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Testing times

Advances in drug screening and discovery

The preclinical testing of drugs *in vitro* for their biologic and toxic effects is crucial in finding out their potential clinical applications. New instruments are constantly being developed to increase power and speed of the testing. Improvements in sample preparation techniques and the assays in which scientists perform their experiments also allow more rapid progress through the lab, making it possible for drugs to reach clinical trials even faster.

Screening instrumentation

GE Healthcare has launched the **IN Cell Analyzer 2000**, a flexible cell imaging system for high content analysis with excellent image quality, speed and ease-of-use. The flexibility of the system enables scientists to perform a wide variety of previously challenging experiments with a single instrument: from investigative microscopy through to automated screening, and imaging of organelles, cells, tissues and whole organisms. The IN Cell Analyzer 2000 has a unique combination of hardware and software features for extremely fast image acquisition making it ideal for screening. The robust construction of the instrument ensures its reliability for high throughput use when carrying out demanding applications in a multi-user environment.

Genetix' ClonePix™ FL offers a fast, cost-efficient solution for screening and selection of cell lines when generating mAbs or other recombinant proteins. Compared to the conventional 'limiting dilution' technique, ClonePix FL screens more clones, more rapidly, and ensures accurate selection of the most effective secretors. ClonePix FL has the ability to screen thousands of clones for secretion of the target protein, increasing the probability of finding the best clones. During screening, the system identifies clones, and indicates their secretion levels *in situ* thus enabling early rejection of poor performers. User-chosen parameters can then be applied to select the clones of interest. Secretion is revealed using a label-free technique, eliminating the risk of interference with the clones.

Assays, kits and accessories

PBL InterferonSource introduces the new high-sensitivity **VeriKine™ Cynomolgus/Rhesus Interferon-Alpha Serum ELISA kit** to determine macaque IFN-Alpha levels. This assay will enable interferon quantification in Cynomolgus and Rhesus Macaque model systems for viral disease, autoimmune disorders and immunotoxicology. The ELISA kit is sensitive to 25 pg/ml and can detect the protein in a wide variety of sample matrices and test concentrations with an accuracy of +/-20% the expected values in small or large sample sets. The kit also detects the bioactive form of the Rhesus/Cynomolgus IFN-Alpha 2 protein suggesting that research can be expedited by minimising the number of samples to be analysed in bioassays.

G protein-coupled receptors (GPCRs) are the largest known category of molecular targets with verified therapeutic value, comprising approximately 600–1000 members. GPCR cell-based assay development plays a foundational role in compound screening against druggable GPCR targets. **GenScript** offers flexible solutions for assay development and screening against GPCRs of interest, based on various assay formats that include calcium assay, cAMP assay, and reporter gene assay.

The **MaxCyte™ STX™ Scalable Transfection System** enables large volume, reagent-free transfection of primary cells, cell lines, and stem cells. The sterile, closed system can be used with any molecule, including plasmids, protein, mRNA,



The ClonePix™ FL from Genetix



GE Healthcare's IN Cell Analyzer 2000

siRNA, cell lysates, and labile reagents. The system, which is software controlled, can transfect up to 10 billion cells in 30 minutes and is ideal for cell-based assay systems. "The MaxCyte STX can produce billions of high quality transfected cells in minutes," says MaxCyte President and CEO, Doug Doerfler. "Faster development and conduct of cell-based assays increases the productivity of drug discovery groups and increases the likelihood of finding successful drug candidates."

Drug Metabolism and Pharmacokinetic (DMPK) studies have typically required large samples of blood for adsorption, distribution, metabolism, excretion (ADME) and toxicology analysis. **Whatman FTA® DMPK cards**, from **GE Healthcare**, have been developed for the collection and storage of dried blood spot samples and use a microvolume sampling process to overcome this hurdle. The reduced sample volumes, compared with traditional plasma-based methods, provide ethical and economical benefits as well as technical benefits such as improved consistency of data. FTA® DMPK Cards enable collection, transportation and room-temperature storage of samples. They contain a chemically-treated fibre matrix that provides long-term protection of the DNA contained in the blood samples. Blood cells are automatically lysed on contact with the FTA matrix and pathogens become inactivated, making samples safe to handle and ship via standard mail.

To accelerate hit-to-lead programmes in the drug discovery process **Thermo Fisher Scientific** has introduced the **Maybridge Quick2Lead™ Compound Kits**. The kits enable rapid compound library synthesis around bioactive "hits" emerging from screening assays. The kits are made up of pre-weighed, diverse building block selections, facilitating rapid capture of structure-activity data from the closely related structural analogues within the library. Quick2Lead Compound Kits are available as five functionality-based kits, with each one containing 48 carefully selected compounds.

Eppendorf Polypropylene Microplates meet the demand for consistent high quality, minimised sample loss, and increased assay sensitivity from users in the field of modern drug discovery. The **RecoverMax®** well design minimises 'wicking', well-to-well contamination, and the remaining volume in automated sample processing, ensuring outstanding recovery rates for valuable samples, as well as excellent mixing properties. High dimensional accuracy and high temperature and chemical resistance make these Microplates perfect for automated and high-throughput processes in drug discovery research.

Services and software

ProImmune has launched the **REVEAL™ B Cell Epitope Discovery System**, offering both comprehensive best consensus epitope prediction and rapid high throughput linear epitope mapping *in vitro*. REVEAL™ consensus epitope prediction is a key tool in developing incisive hypotheses for downstream *in vitro* research. The service is based not only on primary sequence and 3D structure, but also incorporates any other additional information about the protein of interest from publicly available sources. REVEAL™ linear epitope mapping relies on standardised peptide synthesis, which simplifies and accelerates the measurement of large numbers of samples. Based on ProArray™ high-content peptide microarrays that can include thousands of peptides, the service provides a turnkey solution for applications such as vaccine subunit discovery, immunogenicity testing, and correlating antibody responses to protein targets with disease onset, progression and outcome.

Rockland Immunochemicals now offers immunoassay development and bioanalytical services utilising their expertise in producing antibodies (*in vitro* and *in vivo*) to various targets which monitor important signalling events. Rockland's **DUALISA™** assay technology optimises polyclonal and monoclonal antibodies custom produced for more

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President and CEO, MaxCyte

highly sensitive and quantitative assays than standard ELISAs, saving time during the intensive screening process. Furthermore, the advantages of DualLISA allow for the rapid development of reagents, which can be incorporated onto High Content Screening Platforms. Successful targets to date have been Akt, Pdcd4 and STAT5.

Companies mentioned in this Product Focus:

Eppendorf – www.eppendorf.com
 GenScript – www.genescrypt.com
 GE Healthcare – www.gelifsciences.com
 GE Healthcare (Whatman) – www.whatman.com
 Genetix – www.genetix.com
 MaxCyte – www.maxcyte.com
 PBL InterferonSource – www.interferonsource.com
 ProImmune – www.proimmune.com
 Rockland Immunochemicals – www.rockland-inc.com
 Thermo Fisher Scientific (Maybridge) – www.maybridge.com

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