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The rising tides

The latest advances in proteins and peptides

As peptides are increasingly being used as drugs, and new forms of delivery are investigated, tools and technologies to investigate their properties only increase in popularity. Researchers are still discovering the potential behind proteins and peptides in all their forms. Here is a digest of the latest products on the market for the ever-diversifying areas of protein and peptide research.

Protein separation

Millipore Corporation has announced the introduction of a new suite of multiplex assays that use magnetic beads for more consistent results and automation compatibility. Designed for use with Luminex® xMAP® technology, these new **MILLIPLEX® MAG** kits complement Millipore's broad selection of non-magnetic multiplex assays and enable researchers to choose the format they prefer. MILLIPLEX MAG kits include microspheres embedded with super-paramagnetic particles. Once bound to the protein of interest, the microspheres can be magnetically separated. This makes sample preparation easier and eliminates the risk of sample loss, clogs, or leaks. The new kits also reduce non-specific binding, which results in lower, more consistent coefficients of variation (CVs). Both the magnetic and non-magnetic MILLIPLEX kits use the same protocols and components (except for the beads), so researchers do not need to re-optimize their methods when switching from one format to another.

BAC BV has announced the introduction of a new product called **CaptureSelect® HumanPlasma14**. The first product from a new family of depletion ligands to be collectively known as the CaptureSelect Proteomics Toolbox, HumanPlasma14 is an affinity purification medium that depletes the top 14 abundant proteins in human blood plasma or serum: Albumin, IgG, IgM, IgA, IgE, IgD and free light chains of antibodies, Transferrin, Fibrinogen, α 1 anti-Trypsin, Apolipoprotein A1, α 2 Macroglobulin, α 1 acid Glycoprotein and Haptoglobin. Designed for single-step depletion, HumanPlasma14 consists of a

mixture of CaptureSelect affinity ligands, single-domain monospecific antibodies uniquely immobilized on high-capacity agarose-based beads that were previously individually proven for their specific binding to human serum proteins alone. Designed specifically for single-use protein depletion, HumanPlasma14 avoids the common pitfalls of column clogging, eliminates the need for bead regeneration and removes the chance of cross-contamination of precious clinical samples. Following depletion, the resulting sample is suitable for further downstream applications, including gel electrophoresis and mass spectrometry. HumanPlasma14 is available as a slurry to provide unrivalled flexibility and supports up to 20-30 μ l/ml loading capacity.

Systems

Protein phosphorylation states can change rapidly *ex vivo* due to phosphatase and kinase activity. The **Stabilizer T1 system** from Denator enables rapid inactivation of all enzymatic activity in tissue samples, through an automated heat process. The rapid inactivation of enzymes ensures that proteins and peptides in the sample can be measured in a state as close to *in vivo* as possible. This allows researchers to draw correct conclusions from phospho-protein analysis within cancer and neuroscience. Neuropeptide analysis with mass spectrometry, in tissue, is a second area where several independent researchers have reported that the use of rapid inactivation enables them to find potentially new bioactive peptides, whereas without stabilisation they only find degradation fragments from high abundant proteins.

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Stabilizer T1 system from Denator

GE Healthcare has launched its **Biacore™ T200** SPR system, designed to deliver exceptional sensitivity in the measurement of high quality kinetic, affinity, concentration, specificity, and thermodynamic interaction data, in real time. The system builds upon the success of the widely adopted Biacore T100. The performance, versatility and sensitivity of Biacore T200 enables analysis of interactions involving the smallest, low molecular weight compounds, interactions of rare targets, and facilitates the analysis of interactions involving G protein-coupled receptors. The outstanding sensitivity of the system also allows antigen immobilisation levels so low that interactions with antibody in solution can be analysed, without avidity effects, thus adding flexibility to assay design. In addition, the system expands the range of kinetic parameters that can be studied with the highest precision and confidence, from the fastest on-rates to the slowest off-rates.

The IntelliSynth UV-Monitoring and Feedback-Control System, by **Protein Technologies**, for the Tribute peptide synthesiser, monitors the efficiency of Fmoc removal during deprotection reactions by measuring the concentration of dibenzofulvene adduct formed. Data from individual deprotection reactions can be viewed, as well as an overall efficiency summary for the synthesis. Two feedback control options automatically modify deprotection and/or coupling cycles based on feedback. When paired with peptide predictor software, Tribute users can identify difficult cycles before, during, and after a synthesis.

Reagents

Gyros AB has launched an expanded range of **Rexxip Buffers**, for use with the Gyros Immunoassay Platform, which miniaturises and automates assays to boost productivity and cut time to result. The buffer range has been developed to take into account the many parameters that may influence assay performance, such as application objective, type of analyte, assay format, sample origin and sample components. By selecting buffers best suited to the nature of the analyte and



Biacore T200 from GE Healthcare

sample conditions, users save time in assay development for applications such as protein quantification, biomarker monitoring, pharmacokinetic and pharmacodynamic analysis and impurity testing.

Olink Bioscience has expanded its offerings by launching a range of new products, including the **Duolink® II reagent kit**. The original Duolink product line, introduced on the market in 2007, has been well received by academic labs and pharma companies for its unique and enabling features for the visualisation and location of native protein-protein interactions and low abundant proteins in fixed cells and tissues. The new, updated version of the Duolink kit offers the same unique features but is faster, better and more convenient. The Duolink II reagent kit has a new and improved formula and in combination with fewer steps and a significantly shorter protocol it is more user-friendly and efficient. Experiment and analysis can be completed within the same day.

Evrogen's TagBFP, a monomeric blue fluorescent protein with high photostability and extremely high pH-stability, is now available. Recommended for protein labeling and organelle labeling, the protein's narrow fluorescence emission peak makes it ideal for multicolor imaging. TagBFP possesses bright blue fluorescence with excitation/emission maxima at 402 nm and 457 nm and is more than 1.8 times brighter than EBFP2. It also boasts a significantly shorter maturation half-time at 37°C. TagBFP can be easily expressed and detected in a wide range of organisms. Mammalian cells transiently transfected with TagBFP expression vectors give bright fluorescence within 10–12 hours after transfection and show no cytotoxic effects or protein aggregation. The protein's performance in fusions has also been demonstrated in β -actin and α -tubulin models.

Libraries

BioFocus, a leading provider of gene-to-clinical candidate drug discovery services, has launched four biologically targeted libraries. These new libraries contain novel, drug-like compounds that specifically target kinases and protein-protein interactions.

“Innovative design and compound novelty ensure we provide our clients with the highest chance of success.”

Richard Gordon, Senior Director
Sales and Marketing, BioFocus

BioFocus' second **Helix Mimetic library (HM02)** is based on a novel structure that interacts with protein helices. This library is designed to inhibit protein-protein interactions, but can also target other helical recognition motifs such as the pore region of ion channels. “2010 marks the 11th year of BioFocus' commitment to producing leading compound libraries for the discovery sector” said Richard Gordon, Senior Director, Sales and Marketing. “Innovative design and compound novelty ensure we provide our clients with the highest chance of success.”

Companies mentioned in this Product Focus:

Millipore – www.millipore.com
Olink Bioscience – www.olink.com
Biofocus – www.biofocus.com
Evrogen – www.evrogen.com
Denator – www.denator.com
GE Healthcare – www.gelifesciences.com
Protein Instruments – www.peptideinstruments.com
BAC BV – www.bac.nl
Gyros AB – www.gyros.com

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