



Oxford Symposium: The future of therapy discovery and development

Location: Lecture Theatre B, Department of Computer Science

(entrance via 7 Keble Road, Parks Road, OX1 3QD, Oxford)

DAY 1 (December 5th, 2022)

08:00-09:00 **Registration**

09:00-09:05 **Blanca Rodriguez** (Oxford) *Welcome and symposium objectives.*

SESSION 1: Drug development (Discussion leader: Cristian Trovato)

09:05-09:25 Annie Delaunois (UCB) - Development and deployment of human-based computational tools in drug discovery

09:25-09:50 Jenny Wang (Oxford) and Elisa Passini (NC3Rs) - *In silico* drug trials using computer modelling and simulation

09:50-10:10 Ravindra Alluri (AZ) - Predicting human cardiovascular safety risk from modelling of preclinical data

10:10-10:30 Friedemann Schmidt (Sanofi) - When AI/ML starts to feed in silico simulation: Can we save on SafetyPharm experimentation in early pharmaceutical discovery?

10:30-11:15 **Coffee break**

SESSION 2: Therapies in ischemic cardiomyopathy (Discussion leader: Ana Minchale)

11:15-11:35 Jacopo Biasetti (AZ) -safety and efficacy of cell therapy

11:35-11:55 Luana Rebel (Oxford) - Investigating pro-arrhythmic risk of cell therapy through modelling and simulation

11:55-12:15 Dunja Asentijevic (QMUL) - Cardiac metabolism and preclinical drug development- hope for the future and power for the present

12:15-13:45 **Lunch**

SESSION 3: Sudden cardiac death (Discussion leader: Annemarie Silver)

13:45-14:05 Sandeep Pandit (Zoll) - cardiac safety & effectiveness- a medical device industry perspective

14:05-14:35 Giuseppe Ristagno (Milano) and Hector Martinez-Navarro (Oxford) – Insights into ventricular fibrillation : experiments versus modelling and simulation

14:35-15:05 James Coleman (Oxford) and Betty Raman (JRH) – Pro-arrhythmic ischemia in hypertrophic cardiomyopathy: in silico versus clinical investigations

15:05-15:35 Rina Ariga (NHS) and Sunil Manohar (NHS): Deep learning and big data for disease phenotyping

15:35-16:15 **Coffee break**

SESSION 4: Precision medicine (Discussion leader: Manuela Zaccolo)

16:15-16:45 Chris Toepfer and Alfonso Bueno-Orovio (CVM and CS, Oxford): Hybrid *in vitro/in silico* research into hypertrophic cardiomyopathy.

16:45-17:05 Aiden Doherty (NDPH, Oxford): Can wearables transform our understanding of disease?

17:05- 17:30 Vaidya, Vishal (Pfizer) - Precision Medicine and Precision Safety in Drug Development

DINNER AT CHERWELL BOATHOUSE

DAY 2 (December 6th, 2022)

SESSION 5: Digital twins and big data (Discussion leader: Rodrigo Weber Dos Santos)

- 09:00-09:30 Aurore Lyon (Maastricht) and Matthijs Cluitmans (Philips&Maastricht): Cardiac digital twins: state of the art and transition to industry
- 09:30-10:00 Abhi Banerjee and Julia Camps (Eng and CS, Oxford): From UK Biobank to personalised modelling and simulation
- 10:00-10:30 Amir Jadidi (Freiburg) and Axel Loewe (KIT): synergy between mechanistic simulations and machine learning for clinical challenges around atrial arrhythmias
- 10:30 -11:00 **Coffee break**

SESSION 6: In the clinic and beyond (Discussion leader: Barbara Casadei)

- 11:00-11:20 Nele Vandersikel (Ghent) – topology to classify complex arrhythmias
- 11:20-11:50 Albert Dasi I Martinez (Oxford) and Rohan Wijesurendra (JRH) - *In silico* drug trials for atrial fibrillation
- 11:50-12:20 Caroline Roney (QMUL) and Shohreh Sherry Honarbakhsh (Barts)- Challenges associated with Translating Atrial Modelling to Clinical Practice
- 12:20-13:45 **Lunch**

SESSION 7: Innovation and impact (Discussion leader: Stefano Longobardi)

- 13:45-14:05 Flora Musuamba (EMA) - regulatory perspective
- 14:05-14:25 Jordi Munoz-Muriedas (UCB) - Large scale meta-analysis of preclinical toxicity data for target characterisation and hypotheses generation
- 14:25-14:45 Michel Rochette/Christopher Bianchi (Ansys)- industry perspective into a cardiac simulation framework
- 14: 45-15:05 Michelangelo Paci (Elements) 'Hybrid Digital Twin Technology for Massively Parallel Patch Clamp for Drug Experiments'
- Coffee break 15:05- 15:45**

SESSION 8: Beyond the myocardium (Discussion leader: Blanca Rodriguez)

- 15: 45-16:05 Regent Lee (NHS) - From Aortic Aneurysms to Artificial Intelligence – computational innovations away from the myocardium
- 16:05-16:25 Karl Smith-Byrne (Oxford) - Large-scale genetic and proteomics studies to identify candidate targets
- 16:25-16:45 Pierre Deceuninck (EC) and Annamaria Carusi (ICR) – 'Building bridges across research communities: the example of tackling the pathogenesis of COVID-19'

Concluding remarks

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LIST OF PARTICIPANTS

- Ansys: Michel Rochette, Christopher Bianchi
- AstraZeneca: Jacopo Biasetti, Ravindra Varma Alluri, Cristian Trovato.
- Barts Hospital: Shohreh Honarbakhsh
- Belgium Medicines Agency: Flora Musuamba
- Dassault Systemes: Paul Butler
- Department of Computer Science, University of Oxford: Karen Barnes, Alfonso Bueno-Orovio, Julià Camps, Héctor Martínez-Navarro, Blanca Rodríguez, James Coleman, Albert Dasi i Martínez, Hannah Smith, Ruben Doste, Zhiyuan Wang, Luana Leto Riebel, Ambre Bertrand, Milda Folkmanaitė, Maxx Holmes, Oliver Sampson
- Department of Physiology, Anatomy and Genetics, University of Oxford: Manuela Zaccolo, Milda Folkmanaitė.
- Department of Pharmacology, University of Oxford: Rebecca Burton.
- Elements S.R.L: Michelangelo Paci
- European Commission: Pierre Deceuninck
- Ghent University: Nele Vandersikel, Sander Hendrickx
- GSK: Stefano Longobardi
- Inter-change Research: Annamaria Carusi
- Institute of Biomedical Engineering, University of Oxford: Abhirup Banerjee, Vicente Grau, Yu Han, Lei Li
- Janssen Research and Development : Tanderlan Saidov
- Julie Caroline Holder, Consultant
- JR Cardiology : Alex Sharp
- Karlsruhe Institute of Technology: Axel Loewe, Claudia Nagel
- Maastricht University: Aurore Lyon
- Medical Sciences Division, University of Oxford: Liz Covey-Crump
- National Centre for the Replacement, Refinement & Reduction of Animals in Research: Elisa Passini, Chris Barkus
- Nuffield Department of Population Health, University of Oxford: Aiden Doherty, Karl Smith-Byrne,
- Nuffield Department of Women's & Reproductive Health: Mohammad Mamouei
- Oxford University Hospitals/Department of Cardiovascular Medicine, Oxford: Sunil Manohar, Rogan Wijesurendra, Betty Raman, Regent Lee, Katharine Thomas, Barbara Casadei.
- Pfizer: Vishal S. Vaidya
- Phillips Research: Matthijs Cluitmans
- Queen Mary University of London: Caroline Roney, Dunja Asentijevic
- Queensland University of Technology: Kevin Burrage
- Reuben College, University of Oxford: Sintieh Nchinda Ngek Ekongefeyin
- Royal Berkshire NHS Foundation Trust: Rina Ariga
- Ruff/Oxford Brookes University: Nav Dean
- Sanofi: Friedemann Schmidt, Marcel Mohr
- UCB-Biopharma: Annie Delaunois, Jordi Munoz Muriadas
- Universidade Juiz de Fora: Rodrigo Weber Dos Santos.
- University of Freiburg, Heart Center: Amir Jadidi
- Universidad de Valencia: Dolors Serra, Alejandro Liberos
- Universidad of Zaragoza: Ana Mincholé, Pablo Laguna
- University of Bologna: Stefano Severi
- University of Manchester: Andrew Leach, Sylvia Kaempf



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- University of Milano: Giuseppe Ristagno
- Zoll Medical: Sandeep Pandit, Annemarie Silver



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