

Workshop On
**Multiscale modelling in heart failure: recovery
with mechanical circulatory support**

6-7 October 2022

*Coventry University, Technology Park, Simulation Centre (Room 1F)
& Online*

organized by the

**Research Centre (CSELS), Institute for Health and
Wellbeing, Faculty of Health and Life Sciences
Coventry University**

as part of the project

**Increasing scientific, technological and innovation capacity of Serbia as a
widening country in the domain of multiscale modelling and medical
informatics in biomedical engineering (SGABU)**

funded by the European Commission
in the framework of Horizon 2020



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 952603. This document has been produced within the scope of the SGABU project (www.sgabu.eu). It reflects only the authors' view and the Commission is not responsible for any use that may be made of the information it contains.

Online access:

Day 1: [Click here to join the meeting](#) **Passcode:** 28vSxj

Day 2: [Click here to join the meeting](#) **Passcode:** 9tQXsz

[Download Teams](#) | [Join on the web](#)

REGISTER HERE: <https://forms.office.com/r/sdf0xjFSU7>

DAY 1 (October 6th): HEART FAILURE – clinical and basic science perspective

8.30-9.05	Registration/Coffee/Networking
9.05-9.15	Welcome and Introduction Djordje Jakovljevic, Coventry University, UK
9.15-10.00	SGABU Project overview Nenad Filipovic, University of Kragujevac, RS
	Session 1: Chair Djordje Jakovljevic, Coventry University, UK
10.00-10.45	Heart failure - current state of the art and challenges Prithwish Banerjee, Coventry University and University Hospital Coventry and Warwickshire (UHCW), UK
10.45-11.30	Step into Basic Science: The cardiac work-loop technique for evaluation of drug-induced changes in the failing heart Helen Maddock, Coventry University, UK
11.30-12.15	Treating arrhythmias: drugs, devices and ablation Faizel Osman, Coventry University and UHCW, UK
12.15-12.35	Imaging in heart failure: diagnostics and monitoring Sandeep Hothi, New Cross Hospital, Wolverhampton
12.35-13.30	Lunch
	Session 2: Chair Nduka Okwose, Coventry University, UK
13.30-14.15	Treatment of advanced heart failure: heart transplantation and mechanical circulatory support (UK perspective) Guy MacGowan, Newcastle University and Freeman Hospital, UK
14.15-15.00	Left ventricular assist device as a bridge to recovery in advanced heart failure Djordje Jakovljevic, Coventry University, UK
15.00-15.15	Coffee break
15.15-16.00	Novel approaches in heart failure diagnostics, CORS test and beyond Sarah Charman, Newcastle University, UK
16.00-16.45	Cardiac rehabilitation and home-based interventions in heart failure Nduka Okwose, Coventry University, UK
16.45-17.00	Round Table with Speakers
17.00	Summary and Departure
18.30	Dinner for Speakers (Botanist Coventry))

DAY 2 (October 7th): Multiscale modelling in cardiovascular disease and heart failure; application of bioengineering, novel technologies and artificial intelligence

8.30-9.15	Registration/Coffee/Networking
9.15-9.25	Welcome and Introduction Djordje Jakovljevic, Coventry University, UK
	Session 3: Chair: Derek Renshaw, Coventry University, UK
9.30-10.15	SGABU project - Application of multiscale modelling in cardiovascular diseases and heart failure Nenad Filipovic, University of Kragujevac, RS
10.15-11.00	Application of computational chemistry in cardiovascular drug discovery Christopher Reynolds, Coventry University, UK
11.00-11.45	Integrated, cloud-based platform for multiscale modelling of cardiomyopathy Smiljana Tomasevic, University of Kragujevac, RS
11.45-12.30	Photoplethysmography: The potential power of the optical pulse in cardiovascular assessment John Allen, Coventry University, UK
12.30-13.30	Lunch
13.30-14.15	Health AI with Minimal Supervision: Technologies and Applications Jiangtao Wang, Coventry University, UK
14.15-15.00	Novel technologies in heart failure Aaron Koshy, Newcastle University, UK
15.00-15.15	Coffee break
	Session 4: Chair: Djordje Jakovljevic, Coventry University, UK
15.15-15.35	Cardiac cycle simulations of the parametric and echocardiography based left ventricle models Bogdan Milicevic, University of Kragujevac, RS
15.35-15.55	Application of technology for arterial function assessment Sophie Russell, Coventry University, UK
15.55-16.15	Heart rate variability & novel echocardiography indices in heart failure Mushidur Rahman, Coventry University, UK
16.15-16.30	Round Table with Speakers
16.30	Summary and Departure
18.30	Dinner with Speakers (Pierre Bistro Coventry)

Information about speakers and chairs (alphabetical order):

Aaron Koshy, Academic Cardiology Registrar at Newcastle upon Tyne Hospitals NHS Foundation Trust and Faculty of Medical Sciences of Newcastle University. Academic Cardiologist with interests in heart failure and medical devices. Contact email: a.koshy@nhs.net

Bogdan Milicevic, Research Associate in Biomedical Engineering at the Faculty of Engineering, Kragujevac, Serbia. Expertise: Artificial Intelligence, Computer Simulations and Modelling. Research interests: finite element analysis, cardiovascular system, haemodynamics, medical image processing, bioelectric phenomena, computational fluid dynamics. Contact email: bogdan.milicevic@uni.kg.ac.rs

Christopher Reynolds, Professor and Research Theme Lead in Therapeutics and Disease Prevention at the Faculty Research Centre (CSELS), Institute for Health and Wellbeing of Coventry University. Expertise: Computational chemistry, development and application of molecular dynamics and related computational methods to the structure, dynamics and function of proteins, particularly G protein coupled receptors. Contact email: christopher.reynolds@coventry.ac.uk

Derek Renshaw, Professor in Endocrine Physiology and Deputy Director at the Faculty Research Centre (CSELS), Institute for Health and Wellbeing of Coventry University. Expertise and research interests include endocrinology, inflammation, gut physiology, stress, obesity, and adipose tissue inflammation. Contact email: derek.renshaw@coventry.ac.uk

Djordje Jakovljevic, Professor and Research Theme Lead in Cardiovascular and Lifestyle Medicine, Coventry University. Expertise: Development and evaluation of interventions and technologies to improve prevention, diagnosis, and management of cardiovascular diseases and heart failure. Contact email: djordje.jakovljevic@coventry.ac.uk

Faizel Osman, Professor of Cardiology, Consultant Cardiologist and Electrophysiologist at University Hospital Coventry and Warwickshire (UHCW), Head of Cardiac Arrhythmia Management at UHCW. Expertise: Cardiac Electrophysiology with focus on Atrial Fibrillation, SVT, Atrial Flutter, Ventricular Arrhythmias Complex Devices: ICD, CRT Bradycardia Pacemakers Leadless Pacemakers Device Extractions Contact email: faizel.osman@uhcw.nhs.uk

Guy MacGowan, Professor of Heart Failure at Newcastle University, Consultant Cardiologist with major interest in Heart Failure at the Freeman Hospital, Newcastle upon Tyne Hospitals NHS Foundation Trust. Expertise: Heart failure, Heart transplantation, Ventricular assist devices, Pulmonary hypertension. Contact email: guy.macgowan@nhs.net

Helen Maddock, Professor of Cardiovascular Pharmacology and Physiology and Coventry University Research Centre (CSELS) Director. Expertise: basic and translational research with focus on cardiac contractile dysfunction, drug-induced cardiotoxicity and safety pharmacology, myocardial stress adaptation and oxidative stress, identifying cardioprotective therapies for treating myocardial ischaemia / reperfusion injury, and heart failure. Contact email: helen.maddock@coventry.ac.uk

Jiangtao Wang, Associate Professor Data Science at the Centre for Intelligent Healthcare, Institute for Health and Wellbeing, Coventry University. Expertise: data science and artificial intelligence, and their application in digital health, human wellbeing and environment sensing. Contact email: jiangtao.wang@coventry.ac.uk

John Allen, Professor of Biosensor and Bioinstrumentation at the Centre for Intelligent Healthcare, Institute for Health and Wellbeing, Coventry University. Expertise: medical physics and bioengineering with focus on photoplethysmography, pulse wave analysis and microcirculation in health and disease, vascular optics and novel microvascular assessment, sensor development, signal and image processing. Contact email: john.allen@coventry.ac.uk

Mushidur Rahman, PhD Researcher at the Faculty Research Centre (CSELS), Institute for Health and Wellbeing, Coventry University. Research interests in cardiovascular physiology with focus on the application of echocardiography to determine cardiac implications of COVID19. Contact email: mushidur.rahman@coventry.ac.uk

Nduka Okwose, Research Fellow in Cardiovascular and Lifestyle Medicine at the Faculty Research Centre (CSELS), Institute for Health and Wellbeing of Coventry University. Research interests and expertise in lifestyle interventions and cardiac rehabilitation in heart failure, and non-invasive technologies for cardiovascular function assessments. Contact email: nduka.okwose@coventry.ac.uk

Nenad Filipovic, Professor of Biomedical Engineering and VC of University of Kragujevac, Serbia. Expertise: biomedical engineering, computer simulation and AI applied in health and cardiovascular research as demonstrated in several EU funded FP7, H2020, and Horizon Europe projects. Contact email: fica@kg.ac.rs

Prithwish Banerjee, Professor of Cardiology at Coventry University, Consultant Cardiologist and Lead for Heart Failure at the University Hospital Coventry and Warwickshire, Cardiovascular Lead for the NIHR West Midlands Clinical Research Network and Chair for the Midlands Heart Failure Group. Expertise: general cardiology with a particular interest in heart failure with preserved ejection fraction and cardiorenal syndrome. Contact email: prithwish.banerjee@uhcw.nhs.uk

Sandeep Hothi, Associate Professor of Cardiology, Consultant Cardiologist at the New Cross Hospital, Wolverhampton. Expertise: diagnosis and treatment of adult cardiac conditions and advanced non-invasive cardiac imaging i.e. echocardiography - transthoracic, stress, and transoesophageal, cardiac MRI and CT. Contact email: sandeephothi@gmail.com

Sarah Charman, Senior Research Fellow in Heart Failure at the Faculty of Medical Sciences of Newcastle University. Expertise: lifestyle behaviours of women with heart failure and novel approaches in diagnosis of heart failure. Contact email: sarah.charman@newcastle.ac.uk

Smiljana Tomasevic, Research Associate in Biomedical Engineering at the Faculty of Engineering, Kragujevac, Serbia. Expertise: multiscale modelling with focus on numerical analysis and mechanical characteristics of blood flow in health and cardiovascular disease. Contact email: smiljana@kg.ac.rs

Sophie Russell, PhD Researcher at the Faculty Research Centre (CSELS), Institute for Health and Wellbeing, Coventry University. Research interests in cardiovascular physiology and molecular biology with focus on the effect of COVID19 on arterial function and stiffness. Contact email: sophie.russell@coventry.ac.uk