transatlantic think tank for toxicology

t4 Workshop Report*

Current Approaches and Future Role of High Content Imaging in Safety Sciences and Drug Discovery

Erwin van Vliet [1], Mardas Daneshian [2], Mario Beilmann [3], Anthony Davies [4], Eugenio Fava [5], Roland Fleck [6], Yvon Julé [7], Manfred Kansy [8], Stefan Kustermann [8], Peter Macko [9], William R. Mundy [10], Adrian Roth [8], Imran Shah [11], Marianne Uteng [12], Bob van de Water [13], Thomas Hartung [2,14] and Marcel Leist [2]*

[1]Innovitox consultation & services, Barcelona, Spain; [2]Center for Alternatives to Animal Testing – Europe (CAAT-Europe), University of Konstanz, Konstanz, Germany; [3]Department of Non-clinical Drug Safety, Molecular & Cell Toxicology Group, Boehringer Ingelheim Pharma GmbH & Co. KG, Biberach, Germany; [4]Irish National Center for High Content Screening and Analysis (INCHSA), Dublin, Ireland; [5]German Center for Neurodegenerative Diseases (DZNE), Bonn, Germany; [6]Biological Imaging and Assay Development, National Institute of Biological Standards and Control, Potters Bar, UK; [7]Biocellvia, Marseille, France; [8]Non Clinical Safety, F. Hoffmann-La Roche LTD, Basel, Switzerland; [9]EURL ECVAM, European Commission – Joint Research Centre, Systems Toxicology Unit, Ispra, Italy; [10]National Health and Environmental Effects Research Laboratory, US Environmental Protection Agency, Research Triangle Park, NC, USA; [11]National Center for Computational Toxicology, Office of Research and Development, Research Triangle Park, NC, USA; [12]Cellular Models & High Content Biology Laboratory, Novartis International AG, Switzerland; [13]Leiden Academic Centre for Drug Research, Leiden University, The Netherlands; [14]Johns Hopkins University, Bloomberg School of Public Health, Center for Alternatives to Animal Testing (CAAT), Baltimore, MD, USA

Summary

High content imaging combines automated microscopy with image analysis approaches to simultaneously quantify multiple phenotypic and/or functional parameters in biological systems. The technology has become an important tool in the fields of safety sciences and drug discovery, because it can be used for mode-of-action identification, determination of hazard potency and the discovery of toxicity targets and biomarkers. In contrast to conventional biochemical endpoints, high content imaging provides insight into the spatial distribution and dynamics of responses in biological systems. This allows the identification of signaling pathways underlying cell defense, adaptation, toxicity and death. Therefore, high content imaging is considered a promising technology to address the challenges for the "Toxicity testing in the 21st century" approach. Currently, high content imaging technologies are frequently applied in academia for mechanistic toxicity studies and in pharmaceutical industry for the ranking and selection of lead drug compounds or to identify/confirm mechanisms underlying effects observed in vivo. A recent workshop gathered scientists working on high content imaging

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