segregation within one incubator
- Flexibility—organize cultures by separating multiple users, cell types, or projects



[thermofisher.com/cellocker](http://thermofisher.com/cellocker)



[thermofisher.com/lynx](http://thermofisher.com/lynx)

## Thermo Scientific™ Sorvall™ Lynx™ superspeed centrifuge series

Powerful technologies with breakthrough simplicity:

- Improved ergonomics and performance with lightweight Thermo Scientific™ Fiberlite™ carbon fiber rotors
- Assistance with GMP compliance with secure access and data logging via an intuitive touchscreen interface and Thermo Scientific™ Centri-Log™ Plus software
- Application flexibility and safe, easy rotor exchange with Thermo Scientific™ Auto-Lock™ technology



[thermofisher.com/cliptip](https://thermofisher.com/cliptip)

## Thermo Scientific™ E1-ClipTip™ Electronic Pipettes

Optimum functionality for every application:

- Simplify and speed up pipetting with this electronic programmable pipette
- Pipette between labware formats 8x faster using adjustable tip spacing

## Thermo Scientific™ Herasafe™ and Maxisafe™ 2030i biological safety cabinets

Protection that never takes a day off with the following outstanding features:

- Smartflow Plus—unique airflow system that automatically balances velocities to maintain operator and sample protection
- Auto-adjustable Cross Beam UV—automatically compensates for diminished bulb intensity due to age and extends the cycle time to ensure consistent dose; cross beam illuminates the entire worksurface, without shadows for a thorough disinfection of the chamber
- Intuitive touchscreen interface—provides assurance that the BSC is managing safety conditions autonomously, and is simple and intuitive to use, allowing our customers to fully focus on demanding applications and precision science



[thermofisher.com/bsc](https://thermofisher.com/bsc)



[thermofisher.com/benchtopcentrifuges](https://thermofisher.com/benchtopcentrifuges)

## Thermo Scientific™ general purpose centrifuge series

Performance simplified at every turn:

- Intuitive touchscreen interface for fast and simple programming
- Application flexibility and safe, easy rotor exchange with Auto-Lock technology
- Improved ergonomics with long-lasting Fiberlite carbon fiber rotors
- Third-party verified biocontainment with glove-friendly Thermo Scientific™ ClickSeal™ biocontainment lids



## Thermo Scientific™ Savant™ SpeedVac™ Universal Vacuum Systems

One-click evaporation for removing solvents and concentrating samples while maintaining sample integrity.

- Up to 12 programs for efficient operation
- USB port to download live data
- Choice of kits or modular SpeedVac units to suit the customer and application

[thermofisher.com/speedvac](http://thermofisher.com/speedvac)



## Thermo Scientific™ Solaris™ 2000 and 4000 Open Air Orbital Shakers

Solaris orbital shakers provide a new standard for reliability and technical innovation.

- Extremely reliable heavy-duty mechanism supported by industry-leading warranty
- User programmability for easy setup and reproducibility
- Connectivity-enabled for easy monitoring of operational parameters

[thermofisher.com/shakers](http://thermofisher.com/shakers)



## Thermo Scientific™ TSX Series Ultra-Low Freezers

Highest protection and sustainability standards for ultra-low temperature storage.

- High-performance temperature control—TSX V-drive provides the temperature control to meet high-level temperature validation requirements

[thermofisher.com/tsx](http://thermofisher.com/tsx)



## Diagnostic and packaging products

When you need a global partner to help provide diagnostic and packaging solutions with worldwide support, Thermo Fisher Scientific is ready to be that partner. We can provide quality, off-the-shelf offerings or a solution designed specifically for you. Our out-of-the-box and made-to-order diagnostic and packaging products include:

- Thermo Scientific™ Samco™ transfer pipettes
- Thermo Scientific™ Nunc™ well plates
- Thermo Scientific™ Nalgene™ packaging and diagnostic bottles

[thermofisher.com/productiondiagnostics](http://thermofisher.com/productiondiagnostics)

## Thermo Scientific™ Orion Star™ A211 Benchtop pH Meter

- Informative, easy-to-read backlit graphic display with clear on-screen instructions simplifies operation
- Thermo Scientific™ Orion™ ROSS electrodes provide the optimum choice for stability, rapid response, and accurate pH measurements
- Eliminate the need for magnetic stir bars using the meter-controlled stirrer probe



[thermofisher.com/water](http://thermofisher.com/water)



## Thermo Scientific™ Barnstead™ GenPure™ Pro Water Purification System

Take control of your laboratories ultrapure water.

- Volumetric dispensing for total control of your needed samples
- RNA- and DNA-free water, true built-in ultrafiltration membrane for total confidence in sample safety

[thermofisher.com/waterpurification](http://thermofisher.com/waterpurification)



## Thermo Scientific™ Precision™ Water Baths

Precision general-purpose water baths are rugged, high-performance water baths.

- Small footprint
- Icon-based graphical display
- Prevent contamination with Gibco™ Lab Armor™ Beads

[thermofisher.com/precisionbaths](http://thermofisher.com/precisionbaths)

## Outsourcing services

We provide specialized, reliable, and high-quality outsourcing solutions for customers who don't have the capacity, time, or resources to handle a project in-house.

- Optimize your workflow with new technologies by accessing the expansive technological expertise of the R&D scientists who developed our kits
- Expedite your research and development by accessing our robust global network of lab spaces engaged in cutting-edge innovation
- Minimize risk in your pipeline by placing your projects with our team of dedicated scientific project managers that enable quality and on-track delivery

**Leverage our experience in lab essentials as a powerful resource to augment your research team**—from routine experiments to the most recent and innovative techniques.



### Fast-track your timelines

Our dedicated and focused project management team will help accelerate your time to discovery via a global network of R&D support.

### Decrease FTE hands-on time

Free up your skilled R&D scientists (and lab space) from routine everyday tasks, allowing them to focus on strategically important initiatives.

### Access new technologies and expertise

Benefit from connections to unique skill sets and specialized resources. Our R&D breakthroughs are translated into service offerings that will help you achieve your goals.

We can tailor workflows for all research projects, including:

- Vaccines—gene to protein, cell line production, immunoassays, custom peptides, and custom antibody production
- Small molecules—assay and cellular assay technologies, biochemical and cell-based profiling, loss-of-function screening, genome editing, library screening, drug metabolism and drug safety, oligonucleotides, and microarray analysis
- Immunotherapy—immunoassays, custom antibody production, and custom peptides
- Gene therapy—loss-of-function screening, stem cell services, and genome editing
- Cell therapy—stem cell services, cell line characterization, and genome editing
- Biologics—gene to protein, cell line production, immunoassays, custom peptides, and genome editing
- Biomarkers—loss-of-function screening, custom peptides, immunoassays, custom antibody production, transcriptome profiling, and genotyping analysis

Find out more at [thermofisher.com/customservices](https://thermofisher.com/customservices)





## Custom manufacturing and commercial supply

As the world's leading supplier of reagents and instruments for molecular biology, cellular imaging, synthetic biology, and protein sciences, we also offer the most comprehensive technology and product portfolio for use by companies in developing next-generation molecular testing and immunodetection assays. Leverage our superior combination of quality, global distribution, and commercial services and support so you can maximize your efficiency and scale while minimizing risk, and bring your product to market faster.

### Accelerate your assay development and kit manufacturing

Creating a high-performing, competitively positioned assay is demanding and challenging. We understand this challenge from our work with leading biotech companies who face many of the same difficulties you do. By choosing us, you gain more than just a partner—you'll have an experienced team committed to your success at every stage of the product development and commercialization process.

## Commercial supply capabilities

### Customization

From assay design to workflow optimization—whatever your needs, our custom services team is there for you, including:

- Custom format and formulation with in-process testing
- Custom functional testing (e.g., bridging studies, verification testing, and stability studies)
- Packaging, labeling, and kit production
- Lyophilization

### Superior quality

Don't cut corners when it comes to quality. Bring your vision into being in our state-of-the-art manufacturing sites. Your product will be subjected to rigorous testing to ensure lot-to-lot consistency and reproducibility with the following compliance:

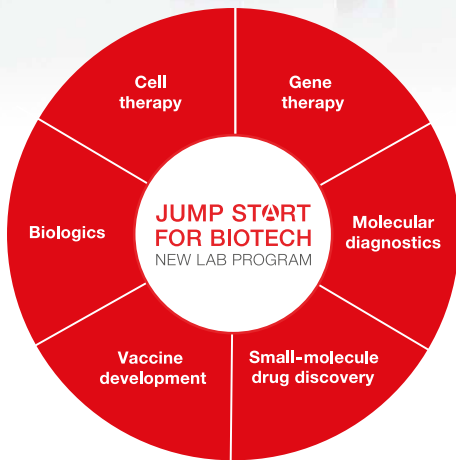
- Certified quality systems with ISO 9001, ISO 13485, and ISO 14001 status
- Six Sigma and Lean Manufacturing processes
- Manufacturing and filling within facilities that meet 100,000 (class D) clean room standards

### Robust security of supply

Partnering with us will help ensure the security of your raw material supply. We have strong safeguards in place to help you reduce risk and avoid delays and setbacks in manufacturing, including:

- Advanced change control notifications
- A global manufacturing footprint
- Comprehensive controls over raw materials and processes
- Confidentiality

Find out more at [thermofisher.com/oem](https://www.thermofisher.com/oem)



## Jump Start for Biotech: new lab program

Jump Start for Biotech is a free program created to get your new lab up and running with leading-edge products organized by therapeutic and diagnostic development workflows. Gain access to discounts and resources to leverage as you develop ground-breaking therapeutics and diagnostics.

### Specialized products for end-to-end therapeutic and diagnostic development

The program includes resources designed for biotech companies:

- Webinars
- Brochures and checklists
- Learning centers
- Special discounts

**You are eligible for the free program if you are:**

- Opening a new lab within your institution or company
- Moving your lab to a new space
- Starting a new company
- Directed to the program by your sales representative

Find out more at [thermofisher.com/biotechjumpstart](https://www.thermofisher.com/biotechjumpstart)

# Notes



 Find out more at [thermofisher.com/biotechessentials](https://thermofisher.com/biotechessentials)

**For Research Use Only. Not for use in diagnostic procedures.** © 2021 Thermo Fisher Scientific Inc. All rights reserved. All trademarks are the property of Thermo Fisher Scientific and its subsidiaries unless otherwise specified. AlphaScreen is a trademark of PerkinElmer, Inc. NanoBRET is a trademark of Promega Corporation. EurekaScan is a trademark of Cellomics, Inc. TaqMan is a registered trademark of Roche Molecular Systems, Inc., used under permission and license. Microsoft and Windows are trademarks of Microsoft Corporation. Illumina is a trademark of Illumina, Inc. Q5 is a trademark of New England Biolabs, Inc. PrimeSTAR is a trademark of Takara-Clontech Laboratories, Inc. Merck is a trademark of Merck KGaA. KAPA HiFi HotStart is a trademark of Roche Inc. Qiagen and HotStar are trademarks of Qiagen GmbH. **COL014632 0521**