Scientific Program

of

SysBio2005

Edition 3/9/2005 1:24 AM

Saturday March 12

Course Registration & Hotel Check-In **11:00 am - 6:00 pm**

Welcome Reception **6:00 pm - 6:45 pm**

Official Course Opening **6:45 pm - 6:55 pm**

Hans Westerhoff and Karl Kuchler

AstraZeneca Opening Lecture

Douglas Kell **7:00 pm – 8:00 pm**

Metabolomics, machine learning and modelling in systems biology: towards an understanding of the language of cells

Welcome Dinner & Subhendu Ghosh **Musical performance** *Patterns of Passion* **8:30 pm - open end**

Sunday March 13

Breakfast *7:00 - 8:30 am*

Principles of Systems Biology **Lectures** **8:30 am - 12:30 pm**

Chair: Hans Westerhoff

Co-chair: Lilia Alberghina

P-L1 **Reinhart Heinrich** 8:30 - 9:15

Dynamics and design of cellular reaction networks

P-L2	**John Doyle**		9:15 - 10:00
	Organizational complexity		
Coffee & Refreshment Break			*10:00 - 10:20*
P-L3	**Albert Goldbeter**		10:20 -11:55
	Computational approaches to cellular rhythms		
P-L4	**Stefan Schuster**		11:05 - 11:50
	Fundamentals and applications of metabolic pathway analysis		
Break			*11:50 – 12:00*
	Guided General Discussion:	**Identifying issues; SB Principles**	**12:00 - 12:30 pm**
Lunch & Afternoon Break			*12:30 - 4:30 pm*
Coffee and Tea Break			*4:00 – 4:30 pm*
	Chalk/Blackboard teaching	**4 in parallel**	**4:30 – 5:10 pm**
PT-B1	Uri Alon	Motifs and networks	
PT-B2	Reinhart Heinrich/Stefan Schuster	Stability and flux mode analysis	
PT-B3	Jacky Snoep/Hans Westerhoff	Control analysis and Silicon cells	
PT-B4	Jörg Stelling/Frank Bruggeman	Robustness, network identification and engineering	
Principles of Systems Biology		**Workshop & Short Talks**	**5:15 – 7:00 pm**
	Chair: Lilia Alberghina		
	Co-chair: Hans Westerhoff		
P-W1	**Dennis Vitkup**		5:15 - 5:35
	Expression dynamics of a cellular metabolic network		
P-S1	**Frank Bruggeman**		5:35 - 5:50
	Smart regulation of ammonium assimilation by *Escherichia coli*: modularity, robustness, and flux regulation		
Coffee & Refreshment Break			*5:50 - 6:10*
P-W2	**Sinisa Zampera**		6:10 -6:30
	An adaptive system approach for the modelling of genetic regulatory networks		
	Glucose metabolism study in the yeast		
P-S2	**Markus Kollmann**		6:30 - 6:45
	Design principles of signal transduction pathways to attenuate noise		
P-S3	**Esa Pitkänen**		6:45- 7:00
	On pathways and distances in metabolic networks		
	Resumed General Discussion:	**Addressing the issues; SB principles**	7:00 - 7:30
Dinner			*7:30 - 9:00 pm*
	Poster Session 1		**9:00 - 11:00 pm**
	Viewing posters		9:00 - 9:45
	Free poster wandering		9:45 – 10:30
	Round table poster discussion (presenters and teachers only)		10:30 – 11:00

Monday March 14

Breakfast *7:00 - 8:30 am*

Tools and methods (part 1) **Lectures** **8:30 am - 12:30 pm**

Chair: Karl Kuchler

Co-chair: Igor Goryanin

T-L1 **Rudi Aebersold** 8:30 - 9:15

Quantitative Proteomics: An essential component of systems biology

T-L2 **Roland Eils** 9:15 - 10:00

Modelling and simulation of large-scale signal transduction networks

Coffee & Refreshment Break *10:00 - 10:20*

T-L3 **Shoshana Wodak** 10:20 - 11:05

Analysing networks of biochemical processes: Bioinformatics meets systems biology

T-L4 **Charlie Boone** 11:05 - 11:50

Global mapping of synthetic genetic interactions in yeast

Break *11:50 – 12:00*

Guided General Discussion: **Identifying issues; Tools, Methods** **12:00 - 12:30**

Lunch & Afternoon Break *12:30 - 4:30 pm*

Coffee and Tea Break *4:00 – 4:30 pm*

Chalk/Blackboard teaching **4 in parallel (repeat)** **4:30 – 5:10 pm**

PT-B1	Uri Alon	Motifs and networks
PT-B2	Reinhart Heinrich/Stefan Schuster	Stability and flux mode analysis
PT-B3	Jacky Snoep/Hans Westerhoff	Control analysis and Silicon cells
PT-B4	Jörg Stelling/Frank Bruggeman	Robustness, network identification and engineering

Tools and methods **Workshop & Short talks** **5:15 - 7:00 pm**

Chair: Igor Goryanin

Co-chair: Karl Kuchler

T-W1 **An-Ping Zeng** 5:15 - 5:35

An integrated interaction network of *Escherichia coli* for studying genotype-phenotype relationship

T-S1 **Sune Danø** 5:35 - 5:50

Oscillatory mechanisms derived from phase and amplitude information

Coffee & Refreshment Break *5:50 - 6:10*

T-S2 **Adrienne James** 6:10 - 6:30

Application of modelling and simulation to drug discovery: The ErbB system

T-S3 **Konstantin Kozlov** 6:30 - 6:45

Combined optimization technique for biological data fitting

T-S4 **Balázs Papp** 6:45- 7:00

Systematic identification and characterisation of synthetic lethal interactions in the metabolic network of yeast

Resumed General Discussion: Addressing the issues Tools & Methods 7:00 - 7:30

Dinner *7:30 - 9:00 pm*

Poster Session 2 **9:00 - 11:00 pm**

Viewing posters 9:00 - 9:45

Free poster wandering 9:45 – 10:30

Round table poster discussion (presenters and teachers only) 10:30 – 11:00

Tuesday March 15

Breakfast ***7:00 - 8:30 am***

Tools & Methods (part 2) **Lectures** **8:30 am - 10:00 pm**

Chair: Karl Kuchler

T-L5 **Jacky Snoep** 8:30 - 9:15

The Silicon Cell approach to building detailed kinetic models of biological systems

T-L6 **Ursula Kummer** 9:15 - 10:00

Mathematical modelling: Choosing the right simulation method

Coffee & Refreshment Break *10:10 - 10:20*

Unicellular Organisms (part 1) **Lectures** **10:20 am - 12:35 pm**

Chair: Stefan Hohmann

U-L7[1] **Masaru Tomita** 10:20 - 11:05

Metabolome analysis and systems biology

U-L2 **Matthias Reuss** 11:05 - 11:50

Hiding behind the population average - cell cycle dynamics of energy metabolism during the lifelines of individual yeast cells

U-L3 **Jörg Stelling** 11:50 - 12:35

Knowledge and data requirements for systems analysis of cellular networks

Lunch & Afternoon Break *12:35 – 13:15*

VISIT to SALZBURG ***13:30 – 23:00 pm***

Buses will leave Hotel at 13:30 pm

Dinner in Salzburg

Return from Salzburg to the venue 22:00 pm

[1] Changed with respect to the program in the course book

Wednesday March 16

Breakfast *7:00 - 8:30 am*

Unicellular Organisms (part 2) **Lectures** **8:30 am - 12:30 pm**

Chair: Stefan Hohmann

Co-chair:Matthias Reuss

U-L4 **Uwe Sauer** 8:30 - 9:15

In vivo operation of metabolic pathways

U-L7[1] **Igor Goryanin** 9:15 - 10:00

Computational Systems Biology: Applications for the Pharmaceutical Industry

Coffee & Refreshment Break *10:00 - 10:20*

U-L6 **Barry Wanner** 10:20 - 11:05

Stochastic activation of the response regulator PhoB by noncognate histidine kinases

U-L1[1] **Edda Klipp** 11:05 - 11:50

Mathematical modeling of stress response in yeast

Break *11:50 – 12:00*

Guided General Discussion: Identifying issues; unicellular organisms 12:00 - 12:30

Lunch & Afternoon Break *12:30 - 4:30 pm*

Coffee and Tea Break *4:00 – 4:30 pm*

Unicellular Organisms **Workshop & Short Talks** **4:30 - 6:50 pm**

Chair: Matthias Reuss

Co-chair: Stefan Hohmann

U-W1 **Guillaume Beslon** 4:30 - 4:50

Modelling evolution of prokaryotic genomes: an integrative approach

U-W2 **Victor Sourjik** 4:50 - 5:10

Signal processing in bacterial chemotaxis

U-W3 **Bas Teusink** 5:10 - 5:30

Combining experimental data and *in silico* analysis to model the metabolic and regulatory network of *Lactobacillus plantarum*

Coffee & Refreshment Break *5:30 - 5:50*

U-S1 **Attila Csikasz-Nagy** 5:50 - 6:05

Modelling fission yeast morphogenesis

U-S2 **Silvia De Monte** 6:05 - 6:20

Metabolic quorum sensing: onset of density-dependent oscillations

U-S3	**Ana Sofia Figueiredo**	6:20- 6:35
	Integration of software tools for the *in silico* design of metabolic pathways using flux balance analysis	
U-S4	**Douglas Murray**	6:35- 6:50
	Uncovering the control of the respiratory clock in yeast	
	Resumed General Discussion: Addressing the issues; unicellular organisms	6:50- 7:30
Dinner		*7:30 - 9:00 pm*
	Poster Session 3	**9:00 - 11:00 pm**
	Viewing posters	9:00 - 9:45
	Free poster wandering	9:45 – 10:30
	Round table poster discussion (presenters and teachers only)	10:30 – 11:00

Thursday March 17

Breakfast		*7:00 - 8:30 am*
Multicellular Organisms	**Lectures**	**8:30 am - 12:30 pm**
	Chair: Hiraoki Kitano	
	Co-chair: Marta Cascante	
M-L1	**Michel Eichelbaum**	8:30 - 9:15
	Pharmacogenomics: a holistic approach to drug organism interaction	
M-L2	**Boris Kholodenko**	9:15 - 10:00
	Systems biology of receptor tyrosine kinase signaling	
Coffee & Refreshment Break		*10:00 - 10:20*
M-L3	**Nicolas Le Novere**	10:20 - 11:05
	Computational systems biology of neuronal signalling	
M-L4	**Ursula Klingmüller**	11:05 - 11:50
	Signal transduction and cancer – generation of high quality quantitative data	
Break		*11:50 – 12:00*
	Guided General Discussion: Identifying issues; multicellular organisms	12:00 - 12:30
Lunch & Afternoon Break		*12:30 - 4:30 pm*
Coffee and Tea Break		*4:00 – 4:30 pm*
Multicellular Organisms	**Workshop & Short Talks**	**4:30 -5:55 pm**
	Chair: Marta Cascante	
	Co-chair: Hiraoki Kitano	
M-W1	**Mariko Hatakeyama**	4:30 - 4:50
	Computer simulation analysis of ErbB signaling for understanding of cellular transformation mechanism	
M-W2	**Thomas Höfer**	4:50 - 5:10
	Integration of signal transduction and cytokine expression in T lymphocytes	

M-S1 **Nils Bluethgen** 5:10 - 5:25

Inferring feedback mechanisms in cellular transformation due to oncogenic RAS

M-S2 **Silvia Santos** 5:25 - 5:40

Regulation of MAPK signalling determining cell fate in PC-12 cells - a step beyond biochemistry

M-S3 **Thomas Sauter** 5:40- 5:55

Mathematical modeling of neuronal response to neuropeptides: Angiotensin II signaling via G-protein coupled receptor

Coffee & Refreshment Break *5:55 - 6:15*

Resumed General Discussion:Addressing the issues; multicellular organisms 6:15 - 6:45

NovoNordisk Closing Lecture

Denis Noble **7:00 pm – 8:00 pm**

Highlights of SysBio2005: From genes to whole organs

Vertical integration using mathematical simulation

Banquet and Farewell Party **8:00 pm - open end**

Presentation of "Gosau YOUNG SysBio INVESTIGATOR AWARDS" 8:30 - 8:45

Marta Cascante, Lilia Alberghina, Roel van Driel, Stefan Hohmann

Official Course Closure 8:45 - 9:00

Hans Westerhoff and Karl Kuchler