

# life Lab

PRODUCTS, INFORMATION, AND SCIENTAINMENT  
ISSUE 14 | JANUARY 2016

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# A LETTER FROM RICHARD MILNE

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Dear Life in the Lab Reader,

In 2015, we worked hard to integrate our Life Technologies brand within Thermo Fisher Scientific. We rebranded the look and feel of our website and updated the URL so that the address is now [thermofisher.com](http://thermofisher.com)

Our website is one of the main ways that we are able to serve scientists around the world. Over 500,000 people visit the site every week, where they access more than 100,000 products in 9 different languages. We do our utmost to put the latest information, products, promotions, documentation, and support resources online, so that wherever you are, you can access the site and get the support and content you need.

But the vision for our online presence is to offer much more than just a website. One of the most exciting areas in our industry is the intersection between biology and computing science. As instruments generate more data and analysis needs become more intensive, we are harnessing the power of virtually unlimited computing power in the cloud to provide new services—storage, management, collaboration, and online informatics. Thermo Fisher Cloud is our latest offering in our digital space, providing bespoke scientific applications, connected instruments, and scalable storage. It's free to access using your [thermofisher.com](http://thermofisher.com) login, and you can even get 10 GB of free storage when you register.

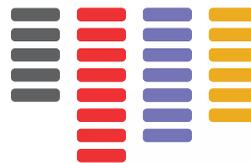
Thank you for using [thermofisher.com](http://thermofisher.com)—we hope you continue to rely on our site and that you find the enhancements we are making to support your work valuable. If you have any comments or suggestions, please use the 'Give Feedback' button on the site. We read and action every piece of feedback we receive.

Richard Milne

## EVER WISH YOU WERE

## SCALABLE?

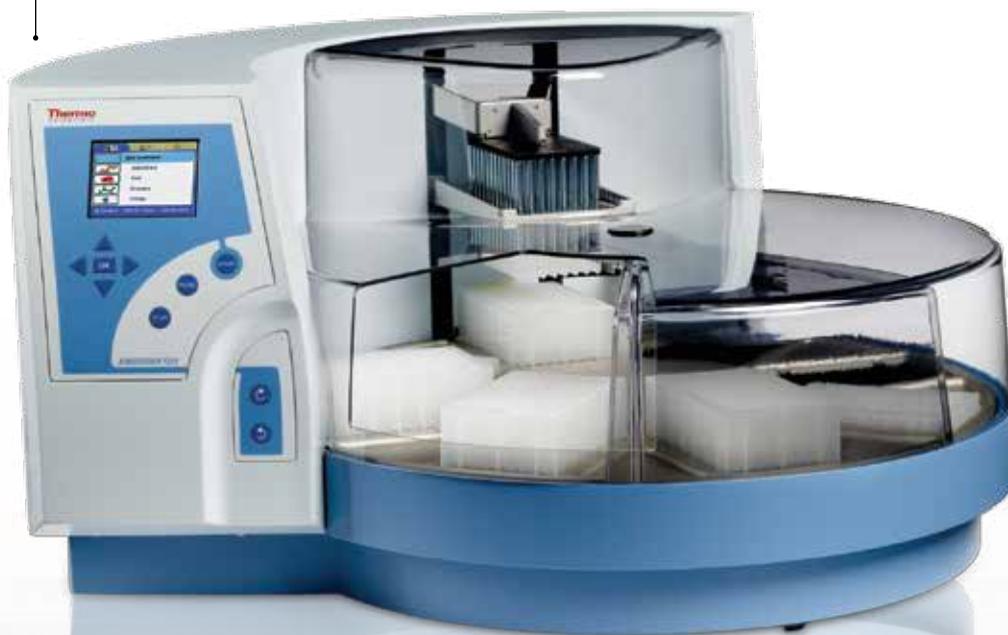
With the KingFisher Magnetic Particle Processor, you are



### SCALABLE NUCLEIC ACID AUTOMATION IS HERE

The Thermo Scientific™ KingFisher™ Magnetic Particle Processor helps increase the speed and accuracy of your nucleic acid purification, introducing you to revolutionary magnetic particle separation technology. This versatile, automated particle processor for DNA/RNA, protein, or cell purification can be done from virtually any source – with the flexibility of two devices that allow you to scale from 6-96 samples in one run.

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### INTRODUCING SCALABLE ISOLATION OF TOTAL RNA

The Applied Biosystems™ MagMAX™ *mirVana*™ Total RNA Isolation Kit is designed for isolation of total RNA, including small RNAs such as microRNAs, from a wide variety of sample matrices. The kit uses Applied Biosystems™ MagMAX™ magnetic-bead technology, enabling reproducible recovery of high-quality RNA that is suitable for a broad range of applications, including Applied Biosystems™ TaqMan™ miRNA Detection Assays.

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

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25%**

#### On RNA preparation

Offer expires 30th April 2016. Terms and conditions apply.

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Contact your local Fisher Scientific sales representative today for more information and a quote.



## INTRODUCING SCALABLE ISOLATION OF CIRCULATING CELL FREE DNA

The Applied Biosystems™ MagMAX™ Cell-Free DNA Isolation Kit is designed for enrichment of circulating cell-free DNA (cfDNA) and optimised for use with biological samples such as serum and plasma. The kit is based on MagMAX magnetic-bead technology, enabling reproducible recovery of high-quality DNA that is suitable for a broad range of applications, including real-time PCR, digital PCR, and next-generation sequencing.

## SCALABLE ISOLATION OF CIRCULATING NUCLEIC ACID FROM PLASMA, SERUM, AND URINE

cfDNA recovery is challenging due to the limited amount present in cell-free samples. The MagMAX Cell-Free DNA Isolation Kit addresses this with its magnetic bead-based purification format which allows you to easily process a wide range of sample input volumes, from 500 µL to 10 mL. When used with either a Thermo Scientific™ KingFisher™ Duo Prime or Thermo Scientific™ KingFisher™ Flex Magnetic Particle Processor, 6 to 24 plasma/serum samples of 2 mL input volume can be isolated at once. Alternatively, samples can be processed manually with the use of a magnetic stand.

## MUST SEE EXOSOME VIDEO

A must if you're even remotely interested in exosomes research. These key talks from the leaders in the field will make you feel like you were at the International Society for Extracellular Vesicles conference (ISEV 2015).

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**Francis S. Collins, MD, PhD**  
Director, NIH



**Xandra Breakefield, PhD**  
Professor, Harvard University



**Jan Lötval, MD, PhD**  
Professor, Gothenburg University



**Fred Hochberg, MD, PhD**  
Professor, Harvard University



**Alan Sachs, MD, PhD**  
CSO, Thermo Fisher Scientific

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✓ Panel Discussion

✓ Plenary Talks

✓ Meet The Experts

## PRODUCTS FOR EXOSOME RESEARCH

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- Exosome cargo isolation and analysis
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# WATCH YOUR FINGERS

You're about to handle the sharpest new Invitrogen technologies

**I** Up to 100X higher yield  
(With degraded samples)

**II** Reduced  $C_t$  values  
(By as much as 8)

## TOP IV REASONS TO LOVE THE BEST SUPERSCRIPT RT YET

Invitrogen™ SuperScript™ IV Reverse Transcriptase is the RT enzyme designed so it won't be outperformed.

**III** As little as 10-minute reaction time

**IV** Super robust enzyme



Watch the video  
ROBUST cDNA SYNTHESIS WITH SUPERSCRIPT IV  
REVERSE TRANSCRIPTASE  
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## NEW PLATINUM TAQ HOT-START FORMATS

Accelerate your PCR experiments with new convenient formats that enable room temperature reaction setup, direct gel loading, high specificity, and increased yields.

**FREE  
SAMPLE**

Of the NEW Invitrogen™ Platinum™ Hot Start PCR 2X Master Mix and Invitrogen™ Platinum™ Green Hot Start PCR 2X Master Mix

10-reaction sample size. Terms and conditions apply.

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## ADVANCE YOUR miRNA RESEARCH with TaqMan Advanced miRNA Assays

Our new Applied Biosystems™ TaqMan™ Advanced miRNA Assays feature superior sensitivity for real-time PCR and a streamlined workflow with new universal RT.

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

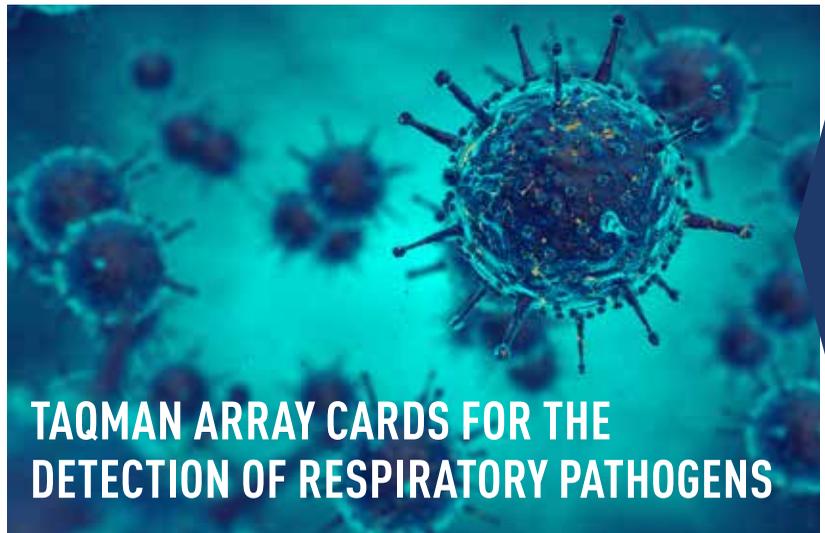
NEW



## BE SURPRISED HOW EASY AND AFFORDABLE HIGH PERFORMANCE REAL-TIME PCR CAN BE

The Applied Biosystems™ StepOnePlus™ Real-Time PCR System is a factory-calibrated qPCR system that makes it easy to step up to high performance qPCR.

- Fast & standard thermal cycling for highest flexibility
- Easy 3-click option to quickly start a run
- Recover your data even if the plate is incorrectly labelled
- Only system that offers Applied Biosystems™ VeriFlex™ Block technology for precise temperature control and enhanced PCR functionality



## TAQMAN ARRAY CARDS FOR THE DETECTION OF RESPIRATORY PATHOGENS

### TaqMan Array Cards detect more respiratory pathogens than conventional methods

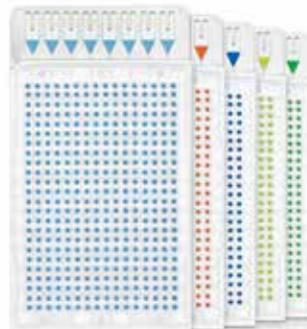
Researchers from Belgium and the UK used Applied Biosystems™ Custom TaqMan™ Array Cards for the detection of respiratory pathogens in a retrospective study [1]. These cards were designed to detect 24 different viruses, eight bacteria, and two fungi. The authors report that the custom designed cards identified viral pathogens in more samples than conventional testing.

**Review the paper at:** [www.ncbi.nlm.nih.gov/pubmed/26364158](http://www.ncbi.nlm.nih.gov/pubmed/26364158)

TaqMan Array Cards are 384-well microfluidic cards that enable you to perform 384 simultaneous real-time PCR reactions without the need for liquid-handling robots or multi-channel pipettors to load samples. The assays are preloaded into each well of the card and are ready for use immediately upon delivery.

Compared to other technologies, Custom TaqMan Array Cards provide an open and flexible format enabling you to design and customise an assay layout specific to your needs.

1. Steensels et al. (2015) J Clin Virol 72:36-41.



**Custom TaqMan Array Cards can be designed by researchers using any of our 50,000 inventoried Applied Biosystems™ TaqMan™ Assays.**

PCR

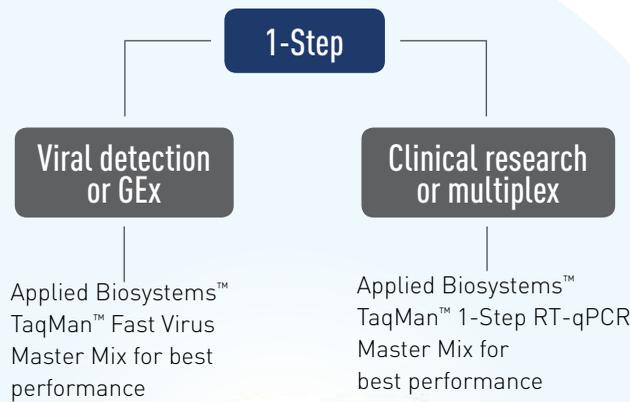
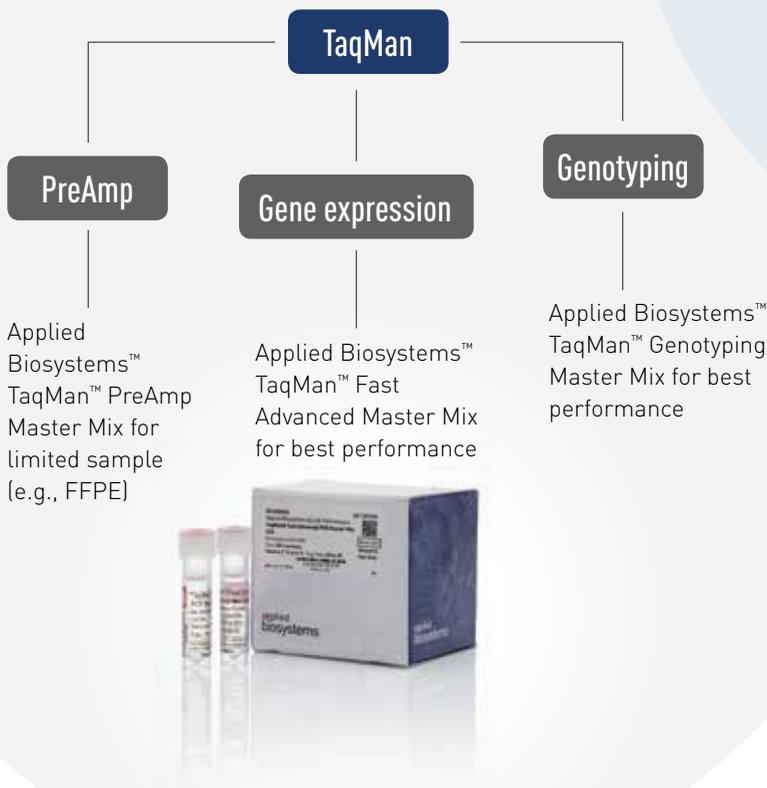
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**25% on RNA extraction**



## WHEN EVERY STEP **NEEDS TO BE** PRECISE

Try the Applied Biosystems™ ProFlex™ PCR System

- 3 DIFFERENT USERS.
- 3 DIFFERENT EXPERIMENTS.
- 3 DIFFERENT TIMES.

All connected remotely to one high-performing and flexible instrument, built for today's PCR laboratory.

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LOVE IT**

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## PRECISE, QUICK AND ROBUST

Find out more about Applied Biosystems™ thermal cycler quality. Check our PCR application notes at [thermofisher.com/tcappnotes](http://thermofisher.com/tcappnotes)



### NEED PLATES?

The optical microplates for higher-throughput genetic analysis applications are here— Applied Biosystems™ MicroAmp™ EnduraPlate™ optical microplates.

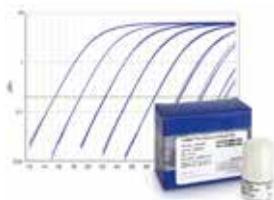
- Automation-ready, barcoded, rigid
- 5 colours for easy well identification
- Packs of 20 or cases of 500

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

**30%** on reverse transcriptase



**45%** on SYBR master mixes

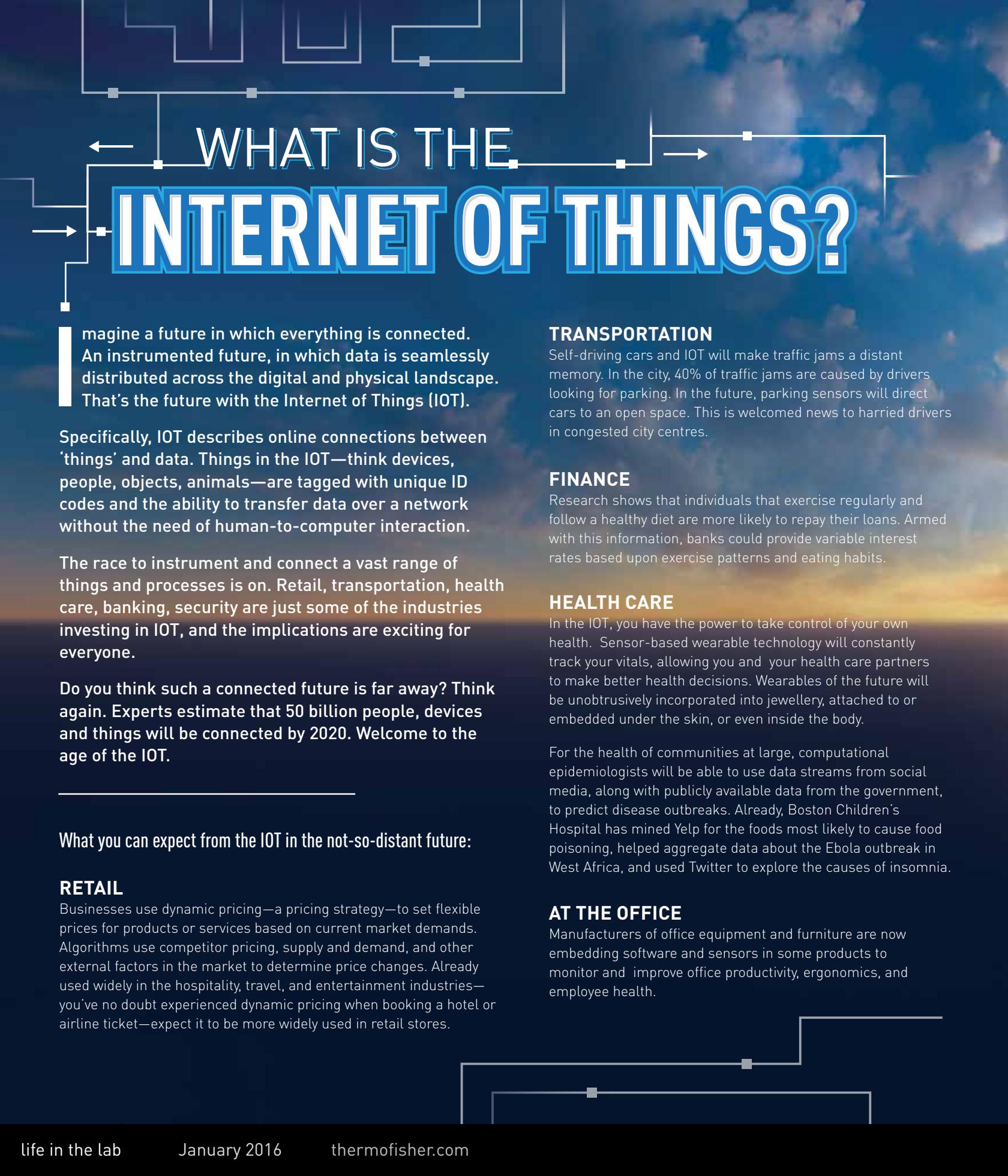


**20%** on TaqMan Gene Expression Assays



**50%** on qPCR plastics





# WHAT IS THE INTERNET OF THINGS?

Imagine a future in which everything is connected. An instrumented future, in which data is seamlessly distributed across the digital and physical landscape. That's the future with the Internet of Things (IOT).

Specifically, IOT describes online connections between 'things' and data. Things in the IOT—think devices, people, objects, animals—are tagged with unique ID codes and the ability to transfer data over a network without the need of human-to-computer interaction.

The race to instrument and connect a vast range of things and processes is on. Retail, transportation, health care, banking, security are just some of the industries investing in IOT, and the implications are exciting for everyone.

Do you think such a connected future is far away? Think again. Experts estimate that 50 billion people, devices and things will be connected by 2020. Welcome to the age of the IOT.

---

What you can expect from the IOT in the not-so-distant future:

## RETAIL

Businesses use dynamic pricing—a pricing strategy—to set flexible prices for products or services based on current market demands. Algorithms use competitor pricing, supply and demand, and other external factors in the market to determine price changes. Already used widely in the hospitality, travel, and entertainment industries—you've no doubt experienced dynamic pricing when booking a hotel or airline ticket—expect it to be more widely used in retail stores.

## TRANSPORTATION

Self-driving cars and IOT will make traffic jams a distant memory. In the city, 40% of traffic jams are caused by drivers looking for parking. In the future, parking sensors will direct cars to an open space. This is welcomed news to harried drivers in congested city centres.

## FINANCE

Research shows that individuals that exercise regularly and follow a healthy diet are more likely to repay their loans. Armed with this information, banks could provide variable interest rates based upon exercise patterns and eating habits.

## HEALTH CARE

In the IOT, you have the power to take control of your own health. Sensor-based wearable technology will constantly track your vitals, allowing you and your health care partners to make better health decisions. Wearables of the future will be unobtrusively incorporated into jewellery, attached to or embedded under the skin, or even inside the body.

For the health of communities at large, computational epidemiologists will be able to use data streams from social media, along with publicly available data from the government, to predict disease outbreaks. Already, Boston Children's Hospital has mined Yelp for the foods most likely to cause food poisoning, helped aggregate data about the Ebola outbreak in West Africa, and used Twitter to explore the causes of insomnia.

## AT THE OFFICE

Manufacturers of office equipment and furniture are now embedding software and sensors in some products to monitor and improve office productivity, ergonomics, and employee health.



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ONE-STEP CLONING OF  
PCR PRODUCTS

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SMALL, REPETITIVE FRAGMENTS  
SIMULTANEOUSLY

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I WANT TO SHUTTLE MY  
GOI BETWEEN MULTIPLE  
EXPRESSION VECTORS  
WITHOUT RE-CLONING

GATEWAY CLONING TECHNOLOGY  
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GENEART SEAMLESS CLONING AND ASSEMBLY

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ONE CONDUCTOR...  
A SYMPHONY OF ENZYMES

I WANT A ONE-BUFFER, ONE-PROTOCOL SOLUTION

NEW

Introducing Invitrogen™ Anza™ Restriction Enzyme Cloning System

- 100% activity and functionality in a single buffer
- One digestion protocol for all enzymes and all DNA types
- Complete digestion in 15 minutes, with flexibility of overnight digestion without star activity

Learn more or request a free sample\* of selected Anza enzymes at:  
[thermofisher.com/anza](http://thermofisher.com/anza)

\*See back cover for terms and conditions

# CLONE?

From traditional cloning to next-generation synthetic biology techniques, time-saving and easy-to-use Invitrogen™ GeneArt™, Invitrogen™ Gateway™ and Invitrogen™ Topo™ products help propel your research forward

25% on TOPO cloning kits



25% on Gateway and Seamless cloning kits



25% on Competent cells



25% on Plasmid purification kits





**NEW**

## Working with exosomes/microvesicles?

Ultracentrifuging your FBS to remove exosomes can remove essential components that cells need to grow consistently.

Gibco™ Exosome-Depleted FBS is an ultrapure FBS that:

- utilises a manufacturing process that helps ensure all the essential components are maintained for optimal cell growth
- offers >90% depletion of exosomes
- helps save >18 hours—ultracentrifugation is not required

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

## Strong dissociation, yet gentle on cells

Gibco™ TrypLE™ Express is a recombinant cell-dissociation enzyme that replaces porcine trypsin. TrypLE Express is not only more gentle on cells but it can be stored at room temperature—no need to freeze/thaw.

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



## Give your cells a vacation

Gibco™ Recovery™ Cell Culture Freezing Medium is a complete, ready-to-use freezing medium for cryopreservation of a wide variety of mammalian cells, including CHO-S, CHO-K1, HEK 293, Jurkat, and NIH 3T3.

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



## Keep your cells healthier longer

Gibco™ GlutaMAX™ Supplement is an alternative to L-glutamine, with increased stability that helps improve cell health. GlutaMAX Supplement is suitable for both adherent and suspension culture of mammalian cells, with no adaptation required.

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



# WELCOME TO THE FUTURE OF TRANSIENT EXPRESSION

## Gibco ExpiCHO Expression System

### Achieve 3 g/L protein yields in a transient CHO system

Switching from 293 to CHO cells during drug development may cost you precious time and create uncertainty. Now there's a better way. The new Gibco™ ExpiCHO™ Expression System provides the highest protein yields possible in a transient system. That means you can always work in CHO cells, starting from discovery.

“The ExpiCHO system helps speed up our developmental timelines by eliminating the need to have different hosts for transient versus stable expression. This eliminates a key quality risk when we transition from research into development.”

Neeraj Kohli  
associate director at Merrimack Pharmaceuticals.

### Superior expression levels compared to existing transient systems

The ExpiCHO Expression System brings together a high-expressing CHO cell line, a chemically defined animal origin-free culture medium, an optimised culture feed, and a high-efficiency transfection reagent that synergistically act to provide titers as much as 160x higher than the Gibco™ FreeStyle™ CHO Expression System and 4x higher than the Gibco™ Expi293™ Expression System. Expression levels of up to 3 g/L were achieved for human IgG proteins (Figure 1).

Find out more at [thermofisher.com/expicho](http://thermofisher.com/expicho)

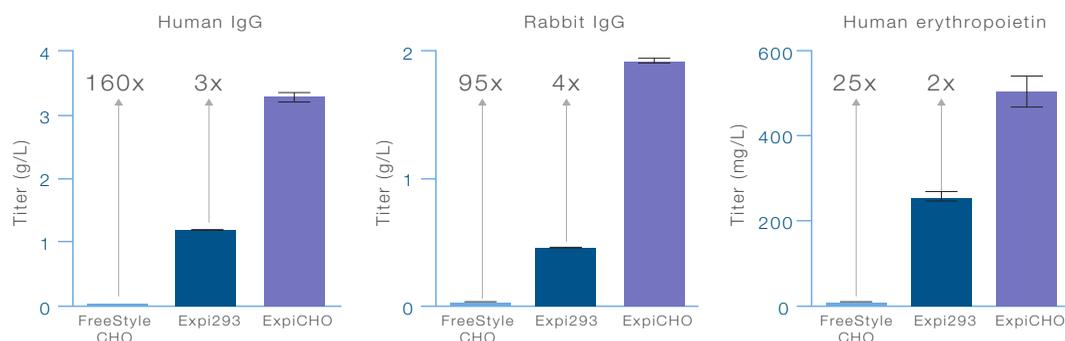
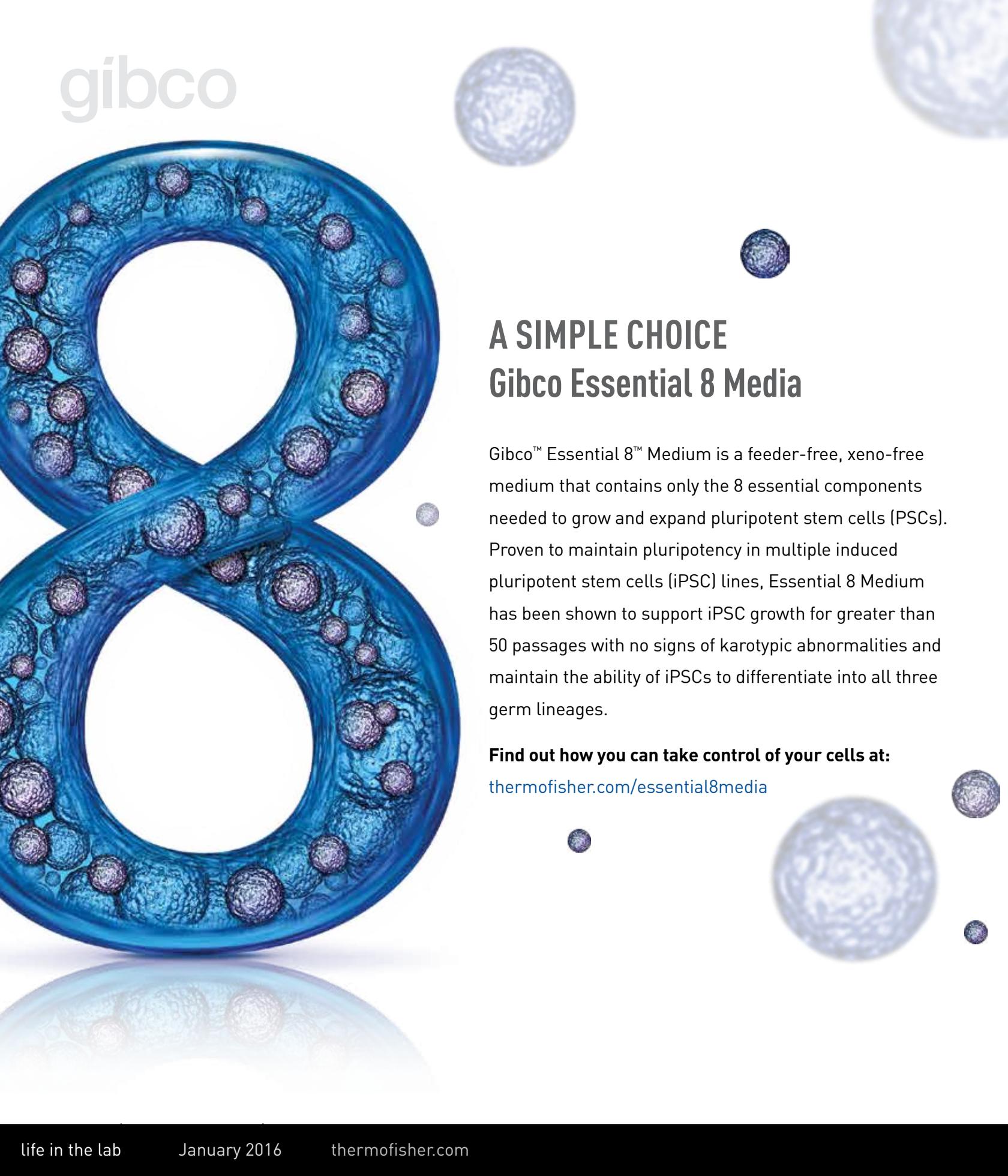


Figure 1. Recombinant protein titers in FreeStyle CHO, Expi293, and ExpiCHO systems. Expression levels of human IgG, rabbit IgG, and erythropoietin in the FreeStyle CHO, Expi293, and ExpiCHO transient expression systems are shown. Titers in the ExpiCHO system range from 25x to 160x of those of the FreeStyle CHO system, and 2x to 4x of those obtained using the Expi293 system.



gibco

## A SIMPLE CHOICE Gibco Essential 8 Media

Gibco™ Essential 8™ Medium is a feeder-free, xeno-free medium that contains only the 8 essential components needed to grow and expand pluripotent stem cells (PSCs). Proven to maintain pluripotency in multiple induced pluripotent stem cells (iPSC) lines, Essential 8 Medium has been shown to support iPSC growth for greater than 50 passages with no signs of karyotypic abnormalities and maintain the ability of iPSCs to differentiate into all three germ lineages.

**Find out how you can take control of your cells at:**  
[thermofisher.com/essential8media](http://thermofisher.com/essential8media)



## ESSENTIAL 8 FLEX MEDIUM

**Manage your PSC culture schedule and minimise 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 truly weekend-free culture feeding schedule.

## WHERE WOULD YOU LIKE TO GAIN CONTROL?

Choose the Essential medium that's right for you.



### ESSENTIAL 8 MEDIUM

**Our most defined and consistent feeder-free medium for iPSCs**

Determine what goes in and what stays out of your PSC cultures with a medium that contains only the 8 essential ingredients required to consistently grow and maintain PSCs, while minimising variability.



### ESSENTIAL 6 MEDIUM

**Enables more efficient embryoid body (EB) differentiation**

When used in conjunction with Essential 8 Medium, Gibco™ Essential 6™ Medium supports robust EB formation.



### ESSENTIAL 8 MEDIUM + REVITACELL SUPPLEMENT

**Control the level of stress on your cells**

Via the combination of Essential 8 Medium and Gibco™ RevitaCell™ Supplement, nurture your cells through difficult, stressful transitions, including single cell passaging and gene editing.

invitrogen

Innovative instruments, reagents, antibodies, and software—all powered by Invitrogen™ reagents

# FLOW CYTOMETRY



**SPEED THAT MATTERS:  
10x FASTER, SAME  
DATA QUALITY**

MODULAR DESIGN

FAST DETECTION SPEED

DISTINCTIVE ACQUISITION AND ANALYSIS SOFTWARE

CONVENIENT SIZE

## EXPERIENCE WOW! CYTOMETRY

Do you assess a lot of cells to get the data you need? Run dilute, precious, or large volume samples? Invitrogen™ Attune™ NxT Flow Cytometer is the only one that can run at 35,000 events/sec at flow rates up to 1 mL/min.\* All with the same CVs you get at lower speeds. Don't waste time or compromise your data quality.

Take the interactive tour or request a demo at:  
[thermofisher.com/attune](http://thermofisher.com/attune)

## 6-COLOUR, NO-WASH, NO-LYSE, NO COMP, NO KIDDING

In flow cytometry, compensation is critical for success, yet poorly understood. Download this app note to better understand the process of setting up and achieving panel design success in your lab.

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



Download the app note

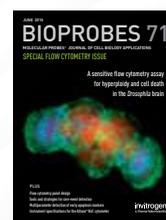
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**Try flow cytometry proof live/dead  
fixable dyes today and save 25%**

Offer expires 30th April 2016.  
Terms and conditions apply.

Find out more at: [thermofisher.com/promointhelab](http://thermofisher.com/promointhelab)

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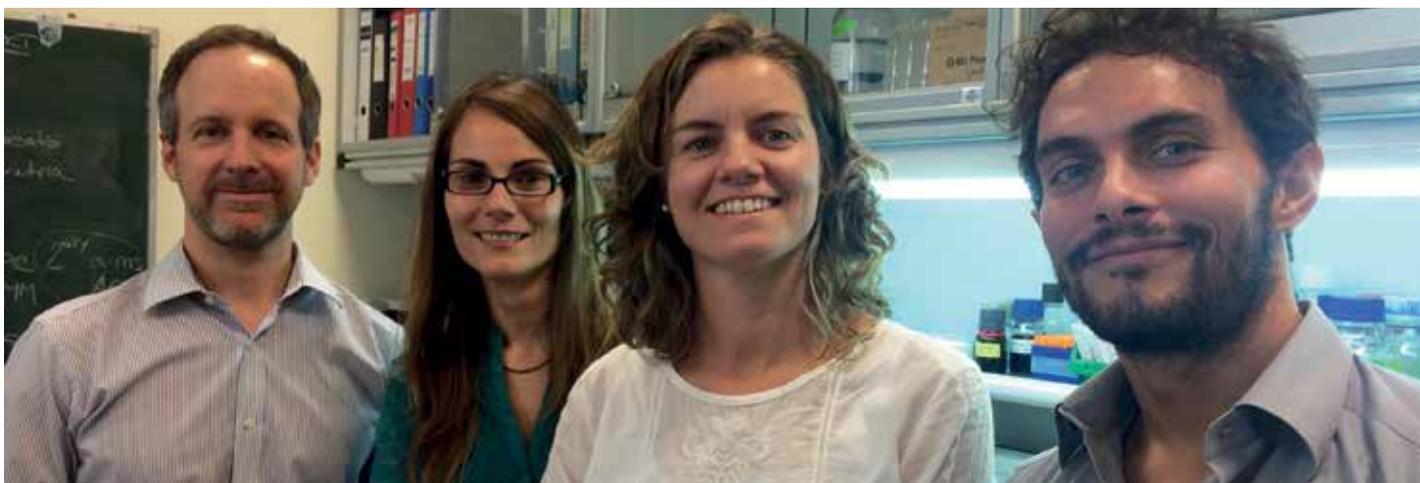
## BioProbes 71

**The Flow Cytometry Issue**

Get your free copy of the latest issue of *BioProbes™ Journal*.

[thermofisher.com/bioprobes71](http://thermofisher.com/bioprobes71)

\*Other cytometers have comparable event rates, but cannot match the flow rates at the same time.



## WE WOULD LIKE TO WELCOME DR. BRUNO SAINZ AND HIS TEAM TO THE ATTUNE NxT FLOW CYTOMETER FAMILY

The winner of the EMEA Invitrogen™ Attune™ NxT Grant 2015 is Doctor Bruno Sainz Jr, PhD (pictured on the left), from the Autónoma University of Madrid, Spain with the project: **“Development of a state-of-the-art liquid biopsy assay for the detection of circulating cancer stem cells fused to macrophages in human blood samples”**.

The grant means that Dr Bruno Sainz is now the proud owner of a 4-laser Invitrogen™ Attune™ NxT Flow Cytometer.

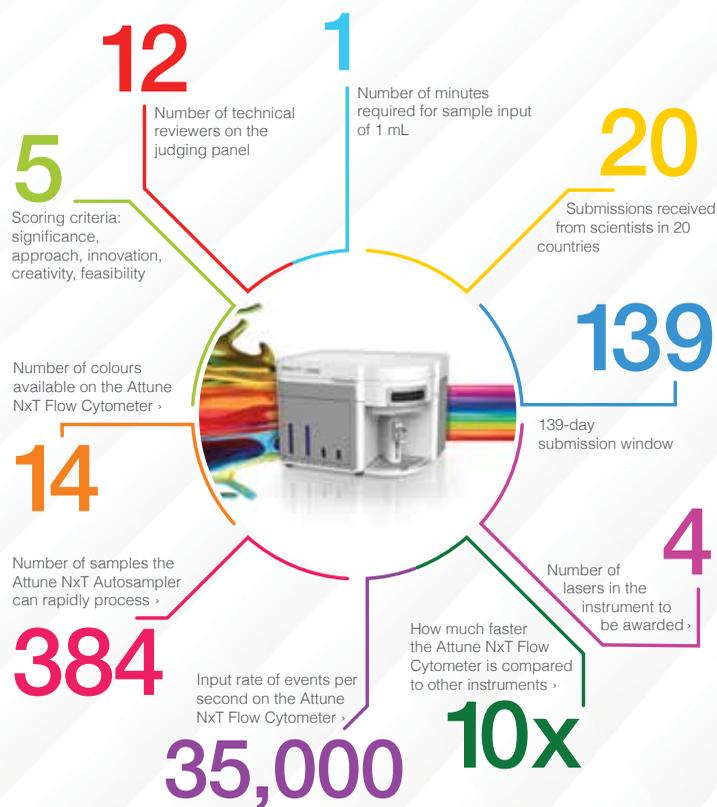
Dr. Sainz explained—“Since the majority of cancer patients die from metastasis, what is desperately needed are efficient and fast methods to detect the cells that cause metastasis, therefore my goal is to develop a simple and easy-to-use novel liquid biopsy methodology for circulating tumour cells identification, based on flow cytometry and the novel autofluorescent phenotype inherent to cancer stem cells across numerous epithelial tumours. Faced with the challenges of traditional hydrodynamic based cytometry technology, including limited complexity and suboptimal detection of rare cell subpopulations, we foresee the Attune NxT Flow Cytometer as the means to overcome these challenges.”

Dr Sainz, who holds the prestigious Ramon and Cajal Investigator title, is a highly recognised scientist in the field of cancer stem cells (CSC) and CSC-mediated tumorigenesis and metastasis. He has published more than 40 peer-reviewed papers on these topics and before being appointed to the Autonomia University in Madrid, worked for the prestigious institutions of Scripps Research Institute, La Jolla, CA and University of Illinois at Chicago, IL.

Watch this space to see the story evolve and find out how Dr. Sainz will use his new Attune NxT Flow Cytometer to advance his research.

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

### The Attune NxT Flow Cytometer grant program by the numbers



invitrogen

# Complete, innovative



## Long shelf-life Tris-glycine gels with 2X sample volume capacity

Invitrogen™ Novex™ WedgeWell™ Tris-Glycine gels are precast mini gels for separation of proteins by polyacrylamide gel electrophoresis (PAGE) allowing the use of Laemmli sample and running buffers. These gels enable high quality performance and separation of a wide range of proteins into well-resolved bands. Novex WedgeWell Tris-Glycine gels are designed for use in our Invitrogen™ Mini Gel Tank.

- **Wedge-shaped wells** —easily load up to 60 µL of sample per well
- **High performance** —excellent protein band resolution and sharpness
- **Improved shelf life** —store gels for up to 12 months at 4°C
- **Fast run conditions** —quickly separate proteins using constant voltage in less than 60 minutes
- **Compatible** with native and denatured protein samples

## Improve the sensitivity of your western blot

Blocking solutions for the best signal and lowest background.

### Thermo Scientific™ StartingBlock™ (PBS) Blocking Buffer

A protein-based blocker formulation in phosphate-buffered saline (pH 7.5) for use in western blotting and ELISA applications.

### Thermo Scientific™ StartingBlock™ (TBS) Blocking Buffer

A protein-based blocker formulation in Tris-buffered saline (pH 7.5) for use in western blotting and ELISA applications. StartingBlock Blocking Buffers are also available with an optimised amount of Tween-20 Detergent to provide the lowest background.

### Thermo Scientific™ SEA BLOCK Blocking Buffer

A steelhead salmon serum in PBS that is especially useful as a blocking agent in western blot using fluorescence as a detection method and/or involving mammalian samples.



SAVE  
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#### On a selection of western blot reagents

Offer expires 30th April 2016. Terms and conditions apply.

Find out more at: [thermofisher.com/promointhelab](http://thermofisher.com/promointhelab)

Contact your local Fisher Scientific sales representative today for more information and a quote.

# Western blot workflow solutions

**Increase signal-to-noise ratio and target band development for better sensitivity.**

## Thermo Scientific™ SuperSignal™ Western Blot Enhancer

When a protein or antigen is difficult to detect because of low abundance or poor immunoreactivity, use of SuperSignal Western Blot Enhancer can significantly reduce background and enhance signal by 3 to 10 fold.

## Our signals are loud and clear

Thermo Scientific™ HRP Chemiluminescent Substrates for longer signal duration and broader detection levels.

Our western blotting substrates have a reputation for delivering excellent performance with high sensitivity and low background.

Allows for multiple exposures to be made in order to obtain the best image

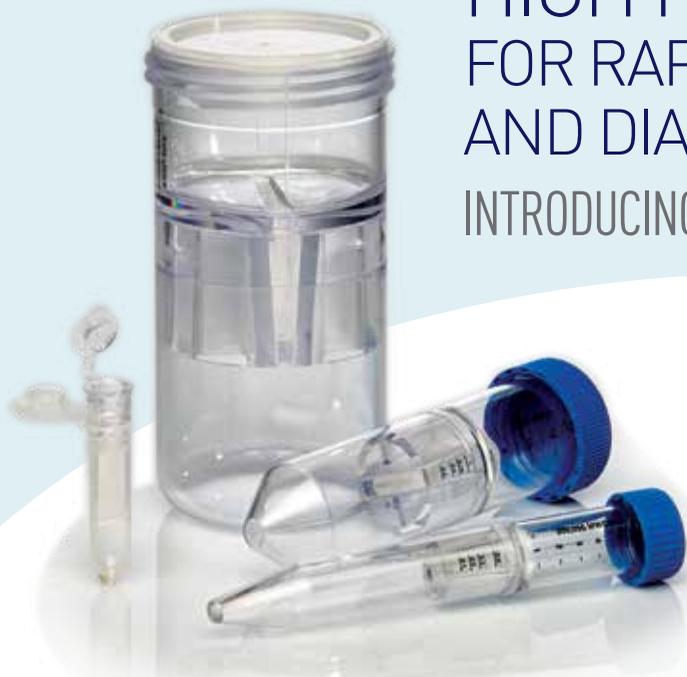
- Blots may be re probed to optimise detection, or to visualise a second protein
- Detects and quantitates a wide range of protein concentrations
- Yields the greatest sensitivity of any available detection method



Learn more at [thermofisher.com/chemisubstrates](http://thermofisher.com/chemisubstrates)

## HIGH PERFORMANCE DEVICES FOR RAPID PROTEIN CONCENTRATION AND DIAFILTRATION

### INTRODUCING OUR NEW LINE OF PROTEIN CONCENTRATORS



Get fast processing and high protein recovery with easy-to-handle Thermo Scientific Protein Concentrators, available in four volume sizes with four molecular weight cutoffs (MWCO)

Thermo Scientific™ Protein Concentrators are disposable devices that are ideal for the concentration, desalting, and buffer exchange of proteins from tissue culture media, antiserum, monoclonal antibody preparations, and chromatography fractions.

The PES membrane in these devices is available in five distinct molecular-weight cutoffs (MWCO) of 3K, 5K, 10K, 30K, and 100K, and can be used for processing sample volumes from 100  $\mu$ L to 100 mL.

- **Rapid processing** —unique design minimises membrane fouling, enabling sample concentration of 10- to 30-fold to be achieved in 5–30 minutes for 10K MWCO, even with particle-laden solutions\*
- **High recovery** —retain >90% of protein samples while removing contaminants or exchanging buffers
- **Convenient** —clear markings, wide sample chamber, and removable filtrate chamber make handling simple and easy

The MWCOs are etched on the sides of the concentrators for easy identification, while a clear window with graduations on the side of each device allows for visual determination of the concentrated sample (retentate) volume.

**The unique design provides reliable and consistent results. Multiple device sizes are available to handle maximum sample volumes of 0.5 mL, 6 mL, 20 mL, and 100 mL.**



**Download the brochure:**  
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\*Device dependent—times may vary for other MWCOs

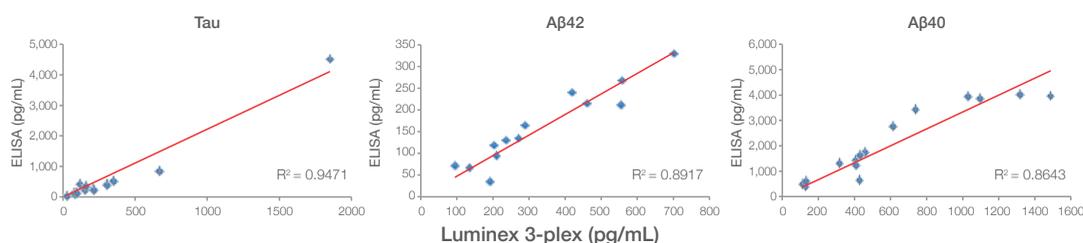
## Introducing the Amyloid beta (A $\beta$ )/Tau Neurodegenerative Human Magnetic 3-plex Panel

Detect A $\beta$ 40, A $\beta$ 42, and tau proteins simultaneously using Luminex™ multiplex assays

Discover a novel multiplex panel to facilitate the success of your Alzheimer's disease research. This kit is uniquely designed for the quantitative determination of A $\beta$ 40, A $\beta$ 42, and total tau in cerebrospinal fluid (also for use with other sample types).

Advantages of our kit include these features:

- Requires only 15  $\mu$ L/well of sample to measure 3 different targets simultaneously
- Rigorously tested for sensitivity, specificity, precision, and lot-to-lot consistency, ensuring reproducibly accurate results
- Produces results comparable to ELISA, but generated more efficiently, rapidly, and with a greater dynamic range



**Correlation of Luminex multiplex panel with ELISAs.** Cerebrospinal fluid was analysed with both the Invitrogen A $\beta$ /Tau Neurodegenerative Human Magnetic 3-plex Panel (Cat. No. LHN0001M) and 3 different Invitrogen ELISA kits (Cat. Nos. KHB3481, KHB3441, and KHB0041). The R<sup>2</sup> values indicate a strong correlation between the sample concentration values obtained using the ELISA and Luminex quantitative methods.

To learn more about our unique Luminex kit, visit [thermofisher.com/neuroluminex](http://thermofisher.com/neuroluminex)  
Have specific technical questions? Email [LuminexFAS@lifetech.com](mailto:LuminexFAS@lifetech.com) for a one-on-one consultation.

## PURIFY with Dr. Frank



**Who is Dr. Frank:** Frank has more than 20 years experience in purifying all sorts of proteins and is passionate about sharing his knowledge with us all.

Send your questions to Frank at [bp@thermofisher.com](mailto:bp@thermofisher.com) and he and his team will do their best to help you further your research.

*Johan: "Hello Frank, in our lab we use quite a number of affinity tags to purify our proteins. In your experience, what is the best affinity tag currently out there?"*

*Dr. Frank: "Hi Johan, all of the traditional affinity tags have positives and negatives associated with them such as chemical waste, price, tag length or are simply not specific enough. We at Thermo Fisher Scientific, in collaboration with the VIB, a life sciences research institute, based in Flanders, Belgium, have tried to take all that information and come up with an affinity tag that is so small and versatile that we believe we actually re-invented the concept of affinity tags. Our tag, which comprises of only 4 amino acids (E-P-E-A) fused at the c-terminus of your target protein, is small and inert and in combination with our, Thermo Scientific™ CaptureSelect™ C-tag affinity resin, provides a powerful platform for purification of almost any protein. Please read the paper from our friends at the Institut Curie, Paris, France showing that it actually outperforms the popular his6-tag."*

More information is available at: [thermofisher.com/ctag](http://thermofisher.com/ctag)

Review paper: <http://www.mdpi.com/2073-4468/3/2/182>

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