BellBrook Labs Launches Compound Profiling Services with High Content 3D Invasion Assay

The 3D ECM Invasion Assay service combines BellBrook’s proprietary iuvo™ Microconduit Array platform and automated high content analysis to produce images of tumor cells actively invading the extracellular matrix. The company can provide customers with quantitative measurements of the anti-invasive properties of their compounds based on true 3D cell migration with sufficient throughput for profiling hundreds of compounds.

Madison WI (PRWEB) May 5, 2010 -- BellBrook Labs announced at the 2010 Society for Biomolecular Screening Symposium the launch of a new invasion assay service for profiling the effects of potential drug molecules on migration of tumor cells through extracellular matrix. The assay was developed as a more physiologically relevant and information-rich alternative to commonly used filter-based assays. The assays are run in submicroliter channels in BellBrook's recently developed iuvo Microchannel 5250 plates. Cells are added to the liquid media compartment and allowed to migrate into the collagen-filled microchannels. Automated microscopy and proprietary algorithms are then used to image the ultrathin assay compartments, generating quantitative data on number of cells invading the matrix and distance traveled as well as effects on cell proliferation. MC5250 plates have 192 channels in an SBS/ANSI format and the assay is fully automated, so throughput is sufficient for secondary screening and data quality is high enough for quantitative IC50 determinations. The services include assay development for customer cell lines, determination of inhibitor potencies, and additional high content analysis of pathway and/or mechanism.

Metastasis is the predominant cause of death from cancer, and tumor cell migration is a key element in the metastatic process. Understanding how tumor cells mobilize and invade other tissues, and developing drugs that inhibit the process are fundamental challenges for the development of improved anti-cancer therapeutics. The most common in vitro assay for tumor cell invasion relies on modified Boyden chambers in which cells traverse a membrane coated with ECM. This approach requires cumbersome manual interventions that limit throughput, and the assays yield only limited information on the bulk population of cells that reach the other side of the membrane.

The iuvo 3D ECM Invasion Assay provides a much more detailed, physiologically relevant assessment of cell behavior because it tracks cell migrating in a true three dimensional matrix, which is more representative of their in vivo microenvironment. Each migrating cell is assigned an x,y coordinate, and a variety of analysis methods are used to quantify migration including those based on distributions, such as median distance traveled, as well as total number of cells migrating. The end result is quantitative IC50 values based on inhibitor dose response curves. Furthermore, relative effects on migration vs. proliferation can be assessed by measuring the density of cells in the loading area at the end of the assay. This allows compounds to be binned based on their inhibition of migration relative to other activities such as proliferation and cytotoxicity.

In addition to number of cells invading and distance traveled, images of actively invading cells can provide clues to the mode of migration and underlying mechanisms; e.g., collective versus individual migration patterns. And more detailed information on mechanisms or pathways can be gleaned using post assay staining of cells in the channels. Both phalloidin staining and immunocytochemistry have been employed in this way. Though BellBrook has just begun to explore these methods, the ability to apply in situ high-content analysis approaches to cells migrating in 3-D ECM is a promising avenue for delineating and targeting specific cell

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invasion events and pathways.

About BellBrook Labs. BellBrook Labs, LLC develops detection reagents and microfluidic devices that accelerate the discovery of more effective therapies for cancer and other debilitating diseases. Transcreener® is a patented high throughput screening assay platform that was introduced in 2005 and is used to identify inhibitors for kinases and other types of protein drug targets. The iuvo™ Microconduit Array technology is a line of unique microscale devices for miniaturization and automation of advanced cell models that are more representative of human physiology. Visit BellBrook’s website for more information: www.bellbrooklabs.com
Contact Information
Robert Lowery
BellBrook Labs
http://www.bellbrooklabs.com
608-227-4501

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