

**The Laboratory Robotics Interest Group  
Mid Atlantic Chapter  
May 2007 Meeting**

**The Thirteenth Annual Technology Exhibition & Presentations**

	<b>Edison Room</b>	<b>Piscataway Room</b>	<b>Woodbridge room</b>
3:00-4:00 p.m.			LabVIEW show and tell Kapeeshwar Krishana, M <b>Instruments and LRIG</b>
4:30-5:00 p.m.	<b>Corning</b> Corning(r) Epic(r) System: High-Throughput Label-Free Detection	<b>Perkin Elmer</b> GPCR Screening	<b>Millipore Corporation</b> Cell Migration Assays
5:00-5:30 p.m.	<b>Thermo Scientific Cell Growth and Discovery</b> WorkCell™: Automating the Management and Screening Analysis of Multiple Cell Lines at a Research Scale	<b>Pharmacopeia:</b> How to Screen 6 Million compounds in a Cell-Based Assay in 7 Days	<b>Lonza:</b> Extending the scope for lu assays for non-ATP consu
5:30-6:00 p.m.	<b>BioTek Instruments</b> BioTek's Synergy™ 2, A Multi-Detection Microplate Reader capable of quantitating cAMP and TNF-a using various homogeneous assay HTS technologies.	<b>Hatch Technology</b> Automating Instruments for Pharmaceutical QbD and PAT	<b>Gyros US</b> Protein quantification using technology: Miniaturization of sandwich immunoassay
6:00-6:30 p.m.	<b>Caliper Life Sciences</b> A comparison of Zephyr and Sciclone Liquid Handlers for Automated Cell-Based Assays on Permeable Support Systems	<b>MPR Associates Inc.</b> Case Study for development of an instrument for electrophoresis in a 96 well microplate format	<b>CyBio US</b> Low Volume GPCR and I Screening, the easy way
6:30-7:00 p.m.	<b>ThalesNano</b> The automation of novel continuous-flow microfluidic reactors as tools to facilitate high-throughput compound synthesis.	<b>Caliper Life Science</b> A comparison of Zephyr and Sciclone Liquid Handlers for Automated Cell-Based Assays on Permeable Support Systems.	<b>Merck</b> The HYPERFlask : A New Yield, High Performance T Culture Flask
7:00-7:30 p.m.	<b>Roche</b> Compound Management Workflow and available technical infrastructure	<b>Nanostream Inc.</b> A Generic Platform for Enzyme Assay Development and Optimization	<b>HTG, Inc</b> Fully Automated, High Sa Multiplexed Measurement Expression

7:30-8:00 p.m	<b>PharmaSeq, Inc.,</b> Light-powered Microtransponders for Miniaturized RFID Applications	<b>BioTrove, Inc.</b> High Throughput Screening via RapidFire™ Mass Spectrometry	<b>Molecular Devices Corp</b> Solving image interactivity informatics through Acuity
8:00-8:30 p.m.	<b>Applied Biosystems/Ambion</b> Improve Productivity and Save Time - tools available from Applied Biosystems and	<b>Genetix</b> Rapid screening and selection of stable high producing clones	<b>Fortebio</b> Applications using Interferometry (BLI) for Label Free Time Kinetics Analysis in High Throughput Screening and Bioprocess

## **Posters**

### **1) REMP**

REMP Bio-Sample Store: The Next Generation Large-Scale Automated

### **2) CIS Bio**

Validation of the new HTRF® KinEASE™ TK universal tyrosine kinase assay: Abl assay optimization & IC50 data for 6 key tyrosine kinases.

### **3) Symyx**

Improving Analytics for Pharmaceutical Development.

## **ABSTRACTS**

### **Corning(r) Epic(r) System: High-Throughput Label-Free Detection**

The use of fluorescent or radioactive labels has served the pharmaceutical industry well for many years, but as the industry continues to move toward more novel targets, new technologies will be required to maintain and accelerate the pace of discovery. Label-free screening will play an important role in hastening this advance because it eliminates the undesirable interactions associated with molecular labels and provides a more direct measure of the relevant biology being investigated. This talk will describe how the Corning(r) Epic(r) System combines proven optical label-free technology with the benefits of high-throughput screening in a 384-well microplate for both biochemical and cell-based assays, including protein/protein, protein/small-molecule, peptide/drug, and GPCRs.

## **Hatch Technology**

Hatch Science has collaborated with Bristol Myers Squibb to create two novel automated instruments which facilitate Quality by Design initiatives from drug discovery and formulation development to quality control and IVIVC testing. A fiber optic potency tester was designed to automate real time in situ, rapid end-point, and compound and blend uniformity testing. Controlled experiments have been performed to compare throughput and data equivalence with the novel system, a competitive system, and manual data collection methods. In addition, a MicroSampling dissolution system was designed to automate performance of USP I and II methods, while concurrently controlling variables that have historically been problematic in dissolution testing and automation. Experiments were carried out to demonstrate data correlation from the novel system with that from manual sampling methods. A review of the system design and performance demonstrate how automation and MicroSampling are enabling technologies for improved data quality and better understanding of APIs and drug formulations.

## **Thermo Scientific Cell Growth and Discovery**

### **WorkCell™: Automating the Management and Screening Analysis of Multiple Cell Lines at a Research Scale**

The advances in cell based research have created an increased demand for cell culturing in life science laboratories. Groups providing cells for a range of applications and research efforts are turning to automation to meet the increased workload and to greatly extend the number of cell lines simultaneously maintained. To support the end uses of these cell types, automated solutions must be able to conduct a broad range of aseptic cell handling procedures in both flasks and microtitre formats while providing flexible workflow software to suit the growth and analysis associated with each. This presentation will describe the application capabilities of the Cell Growth and Discovery WorkCell™ and the design of its software Celleste™ focused on the scientific experience.

## **Millipore Corporation**

### Cell Migration Assays

Speaker: Julie Jia, PhD

Cell migration plays important roles in both normal and pathological process of the organisms, including embryogenesis, wound healing, Immune responses, tumor metastasis, and inflammation.

Cell migration is characterized by direct interaction between cell and the extracellular matrix, communication between neighboring cells, interaction between cell and chemoattractants.

The most widely used method of measuring cell migration is using a microporous membrane culture insert suspended in a larger plastic culture well containing media, forming a “chamber inside a chamber”. The membrane insert can be coated with extracellular matrix if necessary. Growth factors or compounds can be added to the bottom chamber for chemotaxis.

This seminar will discuss:

- Migration background
- How to choose a membrane and culture device
- Coating microporous membrane with extracellular matrix.
- Cell migration measurement: colorimetric & fluorescent
- Microscopic observation of cells grown on filter membrane

## Pharmacopeia

### How to Screen 6 Million compounds in a Cell-Based Assay in 7 Days

Speaker: Tara Stauffer

How do you screen six million compounds in a cell-based assay in seven days? The answer is via a multi-disciplinary approach utilizing biology, chemistry, engineering and information technology. Chemical libraries with drug-like properties were created using ECLiPS<sup>®</sup> technology. ECLiPS<sup>®</sup> libraries are synthesized on bead using a mix and split method. The synthesis is tracked by tagging the beads with haloaromatic markers. Compounds are eluted from the beads using acid- or photo-cleavage. All libraries are divided into sublibraries and screened using a two-tiered approach. First, sublibraries are surveyed using a multi-compound format. Active sublibraries are then re-screened as single compounds. In this study library compounds were screened in 1536-well plates against a GPCR using a 2 mL LANCE<sup>®</sup> cAMP assay. The assay was performed using a fully automated, non-contact dispenser capable of delivering various reagents. The high accuracy of this proprietary dispenser is the result of a system which uses real-time pressure readings in the dispenser lines to continually adjust reagent delivery. This process is ideally suited for cell suspensions. The multi-bead 1536-well format, coupled with the speed and accuracy of the dispenser, resulted in the screening of up to 900,000 compounds per day with an average Z prime of 0.7. Analysis of the screening results was performed using software suitable for deconvolution of 1536-well data. This screening and data analysis paradigm was ultimately used to identify seven distinct chemical series for the target GPCR. Taken together, these results illustrate the efficiency of Pharmacopeia's multi-disciplinary approach to high-throughput screening.

## Lonza

Extending the scope for luciferase: coupled assays for non-ATP consuming enzymes.

Firefly luciferase provides an exquisitely sensitive means by which to detect ATP and has been exploited for a number of years as a tool to measure the health and proliferation of cell populations and the activity of enzymes such as protein kinases in cell free systems. Luciferase technology may seem to be somewhat limited in its application to simply measuring for the presence, creation or consumption of ATP. However many biochemical reactions produce products or by-products that can be coupled to the luciferase reaction and exploiting it as a means by which to detect them gives the same levels of sensitivity and speed as the direct measurement of ATP itself.

cAMP dependent phosphodiesterases (PDEs) act by converting cAMP to AMP. While AMP is not a reaction substrate of the luciferase enzyme, AMP can be converted to ATP which is. The PDELight assay employs the use of pyruvate orthophosphate dikinase (PPDK) in a couple reaction to convert AMP directly to ATP. The ATP is then detected by the luciferase reaction whereby the amount of ATP detected is directly proportional to the initial amount of AMP in the sample and therefore to PDE activity. The use of PPDK in coupled systems is exploited further by PPILight, an assay which measures free pyrophosphate in a sample, again by direct conversion to ATP. The measurement of PPI can be used as a means of determining the activity of any enzyme that produces it, for example adenylate/guanylate cyclases and DNA/RNA polymerases, all of which are important drug targets. Enzyme coupled reactions feeding into a firefly luciferase based detection systems can provide extremely sensitive, fast and simple assays that are fully scalable, lending themselves greatly to screening applications.

## BioTek

BioTek's Synergy™ 2, A Multi-Detection Microplate Reader capable of quantitating cAMP and TNF- $\alpha$  using various homogeneous assay HTS technologies

□ Paul Held Ph. D Senior Scientist, BioTek Instruments

High-throughput assays require that both the assay technology, as well as the instrumentation necessary to measure the results, be reliable and cost effective. cAMP and Tumor Necrosis Factor (TNF- $\alpha$ ) are important mediators and indicators for a litany of cellular responses. As such, assays of these moieties are common in research and drug discovery high throughput screening (HTS). The ability to accurately measure changes in these compounds, using a homogeneous assay technology, saves considerable amounts of time and expense. Several different assay technologies have been developed to measure these compounds and others in homogeneous assays. Cisbio's time-resolved fluorescence (HTRF®) technology uses a combination of time-resolved fluorescence (TRF) and fluorescence resonance energy transfer (FRET) to investigate biomolecular interactions. Perkin Elmer's Amplified Luminescent Proximity Homogeneous Assay or AlphaScreen<sup>®</sup> assays uses active beads that uses reactive singlet oxygen production to transfer energy from the donor bead to the acceptor. Fluorescence polarization is a homogenous assay technology that measures the changes in the orientation plane of polarized light brought about by the rotational motion of fluorophores in solution.

BioTek's Synergy™ 2 Multi-Detection Microplate Reader provides both a tungsten-halogen lamp as well as a high intensity xenon flash lamp and combines them with deep blocking fluorescence filters to provide high sensitivity. The combination of a high performance multi-detection reader and a robust homogeneous assay technology provides for a reliable HTS solution. Here we describe the use of the Synergy 2, in conjunction with Gen5™ Data Analysis Software, to quantitate the signal and perform the data reduction for cAMP and TNF assays using HTRF<sup>®</sup>, AlphaScreen<sup>®</sup> or Fluorescence polarization technology. Examples of typical performance of these assays when measured on a Synergy 2 will be provided along with an overview of both the assay technologies and reader design.

## **Perkin Elmer**

GPCRs are a sophisticated class of membrane proteins that continue to be one of the main target classes for drug discovery. New knowledge has rapidly expanded our understanding of the function of these receptors and concepts such as inverse agonism, dimerization and allosteric regulation now provide new avenues for GPCR targeted therapeutics.

With the acquisition this year of Euroscreen, PerkinElmer has expanded its reagent technology offering for GPCR screening. This now provides the most complete solution for GPCR research and screening. The key strategic move, announced in the early part of this year, thus brings into the PKI portfolio a cell based luminescent technology allowing simple and economical approaches to assess GPCR signaling via calcium activation using the photoprotein, aequorin. Furthermore, the combined GPCRs product lines of PerkinElmer and Euroscreen, either in cells or in membranes, now provides the largest portfolio available in the industry for use by researchers.

This seminar will discuss the uses of this technology in GPCR screening, reviewing its advantages in terms of throughput, size of signal and so on as well as the various protocols for use on instruments such as the Lumilux. The presentation will also place in context this new technology with the variety of solutions now available from PerkinElmer drug discovery directed at GPCRs.

## **Gyros US**

Protein quantification using Gyrolab CD technology: Miniaturization and integration of sandwich immunoassay

The Gyrolab Bioaffy® technology offers a microfluidic solution for performing sandwich immunoassays at nanoliter scale. By working at nanoliter scale, reaction times are reduced from hours down to minutes. This means that up to 112 data points can be generated within one hour. Samples are processed in parallel under controlled conditions, enhancing reproducibility and reliability. Assays are performed automatically within the instrument platform thus reducing hands-on time. The main application areas for Gyrolab Bioaffy are within the protein drug development process; including clone selection and productivity, impurities quantification, pre-clinical development and pharmacokinetics. Examples have shown that Gyrolab Bioaffy is an effective and flexible tool in protein quantification.

## **Caliper Life Sciences**

A comparison of Zephyr and Sciclone Liquid Handlers for Automated Cell-Based Assays on Permeable Support Systems.

Speaker: Geoffrey Grove

Liquid handling is an important part of automation for HTS especially as the demand for standardization and efficiency increase. With cell-based assays, automation is being used to seed, wash, and assay plates faster and with less variation than customary manual methods. In a recent study we used Corning's® HTS Transwell® 96 permeable support plates in conjunction with Caliper's Sciclone® ALH 3000 and a table top LiCONiC® STX40 CO<sub>2</sub> incubator to demonstrate that complex, multiple-step cell-based assays could be optimized in a fully automated system. Our results demonstrate that, with assay optimization, multiple step cell-based assays can be fully automated to yield highly reproducible results.

**MPR Associates Inc**

Title: Case Study for development of an instrument for electrophoresis in a 96 well microplate format

Presenter: Cameron Loper

Abstract: Recent advances in mass spectrometry allow the monitoring of hundreds to thousands of molecules found in a biological sample. However, analysis of biological samples, including blood serum, can require extensive sample preparation. Existing mass spectrometry sample preparation techniques are cumbersome, require a skilled labor force, are difficult to automate, can take upwards of a week to complete, and are costly. A new automated sample preparation system that performs electrophoretic fractionation and concentration of charged molecules was developed to answer these laboratory needs. The system includes an instrument, a disposable cartridge, and an external computer for user interface. This presentation focuses on the instrument and user interface development. The instrument is comprised of electrical, mechanical, and software subsystems that were designed, engineered, and integrated to create a functional, accurate, and user friendly device. With the instrument a user can define electrical current profiles to individually process 96 different samples. The profiles are fully adjustable through software communicating to the device over an Ethernet connection. Once a sample preparation run is started the instrument controls the electrical current to each of 96 wells according to the desired current profile and automatically logs measured voltage and current for each well for further study. This presentation will discuss the important steps of development of the described instrument. This includes a description of the manual lab process that this instrument alleviates, the initial concept of the instrument, early prototyping steps, and finally development into a full featured product for the marketplace. Special attention will be placed on major design challenges that were overcome and development hurdles that presented themselves along the way.

## CyBio US

“Low Volume GPCR and Ion Channel Screening, the easy way”

Current screening trends see a shift towards working with higher plate densities and reducing overall assay volumes. Using Flash Luminescence and novel photoproteins, the process of functional screening for GPCR and Ion Channels is simplified and made more economic, while gaining signal to background and sensitivity compared to traditional fluorescent methods. This presentation will focus on the Lumax family of HTS flash luminometers and low volume dispensing instruments, including the LabCyte Echo and the Genomic Solutions HummingBird, as well as the CyBi-Well nanoliter pipettors. Using this equipment coupled with a powerful biology provided by Axxam, it is shown that managing a move to high density/ low volume in HTS functional screening can be done without sacrificing signal, speed or assay simplicity.

□

**ThalesNano**, Záhony u. 7, Budapest, Hungary, H-1031

The automation of novel continuous-flow microfluidic reactors as tools to facilitate high-throughput compound synthesis.

Kathleen Battista

One of the major advantages of utilizing flow reactors for organic synthesis is that the reactors can often be automated more easily than batch reactors. This means certain organic synthesis reactions, e.g. hydrogenation, may be automated when previously thought impossible or too difficult. To this end, the presentation will describe a series of continuous-flow microfluidic reactors including, a hydrogenation reactor (H-Cube), a high pressure, high temperature organic synthesis reactor (X-Cube), and a continuous-flow ozonolysis reactor (O-Cube). The presentation will detail the chemistry developed on each reactor and the attempts to automate each reactor to develop novel automated high-throughput chemistry.

## **Merck**

### The HYPERFlask : A New High Yield, High Performance Tissue Culture Flask

Stacey Szymanski, Kevin Huff, Alison Rush, Amita Patel, Justin Murray, Eric Johnson, Jim Feasby, Rick Peltier, Berta Strulovici

Over the recent years, a large majority of high – throughput screens in the drug discovery process have become cell based, requiring high quality cells in large quantities. Automated production of cells in sufficient quantities to support uHTS has previously been limited by both speed and capacity of automated cell culture systems. Here we describe the HYPERFlask ( a novel 10 layer flask designed and manufactured by Corning) and its application in supporting uHTS cell based assays on an automated cell culture system (SelectT, The Automated Partnership, Royston, UK).

A novel, high density cell culture flask has been developed by Corning. This flask has a growth surface area of 1720 cm<sup>2</sup>, close to ten times the surface area of a single layer tissue culture flask while maintaining the footprint of a T175 flask. The HYPERFlask contains ten interconnected gas permeable growth surfaces, each coated with Corning's CellBIND<sup>®</sup> culture treatment. Cells grow on an ultra thin gas permeable polystyrene film and between each layer an air gap allows for gas exchange.

We have collaborated with both Corning and TAP to develop an upgrade enabling fully automated processing of the HYPERFlask on SelectT. We have grown a variety of cell lines using HYPERFlask and have obtained greater than 10 fold cell yields compared to T175 flasks. Our results indicate that cells grown in the HYPERFlask are viable and show similar dose responses to cells grown in T175 flasks.

In this presentation I will describe validation of the HYPERFlask in automated cell culture including seeding and harvesting protocols. I will also discuss our results in the context of key optimizations necessary to implement this novel development.

## **Roche**

### Compound Management Workflow and available technical infrastructure

This presentation summarized the efforts of inventory personnel locally and globally to sustain an efficient and timely compound management process. The Compound Management group in Nutley supports project teams during the Lead Optimization process by handling all newly synthesized solid compounds. The compounds are weighed out for the required low throughput and pharmacological assays; they may be dispensed as powders or solutions, in tubes or plates guaranteed with high quality.

Project specific samples are also plated for global distribution to ensure a consistent flow of unique newly synthesized compounds in our general in-house HTS library.

The reformatting and local distribution of the general HTS library is the responsibility of the local inventory groups as well which is distributed every few years depending on the solution availability at the local sites.

The informatics to support all these efforts is highly important and is supported by in-house IM colleagues.

## **Nanostream Inc**

### **A Generic Platform for Enzyme Assay Development and Optimization**

Paren Patel, Principal Scientist,

Abnormality in the activities of enzymes in key regulation pathways have been linked to many human diseases. Enzyme inhibitors are therefore an important class of pharmaceutical agents. The development and validation of enzyme assays for high throughput screening has made it feasible to screen hundreds of thousands of chemical entities against a biological target. However, target characterization and assay optimization represent one significant bottleneck for assay development. In order to speed decisions on assay feasibility and assay optimization, we have developed a generic platform for fast enzyme characterization, assay development and optimization. In this system, enzyme activity was analyzed by monitoring separation of substrate and product via micro parallel liquid chromatography. The enzyme activity was then determined based on percentage of product formation at the given time. The system has the capability to analyze 24 samples simultaneously and therefore allows 24 assay conditions to be tested in a single experiment over a short period of time. This system can analyze enzyme kinetics at initial velocity and provides real time monitoring of enzyme kinetics. From a few matrix experiments, the optimal enzyme, ATP, and substrate concentrations can be determined. The collected data also allows  $K_m$  determination for ATP and substrate, and for time course study. The system has been demonstrated for use in developing and optimizing enzymatic assays faster with fewer artifacts, fewer false positives and higher quality data. The unique benefits of this system for target characterization, assay development, and secondary screening in drug discovery will be discussed.

## **HTG, Inc.**

Fully Automated, High Sample Throughput, Multiplexed Measurement of Gene Expression

Jerry Zemaitis, VP Commercial Operations,

The automated, quantitative, high throughput, and multiplexed measurement of gene expression (mRNA) has been a challenge. The ArrayPlate quantitative Nuclease Protection Assay (qNPA™) marketed by HTG, Inc., provides this capability. Based on a simple lysis-only sample preparation and hybridization assay protocol standard off-the-shelf pipettors, incubators, and plate washer along with a luminescence imager is all that is necessary to prepare and test samples in 96-well or 384-well format. Multiple genes are measured within each well, enabling in-well controls to be run and permitting complete gene expression signatures to be measured within the same well. The quantitative performance of qNPA permits the signatures measured within each well to be scored, increasing the statistical power of the assay to detect differences above background without picking up false positives. Any type of cell or tissue, including fixed tissue or whole organisms, can be tested, permitting the native genes to be measured in their native state. The robustness and reproducibility of qNPA permits high throughput screening as well as dose response QSAR profiling and optimization, providing whole assay CV's (e.g. including the individual differentiation, treatment, and processing of samples) that typically average less than 10%. Thus the assay can identify weakly active compounds and changes in gene expression that are in the 10% to 20% range. While there are other commercial automated imager solutions, HTG is launching an automation accessory for its Omix imager.

**PharmaSeq**, Inc., 11 Deer Park Drive, Suite 104, Monmouth Junction, NJ 08852

### Light-powered Microtransponders for Miniaturized RFID Applications

The heart of PharmaSeq's microtransponder-based system is an ultra-small light-powered electronic tag with an imbedded antenna. The tag is a monolithic integrated circuit manufactured using standard CMOS technology. An essential part of the tag is the photocell, which, when illuminated by light, provides power for electronic circuits on the tag. The remaining areas of the silicon chip are occupied by read-only memory for the unique 50-bit ID, decoders, counters, and a simple radio transmitter. Two versions of microtransponders, 500 x 500 x 100 and 250 x 250 x 100 microns, have been built. In addition, a portable microtransponder ID reader is also available. It communicates with a PC via a USB port. Microtransponders can be readily built into a variety of biomedical tracking and authentication applications and serve as advanced labels. More information is available at the company's web site, <http://www.pharmaseq.com/products.html>.

## BioTrove, Inc

High Throughput Screening via RapidFire™ Mass Spectrometry □ Can Ozbal □ BioTrove, Inc.

Label-free screening technologies are becoming increasingly important in the drug discovery process, as therapeutic areas such as metabolic and cardiovascular disease continue to explore intractable screening targets. Mass spectrometry provides an excellent tool for screening enzymatic targets for several reasons; high specificity and sensitivity, direct detection of substrates and products, and applicability to a broad chemical range of unmodified substrates and products. Traditionally, mass spectrometry has been limited in high throughput screening applications due to low throughput (2-3 minutes/sample). In this presentation, RapidFire high-throughput mass spectrometry (RFMS) (6-7 seconds/sample) is compared to conventional HTS techniques and the utility of RFMS as a primary and secondary screening tool is demonstrated through the use of case studies.

## **Molecular Devices Corporation**

Romesh Draviam, Ph.D.  
Drug Discovery- Application Scientist

### Solving image interactivity in cellular informatics through AcuityXpress

Data generated on today's high content imaging platforms are multi-parametric by nature. One of the major challenges of cellular informatics platforms has been the inability to interact directly with the original analyzed images. Here, we demonstrate the AcuityXpress cellular informatics software that gives an unparalleled level of image interaction and visualization, along with all the most advanced statistical analysis and clustering tools. Features allow grouping of profiles and compounds together by correlation, in both Self-Organized Maps (SOM) and 3-D plots of Principal Components Analysis (PCA). Image drill down facilitates quality control of positive hits, by allowing users to visualize not only the images within the wells that produce the hits, but also the analysis segmentation that was run on those images. In addition, the drill down tool allows users to choose certain cells of interest and display other compounds or wells that produce a phenotype similar to the selected cell. This level of interactivity is facilitated by a common database shared by all the components of Molecular Devices Corporation's Total Imaging Solution which also includes the ImageXpress MICRO and ImageXpress ULTRA high content imaging systems and the MetaXpress software for image acquisition and analysis.

## **Applied Biosystems**

Improve Productivity and Save Time - tools available from Applied Biosystems and Ambion

We would highlight the following:

Sample Prep:

Cells to cDNA workflow - no RNA isolation needed

MagMax - high throughput RNA isolation

Real Time PCR:

Workflow from 1700, TLDA, Real Time, etc

siRNA's:

discuss GeneAssist and how it helps the workflow by already giving you the validated siRNA's as well as Taqman assay.

These would be scientific talks around these product lines. It would also show new free web-based tools to aid research workflows.

## Genetix

### Rapid screening and selection of stable high producing clones

A key rate-limiting step in the development and production of new antibody therapeutics is screening large populations of cells for stable, high producing clones. We previously reported a novel technology for discovering high-secreting clones in a rapid one-step process that permits cell screening of large populations while minimizing downstream processing. We extend the findings here with a refined method for selecting the high producers that are stable and have good growth.

The method is compatible with a range of cells types: adherent or suspension, serum-containing or chemically defined. The gentle nature of the process together with minimal handling insures high viability of the collected clones (for CHO cells:  $83 \pm 11\%$ ; range 62.5 – 97%).

The new method reduces the timeline for generating a stable high producing clonal cell line from over 60 days when employing traditional techniques to just 26 days. The low labor requirement means that multiple cell populations can be interrogated in parallel.

## **Fortebio**

Applications using BioLayer Interferometry (BLI) for Label-free Real-Time Kinetics Analysis in Post-primary Screening and Bioprocessing Development

Speaker: Christine Fomchenko, Field Application Scientist

There is a growing need to accelerate the characterization and identification of antibody and protein therapeutics in a simple, label-free, and information-rich format. ForteBio's Octet System addresses that need with label-free, real-time detection using BioLayer Interferometry (BLI) to measure molecular interactions. The Octet System uses biosensors that are optically coated with surface chemistries to report kinetic analysis or quantitation directly in a microplate. The system can analyze crude media and lysates without fluidics, streamlining the development and screening of potential drug candidates.

## Posters:

### REMP

#### REMP Bio-Sample Store: The Next Generation Large-Scale Automated Bio-Repository

Sample integrity during long-term storage has been widely discussed with limited to no valid data available on this important topic. It has been shown recently that proteins in plasma, which undergo multiple freeze/thaw cycles, exhibit severe damage as quickly as the second freeze/thaw cycle. However, plasma proteins stored at  $-70^{\circ}\text{C}$  for up to four years showed no significant protein degradation. Limiting freeze/thaw cycles, therefore, seems more important to maintaining the integrity of the plasma proteome than degradation caused by long-term storage. REMP is the only supplier to have successfully developed and installed a large-scale, fully automated repository for biological samples capable of operating at both  $-80^{\circ}\text{C}$  and  $-20^{\circ}\text{C}$ , concurrently. This unique storage concept allows for the most optimal sample storage conditions while minimizing the freeze/thaw cycling of these valuable samples. The REMP Bio-Sample Store, jointly developed with Pfizer Global R&D, can be used for a wide range of research applications; such as, genomics, proteomics, tissue banking, glycerol stocks and long-term storage of enzymes and other biological stock solutions and is an example for a new generation of sample storage solutions. This workshop will highlight the unique features of this storage system, discuss the affects of freeze/thaw cycles on samples and describe the systems use as a total sample management solution.

### CIS Bio

Validation of the new HTRF® KinEASE™ TK universal tyrosine kinase assay: Abl assay optimization & IC50 data for 6 key tyrosine kinases.

Thomas Roux, Laurence Jacquemart, Julien Trébaux, , Marie-Laure Lebreton, Patrick Mensat, Marion De Decker, Krista Steger\*, Patrice Robinson\*, Amy Card\*, Shay Wallace\*, Leah Torrie\*\*, Lydia Dunkerley\*\*, Catriona Mackay\*\*, Andrew Plater\*\* and Patrick Seguin. Cisbio, France - \*Cisbio, Bedford, USA - \*\* Millipore, Dundee, UK

HTRF KinEASE TK is a universal tyrosine kinase assay that uses a unique peptide substrate, Eu-K labeled anti-phospho tyrosine MAb and a proprietary substrate stabilizing buffer (SEB). Full assay development data is shown for Abl including enzyme kinetics, substrate & ATP Km determination as well as an enzyme titration study. IC50 data for specific and non-specific inhibition of the Abl, CSK, EGFR, JAK2, JAK3 and PTK5 tyrosine kinases are reviewed. Overall this product was validated for 59 cytoplasmic and receptor TKs. Key findings include tolerance of a wide range of ATP concentrations, high z' factors ( $>0.8$ ) and low enzyme consumption enabled by the SEB.

### SYMYX

“Improving Analytics for Pharmaceutical Development”  
Speaker: Eric Carlson

The use of automated, parallel experimentation in the areas of solubility, partition coefficients, and formulation screening can rapidly streamline troubleshooting chemical processes and assist in the development of new methods to increase efficiency. Advances have been made in both predictive solubility models and in automated workflows to study solubility profiles. Rather than scientists choosing one approach over the other, these two techniques can be used in a complimentary fashion to refine solubility models, use less compounds in a given study, and be more successful with the experiments than a scientist chooses to run. During the presentation, an emphasis will be placed on the actual workflows with less emphasis on predictive modeling.

**Case Study:** Cases studies of a large pharma company using these approaches in tandem to perform crystallization studies and to efficiently run solubility studies will be presented.