Get up and Grow!

Novozymes Biopharma's CellPrime® rAlbumin AF and CellPrime® rTransferrin AF

The cultivation of cells derived from multicellular eukaryotes provides an essential model for studying the activity of cells within an entire organism or in vivo. As mass culture of cell lines is fundamental to the manufacture of viral vaccines and other products of biotechnology, it is vital that best practices and products are invested in at the beginning of any research project to ensure that cell growth and maintenance is approached in the most time and cost-effective way. When compared with the values of cell lines, some of which are irreplaceable, the price of effective media and laboratory equipment is small. Furthermore, the time taken to utilize appropriate techniques is minimal when compared with the time needed to redo unsuccessful experiments. To ensure the most effective protocols for maintaining or growing cells can be easily implemented in any laboratory, a range of innovative cell culture matrices and equipment are available that have been designed to benefit the most demanding research scientists by ensuring the integrity of yields and the validity of research.

Enhanced Growth Performance

R&D Systems new **StemXVivo™ Culture Matrix** is a fully defined proprietary mixture of recombinant human adhesion molecules for the culture of stem or progenitor cells. It is designed to be used as a substitute for basement membrane extract or as a feeder layer in the maintenance and/or differentiation of stem or progenitor cells. StemXVivo Culture Matrix supports normal attachment, growth and marker expression of stem and progenitor cell populations when compared to cells grown on Engelbreth-Holm-Swarm (EHS) basement membrane.

Novozymes Biopharma's range of animal-free recombinant supplements and bioactive proteins have been developed to improve the growth performance of cell lines for viral vaccines. **LONG®R3 insulin-like growth factor-I, LONG® epidermal growth factor, CellPrime® rAlbumin AF and CellPrime® rTransferrin AF** (CellPrime rAlbumin and rTransferrin are sold exclusively through Millipore), have been designed to act both individually and in combination, to enhance the growth performance of vaccine cells in serum-free media formulations. These recombinant bioactive proteins enable the replacement of animal-derived components in the production process, assisting regulatory approval while minimizing risk to product users. The use of bioactive proteins also contributes to greater consistency in process performance and elevates process yields in biopharmaceutical product manufacturing.

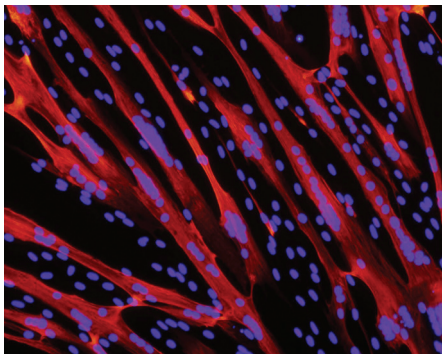
Cook Myosite's primary human skeletal muscle-derived cells (SkMDC) are isolated and purified from human skeletal muscle using controlled manufacturing processes developed and refined from over 10 years of research. SkMDC are primitive myogenic progenitor cells that can differentiate into multinucleated skeletal myotubes, which are useful to assay signaling pathways and drug discovery and toxicity throughout skeletal muscle development. SkMDC are consistently isolated and banked with high purity and viability. Cells are categorized online by age, gender and other social/media information so that customers can select the desired cell population each time they order. A gene array characterization is provided with every SkMDC purchase to define the starting culture and by using Cook Myosite's Myotonic Growth Medium, SkMDC can be reliably expanded *in vitro* while maintaining phenotype.

Effective Antibody Production

The new **C5011 hollow fiber bioreactor cartridge** from **FiberCell Systems** is optimized for maximum antibody production when used with the new FiberCell Systems Duet pump. Each cartridge can produce from 20 mg to 100 mg of antibody from a hybridoma cell line every two days in a total volume of 20-40 ml for six months of continuous production or more. The high cell density permits adaptation to FiberCell Systems serum replacement; CDM HD. Used just like serum, CDM HD turns classical media into a chemically defined, protein-free medium optimized for use in hollow fiber bioreactors. The cartridge comes pre-sterilized and is easy to set up, simplifying monoclonal antibody and recombinant protein production. The Duet pump will run two cartridges simultaneously for twice the productivity.

DNA Delivery

Mirus Bio has expanded its transfection reagent portfolio with the development of ***Trans*IT®-2020**, a new high performance transfection solution for broad spectrum plasmid DNA delivery into mammalian cells. TransIT-2020 is suitable for both transient and stable transfection and also works well in typically hard-to-transfect cell types.



SkMDC from Cook Myosite are banked with high purity and viability

Bioo Scientific's MaxDiscovery Apolipoprotein B (ApoB) ELISA Kit

Milipore's FlowCellect™ kits use flow cytometry for the analysis of cell health

TransIT-2020 is animal-origin free and does not require any culture media change post-transfection, allowing maximum compatibility for all downstream applications.

Maintenance of Cells in Culture

Available in two sizes, the new **triple gas incubators** from **IKS International** offer a high quality culturing environment with excellent temperature accuracy and CO_2 stability. The larger incubator (IVS-9160GC) with 173 liter chamber and eight divided inner doors delivers a good price performance ratio, while the small 33 liter model (IVS-9000GC) with six divided inner doors is ideal for use with lowered oxygen concentrations. Both of the triple gas incubators provide a condensation-free chamber with rounded corners for easy-cleaning and the well-designed interior is fully autoclavable. Very fast recovery times for temperature, CO_2 and O_2 ensure a highly stable environment for embryo growth and an internal HEPA filter prevents contamination. Other features include a dual-beam (non-dispersive) infrared CO_2 sensor and an access port allowing connection to an external XiltriX® sensor for continuous status monitoring.

Analysis of Cultured Cells

The **MaxDiscovery Apolipoprotein B (ApoB) ELISA Kit** from **Bioo Scientific** is a complete, two-step ELISA test that analyzes the quantity of ApoB in tissues, serum, plasma or cultured cells with minimal sample preparation. This kit offers precise protein measurement along with the ability to analyze multiple samples in low-volume, high-throughput experiments. This ELISA is available in 96-well and 384-well formats; both of which have plates that are pre-coated with capture monoclonal antibodies and contain all of the reagents needed to perform the assays. For increased flexibility, the 96-well plate is composed of 8-well breakaway strips.

Millipore has launched **FlowCellect**™ kits for the analysis of cell health using flow cytometry. The kits permit researchers to quickly and easily evaluate mitochondrial health in drug compound screening, apoptosis-related research and understanding the mechanism of diseases. The six new FlowCellect kits include the MitoDamage kit, which provides simultaneous information on mitochondrial perturbations, apoptosis and cell death and the MitoStress kit, which allows study of the inter-relationship between mitochondrial oxidative stress and apoptosis. For researchers who want to further understand mechanistic pathways, Cytochrome C kits allow for evaluation of mitochondrial Cytochrome C levels in apoptotic cells and commitment to the intrinsic pathway of death, thereby simplifying an assay that has been traditionally done with western blots.

Thermo Fisher Scientific has launched the **Thermo Scientific Pierce Agarose ChIP Kit** for fast and reproducible chromatin immunoprecipitation (ChIP) assays. ChIP assays monitor transcription regulation through histone modification or transcription factor-DNA binding interactions. The ChIP technique captures a snapshot of specific protein-DNA interaction as they occur in living cells. The Pierce® Agarose ChIP Assay Kit contains all reagents to perform a successful ChIP assay using mammalian cells or tissue. The specially titrated and tested micrococcal nuclease evenly digests the DNA, eliminating the variability that results from using sonication. The specially blocked ChIP Grade Pierce Protein A/G Plus Agarose Resin provides high binding capacity and low background. The fast procedure uses convenient spin columns for the immunoprecipitation, wash and elution steps, minimizing sample loss.

Live Cell Imaging

Chip-Man Technologies has announced the launch of the **Cell-IQ 2** live cell imaging and analysis system. This innovative platform builds on the success of the original Cell-IQ system, offering fully automated imaging and analysis for the study of live cell behaviour in an optimized stable environment. The Cell-IQ platform allows accurate and reproducible quantitation of results for live cell imaging and has already proven highly successful in a range of laboratory settings. The second generation system provides increased usability and precision for users, offering advanced features for cell biology.

Intelligent Substrates has introduced protein micropatterned substrates for live cell imaging applications. Patterns of extracellular matrix proteins, by restricting the sites of cellular adhesion and spreading, can define the location, size and morphology of cultured cells; direct migration; and control other important cellular functions. Intelligent Substrates' **Substrate Design Center** works with researchers to rapidly develop custom protein micropatterns with features as small as 5 µm on a variety of substrates and formats compatible with common cell dynamics imaging setups. Protein micropatterned substrates can control important cellular functions including mitosis, cell growth, apoptosis, stem-cell differentiation, tissue growth and structure and multi-cell dynamics and interactions. These products and services provide improved sensitivity, lower variability and simpler automated image analysis to enable researchers to achieve better results faster.

Cell Harvesting

Sera Lab has announced the launch of the novel **SplitKits cell dissociation system**, the first specifically designed for use in both serum-based and serum-free methodologies. Developed using a vegetable-based component rather than trypsin, SplitKits avoid any risk of contamination with either animal or human viruses or bacteria and are suitable for a wide variety of cell culture systems. Independent studies conducted in both research and biopharmaceutical laboratories have shown that SplitKits encourage faster cell dissociation than trypsin. Greater control of the dissociation process produces homogenous cell suspensions with minimal batch-to-batch variation. The extremely gentle action of the SplitKits vegetable-based enzyme gives higher cell yields and better cell growth recovery following detachment.

Chip-Man Technologies' Cell-IQ 2 live cell imaging and analysis system.

Companies featured in this product focus:
R&D Systems – www.rndsystems.com
Novozymes Biopharma - www.biopharma.novozymes.com
Cook Myosite Inc – www.cookmyosite.com
FiberCell Systems – www.fibercellsystems.com
Mirus Bio – www.mirusbio.com
IKS International – www.iksbv.nl
Bioo Scientific – www.biooscientific.com
Millipore Corporation - www.millipore.com
Thermo Fisher Scientific – www.thermoscientific.com
Chip-Man Technologies – www.chipmantech.com
Intelligent Substrates – www.intelligentsubstrates.com
Sera Laboratories – www.seralab.co.uk