

## Schedule

- 8:30 – 9:00 AM Registration
- 9:00 – 9:15 AM Introduction
- 9:15 – 9:45 AM Patrick Humphrey, Sr. Automation Scientist  
Abbott Laboratories  
Design and Implementation of a Modular, Robotic High Throughput Cell-based Screening System
- 9:45 – 10:15 AM Andrew Niles, Senior Research Scientist  
Promega Corporation  
Homogeneous, High Throughput Assays for the Assessment of Toxicity: On- and Off-Target Models using a Cancer Cell line and iPSC Cardiomyocytes
- 10:15 – 10:30 AM Vendor Spotlight
- 10:30 – 10:45 AM Vendor Presentation  
Brad Larson, Principal Scientist  
Utility of Automated Cell-Based Drug Transport Assays in 96-Well Format, Using Permeable Support Systems
- 10:45 – 11:15 AM Morning Break
- 11:15 – 11:45 AM Ted Wakatsuki, Assistant Professor of  
Physiology, Medical College of Wisconsin;  
Co-Founder, InvivoSciences LLC  
Medical College of Wisconsin  
Bringing a New Dimension to Cell-Based Assays
- 11:45 – 12:15 PM Rebecca Lee-Lu, Senior Microbiologist  
Dow AgroSciences  
HTP Screening Process Of Secondary Metabolite Producer-  
*Saccharopolyspora spinosa*
- 12:15 – 1:30 PM Lunch
- 1:30 – 1:45 PM Vendor Presentation  
Steve Anderson, Drug Discovery Specialist  
PerkinElmer  
SureFire™ Assays for the Detection of Endogenous Phosphoproteins in Cells
- 1:45 – 2:00 PM Vendor Presentation  
Rick Gordon, Sales Manager  
FortéBio  
Reducing Bioprocessing Bottlenecks With an Automated Label-Free Assay
- 2:00 – 2:30 PM Dan Bradford, Research Specialist  
Stowers Institute for Medical Research  
High-Throughput Method for Aneuploidy Detection in *S. cerevisiae*
- 2:30 – 3:00 PM All Speakers  
Guest Moderator  
Roundtable Discussion, "Cell-Based Assays and Bioprocessing: Q and A"
- 3:30 – 4:30 PM LRIG Board Meeting (Congress Hotel)

HAMILTON ROBOTICS



Agilent Technologies

Thursday, Oct 7th  
5:00 PM–7:00 PM

Informal Reception with Vendor Exhibition

Friday, October 8th  
8:30 AM – 3:00 PM\*

\*Vendor Exhibition 8:30 AM – 2:00 PM

Vendor Exhibition Area  
Lunch and Refreshments Provided  
ATTENDANCE IS FREE

# Midwest LRIG

Fall Meeting  
2010

## Automating Cell-Based Assays and Bioprocessing

Thursday and Friday  
October 7-8, 2010

Roosevelt University  
430 S. Michigan Ave, Chicago, IL



MIDWESTLRIG INC.

The Midwestern USA Chapter of the Global Laboratory Robotics Interest Group

## Presentations

### Patrick Humphrey, Sr. Automation Scientist Abbott Laboratories

#### Design and Implementation of a Modular, Robotic High Throughput Cell-based Screening System

A growing number of screens presented to our HTS group have been the more complex and labor intensive cell-based screens. These types of assays drove the need to fully automate the screening process. Multiple robotic systems were evaluated for redundancy, modularity and the ability to rapidly reconfigure the system for different screening targets. We chose a HighRes Biosolutions Microstar system which satisfied our specification and functionality needs. We present the design and implementation of our cell-based screening system and the results of a screening campaign across fifteen different cancer cell lines.

### Andrew Niles, Senior Research Scientist Promega Corporation

#### Homogeneous, High Throughput Assays for the Assessment of Toxicity: On- and Off-Target Models using a Cancer Cell line and iPS Cardiomyocytes

We have developed a suite of automation friendly, multiplexed assays which can be used for the primary assessment of both on- and off-target cytotoxicity during drug screening and discovery efforts. We will demonstrate their utility using both primary and cancer cells contacted with clinically relevant compounds for various exposure periods. The resulting biomarker profile established from these assays can reveal information regarding a compound's potency, mode of cytotoxic action, or safety window.

### Tetsuro Wakatsuki, Assistant Professor in Physiology, Co-Founder, InvivoSciences LLC Medical College of Wisconsin

#### Bringing a New Dimension to Cell-Based Assays

We have developed a three-dimensional (3D) tissue-based, high-throughput, high-content profiling system of physiological parameters for the pharmaceutical and biotech industries. Using the live engineered tissue-constructs, their physiological responses to pharmaceuticals, environmental stresses, and biological agents such as virus can be analyzed. A robotic device was also developed to assess tissue mechanics as well as optical readouts of physiological parameters including cell viability and mitochondrial activities. The assay system can predict toxicity, therapeutic benefit, and the pharmacogenomic effects of drug candidates. Therefore, it can assist in reducing the numbers of laboratory animals used in drug discovery and cosmetic testing. For example, the assay system has been used to predict the efficacy of agents to improve skin elasticity without toxic effects as well as to identify chemical compounds that can treat cardiac fibrosis by reducing hyper contractility of fibrotic tissues without affecting the toxic effects on cardiac functions.

### Rebecca Lee-Lu, Senior Microbiologist Dow Agrosciences

#### HTP Screening Process Of Secondary Metabolite Producer- *Saccharopolyspora spinosa*

The insecticides spinosyn are currently produced by Dow AgroSciences using a fermentation based process. Classical random mutagenesis of the producing organism, *Saccharopolyspora (S.) spinosa*, has generated strains with improved productivity. Strain selection for industrial secondary metabolites is a cost effective method to maximize product yields. By utilizing the HTP platform coupled with automation more potential strains can be analyzed in a shorter amount of time to add value to the business.

### Dan Bradford, Research Specialist Stowers Institute for Medical Research

#### High-Throughput Method for Aneuploidy in *S. cerevisiae*

Aneuploidy is the condition of having one or more additional or missing chromosomes from the normal number leading to an unbalanced chromosome complement. Whole chromosome aneuploidy is responsible for several human disorders and is prevalent in most cancers. Standard methods to detect aneuploidy range from chromosome painting techniques to microarray-based methods. Though these methods are capable of detecting aneuploidy over a range of different resolutions, they are limited by low sample throughput, cumbersome sample preparation and cost.

We have developed methods to perform high-throughput preparation and processing to quickly and accurately measure whole-chromosome aneuploidy in cultured yeast using qPCR.

## Vendor Presentations

### Brad Larsen, Principal Scientist BioTek Instruments, Inc.

#### Utility of Automated Cell-Based Drug Transport Assays in 96-Well Format, using Permeable Support Systems

This presentation will highlight an automated cell-based drug transport assay using either Caco-2 or MDCK cells in 96-well Permeable Supports. The attendee will learn how the entire assay process was automated, including cell dispensing, media exchanges, and compound addition and removal, using simple, yet robust robotic instrumentation from BioTek, as well as a two-part permeable support system from Corning Life Sciences. Validation metrics will also be presented, including Transepithelial Electrical Resistance (TEER), and Lucifer Yellow and Rhodamine 123 permeability. The data shows that the automated assay is able to deliver results that are more consistent than manual processing, while reducing the overall experimental time.

### Steve Anderson, Drug Discovery Specialist PerkinElmer

#### SureFire™ Assays for the Detection of Endogenous Phosphoproteins in Cells

The phosphorylation of proteins plays a major role in disease including cancer and inflammation. Therefore, assays which can quantitate the phosphorylation of proteins are important in the study of signaling pathways as well as the screening for compounds that can inhibit specific phosphorylation events in cells.

Surefire, an Alpha Technology available from PerkinElmer, provides the ability to quantitate endogenous phosphoproteins in cell lysates. Surefire assays are homogeneous, eliminating the wash steps associated with Western blotting thereby saving valuable time. SureFire assay are as sensitive as Western Blot assays as well as quantitative and eliminates the need for imaging. We will discuss SureFire and Western blot assays comparing the workflow and the results of several phosphoprotein targets.

### Rick Gordon, Sales Manager FortéBio

#### Reducing Bioprocessing Bottlenecks With an Automated Label-Free Assay

Accurate protein and antibody quantitation is critical to the selection of expression strains for development and optimization of bioreactor titers in production. Traditional analytical methods such as ELISA and HPLC have drawbacks that include long analysis times, lack of specificity, labor intensive protocols, and imprecision. Here we describe a fully automated, robotic-compatible, simple Dip and Read™ assay platform that measures protein titer in cell culture supernatants and other crude media for about 2,000 samples in 5 hours.

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Vendor Passport for the  
iPod nano raffle!



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