In silico drug safety and efficacy symposium

DAY 1 (21st September 2017)

08:00-09:00  Registration

09:00-09:10  Blanca Rodriguez (University of Oxford) and Helen Prior (NC3Rs): Welcome and symposium objectives.

SESSION 1: Human in silico modelling and simulation (Chaired by: András Varró, University of Szeged, Hungary)

09:10-09:30  Eric Sobie (Mount Sinai School of Medicine, USA): Population-based mechanistic modeling allows for quantitative predictions of drug responses across cell types.

09:30-09:50  Pierre Morissette (Merck Research Laboratories, USA): In silico modelling and electromechanical window.

09:50-10:10  Michelangelo Paci (Tampere University, Finland): Computer modelling of hiPSC-CM electrophysiology and calcium dynamics: present and future.

10:10-10:30  Godfrey Smith (University of Glasgow & Clyde Biosciences, UK): Use of optical action potential waveforms to inform in-silico models of iPSC-derived cardiomyocyte electrophysiology

10:30-11:15  Coffee break

SESSION 2: New human in silico and in vitro technologies and regulatory perspectives (Chaired by: Hugo Vargas, Amgen Inc, USA)

11:15-11:35  Emilia Entcheva (George Washington University, USA): High-throughput all-optical cardiac electrophysiology in human iPSC-CMs: Predictive value of multidimensional space-time data for the CiPA initiative.


11:55-12:15  Sara Dutta (Food and Drug Administration, USA): CiPA in silico modelling: Update and next steps.


12:35-14:00  Lunch

SESSION 3: Human in vitro models (Chaired by: Hua Rong Lu, Janssen Pharmaceutical, Belgium)

14:00-14:20  Patrick McDonough (Vala Sciences, USA): Specific prediction of clinical QT prolongation by kinetic image cytometry of calcium and voltage transients in human iPSC-cardiomyocytes.

14:20-14:40  Jeff Saucerman (University of Virginia, USA): Systems pharmacology of human iPSC-derived cardiomyocyte proliferation.

14:40-15:00  Jean-Frédéric Gerbeau (Inria Paris & Sorbonne Universités UPMC Paris 6, France): Machine learning and computer simulation for hiPSC-MEA signals classification.

15:00-15:30  Coffee break

SESSION 4: Beyond human electrophysiology: autonomic regulation, contractility and metabolism (Chaired by: Alfonso Bueno-Orovio, University of Oxford, UK)

15:30-15:50  Esther Pueyo (University of Zaragoza, Spain): In silico investigation of autonomic nervous system–heart interactions: Implications for cardiac arrhythmias and therapeutic approaches.

15:50-16:10  Najah Abi Gerges (AnaBios Inc, USA): Adult human primary cardiac-based models for the simultaneous prediction of drug-induced inotropic and pro-arrhythmia risk.

16:10-16:30  Steve Niederer (King’s College London, UK): Modelling of Doxorubicin toxicity.


16:50-17:30  Yoram Rudy (Washington University in St Louis, USA): Modelling and imaging human cardiac electrophysiology: Potential applications in drug development and evaluation.
SESSION 5: Drug efficacy and disease interactions
(Chaired by: Javier Saiz, Universitat Politècnica de València, Spain)
09:00-09:20 Eleonora Grandi (University of California Davis, USA): A computational approach to atrial fibrillation selective pharmacology.
09:20-09:40 Andreu Climent (Hospital Gregorio Marañón, Spain): Personalised efficacy of atrial fibrillation antiarrhythmic drugs: Lessons learnt from populations of mathematical models.
09:40-10:00 Beatriz Trénor (Universitat Politècnica de València, Spain): Sensitivity analysis revealing the modulation of calcium dynamics in simulated human heart failure.
10:00-10:20 Gunnar Seemann (Universitäts-Herzzentrums Freiburg, Germany): Concentration and heart rate dependent antiarrhythmic drug potency in a multiscale in silico model.
10:20-11:00 Coffee break

SESSION 6: In silico cardiac drug testing
(Chaired by: Ana Mincholé, University of Oxford, UK)
11:00-11:20 David Christini (Weill Cornell Medical College, USA): Global optimization of ventricular myocyte models to clinical restitution data improves predictions of rate-dependent QT interval prolongation.
11:20-11:40 Flavio H. Fenton (Georgia Institute of Technology, USA): Real time simulations of complex cell models in 2 and 3D on a desktop: Getting closer to patient specific modelling.
11:40-12:00 Henggui Zhang (University of Manchester, UK): Development of the human whole heart for quantifying the function impacts of anti-arrhythmic drugs.
12:00-12:20 Belinda Gray (St George’s University Hospitals NHS Foundation Trust, UK): Sudden cardiac death and gene discovery.
12:20-12:40 Annie Delaunois (UCB Biopharma, Belgium): Designing safer drugs through the application of in silico methodologies.
12:40 Blanca Rodriguez: Conclusions followed by Lunch

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LIST OF PARTICIPANTS (as per September 19th, 2017)

RESEARCH AGENCIES:
- National Centre for the Replacement, Refinement & Reduction of Animals in Research (UK): Helen Prior, Kate Harris.
- Health and Environmental Sciences Institute (USA): Jennifer Pierson.

REGULATORY AGENCIES:
- Food and Drug Administration (USA): Sara Dutta.

INDUSTRY:
- Abbvie (USA): Gary Gintant.
- Amgen (USA): Yang Liu, Yusheng Qu, Hugo Vargas.
- AnaBios Corporation (USA): Najah Abi Gerges.
- Biotrial (UK): Matthew Konneh.
- Clyde Biosciences Ltd (UK): Godfrey Smith.
- Eli Lilly and Company (USA): Derek Leishman.
- Chugai Pharma Europe Ltd (UK): Keith Jones.
- GSK (UK): Gareth Lewis.
- Janssen Research and Development (Belgium): Hua Rong Lu, Ivan Kopljar.
- Lipz (France): Philippe Zitoun.
- Merck Research Laboratories (USA): Pierre Morissette, Frederick Sannajust.
- Pfizer (USA): David Ackley, Todd Wisialowski.
- QT Informatics (UK): Mark Davies.
- UCB-Biopharma SPR (Belgium): Annie Delaunois.
- Vala Sciences Inc (USA): Patrick McDonough, Jeff Price.

CLINICAL AND ACADEMIA:
- Barcelona Supercomputing Center (Spain): Jazmin Aguado-Sierra.
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