

COMBINE & ERASysAPP Tutorial Modelling and Simulation of Biological Models

<http://co.mbine.org/events/tutorial2014>

Date: Sunday, September 14th, 2014 (9:00 - 18:00)

Venue: Melbourne, Australia - Ether Conference Centre, 265 Little Bourke Street

Focus

Participants will learn setting-up computer models of biological networks and simulating them in different systems biology platforms, as well as using databases and applying modelling standards. Hands-on sessions, lectures and software demonstrations will be included providing attendees with the necessary skills.

Topics

- Model setup using different software tools and systems biology platforms
- Using experimental data for setting up quantitative models
- Parameter estimation, optimization and model fitting
- Simulation, analysis and visualization of biochemical models
- Database supported modelling: Integrated data management and model databases
- Community standards and formats for systems biology models

Target audience: Experimentalists and modellers with basic experience in modelling and simulation

Standards (<http://co.mbine.org/>): CellML, SBGN, SBML, SBOL, SED-ML

Databases: BioModels, JWS Online, Physiome Repository, SABIO-RK, SEEK

Tools: CellDesigner, COPASI, iBioSim, OpenCOR, SBGN-ED, SYCAMORE, Virtual Cell

Tutors

- Akira Funahashi and Noriko Hiroi: Keio University (Yokohama, Japan)
- Martin Golebiewski: Heidelberg Institute for Theoretical Studies (Germany)
- Mike Hucka: California Institute of Technology (Pasadena, CA, USA)
- Ursula Kummer and Jürgen Pahle: University of Heidelberg (Germany)
- Nicolas Le Novère: Babraham Institute (Cambridge, UK)
- Chris J. Myers: University of Utah (Salt Lake City, UT, USA)
- Ion Moraru: University of Connecticut Health Center (Farmington, CT, USA)
- David Nickerson: Auckland Bioengineering Institute (New Zealand)
- Falk Schreiber and Tobias Czauderna: Monash University (Melbourne, Australia)
- Jacky Snoep: Stellenbosch University (South Africa)
- Natalie Stanford: University of Manchester (UK)

Tutorial coordinators

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Agenda

9:00-10:55 Standards and Tools for Systems Biology Modelling (Plenary 1)

- 9:00-9:05 **Introduction**
Martin Golebiewski (HITS, Heidelberg, Germany)
- 9:05-9:15 **ERASysAPP - ERA-Net for Systems Biology Applications**
Rob Diemel and Anne Boeter (ZonMw, NL)
- 9:15-9:35 **COMBINE Standards**
Nicolas Le Novère (Babraham Institute, Cambridge, UK)
- 9:35-9:55 **The Systems Biology Markup Language (SBML)**
Mike Hucka (California Institute of Technology, Pasadena, CA, USA)
- 9:55-10:15 **CellML, OpenCOR and the Physiome Repository**
David Nickerson (Auckland Bioengineering Institute, New Zealand)
- 10:15-10:35 **The Systems Biology Graphical Notation (SBGN)**
Falk Schreiber and Tobias Czauderna (University of Halle-Wittenberg, Germany & Monash University, Melbourne, Australia)
- 10:35-10:55 **The Synthetic Biology Open Language (SBOL)**
Chris J. Myers (University of Utah, Salt Lake City, UT, USA)
- 10:55-11:15 *Morning tea*

11:15-13:15 Tools and Databases for Systems Biology Modelling (Plenary 2)

- 11:15-11:35 **SABIO-RK**
Martin Golebiewski (HITS, Heidelberg, Germany)
- 11:35-11:55 **JWS Online**
Jacky Snoep (Stellenbosch University, South Africa & University of Manchester, UK)
- 11:55-12:15 **COPASI**
Ursula Kummer and Jürgen Pahle (University of Heidelberg, Germany)
- 12:15-12:35 **CellDesigner**
Akira Funahashi and Noriko Hiroi (Keio University, Yokohama, Japan)
- 12:35-12:55 **VirtualCell**
Ion Moraru (University of Connecticut Health Center, Farmington, CT, USA)
- 12:55-13:15 **Sharing and Managing Systems Biology Data and Models: SEEK**
Natalie Stanford (University of Manchester, UK)
- 13:15-14:00 *Lunch*

14:00-15:45 Parallel Demo and Hands-on Session 1

- a) **SBML.org resources, BioModels Database, iBioSim** (Chair: Martin Golebiewski)
Mike Hucka, Nicolas Le Novère, Chris J. Myers
- b) **CellML, Physiome Repository, OpenCOR** (Chair: Falk Schreiber)
David Nickerson

15:45-16:15 *Afternoon tea*

16:15-18:00 Parallel Demo and Hands-on Session 2

- a) **JWS Online, SEEK, SABIO-RK and COPASI** (Chair: Nicolas Le Novère)
Martin Golebiewski, Ursula Kummer, Jürgen Pahle, Jacky Snoep, Natalie Stanford
- b) **SBGN, SBGN-ED, CellDesigner and Virtual Cell** (Chair: David Nickerson)
Tobias Czauderna, Akira Funahashi, Noriko Hiroi, Ion Moraru, Falk Schreiber