

Advertisement feature

The big picture

Advances in cell-based assays

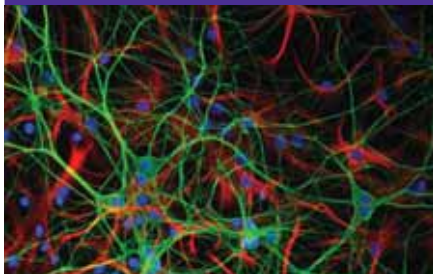


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During recent years there has been a growing trend towards more frequent use of cell-based assays for drug discovery. Cell-based assays differ from more traditional screening enzyme- or antibody-based assays in that they enable the analysis of whole cell responses to compounds of interest, providing a better model for tests such as toxicity prediction. The use of live cells requires special consideration, and technological advances in the field are leading to products that are simple to use while remaining accurate and sensitive.

Assays

Trevigen has introduced the **CultreCoat® Cell Adhesion Assays** for assessing factors that influence cell-matrix interactions. The product comes in a simple, standardised, high-throughput adhesion assay format, offering 96-well plates coated with Basement Membrane Extract, Laminin I, Collagen I, Collagen IV, Fibronectin, Vitronectin, or an array of all six ECM proteins. A black stripwell format minimises background, providing increased sensitivity. Calcein labelling allows direct comparison between the number of cells loaded and the number of cells that adhere, and additional controls are provided for determining background and non-specific binding.

The Cellomics Comet v3.0

Bio-application from **Thermo Fisher Scientific** is a cell-based imaging approach for addressing the bottleneck of rapid and accurate DNA damage assessment, based on the Comet assay. This assay, also known as single cell gel electrophoresis (SCGE) is a commonly used assay to ascertain DNA damage induced in cells by acute exposure to chemicals or radiation. The Comet Bio-application runs on the Thermo Scientific Cellomics Arrayscan VTI system, and provides automatic acquisition and quantification of Comet assays.

Dojindo has launched the **Cell Counting Kit-SK (CCK-SK)**, a highly sensitive, nonradioactive colourimetric assay, which enables the monitoring of cell viability in culture. Cell viability can be monitored by looking at the total production of NADH by dehydrogenase activity; this kit uses the unique water-soluble tetrazolium salt-8 (WST-8) as an indicator of dehydrogenase production. The components of the kit are virtually nontoxic to cells, enabling the same cells to be used in further experiments.

RayBiotech has introduced **RayBio® Cell-based ELISA kits** for verification of pathway activation in cell lines, enabling quick and easy production of a snapshot of protein phosphorylation in cultured cells. Using the kits it is possible to fix and treat cells with phospho-specific or pan antibodies; this allows the simultaneous screening of the effects of numerous different treatments (e.g., siRNA or other chemicals) in as little as 6 hours.

Dualsystems Biotech has launched its **DUALhunter system** to find novel protein interaction partners for transcriptionally active and self-activating proteins. The DUALhunter system screens full-length soluble nuclear proteins *in vivo* and can also be used to screen protein domains or fragments for novel protein interactions. The system works by detecting protein interactions based on the split-ubiquitin system, giving researchers the ability to screen classes of proteins such as transcription factors or strongly acid proteins that cannot be screened using classical yeast two-hybrid systems. The DUALhunter system is available in both convenient kit form and as a custom screening service.

Designed for use in drug discovery and basic neuroscience research, **Millipore's** new **high content analysis kits for detecting neurotoxicity** identify toxicity biomarkers in neurons and glial cells. Detection of these markers may provide molecular and cellular signatures predictive of toxic effects on the nervous system. These kits can be used in many areas of neurological study including Alzheimer's disease, Parkinson's disease and other neurodegenerative disorders. In pharmaceutical development, using improved assays for toxicity assessment alongside other ADMET methods may

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RayBio® Cell-based ELISA kits from RayBiotech

reduce the chances of unexpected adverse toxic effects at later stages of the process.

Reagents and accessories

IBA has developed **FasL-Strep** to induce apoptosis in cell cultures. The product is especially suited for high-throughput screening and quantitative determination of anti-apoptotic agents in cell-based assays. Due to conformational stabilisation of homotrimeric FasL-Strep with a novel trimerisation module, the T4 Foldon, efficient and highly-reproducible induction of apoptosis is achieved without chemical crosslinking. The fused Strep-tag allows immobilisation on Strep-Tactin® coated microplates or specific cross-linking via the antibody StrepMAB-Immo to enhance apoptotic activity. Murine and human FasL-Strep variants are offered as single reagents or in combination with Strep-Tactin coated microplates or StrepMAB-Immo.

The **CellVue® Claret Far Red Fluorescent Cell Linker kit** has been introduced by **Sigma-Aldrich** for the labelling of cell membranes for *in vitro* and *in vivo* live cell studies. The kit incorporates a far-red fluorescent dye with long aliphatic tails into lipid regions of the cell membrane. CellVue Claret is suitable for cell tracking and proliferation studies. When used in combination with other cell tracking probes such as CFSE and PKH dyes, non-cytotoxic CellVue Claret allows for multi-parameter studies on living cells: permitting simultaneous proliferation tracking of multiple cell populations, e.g., stimulator and responder cells, regulatory and effector cells *in vivo* or *ex vivo*. CellVue Claret's low autofluorescence background and high signal to noise ratio allow for outstanding ability to detect dimly expressed visible fluorescent proteins or cytokines. It is compatible with flow cytometers, confocal, and *in vivo* imaging equipment.

MaxCyte has launched the **MaxCyte STX Scalable Transfection System** for rapid, scalable, and reagent-free cell transfection for cell based assays, preclinical protein production and other cell-based applications. Using the MaxCyte



The MaxCyte STX Scalable Transfection System

STX, more than ten billion cells can be transfected in less than 30 minutes with one or more loading agents at efficiencies and cell viabilities often exceeding 90%. “The MaxCyte STX can produce a large number of transfected cells in minutes compared to current time-consuming and inconsistent methods. More assays can be developed and performed in a shorter period of time, increasing the likelihood of finding a successful drug candidate,” said CEO, Doug Doefler.

For improved and simplified human cell line authentication, **Promega** has introduced the **StemElite™ ID System** for research applications. The system allows scientists to quickly and easily validate the authenticity and purity of their human cell lines prior to submitting their results for publishing or passing the cell line to another laboratory. Understanding that cross-contamination between cell lines is a frequent cause of scientific misrepresentation, StemElite ID is designed to give scientists confidence in the integrity of their results. The kit provides all reagents required for co-amplification and three colour detection of DNA fragments in a single tube.

Software and technology

GE Healthcare has introduced the **IN Cell Miner High-Content Manager (HCM)** for the effective management of complex data generated by cellular high-content screening and analysis systems. The client-server based application handles data that has been generated by the IN Cell Analyzer imaging system providing a robust and scalable data management solution. It allows scientists to consistently capture, manage, share and archive HCA data, thereby enhancing research efficiency, data security and regulatory compliance. The new IN Cell Miner HCM is fully aligned with the IN Cell Analyzer HCA system and the IN Cell Investigator image analysis software.

Cyntellect's LEAP™ is an automated microplate-based cytometry system for *in situ* cellular analysis and purification. LEAP combines ultra high-speed imaging,

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Doug Doefler, CEO,
MaxCyte

multi-parameter visual cell characterisation, and simultaneous laser-based cell manipulation to process cells with great precision and simplicity in their natural state. The system can analyse and process adherent and non-adherent cell types using C-lect™ applications kits and microplates. LEAP applications include rapid cell line generation, precise rare cell detection and single cell genetic profiling, stem cell processing and generation, cell health assays and label-free cell analysis.

Companies mentioned in this Product Focus:

Cyntellect – www.cyntellect.com
 Dojindo – www.dojindo.com
 Dualsystems Biotech – www.dualsystems.com
 GE Healthcare – www.gelifesciences.com
 IBA – www.iba-go.com
 MaxCyte – www.maxcyte.com
 Millipore – www.millipore.com
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