It's a Cell out!

What's hot in the world of tissue and cell culture

Image supplied by GE Healthcare

Already a staple in molecular and cellular research, tissue and cell culture is undergoing a rise in technological innovation as advances are made in specialist fields such as regenerative medicine. In the past, working with tissue cultures has enabled the identification of infections, chromosomal abnormalities and enzyme deficiencies. It also allows us to investigate cancers, manufacture and test biological drugs, and develop vaccines. Some of the new tools available to researchers are outlined below.

Reactors and incubators

New Brunswick Scientific has introduced a new line of **Galaxy® CO_2** incubators. Galaxy incubators come in two model ranges – an R Series with advanced controller, automated 72-hour data logging with trend graph capability, password-protected programmable alarms and a greater range of options; and an economical S Series with simple LED display for all standard cell culture applications. Galaxy CO_2 incubators feature a unique fanless design and seamless one-piece chamber to eliminate potential breeding grounds for contaminants, and a high-temperature disinfection option to further minimise contamination risk.

Glen Mills has introduced the new Large Scale **Z®RP Bioreactor System** suitable for long-term continuous culture of high densities of adherent cells. This rotating bed bioreactor is ideal for expanding cells and growing tissues in a self-generated Extended Cell Matrix to a fully developed, natural 3D structure. Culturing of adherent cells/tissues in a sterile natural 3D environment continuously for more than 12 months allows for impressive cell densities exceeding 10^{10}, all in a compact laboratory tabletop apparatus.

Cell lines, media and supplements

The **ATCC® Breast Cancer Cell Panel** is the largest standardised panel of breast cancer cell lines readily available to the research community. This panel of 45 cell lines reflects important genomic abnormalities found in breast tumours and could reveal how they contribute to breast cancer pathologies. Each cell line in the panel has undergone strict ATCC authentication and quality control procedures. The panel features a compact disc containing signed COAs and product sheets for each individual cell line and an extended warranty.

The **Opti-Clone™ II** hybridoma cloning factor from **MP BioMedicals** is a partially purified hybridoma growth medium supplement, which improves the cloning efficiency of murine B-cell hybridomas. It will enhance the growth of hybridomas cultured at low cell densities and will dramatically increase the number of antibody producing colonies. Opti-Clone promotes hybridoma growth, eliminates feeder cell layers, increases antibody production, improves viability of stressed cells and improves surviving hybridomas during HAT selection.

To support developing research and bioproduction demands, **R&D Systems** offers **Animal Free™ recombinant proteins**. R&D Systems' products are manufactured in a laboratory exclusively dedicated to the production and purification of recombinant proteins using all non-animal reagents. Every stage of the established fermentation and protein purification methodologies has been specifically modified for the manufacture of animal-free products.

Accessories and tools

Nikon Instruments has launched the **Hi-Q^4** dish, a high optical quality, plastic bottom, multi-experiment dish for cell culture and live cell imaging. The Hi-Q^4 enables

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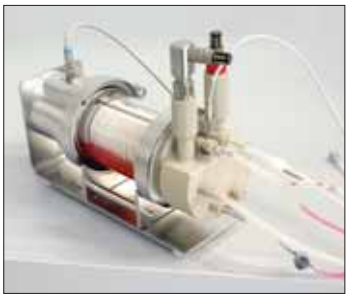

The Z®RP Bioreactor System from Glen Mills

New Brunswick Scientific's Galaxy® CO_2 incubators

high resolution fixed and live cell imaging with up to four experiments able to run concurrently, in the same dish. Hi-Q[4] dishes are available with surfaces treated for tissue culture, guaranteeing optimal growth and proliferation. The lockable lid minimises evaporation, while gas can penetrate through the base, allowing long-term cell culture and analysis.

The **Xiltrix**® CO_2 monitoring system from **IKS** uses a single sensor in an automated monitoring station to accurately measure, record and, if necessary, alarm the CO_2 concentrations in up to 16 incubators, offering significant cost savings to any laboratory using more than 3 or 4 such incubators. At intervals set by the user, this single sensor is automatically calibrated against a standard gas mixture. This not only eliminates sensor drift but clearly offers further savings compared to the separate calibration of individual incubator sensors. The XiltriX monitor is useful for IVF labs, haematology, cell culture or vaccine laboratories.

GE Healthcare has introduced **ReadyMate**™ genderless disposable aseptic connectors (DACs) for biopharmaceutical production. The ReadyMate DAC offers a safer, more economic and simpler connection to assembly components, such as media bags and tubing for upstream and downstream applications. ReadyMate reduces the complexity of biopharmaceutical production by decreasing parts inventories and eliminating requirement for unique operator skills, specialised equipment, calibration, or servicing. The patented DAC has a validated closure mechanism, is simple to use and provides users with the flexibility to quickly establish aseptic connections in non-controlled environments. "The move towards disposable equipment has been a great step forwards in tissue and cell culture," says Gerard Gach, ReadytoProcess Product Marketing, GE Healthcare. "The next generation of tools will enable reduction of in-suite preparation steps such as delivering pre-flushed tangential flow filters and other improvements that result in streamlining inventory, reduction in operator training, and cost-effective and flexible process capabilities."

With built-in high quality imaging technology and intelligent image analysis software, **Genetix' CloneSelect**™ **Imager** enables objective, quantitative assessment of cell growth. The system replaces time-consuming, subjective manual inspections to consistently determine cell confluence and estimate cell number, viewing and tracking cell growth in every well in every plate. With the ability to track the history of each colony within a well back to its starting point the system ensures confident verification of monoclonality. After selection of secreting cell lines, subsequent outgrowth and productivity of the selected cell lines can be monitored and evaluated. In addition, CloneSelect Imager is used to rapidly screen culture variables to identify optimal culture conditions for low density or clonal outgrowth. The system uses label-free white light imaging of living cells and is suitable for viewing adherent and settled suspension cells.

Cell harvesting

Trevigen has released a standardised kit for isolating cells from 3D culture for biochemical analysis. The **Cultrex**® 3D Culture Cell Harvesting Kit is based on a non-enzymatic approach that prevents biochemical degradation during processing and overcomes the problems associated with extracting cells from BME or Laminin I in 3D culture. The quality of the harvested cells is ideal for western blotting, RNA and DNA analysis.

Thermo Fisher Scientific has introduced the new **Nunc**™ **UpCell**™ **Surface** for temperature-induced cell harvesting. Designed to enable quick dissociation of cells from the culture surface upon a simple change in temperature, the Nunc UpCell Surface negates the need for enzymatic treatment (trypsinisation) and cell scraping, while maintaining cell viability and the integrity of surface receptors and antigens. Even cell types that are difficult to detach by other methods and contiguous cell sheets can be harvested from the Nunc UpCell Surface, and harvested cell sheets can be stacked on top of each other in order to create 3D tissue models and co-cultures.

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The demand for safer biologicals and biopharmaceuticals has led **Worthington Biochemical Corporation** to introduce several Animal Origin Free (AOF) enzymes for cell and tissue culture research and applications. The new **AOF Collagenase** for tissue dissociation and cell isolation is now available, providing an ideal product for regenerative medicine applications as there is no risk of potential TSE and/or mammalian virus contaminants. In addition, the use of AOF enzymes eliminates many of the regulatory issues and concerns associated with enzymes purified from animal sources.

Companies mentioned in this Product Focus:

ATCC – www.lgcstandards-atcc.org
GE Healthcare – www.gelifesciences.com
Genetix – www.genetix.com
Glen Mills – www.glenmills.com
IKS – www.iksbv.nl
MP BioMedicals – www.mpbio.com
New Brunswick Scientific – www.nbsc.com
Nikon Instruments – www.nikoninstruments.com
R&D Systems – www.rndsystems.com
Thermo Fisher Scientific – www.thermofisher.com
Trevigen – www.trevigen.com
Worthington Biochemical Corporation – www.worthington-biochem.com