

Stem Cell Excellence™

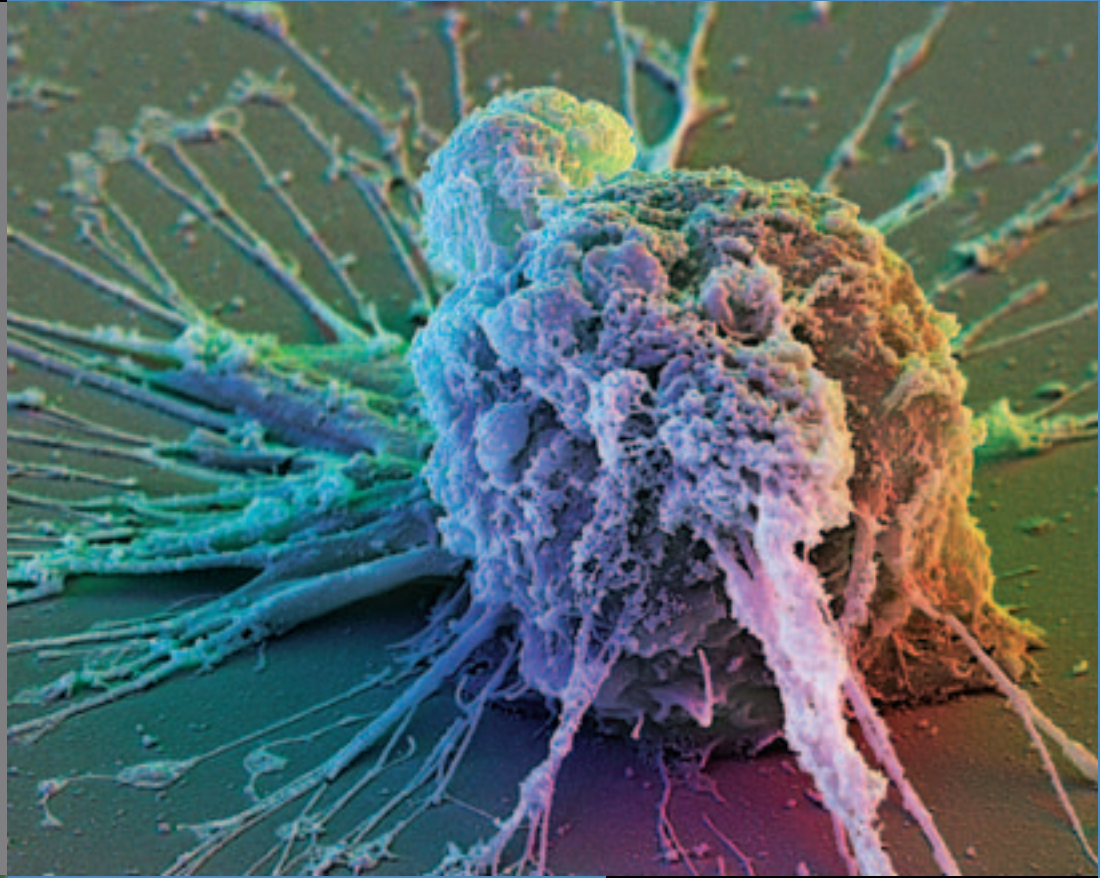
Stability

Reproducibility

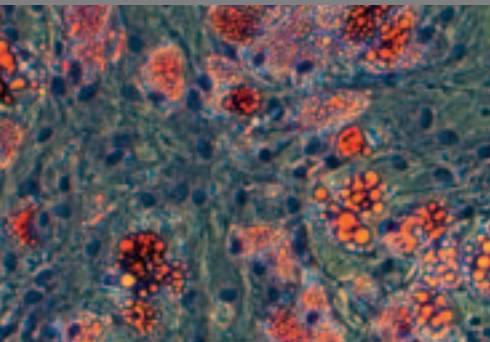
Scalability

Traceability

Security



www.thermo.com/stemcell



Enormous Promise

Significant Challenges.

The study of stem cells holds the promise to change the future of human health. But extensive research is needed to fully understand how these unique cells behave — and how to apply them to emerging treatments such as regenerative medicine and cell-based therapies. The pursuit of this knowledge brings with it significant challenges that confront the researcher every day. Challenges that demand rigorous techniques and powerful tools.

Stem cells must be handled as a precious resource, with each line requiring precise storage and growth conditions and detailed records of the entire life cycle for both consistency and regulatory compliance. While developing new protocols for isolation and differentiation, a multitude of risk factors must be avoided that could alter the cell's progression at any step.

While cells are under study, issues such as safety and viability demand constant

monitoring and testing. And with the enormous volume of samples and results to be tracked, the capability to efficiently manage a highly complex process is essential.

As the world leader in serving science, our goal is to provide researchers with proven solutions across every stage of the stem cell work flow, from cell collection through differentiation, characterization, storage and transport. Our Stem Cell Excellence portfolio

encompasses a best-in-class array of instruments, equipment, consumables, reagents and media, services and software — all designed to make you more productive.

Whether to support a small research lab or a full-blown production environment, we bring broad global resources and unsurpassed manufacturing capabilities to produce world-class products and services aimed at helping you achieve your goals.

The tools of the stem cell laboratory,
a c r o s s t h e w o r k f l o w .

Collection/Preparation

Expansion/Differentiation

The exacting demands of stem cell research call for solutions designed to address the heightened needs of the stem cell scientist.

□ STABILITY

For uniform results over time and to maximize cell viability, we deliver consistent instrument performance, stringent consumable material analysis and rigorous reagent quality control.

□ REPRODUCIBILITY

To ensure reproducibility in your research, we offer monitoring options, calibration services, LIMS solutions, automation, traceable manufacturing, QC documentation, documents of conformity and batch control options.

□ SCALABILITY

Our scalable automation solutions and integrated sample management technologies – such as bar-coded sample vials and LIMS software – enable rapid, efficient scale-up from research to production environments.

□ TRACEABILITY

We can streamline and simplify sample tracking through our bar-coding, automation, inventory control and LIMS offerings. Our products are traceable through ISO certification and batch management.

□ SECURITY

We help ensure sample security via monitoring systems, alarms, back-up systems, access and set-point security and certificates of analysis.

Characterization/Analysis

Storage/Transport

Collection/Preparation

Collection/Preparation

The sensitive nature of stem cells calls for extreme care during the collection and preparation process. Whether working with tissue, fluids or stored material, viability is paramount, making precise, timely sample handling essential. Each purification protocol must be performed with rigorous consistency to eliminate variables. And at each step, meticulous records must track every sample and every variable.

Our Stem Cell Excellence product portfolio is designed to build confidence into your cell collection and preparation processes. Ergonomically designed Finnpipettes® offer outstanding comfort and precision for repetitive sample handling.

Endotoxin-free NALGENE® and NUNC® consumables ensure maximum sample integrity. Our precision-engineered Sorvall® and Heraeus® centrifuges ensure fast, efficient cell separations and precise temperature control to maintain cell viability.

The Kingfisher® magnetic particle processor isolates target cells with pinpoint accuracy. Our Nautilus LIMS™ software and bar-coded NALGENE and NUNC consumables provide highly efficient sample tracking and data management.



Reproducibility

Precision-engineered centrifuges offer precise temperature control and programmed run profiles to deliver maximum reproducibility for cell harvesting.



Our lightweight, ergonomically designed Finnpipettes enable accurate, repeatable pipetting.



The NUNC Cell Factory offers fast linear scale-up of adherent cultures – from benchtop to industrial scale – with no change in kinetics.

Kingfisher magnetic particle processors deliver precise target cell purification.



Expansion/Differentiation

To expand target cell lines and nurture the differentiation process, cells must be cultivated under optimal, non-varying growth conditions. It is essential to provide the correct nutrient balance and tightly control environmental factors such as temperature, humidity, and oxygen levels. Throughout the process, a pure, contaminant-free environment must be maintained. As cells grow in number or are differentiated, precise identification and tracking of each line is needed to validate results and ensure traceability.

High-quality Thermo Scientific equipment, such as our biological safety cabinets and CO₂ incubators, keeps your cells healthy while creating a safe, comfortable work environment for you and your colleagues. Our HyClone AdvanceSTEM™ media products are specially

formulated to ensure precise nutrition for optimal stem cell growth. Our Dharmacon siRNA, shRNA, miRNA, and delivery technologies enable the investigation and modulation of the genetic networks involved in maintaining pluripotency and controlling cellular differentiation.

We also ensure sample purity through our certified sterile, noncytotoxic and nonpyrogenic NALGENE and NUNC consumables, and Barnstead water purification systems, which produce water free of endotoxins and nucleases.

Security

Our NSF- and EN-certified biological safety cabinets offer superior user comfort and sample protection.



Developed specifically for stem cell applications, the HyClone AdvanceSTEM line of stem cell culture products keeps cells in an undifferentiated state and ensures directed differentiation.



Stability

Bactericidal and fungicidal copper-lined CO₂ incubators deliver high temperature stability and contaminant-free cell growth.



Our Barnstead NANOpure® laboratory water system produces water free of endotoxins and nucleases, such as RNase and DNase, as well as inorganics, organics and bacteria.



The Matrix Platemate 2x3 workstation provides a scalable liquid handling solution to suit the needs of an expanding laboratory.



Dharmacon RNA interference (RNAi) technologies facilitate understanding of the function of genes and their role in biological processes.

Characterization/Analysis

Identifying cell types and selecting target cells introduces new levels of complexity that demand careful management. The sheer volume of results from testing can make finding the targeted samples a significant challenge. Careful analysis is needed to remove non-targeted cell types and ensure that the selected cells are progressing as desired. Tracking and traceability are essential for regulatory compliance — and to ensure the repeatability and validity of procedures and results.

Our Thermo Scientific Pierce protein research products are widely used for the isolation, localization, characterization and analysis of the protein constituents of stem cells. The Thermo Scientific Cellomics® High Content Analysis (HCA) platform combines automated, high-resolution, multi-mode

imaging with data visualization and informatics to provide in-depth, quantitative measurements of stem cell biology, such as morphology, differentiation and signaling. Our NUNC LiveCell Array™ real-time cell imaging and analysis slides let you view cellular behavior to help set up tests and view

protocol effects. Diagnostic tools, such as our Shandon histological equipment and reagents, support a full range of detection and monitoring methods. Robust sample tracking solutions help match tests with samples, while demonstrating compliance with regulatory requirements.

Scalability

The Cellomics High Content Analysis (HCA) platform performs automated analysis in a live cell chamber. Scalable “n” tier architecture handles data from a few detailed experiments to a full screening campaign or systems study.

Pierce Kits facilitate functions such as fractionating the proteome into important subgroups (phosphoproteins, glycoproteins, and polyubiquitinated proteins); fluorescently labeling cellular components for visualization or separation; and quantitating specific cellular proteins by Western blotting.



Nautilus LIMS software includes patented workflow technology for graphically designing a workflow of the sample life cycle.



Shandon Cytospin® 4 Cytocentrifuge provides economical thin-layer cell preparations from any liquid matrix, especially hypocellular fluids.



NUNC LiveCell Array cell imaging and analysis microscope slides permit multiplexing and high content analysis, including real-time kinetics.

Storage/Transport

Stem cell research relies on the continuous development of new techniques and discoveries. Today's results must be preserved for extended periods, requiring safe, cost-effective storage to maintain cell viability and security. Transferring cells from a storage or production environment to a clinic or lab necessitates tracking the movement of each sample and logging the final storage location for future retrieval, with the original data intact.

Our Thermo Scientific storage solutions provide exceptional security, with built-in monitoring capabilities that help ensure consistent performance and reliable sample protection.

Our Forma controlled-rate freezers protect cell viability during the critical freezing processes. NUNC Opticell™ products provide sealed, protected sample transport, offering peace of mind when

cells leave the lab bench.

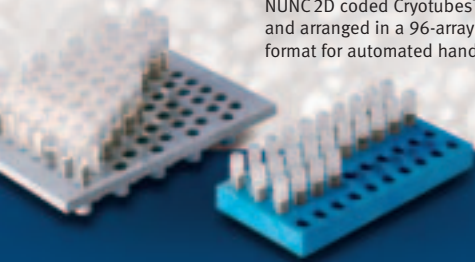
Our Nautilus LIMS software and bar-coded NUNC consumables offer exceptional efficiency for locating samples and accessing records to verify their origin.

Security

With temperature failure controls, lockable temperature and alarm setpoints, and optional LN₂/CO₂ backup systems, our Revco® PLUS -86°C freezers offer superior sample protection.

Traceability

NUNC 2D coded Cryotubes™ are coded and arranged in a 96-array ANSI/SBS format for automated handling.



Cryomed® controlled-rate freezers maximize cell viability when freezing samples for storage. Optional access-code protection provides increased security.



The NUNC Opticell cell culture system is a unique cell culture format for growing, monitoring, and transporting cells.

Our Stem Cell Excellence portfolio provides essential instruments, consumables, reagents, media, services and software – tailored to the needs of stem cell laboratories.

Instruments & Equipment

Automation Equipment
Biological Safety Cabinets
Centrifuges
CO₂ Incubators
Cryopreservation Systems
Freezers
Histology / Cytology Equipment
Magnetic Bead Isolation Instruments
Readers
Refrigerators
Thermal Cyclers
Water Purification Systems
Work Cells

Laboratory Consumables & Pipetting

Bottles
Cryopreservation Consumables
Filters
Histology Consumables
Pipettes
Pipette Tips
Plates, Flasks & Dishes
Purification Kits & Reagents

Reagents & Media

Buffers and Dissociation Reagents
Cell Culture Supplements and Sera
Electrophoresis Reagents
Histology / Cytology Reagents
Media
Purification Kits & Reagents

Financial Services

Lab Service Programs

Software

Data Management

About Thermo Fisher Scientific

Thermo Fisher Scientific Inc. (NYSE: TMO) is the world leader in serving science, enabling our customers to make the world healthier, cleaner and safer.

With an annual revenue rate of more than \$9 billion, we employ 30,000 people and serve over 350,000 customers within pharmaceutical and biotech companies, hospitals and clinical diagnostic labs, universities, research institutions and government agencies, as well as environmental and industrial process control settings.

Serving customers through two premier brands, Thermo Scientific and Fisher Scientific, we help solve analytical challenges from routine testing to complex research and discovery. Thermo Scientific offers customers a complete range of high-end analytical instruments as well as laboratory equipment, software, services, consumables and reagents to enable integrated laboratory workflow solutions. Fisher Scientific provides a complete portfolio of laboratory equipment, chemicals, supplies and services used in healthcare, scientific research, safety and education.

Together, we offer the most convenient purchasing options to customers and continuously advance our technologies to accelerate the pace of scientific discovery, enhance value for customers and fuel growth for shareholders and employees alike.

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