

European Network of Multidisciplinary Research to Improve the Urinary Stents (ENIUS)

Training School

Sponsored by:



Organised by:



Computational approaches to ureteric stent design

Tuesday 11th – Wednesday 12th September
Mathematical Institute, University of Oxford

LOCAL ORGANISING COMMITTEE:

Prof. Sarah Waters, University of Oxford, United Kingdom – *ENIUS working group leader*

Dr. Francesco Clavica, University of Bern, Switzerland – *ENIUS working group vice-leader*

Dr. Dario Carugo, University of Southampton, United Kingdom – *ENIUS Short term Scientific Mission (STSM) coordinator*

PROGRAMME

DAY 1 - Tuesday 11th September

- 9:30 – 10:00 **INTRODUCTION & WELCOMING REMARKS**
- Prof. Federico Soria Gálvez** (Jesús Usón Minimally Invasive Surgery Centre)
Prof. Sarah Waters (Mathematical Institute, University of Oxford)
- 10:00 – 11:30 **AN INTRODUCTION TO URETERAL STENTS AND THEIR COMPLICATIONS**
Chair: Dr. Dario Carugo
- Dr. Noor NP Buchholz** (Sobeh's Vascular & Medical Center, Dubai) &
Ayesha Bint-e-Siddiq (Institute of Biomedical Engineering, University of Leeds)
The influence of stent encrustation on ureteral flow – a computational fluid dynamics analysis
- Dr. Dirk Lange** (Department of Urologic Sciences at the University of British Columbia)
The impact of indwelling stents on ureteral function
- Dr. Sandra A Wilks** (Biomedical Sciences, University of Southampton)
Deciphering the crystal maze: understanding bacterial biofilms
- 11:30 – 11:45 BREAK
- 11:45 – 12:45 **CLINICAL UROLOGY & URODYNAMICS**
Chair: Dr. Francesco Clavica
- Dr. Andrew Gammie** (Clinical Engineer, Bristol Urological Institute)
Limitations of current approaches in Urodynamics
- Dr. Louise Rouse** (Endourology Fellow, Urology Department, Churchill Hospital, Oxford)
Clinical Urology
- 12:45 – 1:45 LUNCH & POSTER PRESENTATIONS
- 1:45 – 3:15 **COMPUTATIONAL & NUMERICAL MODELLING**
Chair: Professor Sarah Waters
- Dr. Eldad Avital** (School of Engineering and Materials Science, Queen Mary University of London)
High performance computations of bio-fluid dynamics
- Dr. Jordi Alastruey** (Biomedical Engineering Department, King's College London)
Arterial blood flow: Modelling and analysis using reduced-order models
- Prof. Dominik Obrist** (ARTORG Center for Biomedical Engineering Research, University of Bern)
Computational modelling of fluid-structure interaction in biomedical flow systems
- 3:15 – 3:30 BREAK
- 3:30 – 5:30 **MECHANOBIOLOGY**
Chair: Dr. Dario Carugo
- Prof. Yannis Missirlis** (Department of Mechanical Engineering, University of Patras)
All the appropriate signals are necessary for engineering proper tissues: a prerequisite for successful tissue engineering
- Prof. Gerry Apodaca & Wily Giovanni Ruiz** (School of Medicine, University of Pittsburgh)
Maintenance of the urothelial barrier during bladder filling and voiding
- Dr. Mark Thompson** (Institute of Biomedical Engineering, University of Oxford)
Microstructural deformation of bladder tissue

Prof. Jenny Southgate (Department of Biology, University of York)
Design lessons from biology: evolved for function

5:30 – 6:30 DRINKS AND POSTER PRESENTATIONS

7:00 TRAINING SCHOOL DINNER

DAY 2 - Wednesday 12th September

9:30 - 11:30 **EMERGING TECHNOLOGIES**
Chair: Dr. Francesco Clavica

Dr. Bahareh Vahabi, (Senior Lecturer in Physiology, University of the West of England)
The validation of a functional, isolated large animal bladder model for physiological experimentation

Dr. Joshua Owen (Oxford Centre for Drug Delivery Devices, University of Oxford)
Ultrasound enhanced delivery of therapeutic agents for the treatment of biofilms associated with Urinary Tract Infections

Prof. Edwin Jager (Bionics and Transduction Science Unit, Linköping University)
Microphysiological devices to study mechanotransduction in urinary tract

Dr. Marc Schneider (Department of Urology, Bern University Hospital)
Urinary tract function assessment in mice and rats

11:30-12:30 **SHORT-TERM SCIENTIFIC MISSION (STSM) Workshop**

12:30-2:00 **LUNCH & POSTER PRESENTATION**

2:00:2:30 **CLOSING REMARKS**

CONTACTS

Dr. Nicola Kirkham, email: nicola.kirkham@maths.ox.ac.uk

Prof. Sarah Waters, e-mail: sarah.waters@maths.ox.ac.uk

Dr. Francesco Clavica, e-mail: francesco.clavica@artorg.unibe.ch

Dr. Dario Carugo, e-mail: d.carugo@soton.ac.uk