

Programme for the workshop Future Trends in Mathematical Biology: In vitro, in vivo, and in silico

Time: Wednesday, November 22 and Thursday, November 23, 2017.

Venue: Department of Applied Mathematics and Computer Science (DTU Compute), Technical University of Denmark (DTU), Kongens Lyngby, Denmark

Workshop place: Building 324, room 240 (lunchroom).

Programme for Wednesday, November 22, 2017.

Chairman: *Michael Pedersen*

- 09:00 – 09:15** **Welcome**
Michael Pedersen, Section for Scientific Computing, DTU Compute
- 09:15 – 10:00** **Mathematical modelling of life science problems**
Messoud Efendiyev
Institute of Computational Biology, Helmholtz Zentrum Munich, Germany
- 10:00 – 10:30** **System and Control Technologies for an Artificial Pancreas**
John Bagterp Jørgensen
Section for Scientific Computing, DTU Compute
- 10:30 – 10:45** **Coffee break**

Chairman: *Mads Peter Sørensen*

- 10:45 – 11:15** **Machine learning approach for drug candidate optimization**
Kristian Moss Bendtsen
Novo Nordisk, Måløv, Denmark
- 11:15 – 11:45** **Description and Comparison of Protein 3d-Structures with emphasis on (bio)-topologi**
Peter Røgen
Section for Scientific Computing, DTU Compute
- 11:45 – 13:00** **Lunch**

Chairman: *Messoud Efundiev*

13:00 – 13:45 Fighting Fires Forth and Back in Time -- Modelling and First Indicative Results

Florian Rupp

Faculty of Mathematics, Technical University of Munich, Garching, Germany

13:45 – 14:15 Closed-loop control applications in biomedicine: Perspectives for the treatment of epilepsy

Dimitri Boiroux

Section for Scientific Computing, DTU Compute

14:15 – 14:30 *Coffee break*

Chairman: *Mads Peter Sørensen*

14:30 – 15:00 Substrate-depletion oscillators: Canards without attracting slow manifolds

Kristian Uldall Kristiansen

Section for Mathematics, DTU Compute

15:00 – 15:30 Numerical Simulation of growing and harvesting cells on electromechanical resonator sensors

Bolaji Adesokan

Section for Scientific Computing, DTU Compute

Programme for Thursday, November 23, 2017.

Chairman: *Mads Peter Sørensen*

09:00 – 09:45 Excitation induced shape transformations in semiflexible biopolymer rings

Yuri Gaididei
Bogolyubov Institute for Theoretical Physics, Kiev, Ukraine

09:45 – 10:15 Traveling pulse solutions in the FitzHugh-Nagumo equations

Paul Carter
Department of Mathematics, University of Arizona, Tucson AZ, USA

10:15 – 10:30 *Coffee break*

Chairman: *Mads Peter Sørensen*

10:30 – 11:00 Interdisciplinary teaching of mathematical biology

Ken Haste Andersen
National Institute of Aquatic Resources, DTU Aqua

11:00 – 11:30 Speed of Evolution in Spatially Extended Populations

Erik Andreas Martens
Section for Dynamical Systems, DTU Compute

11:30 – 13:00 Lunch

Chairman: *Michael Pedersen*

13:00 – 13:45 Why math matters

Johnny Ottesen
Department of Science and Environment, University of Roskilde, Denmark

13:45 – 14:15 Modelling vector distribution and abundance using environmental predictors and machine learning techniques

Lene Jung Kjær
National Veterinary Institute, DTU Vet

14:15 – 14:30 *Coffee break*

Chairman: *Mads Peter Sørensen*

- 14:30 – 15:00** **Time and cluster effects of antibiotics on resistance genes in the pig gut**
Kaare Græsbøl
National Veterinary Institute, DTU Vet
- 15:00 – 15:30** **Optimality and games in behavioural ecology: Vertical strategies of marine predators and prey**
Uffe Høgsbro Thygesen
Section for Dynamical Systems, DTU Compute
- 15:30 – 15:40** **Closing remarks**
Michael Pedersen
Section for Scientific Computing, DTU Compute

Organized by

Messoud Efeendiev, Institute of Computational Biology, Helmholtz Zentrum Munich, Germany.
Michael Pedersen, Department of Applied Mathematics and Computer Science.
Mads Peter Sørensen, Department of Applied Mathematics and Computer Science.