Press release
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CYTOO's 2D+ Cell Culture Platform enables Quantitative Mapping of Trafficking Compartments and Standardized Mitochondrial Analysis

New applications represent a major step towards quantitative high content analysis of cellular organization in high throughput screening.

Grenoble, France, 18th September 2012 – CYTOO S.A., a life sciences systems & tools company that offers solutions for cell-based assays and High Content Screening (HCS), announced today new results that demonstrate the ability of the Company's 2D+ Cell Culture Platform to enable two new high content analysis (HCA) approaches: (i) quantitative density mapping of trafficking compartments and (ii) standardized mitochondrial analysis. The results will be presented next week at MiPTec 2012 in Basel by the researchers from the Institut Curie in Paris and Angers University Hospital/INSERM, France.

The CYTOO 2D+ Cell Culture Platform, which was launched in July 2012, is based on the use of adhesive micropatterns in microplate wells to guide the cell architecture and behavior in culture. By defining the 2D topology of cell adhesion, the 2D+ Technology enables the fine control of the spreading and 3D shape of cultured cells in single- or multi-cellular configurations resulting in control of cell contractility, cell polarity, organelle positioning, or cell division axis. This opens new perspectives for more physiologically relevant cell-based assays compared to classical 2D culture where cells spread and move in an uncontrolled manner.

The researchers of Bruno Goud's team at the Institut Curie will present at MipTec novel data [1] showing the use of the 2D+ Cell Culture Platform to identify proteins that sustain steady-state organization of trafficking compartments by high-throughput density mapping in several compound and siRNA high content screens. Following the method developed previously by the team [2], the hits were selected based on the P-value calculated from the difference between the density map of a pooled control and the density map of each treated condition in the screen. The data from only 30 cells per condition was sufficient to get statistically significant results. In comparison, "state-of-the-art" HCA using unrestricted cells with considerable cell-to-cell variation requires hundreds or thousands of cells in order to get significant results.

Arnaud Chevrollier from Angers University Hospital will present [3] the use of the CYTOO 2D+ technology to standardize the quantification of mitochondrial networks in primary skin fibroblasts. The increasing importance of defective mitochondrial dynamics in several diseases including common neurodegenerative disorders, cardiomyopathies, or age-related disorders, has called for the development of reference imaging tools for medical investigation and drug discovery. However, until now current approaches to study complex mitochondrial morphology have been limited to low throughput analysis due to the ever varying shape and distribution of the mitochondrial network in cells with heterogeneous size and morphology that is inherent to culture conditions but has no direct

biological significance. The CYTOO 2D+ micropatterned arrays enabled standardization of the size and shape of the cells in culture allowing, for the first time, a high content quantitative relationship between the organization of the mitochondrial network and specific experimental and pathological conditions. This novel approach can also be applied to high content screening to systematically identify compounds and pathways that impact mitochondrial abundance and sub-cellular distribution.

Commenting on the new results, Michel Bornens, Ph.D, CYTOO Chief Scientific Officer, said: "*These two studies to be presented at MiPTec this year demonstrate how, 2D+ Cell Culture Platform enables completely new powerful high content analysis approaches that were previously impossible. We are delighted to see this new data, which represent a major step towards quantitative HCA of cellular organization in high throughput screens."*

References

1. K. Schauer et al. *Identification of proteins that sustain steady-state organization of trafficking compartments by high-throughput density mapping*. Poster presentation P177, MiPTec, Basel 2012.
2. Schauer K, et al. *Probabilistic density maps to study global endomembrane organization*. Nat. Methods. 2010 7(7):560-6; Duong T, et al. *Closed-form density-based framework for automatic detection of cellular morphology changes*. Proc Natl Acad Sci U S A. 2012;109 (22):8382-7.
3. A. Chevrollier et al. *Standardized mitochondrial analysis using micropattern arrays*. Poster presentation P117, MiPTec, Basel 2012; A. Chevrollier et al. *Standardized mitochondrial analysis gives new insights into mitochondrial dynamics and OPA1 function*. The Int. J. of Biochem. & Cell Biol. 2012; 44:980-8.

About CYTOO S.A.

CYTOO S.A. is a distinctive life sciences systems & tools company that offers a disruptive solution that brings robustness, sensitivity and powerful quantification to cell-based assays and High Content Screening (HCS). The Company's 2D+ Cell Culture Platform based on adhesive micropatterns offers control over the cells' microenvironment, leading to normalized cell morphology and behavior. The technology allows the optimization or resurrection of complex or difficult cell-based assays and opens possibilities of innovative assay development.

For more information about the complete product portfolio, visit www.cytoo.com

Contacts

Cytoo SA
Constantin Nelep, PhD.
Senior Product Manager
Tel: +33 6 47 69 48 59
cnelep@cytoo.com
Twitter: cytoo

Media Enquiries
Lorna Cuddon
Zyme Communications Ltd
Tel: +44 (0) 7811996942
Email: lorna.cuddon@zymecommunications.com
Twitter: zymecomms