



Safety Pharmacology Society 2018

Washington D.C.

September 30 – October 3

Sponsored Presentations

Monday, October 1

07:00 – 08:00 | Hoover

OPTOGENETIC AND hiPSC-DERIVED CELLS – LEAP INTO THE FUTURE OF DRUG SCREENING

Presented by: Ncardia and Axion BioSystems

The cardiomyocyte and multiwell microelectrode array (MEA) assay offers an ideal approach to evaluate proarrhythmic indicators *in vitro*, and the addition of optogenetics provides unparalleled control of the assay. Learn how the combination of Axion BioSystems' leading MEA technology and Ncardia's new light-gated ion channel transfection technology provides an attractive assay for investigation of frequency-dependent responses of hiPSC-derived cardiomyocytes.

Monday, October 1

12:30 -13:30 | Hoover

BEYOND THE CiPA MYOCYTE ASSAY: TOMORROW'S TOOLS TODAY

Presented by: Axion BioSystems

Trends in cardiac safety testing, as exemplified by CiPA and JiCSA, emphasize a move to integrated cellular models. The cardiomyocyte and multiwell microelectrode array (CM-MEA) assay offers an ideal approach to evaluate proarrhythmic indicators *in vitro*. Join Axion BioSystems to discuss advances in highly-multiplexed CM-MEA assays, fully exploiting the latent power of human cardiomyocyte models.

Oral Communications Sessions

Monday, October 1

14:00 – 15:15 | Thurgood Marshall West

ORAL COMMUNICATIONS SESSION 2: IMPACT OF HUMAN INDUCED PLURIPOTENT STEM CELLS ON *IN VITRO*, CARDIAC, AND CENTRAL NERVOUS SYSTEM SAFETY ASSESSMENT

14:45–15:00 Are Human iPSC-Derived Neurons a Good Tool to Detect Seizurogenic Drugs?

Mohamed Kreir, *et al.*

Global Safety Pharmacology, Preclinical Development & Safety, Discovery Sciences, Janssen Research & Development, Janssen Pharmaceutica NV, Beerse, Belgium

15:00–15:15 Sex Differences in Repolarization Reserve, a Possible Mechanism for Sex-Related Differences in Drug-Induced QT Prolongation and Torsades de Pointes

Li Pang, *et al.*

US Food and Drug Administration National Center for Toxicological Research, Jefferson, AR, The United States of America

Tuesday, October 2

14:00 – 15:15 | Thurgood Marshall North

ORAL COMMUNICATIONS SESSION 3: RECENT PROGRESS IN NEUROLOGICAL SAFETY ASSESSMENTS

14:15-14:30 Evaluation of Pilocarpine in Multiple Neuronal Cell Types Using Microelectrode Array

Christopher Strock, *et al.*

Cyprotex US LLC, Watertown, MA, The United States of America

14:30-14:45 Trial to Detect Significant Metrics for Drug-Induced Seizure Liability Using Microelectrode Array Data Analysis and Primary Rodent Neurons: From Multi-Site Pilot Study of the HESI NeuTox Consortium with CSAHi and iNCENS

Norimasa Miyamoto, *et al.*

Poster Presentations

13:00-14:00 | Even Poster Numbers Present on Monday, Odd on Tuesday

15:15-15:45 | Odd Poster Numbers Present on Monday, Even on Tuesday

Poster Abstract Title and Authors

- # 024** **Evaluation of Electrophysiological Parameters Variability of iPSC-Derived Cardiomyocytes**
Celine Chantoiseau, Thierry Carriot, Veronique Ballet, Jean-Michel Guillon
Sanofi R&D, Vitry sur Seine, France
- # 035** **Channelrhodopsin-2 Transfected hiPSC-CMS Allows for LED Excitation/Pacing on Two MEA Platforms**
Benjamin Wolters, Mieke Doornbos, Chris Fleming, Ralf Kettenhofen
Ncardia, Leiden, The Netherlands; Ncardia Inc., Plymouth Meeting, PA, The United States of America; Ncardia AG, Koln, Germany
- # 061** **Multiwell Microelectrode Array Technology for Multimodal Characterization of Neural and Cardiac Networks *In Vitro***
Daniel C. Millard, Heather B. Hayes, Stacie A. Chvatal, Anthony M. Nicolini, Colin A. Arrowood, Mike Clements, James D. Ross
Axion BioSystems, Inc., Atlanta, GA, The United States of America
- # 071** **Functional *In Vitro* HTS Seizure Prediction with Human and Mouse Neurons Growing on Microelectrode Arrays Analyzed by Artificial Intelligence-based Methods**
Benjamin M. Bader, Konstantin Jugelt, Luise Schultz, Blake Anson, Mike Clements, Olaf Schroder
NeuroProof GmbH, Rostock, Germany; FUJIFILM Cellular Dynamics, Madison, WI, The United States of America; Axion BioSystems, Atlanta, GA, The United States of America

073 Are Human iPSC-Derived Neurons a Good Tool to Detect Seizurogenic Drugs?

Mohamed Kreir, Greet Teuns, Hua Rong Lu, David J. Gallacher

Global Safety Pharmacology, Preclinical Development & Safety, Discovery Sciences, Janssen Research & Development, Janssen Pharmaceutica NV, Beerse, Belgium

074 High-Throughput (*In Vitro*) Phenotypic and Seizure Profiling Using Matured Neuro-Astrocyte Co-Cultures

Dietmar Hess, Chris Fleming, Thomas Palm, Greg Luerman

Ncardia AG, Koln, Germany; Ncardia Inc., Plymouth Meeting, PA, The United States of America

078 Evaluating the Use of Microelectrode Array Technology and Cell-Based Neuronal Culture Models for Proconvulsant Risk Assessment: Progress from the HESI NeuTox Consortium

Daniel C. Millard, Anthony M. Nicolini, Colin A. Arrowood, Heather B. Hayes, Jenifer A. Bradley, Christopher J. Strock, Theresa M. Freudenrich, Kathleen Wallace, Timothy J. Shafer, Matthew J. Cato, Khuram W. Chaudhary, Lorena Saavedra, Daniel Haag, TK Feaster, Blake D. Anson, Greg Luerman, Dietmar Hess, Yichen Shi, Jinqing Li, Hong Shi, Paul Levesque, Mohamed Kreir, Hua Rong Lu, Ikuro Suzuki, Aoi Odawara, Norimasa Miyamoto, Atsuko Ojima, Yasunari Kanda, Ksenia Blinova, David Herr, Ruth Roberts, Jennifer Pierson

Axion BioSystems, Inc., Atlanta, The United States of America; Cyprotex US, LLC, an Evotec Company, Watertown, The United States of America; ISTD NHEERL US EPA, Research Triangle Park, NC, The United States of America; Safety Pharmacology, In Vitro / In Vivo Translation, GlaxoSmithKline, Collegeville, PA, The United States of America; NeuCyte, Sunnyvale, CA, The United States of America; FUJIFILM Cellular Dynamics, Inc., Madison, WI, The United States of America, Ncardia AG, , Köln, Germany; Axol Bioscience, Little Chesterford, United Kingdom; Bristol-Myers Squibb, Princeton, NJ, The United States of America; Janssen Pharmaceutica NV (J&J), Beerse, Belgium; Tohoku Institute of Technology, Sendai, Japan; Japan iPSC-non-clinical Experiments for Nervous System project, Sendai, Japan; Biopharmaceutical Assessments Core Function Unit, Medicine Development Center, Eisai Co., Ltd, Tsukuba, Japan; Tsukuba branch, Techno Pro R&D company, Techno Pro Inc., Tsuchiura, Japan; NIHS, Kawasaki, Japan; US Food and Drug Administration, Center for Devices and Radiological Health, Silver Spring, MD, The United States of America; Neurotoxicology Branch, US Environmental Protection Agency, Research Triangle Park, NC, The United States of America; Apconix, Cheshire, United Kingdom; Health and Environmental Science Institute, Washington, DC, The United States of America

079 **Trial to Detect Significant Metrics for Drug-Induced Seizure Liability Using Microelectrode Arrays Data Analysis and Primary Rodent Neurons: From Multi-site Pilot Study of the HESI NeuTox Consortium in Collaboration with CSAHI and iNCENS**

Norimasa Miyamoto, Atsuko Ojima, Saori Inaba, Tetsuo Kitamura, Tomoharu Osada, Takashi Yoshinaga

Biopharmaceutical Assessments Core Function Unit, Medicine Development Center, Eisai Co., Ltd., Tsukuba, Japan; Consortium for Safety Assessment using iPSC Cells (CSAHi), Kawasaki, Japan; iPSC Non-clinical Experiments for Nervous System (iNCENS), Kawasaki, Japan; The NeuTox Micro-Electrode Array (MEA) Subteam, The Translational Biomarkers of Neurotoxicity (NeuTox) Committee, Health and Environmental Sciences Institute (HESI), Washington, DC, The United States of America; Tsukuba branch, TechnoPro R&D, Company, TechnoPro, Inc., Tsuchiura, Japan; Safety Assessment Department, Nonclinical Research Center, LSI Medience Corporation, Kamisu, Japan; Advanced Medical Business Development Department, LSI Medience Corporation, Chiyoda, Japan

082 **Evaluation of Pilocarpine in Multiple Neuronal Cell Types Using Microelectrode Array**

Jennifer A. Bradley, Christopher J. Strock

Cyprotex US LLC, Watertown, MA, The United States of America

096 **Robust Estimation of Field Potential Duration in Multi-Electrode Array Signals**

Levy Batista, Thierry Bastogne

CYBERNANO, Villers-les-nancy, France; CRAN, University Lorraine-CNRS UMR, Vandoeuvre-lesNancy, France; INRIA BIGS, Vandoeuvre-les-Nancy, France

112 **Comparison of *In Silico* Action Potential Modeling (AP-Predict) and the hiPSC-CM MEA Assay in Predicting Drug-Induced Cardiotoxicity**

Shuya Wang, Patricia A. Valentine, Matthew J. Cato, Anthony Bahinski, Khuram W. Chaudhary

GlaxoSmithkline, Collegeville, PA, The United States of America

164 **Assessment of Hypertrophic Cardiomyopathy Using Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes Reveals Abnormal Excitation Contraction Coupling**

Natsuyo Aoyama, Jing Liu, Souameng Lor, T.K. Feaster, Simon Hilcove, Eugenia Jones

FUJIFILM Cellular Dynamics, Inc., Madison, WI, The United States of America

165 **Clinical Trials-in-a-Dish: Different Inter-Individual Drug Responses for Calcium Handling and Electrophysiology in a Cohort of hiPSC-Derived Cardiomyocytes**

Bernard Fermini, Denise D. Sullivan, Jerome Chal, Eli J. Fine, Shawn T. Coyne, Alexia King, Jessica Johnson, Alexander Hernandez, Chinye F. Obata, Kevin P. Coyne

Coyne Scientific, Atlanta, GA, The United States of America

177 **Sex Differences in Repolarization Reserve, a Possible Mechanism for Sex-Related Differences in Drug-Induced QT Prolongation and Torsades de Pointes**

Feng Wei, Chengzhong Cai, Beverly Lyn-Cook, Li Pang

National Center for Toxicological Research, Jefferson, AR, The United States of America; US Food and Drug Administration National Center for Toxicological Research, Jefferson, AR, The United States of America

189 **Utilization of Human Induced Pluripotent Stem Cell-Derived Cardiomyocytes on an MEA Platform for Prediction of Liabilities with Chronic Drug Treatment**

Christopher J. Strock

Cyprotex US LLC, Watertown, MA, The United States of America

194 **High-Throughput and High-Content Safety Pharmacology Assessments with 3-Dimensional Human Induced Pluripotent Stem-Cell Derived Cortical Spheroid Platforms**

Steven Dea, Steven Biesmans, Sergio Mora-Castilla, Sarah Romero, Neh Sodhi, Aurian Saleh, Grace Woodruff, Tony Harrington, Fabian Zanella, Cassiano Carromeu

StemoniX, San Diego, CA, The United States of America; Janssen Pharmaceutica, San Diego, CA, The United States of America