ECMTB 2011

8TH EUROPEAN CONFERENCE on MATHEMATICAL and THEORETICAL BIOLOGY and ANNUAL MEETING of the SOCIETY FOR MATHEMATICAL BIOLOGY

PLENARY SPEAKERS

Uri Alon, Weizmann Institute of Science
Marek Kimmel, Rice University, Huston
Sylvie Méléard, École Polytechnique, Paris
Rob Phillips, California Institute of Technology
Michael C Reed, Duke University
Peter Swain, University of Edinburgh
Julie Theriot, Stanford University
Hiroki Ueda, RIKEN (Japan)

KRAKÓW, JUNE 28—JULY 2 2011

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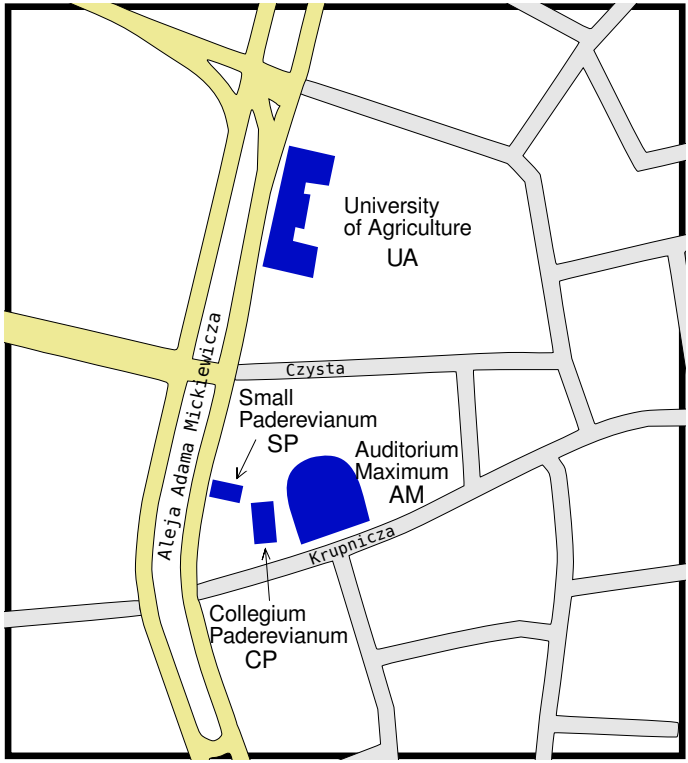
ESMTB SMB PAN



- Auditorium Maximum [**AM**]

  AM1 – **AM9**

- Godlewski's Collegium
  of University of Agriculture [**AU**]

  UA1 — Room A
  UA2 — Room B
  UA3 — Room C

- Small Paderevianum [**SP**]

  SP1 — Room 02

- Collegium Paderevianum [**CP**]

  CP1 — Room 702
  CP2 — Room 01
  CP3 — Room 709
  CP4 — Room 607

Contents

Monday, June 27

Introductory Lectures

14:30 – 15:15 **Stanisław Cebrat**: *Sympatric speciation in the changing environment*
15:20 – 16:05 **Andreas Deutsch**: *Mathematical modelling of cancer invasion*
16:10 – 16:55 **Peter Jagers**: *Branching processes – the dynamics of finite populations*
17:25 – 18:10 **Eva Kisdi**: *Mathematical ecology: The need for mechanistic models*
18:15 – 19:00 **Andrea Pugliese**: *An introduction to current problems in epidemic modelling*

Tuesday, June 28

09:00 – 09:30 Opening

09:30 – 10:15 Plenary Lecture:
Peter Swain: *Stochasticity in biochemical networks*

10:15 – 11:00 Coffee break — welcome reception

11:00

AM1 Gene regulation	AM2 Population Dynamics	AM3 Cancer growth and treatment I	AM4 Tumor invasion I	AM5 Cancer
M.C. Mackey D. Iber T. Höfer T. Gedeon F. Naef	C.A. Braumann C. Fang N. McPherson Y. Choi	A. Friedman M.A. Herrero A. Marciniak-Czochra A. d'Onofrio M.A. Horn	V. Cristini H. Hatzikirou C. Guiot G. Lolas	V. Capasso A. Gasselhuber J.C. López Alfonso V.M. Perez-Garcia M. Sturrock
AM6 Epidemics	**AM7** Multiscale: Chaste framework	**AM8** Mosquito-Borne Diseases	**AM9** Plants, growth and transport I	**CP1** Bioimaging
A. Pugliese E. Brooks-Pollock E. Harrison L. Mailleret M. Plucinski	J. Osborne A. Fletcher S. Dunn O. Cominetti P. Murray	A. Lloyd C. Manore A.M. Lutambi S. Barbosa N. Chitnis	M. Ptashnyk W. Konrad A. Roth-Nebelsick R. Pieruschka K. Zygalakis	Y. Kalaidzidis A. Doroshkov I. Kowalik-Urbaniak R. Seri K. Thierbach
SP1 From one to many I	**UA1** Ecosystems Dynamics	**UA2** Game theory — evolution and ecology I	**UA3** Medical Physiology	
D. Drasdo C.A. Hunt R. Merks K.A. Rejniak J. Glazier	J. Müller B.I. Camara Y. Eynaud W. Jeon	M. Lindh M.J. Ejsmond F. Grognard K. Argasinski	J. Ward M. Gallenberger J. Hiorns I. Vignon-Clementel	

14:30

AM1 Ecosystems Dynamics	AM2 Population Dynamics	AM3 Cancer growth and treatment II	AM4 Tumor invasion II	AM5 Cancer
H. Kettle	J. Iranzo	V. Capasso	S. Fedotov	M. Swat
J. Greenman	W. Ferreira Jr.	A. Gandolfi	K. Painter	M. Al-husari
T. Namba	M. Teixeira Alves	K.R. Fister	M.A. Herrero	S. Mahmood
V. Pasour	L. Sanz	U. Ledzewicz	C. Giverso	G. Powathil
J.Y. Wakano	A. Bohn	J. Poleszczuk	A. Deutsch	R. Rockne

AM6 Epidemics	AM7 Cellular Systems Biology	AM8 Game theory — evolution and ecology II	AM9 Plants, growth and transport II	CP1 From one to many II
J.R. Artalejo	P. Buske	C. Hadjichrysanthou	V. Volpert	H.G. Othmer
M. Lopez-Herrero	M. Kahm	I. Kareva	L. Band	H. Enderling
R. Porter	M. Sajitz-Hermstein	C. Gokhale	R. Dyson	H. Perfahl
M. Roberts	R. Heise	V. Krivan	R. Nolet	C. Reichhardt
J. Prentice	F. Crauste	M. Broom	A. Chavarría-Krauser	Y. Jiang

SP1 Biochemical Reaction Networks I	UA1 Vector-borne diseases	UA2 Reaction kinetics	UA3 Bio-engineering
D. Swigon	M. Recker	S. Cotter	A. Cherstvy
G. Szederkenyi	E. Gjini	P. Lotstedt	S. Scacchi
C. Conradi	D. Coffield Jr.	K. Zygalakis	Y. Stokes
G. Craciun	Y. Dumont	O. Radulescu	P. Lachor
C. Pantea	B. Adams		

17:00

AM1 Ecosystems Dynamics	AM2 Population Dynamics	AM3 Cancer growth and treatment III	AM4 Regulatory Networks	AM5 Cancer
N. Yamamura	P. Jagers	A. Chauviere	L. Sella	B. Ribba
M. Vela-Pérez	J. Berbert	C. Gerin	J. Gouzé	G. Ascolani
P. Yan	I. Mroz	S. Bunimovich	M. Apri	A. Martinez-Gonzalez
C. Ciric	A. Savory	S. Benzekry	E. Roberts	K. Psiuk-Maksymowicz
A. Ramanantoanina	W.M. Getz	K. Kassara	R. Noble	Z. Szymańska
		U. Ledzewicz, A. d'Onofrio		

AM6 Epidemics	AM7 Cellular Systems Biology	AM8 Immune resp. calcium signaling I	AM9 Infectious agents	CP1 Cellular migration
H. Nishiura	Z. Neufeld	M. Covert	A. Kucharski	R. Baker
G. Mercer	D. Damineli	M. Iwanaszko	G. Gomes	M. Simpson
L. Berec	T. Kobayashi	P. Paszek	Y. Artzy-Randrup	J. Fozard
R. Hickson	A. Makuchowski	R. Bertolusso	B. Boldin	E. Khain
O. Melnichenko	T. Lai		V. Andreasen	A. Middleton

SP1 Biochemical Reaction Networks II	UA1 Viral hepatitis dynamics I	UA2 Spatial Ecology	UA3 Complex Biological Systems
S. Schnell	A.U. Neumann	R. Kraenkel	G. Enciso
M. Banaji	L. Strauss	R. Mendes Coutinho	D. Schmidt
G.A. Rempala	J. Guedj	F. Azevedo	A. Cai
H. Kamei	E. Herrmann	E. Dauson	R. Gejji
M. Mincheva	R.B. Nachbar		P. Hurtado

Wednesday, June 29

08:30

AM1 Evolutionary Ecology	AM2 Population Dynamics	AM3 Cancer growth and treatment IV	AM4 Mathematics of liver	AM5 Cancer
A. Best	E. Khain	A. Fasano	L.O. Schwen	D. Schlueter
A. Bratus	R. Anguelov	L. Hanin	D. Drasdo	M. Barbarossa
A. Karkach	S. Hamdous	M. Lachowicz	L. Brusch	E. Kim
A. Satake	H. Seno	M. Krzeminski	W. de Back	M. Robertson-Tessi
T. Kostova Vassilevska	G. Marion	C. Groh		N. Khatiashvili

AM6 Epidemics	AM7 Genetics and Genomics	AM8 Eco-epidemiology I	AM9 Semigroups of Operators I	CP1 Regulation in bone tissue I
R. Saenz	V. Schwämmle	J. Poggiale	D. Wrzosek	C. Hellmich
R. Davidson	R. Kollár	M. Banerjee	A. Marciniak-Czochra	P. Pivonka
T. Dhirasakdanon	P. Błażej	M. Sieber	P. Gwiazda	B. van Rietbergen
E.A. Nosova	K. Boďová	Q. Zhang	R. Service	P. Cummings
A.D. Elhadi	A. Danek	E. Venturino	H. Thieme	A. Moroz
	Ł. Olczak			

CP2 Speciation	SP1 Modeling viral hepatitis II	UA1 Bioinformatics System Biology	UA2 Neurosciences	UA3 Angiogenesis I
J. Hermisson	H. Dahari	L. Astola	S. Ditlevsen	R. Wcisło
G. Meszéna	J. Nakabayashi	P. Foszner	D. Forger	A. Qutub
K. Schneider	J. Forde	B. Hirt	J. Pyrzowski	H. Rieger
S. Proulx	N. Dixit	S. Fortmann-Roe	J. Signerska	F. Milde
T. Priklopil	P. Colombatto	W. Weens	K. Kravchuk	S. Massey

11:00

AM1 Evolutionary Ecology	AM2 Population Dynamics	AM3 Cancer growth and treatment V	AM4 Mathematics of liver	AM5 Cancer
S. Cornell	N. Britton	J. Clairambault	P. Hunter	C. Wiuf
T. Ammunét	E. Nonaka	H. Schaettler	H. Holzhuetter	S. Becker
M. Castel	U. Skwara	E. Afenya	S. Hoehme	M. Kolev
I. Karonen	F. Cordoleani	A. Nowakowski	T. Ricken	B. Mendoza-Juez
A. Seppänen	L. Zhang	A. Kubo		S. MoobedMehdi-Abadi

AM6 Epidemics	AM7 Crowd Dynamics I	AM8 Eco-epidemiology II	AM9 Biofluids, Solute, Hemodynamics	CP1 Regulation in bone tissue II
M. von Kleist	B. Maury	M. Langlais	H. Layton	V. Klika
A. Novozhilov	A. Tosin	N. Apreutesei	R. Evans	J. Fernandez
M. Selbach-Allen	J. Haskovec	J.B. Burie	A. Layton	S. Maldonado
A. Uziel	M. Campanella	H. Malchow	N. Holstein-Rathlou	Y. Kameo
S. Repsys	J. Evers	A. Bate	S.R. Thomas	H. Khayyeri

CP2 Neglected Tropical Diseases	SP1 B and T cell responses	UA1 Bioinformatics System Biology	UA2 Physiological systems	UA3 Angiogenesis II
L. Esteva	Y. Louzoun	S. Jabbari	J. Batzel	R. Merks
C. Ferreira	E. Terry	A. Arnold	M. Olufsen	T. Alarcón
R. Kraenkel	M. Kochanczyk	S. Kleessen	M. Bachar	R. Schugart
	A. Shuvaev	M. Sadovsky	F. Kappel	F. Hubert
		M. Vieira Kritz	J. Ottesen	
			J. King	

14:30

AM1 Evolutionary Ecology	AM2 Population Dynamics	AM3 Population Genetics	AM4 Interacting cell systems I	AM5 Epidemic models I
A. Yamauchi F. Drubi Vega K. Bartoszek E. Elliott J. Toivonen	L. Chaves C. Winkel N. Jagiella J. Yoon J. Thibodeaux	M. Mota T. Hustedt S. Takahashi M. Wittmann M. Pułka	J. Bloomfield P. Lushnikov A. Czirok R. O'Dea R. Rovetti	T. House, I. Kiss D. Sirl K. Sharkey K. Eames P. Simon
AM6 Immunology	**AM7** Crowd Dynamics II	**AM8** Immune resp. calcium signaling II	**AM9** Stem cells and cancer	**CP1** Fractals and Complexity I
J. Kzhyshkowska E. Delgado-Eckert M. Dolfin S. Gerdes S. Iwami	A. Schadschneider B. Düring A. Seyfried M. Bodnar N. Bode	J. Faeder P. Kocieniewski T. Lipniacki J. Jaruszewicz P. Żuk	J. Lowengrub C. Tomasetti T. Stiehl H. Haeno C. Morton	B. West R. Dobrescu K. Metze H. Jelinek P. Waliszewski
CP2 Heart rate dynamics I	**SP1** Mechanics of Cells and Tissues I	**UA1** Bioinformatics System Biology	**UA2** Stochastics neuroscience I	**UA3** Education Beyond BIO2010 I
J. Amigó A. Kaczkowska B. Graff J. Gierałtowski D. Makowiec	H.G. Othmer G. Vitale M. Stolarska K. Rejniak Y. Kim	J. Galle I. Akberdin M. Domijan S. Handelman M. Marczyk	W. Gerstner R. Sirovich M. Thieullen P. Greenwood S. Shinomoto	H. Gaff C. Neuhauser R. Robeva W. Just R. Robeva, M. Burke

17:00

AM1 Developmental Biology	AM2 Epidemics/ Population Dynamics	AM3 Population Genetics	AM4 Interacting cell systems II	AM5 Modelling biofilms
M. Watson M. Kücken S. Bakshi H. Hardway A. Madzvamuse	S. Touzeau A. Anandanadesan B. Franz M. Anazawa S. Weitz	S. Leviyang W. Bartoszek S. Fischer S. Kluth S. Park	F. Peruani A. Voss-Boehme C. Deroulers T. Zerjatke J. Malmros	F. Davidson C. Kuttler J. Perez-Velazquez N.C. Overgaard H. Eberl
AM6 Immunology	**AM7** From Individuals to Populations	**AM8** Immune resp. calcium signaling III	**AM9** Nonnegative Radon measures	**CP1** Fractals and Complexity II
J. Conway Y. Cai J.A. Garcia K. Saeki V. Skakauskas	C. Surulescu F. Matthaeus J. Haskovec D. Hilhorst J. Kelkel	G. Dupont A. Skupin J. Tsai B. Hat P. Szopa	J.A. Carrillo P. Gwiazda G. Raoul A. Ulikowska G. Jamróz	R. Abu Eid H. Ahammer N. Milosevic W. Klonowski E. Oczeretko
CP2 Heart rate dynamics II	**SP1** Mechanics of Cells and Tissues II	**UA1** Bioinformatics System Biology	**UA2** Statistics in neuroscience II	**UA3** Turing?? on morphogenesis
P. Podziemski M. Petelczyc T. Buchner J. Piskorski J. Ellert K. Ambroch	W. Alt D. Ölz M. Scianna P. Macklin P. Topa	J. Nacher K. Świder M. Zientek U. Zubairova J. Arndts	S. Gruen R. Kobayashi A. Samson M.P. Nawrot K. Holst	S.S. Lee T. Nakamura D. Headon E. Gaffney S. Kondo

Thursday, June 30

8:30 – 9:15 Plenary Lecture:
Michael C. Reed: *Serotonin metabolism in health and disease*

9:20 – 10:05 Plenary Lecture:
Marek Kimmel: *Heterogeneity of proliferating cell populations: Models and data*

10:10 – 10:55 Plenary Lecture:
Hiroki Ueda: *System-level understanding of biological timings*

11:30

AM1 Evolutionary Ecology	AM2 Population Dynamics	AM3 Developmental Biology	AM4 Bridging the Divide	AM5 Neurosciences
K. Parvinen R. Bowers T. Nurmi M. Utz C. Liddell	P. Pang F. Chalub M.A. Lopez-Marcos H. Toyoizumi R. Rosà	S. Dalessi H. Yoshida C. Chettaoui S. Lubkin V. Mironova	A. Friedman M. Meyer-Hermann M. Eisenberg H. Jain H. Perfahl	J. Hertz A. Bielecki A. Lavrova L. Sacerdote C. Smith

AM6 Epidemics	AM7 Cellular Systems Biology	AM8 Cell and Tissue Biophysics	AM9 Epidemic models II
R. Nishi K. Avilov L. Fernandez Lopez T. Kuniya V. Perminov	E. Volkov M. Tindall E. Feliu R. Erban M. van Hoek	S. Tiburtius V. Zubkov J. Fuhrmann K. Giorgakoudi T. Stepien	T. Britton A. McKane M. Taylor A. Kleczkowski C. Kamp

14:30 Excursion

and

Conference Dinner

8:30 – 9:15 Plenary Lecture:
Uri Alon: *Design principles of biological circuits*

9:20 – 10:05 Plenary Lecture:
Julie Theriot: *Quantitative analysis and modeling of cell shape during rapid movement*

10:10 – 10:55 Plenary Lecture:
Rob Phillips: *Random walks in physical biology*

14:30

AM1 Evolutionary Ecology	**AM2** Regulatory Networks	**AM3** Population Genetics	**AM4** Delay Differential Equations I	**AM5** Cell and Tissue Biophysics/ Neurosciences
B. Wennberg D. Wallace W. Borkowski J. Miller J. Scott	D. Muraro C. Bodenstein M. Knudsen M. Koetzing D. Schittler	R. Bürger A. Akerman M. Rafajlovic U. von Wangenheim R. Puddicombe	M.C. Mackey A. d'Onofrio Y. Nakata J. Miekisz P. Getto	K. Chiam A. Coster A. Toma E. Spanou M. Tamborrino

AM6 Population Dynamics	**AM7** Developmental Biology	**AM8** Cancer	**AM9** Ecology and evolution — diseases
C. Cobbold E. Hingant J. Reynolds X. Yang	T. Glimm E. Deinum T. Lundh A. Polezhaev S. Nikolaev	I. Cheddadi N. Deakin A. Kolobov C. Mente J. Rodriguez Chrobak	T. Day A. Sasaki A. White S. Alizon E. Kisdi

11:30 – 12:10 Art Winfree Prize's plenary lecture
John Tyson: *Temporal organization of the cell cycle*

12:20 – 13:00 Lee Segel Prize's plenary lecture
W. Brent Lindquist and Ivan D. Chase: *Analysis of winner-loser models of hierarchy formation in animals*

17:00 – 17:30 Reinhart Heinrich Award's plenary lecture
Thomas Maiwald: *Mathematical modeling and in silico labeling with PottersWheel*

17:40 – 18:10 Reinhart Heinrich Award's plenary lecture
Tina Toni: *Approximate Bayesian Computation for parameter inference and model selection in systems biology*

18:20 – 18:50 Lee Segel Prize's plenary lecture
Barbara Boldin: *Persistence and spread of gastro-intestinal infections: the case of enterotoxigenic Escherichia coli in piglets*

Saturday, July 2

08:30

AM1 Cytoskeleton and cortical actin	AM2 Epidemics	AM3 Information, behaviour,infection	AM4 Multiscale modeling I	AM5 Education Beyond BIO2010 II
G. Salbreux A. Harris J. Joanny S. Naganathan W. Strychalski	A. Ouhinou S. Hashemi J. Cui H. Johnson A. Khan A. Elaiw	T. Reluga P. Manfredi S. Funk B. Buonomo	D. Drasdo V. Volpert Y. Kim P. Macklin L. Preziosi	S. Koksal P. Vera-Licona H. Callender R. Robeva, M. Burke

AM6 Fluid-structure interact.	AM7 Resistance in cancer	AM8 Modelling dengue fever	AM9 Collective phenomena	CP1 Analysis of Signals I
E. Jung C. Hamlet K. Leiderman S. Olson K.A. Rejniak	A. Anderson E. Flach J. Foo H. Enderling D. Basanta	M. Aguiar E. Massad H.S. Rodrigues J. Lourenço N. Stollenwerk	M. Zagorski A. Deutsch P. Lio D. Makowiec Z. Struzik	J. Harezlak C. Drake M. Knappitsch T. Kozubowski B. Obara

CP2 Immunology/ Medical Physiology	CP3 Delay Differential Equations II	CP4 Cell migration by development	SP1 Immune resp. calcium signaling IV
G. Dimitriu F. Vistulo de Abreu G. Gramotnev M. Taghipoor	H. Hbid S. Bernard M. Bodnar M. Piotrowska A.L. Dawidowicz	P. Kulesa L. Dyson M. Simpson M. Wynn K. Painter	J. Miekisz P. Szymanska J. Pekalski M. Komorowski M. Falcke

11:00

AM1 Developmental Biology	AM2 Population Dynamics	AM3 Information, behaviour, disease	AM4 Multiscale modeling II	AM5 Cell and Tissue Biophysics
Y. Morishita J. Starruß J. Szymanowska-Pułka S. Tapani L. Willis	M. Souza A. Ghosh R. Chisholm W. Maciejewski J. Rault	S. Del Valle R. Vardavas R. Breban I. Kiss M. Ajelli	J. Lowengrub C.V. Achim I. Graf A. Voigt A. Chauviere	Z. Grzywna Z. Jones J. Li U. George R. Bauer

AM6 Regulatory Networks	AM7 Cellular Systems Biology	AM8 Epidemiology and Evolution	AM9 Semigroups of Operators II	CP1 Analysis of Signals II
S. van Mourik E. Tzafestas M. Zagórski B. Fitzpatrick A. Ochab-Marcinek	A. Csikasz-Nagy M. Jafari-Mamaghani J. Krishnan I. Potapov J. Śmieja	E. Venturino C. Guiot P. Gerrish J. Ripoll N. Stollenwerk	J. Farkas P. Hinow M. Lachowicz R. Bogucki A. Bobrowski	A. Weron E. Gajecka-Mirek J. Leśkow M. Molenda A. Panorska

CP2 Physiological processes — dialysis	CP3 Advances in infe- ctious diseases I	CP4 Toxicology and pharmacology	SP1 Immune resp. calcium signaling V
D. Schneditz J. Stachowska-Piętka R. Cherniha M. Galach M. Debowska	E. Schwartz S.M. Ciupe J. Forde K. Pawelek R. Miron	W. Krzyzanski M. Swat A. Mendyk S. Polak A. Krinner	R. Thul K. Thurley M. Dyzma Z. Peradzyński B. Kaźmierczak

14:30

AM1 Systems Biology of Development	**AM2** Population Dynamics	**AM3** Noisy Cells	**AM4** US - African BioMathematics Initiative	**AM5** Cancer
J. Jaeger M. Palm J. Belmonte A. Köhn-Luque O. Chara	I. Chairez-Hernandez J. Jaroszewska A. Bernal Escobar Y. Otake	T. Höfer M. Falcke A. Skupin T. Schwalger	H. Gaff R. Nadolny G. Himes Boor R. Wiederholt S. Ermon H.G. Sadie Ryan	G. Meral M. Mrugala A. Traulsen J. Gallaher P. Gerlee

AM6 Macromolecules and Molecular Aggregates	**AM7** Lotka-Volterra and Kolmogorov systems	**AM8** Bridging Time Scales	**AM9** Advances in infectious diseases II
R. Mondaini R. Kerner R. Twarock G. Indelicato T. Keef	J. Mierczynski Z. Hou Y. Takeuchi J. Balbus S. Baigent	K. Fackeldey V. Liebscher I. Antes S. Röblitz	R. Smith? A. Bonacic Marinovic R. Breban B. Konrad R. Eftimie

17:00 Plenary Lecture:
Sylvie Méléard: *A rigorous model for adaptive dynamics of Mendelian diploids*

17:50 Closing of the Conference

Detailed Timetables of Parallel Sessions

Tuesday, June 28, 11:00, Room: **AM1**

MATHEMATICAL MODELS OF GENE REGULATION
Organizer: Tomas Gedeon

11:00–11:40 Michael C. Mackey: *Molecular distributions in gene regulatory dynamics*
11:40–12:00 Dagmar Iber: *From Gene Networks to Tissue Engineering: Computational Models of Pattern Formation*
12:00–12:20 Thomas Höfer: *A recruitment-reaction model for chromatin-associated regulatory processes*
12:20–12:40 Tomas Gedeon: *Modelling delays induced by transcription and translation*
12:40–13:00 Felix Naef: *Calibrating stochastic models of transcriptional bursting in single mammalian cells*

Tuesday, June 28, 11:00, Room: **AM2**

POPULATION DYNAMICS
Chaired by: Mirosław Lachowicz

11:00–11:30 Carlos A. Braumann: *Profit optimization issues in livestock production in a randomly variable environment*
11:35–11:55 Chun Fang: *Asymptotic almost periodicity of competitive-cooperative systems with almost periodic time dependence*
11:55–12:15 Nicola McPherson: *Macroparasites in Managed Systems: Using mathematical models to help reduce the Impact of emphArgulus foliaceus in UK Fisheries*
12:15–12:35 Yeontaek Choi: *Movement pattern analysis of C.elegans based on Box-Sized-Distribution*

Tuesday, June 28, 11:00, Room: **AM3**

ANALYSIS OF MATHEMATICAL MODELS FOR CANCER GROWTH AND TREATMENT, PART I
Organizers: Urszula Ledzewicz, Alberto d'Onofrio

11:00–11:40 Avner Friedman: *The development of fingers in solid tumors*
11:40–12:00 Miguel A. Herrero: *Wave propagation and tumour growth*
12:00–12:20 Anna Marciniak-Czochra: *Dynamics of pattern formation in the models of early cancerogenesis*
12:20–12:40 Alberto d'Onofrio: *The noisy life of tumors*
12:40–13:00 Mary Ann Horn: *Using mathematical modeling to understanding the role of diacylglycerol (DAG) as a second messenger*

Tuesday, June 28, 11:00, Room: **AM4**

MODELING AND ANALYSIS OF TUMOR INVASION I

Organizers: Haralampos Hatzikirou, Andreas Deutsch, Arnaud Chauviere

11:00–11:30 Vittorio Cristini: *Multiparameter Computational Modeling of Tumor Invasion*

11:30–12:00 Haralampos Hatzikirou: *Mechanisms of glioma tumor invasion*

12:00–12:30 Caterina Guiot: *Lumped models for tumor progression*

12:30–13:00 Georgios Lolas: *The Lymphatic Vascular System in Lymphangiogenesis, Invasion and Metastasis: A Mathematical Approach*

Tuesday, June 28, 11:00, Room: **AM5**

CANCER

Chaired by: Luigi Preziosi

11:00–11:30 Vincenzo Capasso: *Population behaviour of cancer stem cells*

11:35–11:55 Astrid Gasselhuber: *Computational Model of Targeted Drug Delivery via Low-Temperature Sensitive Liposomes and image-guided focused ultrasound*

11:55–12:15 Juan Carlos López Alfonso: *Some Mathematical Problems in Radiotherapy*

12:15–12:35 Victor M. Perez-Garcia: *Bright solitons in malignant gliomas*

12:35–12:55 Marc Sturrock: *Spatio-temporal modelling of the Hes1 and p53 pathways*

Tuesday, June 28, 11:00, Room: **AM6**

EPIDEMICS

Chaired by: Hiroshi Nishiura

11:00–11:30 Andrea Pugliese: *Approximation of infection spread in multigroup SIR models through homogeneous models*

11:35–11:55 Ellen Brooks-Pollock: *Tuberculosis - the family disease?*

11:55–12:15 Eleanor Harrison: *Epidemic Models for Leishmaniasis: Elucidation of Key Processes and Parameters*

12:15–12:35 Ludovic Mailleret: *From elaborate to compact seasonal plant epidemic models*

12:35–12:55 Mateusz Plucinski: *Human social network structure is reflected in sequence data for commensal bacteria*

Tuesday, June 28, 11:00, Room: **AM7**

MULTISCALE MODELLING OF BIOLOGICAL SYSTEMS: THE CHASTE FRAMEWORK
Organizer: James Osborne

11:00–11:40 James Osborne: *A multiscale computational framework for modelling biological systems: Chaste*
11:40–12:00 Alexander Fletcher: *Modelling biological systems in Chaste: an overview*
12:00–12:20 Sara-Jane Dunn: *Modelling the Effect of the Actin Basket and Basement Membrane in the Deformation of the Colonic Crypt*
12:20–12:40 Ornella Cominetti: *Using a cell-vertex model to study the role of differential adhesion in the intestinal crypt*
12:40–13:00 Philip Murray: *Using Chaste to simulate a multiscale problem in developmental biology*

Tuesday, June 28, 11:00, Room: **AM8**

MATHEMATICAL MODELING OF MOSQUITO-BORNE DISEASES
Organizer: Nakul Chitnis

11:00–11:40 Alun Lloyd: *Modeling Wolbachia-Based Strategies for Controlling Mosquito-Borne Diseases*
11:40–12:00 Carrie Manore: *A Model for the Spread of Rift Valley Fever in Livestock with Vertical Transmission*
12:00–12:20 Angelina Mageni Lutambi: *Modelling mosquito dispersal in a heterogeneous environment*
12:20–12:40 Susana Barbosa: *A genetic model for the spread of insecticide resistance in a heterogeneous environment*
12:40–13:00 Nakul Chitnis: *Mathematical Modeling to Support Malaria Control and Elimination*

Tuesday, June 28, 11:00, Room: **AM9**

PLANTS, GROWTH AND TRANSPORT PROCESSES I
Organizers: Andrés Chavarría-Krauser, Mariya Ptashnyk

11:00–11:40 Mariya Ptashnyk: *Transport of metal and water in plant roots: Modelling and Analysis*
11:40–12:00 Wilfried Konrad: *Dynamics of plant water transport derived from applying an optimisation scheme to Soil-Plant-Atmosphere-Continuum*
12:00–12:20 Anita Roth-Nebelsick: *Plant gas exchange: Theoretical considerations on the level of single stomata*
12:20–12:40 Roland Pieruschka: *The interaction of leaves with the environment*
12:40–13:00 Konstantinos Zygalakis: *A dual porosity model for the uptake of nutrients by root hairs*

Tuesday, June 28, 11:00, Room: **CP1**

BIOIMAGING
Chaired by: Włodzimierz Klonowski

11:00–11:30 Yannis Kalaidzidis: *Quantitative Multiparametric Image Analysis for Estimation of siRNA Induced Off-target Effect*
11:35–11:55 Alexey Doroshkov: *Analysis of leaf hairiness in wheat Triticum Aestivum L. using image processing technique*
11:55–12:15 Ilona Kowalik-Urbaniak: *Objective quality assessment of JPEG- and JPEG2000- compressed CT neuro images*
12:15–12:35 Raffaello Seri: *Confidence sets for the Aumann mean of a random closed set*
12:35–12:55 Konstantin Thierbach: *Application of variational shape models in single cell tracking*

Tuesday, June 28, 11:00, Room: **SP1**

FROM ONE TO MANY: CELL-BASED MODELING OF COLLECTIVE, EMERGENT BEHAVIORS IN BIOLOGY I
Organizer: Yi Jiang

11:00–11:25 Dirk Drasdo: *Possible cell behavior strategies to escape biomechanical constraints in liver regeneration and tumor growth*
11:25–11:50 C. Anthony Hunt: *Emergent patterns of hepatic zonation of xenobiotic clearance and hepatotoxicity: a plausible role for cell learning*
11:50–12:15 Roeland Merks: *Cell-based modeling of plant tissues using VirtualLeaf*
12:15–12:40 Katarzyna A. Rejniak: *Contribution of Individual cells to homeostatic balance and imbalance in epithelia*
12:40–13:05 James Glazier: *Multi-scale, Multi-cell Computational Modeling of Choroidal Neovascularization in Age-Related Macular Degeneration*

Tuesday, June 28, 11:00, Room: **UA1**

ECOSYSTEMS DYNAMICS
Chaired by: Helen Kettle

11:10–11:40 Johannes Müller: *Modeling the spread of phytophtora*
11:45–12:10 Baba Issa Camara: *Estimation of the stratified dispersal rate*
12:10–12:35 Yoan Eynaud: *Modelling the mesopelagic ecosystem: how far details are important ?*
12:35–13:00 Wonju Jeon: *Exploring Algal Blooms through Planktons' Interactions Using Trophic Model*

Tuesday, June 28, 11:00, Room: **UA2**

GAME THEORETICAL MODELLING AND OPTIMIZATION IN EVOLUTION AND ECOLOGY I

Organizers: Mark Broom, Krzysztof Argasinski

11:00–11:25 Magnus Lindh: *Evolution of tree architecture*

11:25–11:50 Maciej Jan Ejsmond: *More capital or income breeding – optimal strategies for indeterminate growers in the seasonal environment*

11:50–12:15 Frédéric Grognard: *Dynamic game for optimal resource allocation of annual plants and grazing consumers*

12:15–13:00 Krzysztof Argasinski: *In which currency are paid payoffs in evolutionary games?*

Tuesday, June 28, 11:00, Room: **UA3**

MEDICAL PHYSIOLOGY

Chaired by: Jerry Batzel

11:10–11:40 John Ward: *Mathematical modelling of wound healing and the development of chronic wounds*

11:45–12:10 Martina Gallenberger: *A mathematical model for glucose and insulin dynamics with direct connection to the beta-cell cycle*

12:10–12:35 Jonathan Hiorns: *A biomechanical model of the asthmatic airway*

12:35–13:00 Irene Vignon-Clementel: *Towards predictive modeling of patient-specific Glenn-to-Fontan conversions: boundary conditions and design issues*

Tuesday, June 28, 14:30, Room: **AM1**

ECOSYSTEMS DYNAMICS

Chaired by: Johannes Müller

14:30–15:00 Helen Kettle: *Modelling the Emergent Dynamics of Microbial Communities in the Human Colon*

15:05–15:25 Jonathan Greenman: *Pathogen exclusion in eco-epidemiological models*

15:25–15:45 Toshiyuki Namba: *Intraguild Predation in a Source-Sink Metacommunity*

15:45–16:05 Virginia Pasour: *Influence of Macrophytes on Biological Residence Time in a Flow-Through System*

16:05–16:25 Joe Yuichiro Wakano: *Reduction from reaction-diffusion model to two-patch compartment model*

Tuesday, June 28, 14:30, Room: **AM2**

POPULATION DYNAMICS
Chaired by: Carlos A. Braumann

14:30–15:00 Jaime Iranzo: *Tempo and mode of inhibitor-mutagen therapies: a multidisciplinary approach*
15:05–15:25 Wilson Ferreira Jr.: *Dengue Epidemics : Urbi et Orbi*
15:25–15:45 Mickael Teixeira Alves: *Optimal foraging predators in Leslie Gower models with alternative prey*
15:45–16:05 Luis Sanz: *Exponential growth and extinction in age structured populations incorporating environmental stochasticity*
16:05–16:25 Andreas Bohn: *Multi-level modeling of the stochastic spatio-temporal dynamics of phototrophic biofilms*

Tuesday, June 28, 14:30, Room: **AM3**

ANALYSIS OF MATHEMATICAL MODELS FOR CANCER GROWTH AND TREATMENT, PART II
Organizers: Urszula Ledzewicz, Alberto d'Onofrio

14:30–15:10 Vincenzo Capasso: *An hybrid analysis of multiscale models for angiogenesis*
15:10–15:30 Alberto Gandolfi: *Vascularization and chemotherapy: inferences from a simple model*
15:30–15:50 K. Renee Fister: *Optimal control scenarios in cancer treatment strategies*
15:50–16:10 Urszula Ledzewicz: *On optimal controls minimizing tumor volume in combinations of anti-angiogenic treatment with radiotherapy*
16:10–16:30 Jan Poleszczuk: *Optimal and suboptimal treatment protocols for anti-angiogenic therapy*

Tuesday, June 28, 14:30, Room: **AM4**

MODELING AND ANALYSIS OF TUMOR INVASION II
Organizers: Haralampos Hatzikirou, Andreas Deutsch, Arnaud Chauviere

14:30–15:10 Sergei Fedotov: *Migration-Proliferation Dichotomy in Tumor Cell*
15:10–15:30 Kevin Painter: *The impact of a heterogeneous environment on invasive processes*
15:30–15:50 Miguel A. Herrero: *On the determination of the optimal radiation dose on a target tissue volume*
15:50–16:10 Chiara Giverso: *Modeling the mechanical behavior of cell aggregates and their invasion of mesothelial linings*
16:10–16:30 Andreas Deutsch: *Analyzing emergent behaviour in cellular automaton models of cancer invasion*

Tuesday, June 28, 14:30, Room: **AM5**

CANCER

Chaired by: Victor M. Pérez-García

14:30–15:00 Maciej Swat: *Multi-Cell Tumor Growth Modeling Using CompuCell3D*

15:05–15:25 Maymona Al-husari: *Regulation of Tumour Intracellular pH: A Mathematical Model Examining the interplay between hydrogen ions and lactate*

15:25–15:45 Silvia Mahmood: *Numerical simulations of a continuum model for avascular tumor growth*

15:45–16:05 Gibin Powathil: *Modelling the effects of cell-cycle heterogeneity on tumour response to chemotherapy: Biological insights from a hybrid multi-scale cellular automaton model*

16:05–16:25 Russell Rockne: *Response to anti-angiogenic therapy in human brain tumors: the role of the microenvironment and heterogeneity*

Tuesday, June 28, 14:30, Room: **AM6**

EPIDEMICS

Chaired by: Andrea Pugliese

14:30–15:00 Jesus R. Artalejo: *The ratio of expectations distribution as an alternative to quasi-stationarity in stochastic biological models*

15:05–15:25 MJ Lopez-Herrero: *The SIS and SIR stochastic epidemic models: Length of an outbreak and time to infection*

15:25–15:45 Rosalyn Porter: *Modelling the role of acaricide in preventing tick borne disease in a wild game bird*

15:45–16:05 Mick Roberts: *Epidemic models with uncertainty*

16:05–16:25 Jamie Prentice: *The Perturbation Effect in wildlife diseases: An emergent behaviour of simple models*

Tuesday, June 28, 14:30, Room: **AM7**

CELLULAR SYSTEMS BIOLOGY

Chaired by: Evgenii Volkov

14:30–15:00 Peter Buske: *Modelling in vitro crypt formation*

15:05–15:25 Matthias Kahm: *Actuators of yeast potassium homeostasis*

15:25–15:45 Max Sajitz-Hermstein: *Biochemical reaction networks meet Coalitional Game Theory: The importance of not being single*

15:45–16:05 Robert Heise: *Extensions to Kinetic Flux Profiling to determine the distribution of fluxes in the central carbon metabolism of Arabidopsis thaliana*

16:05–16:25 Fabien Crauste: *Multiscale Modelling of Red Blood Cell Production using Continuous and Hybrid Models*

Tuesday, June 28, 14:30, Room: **AM8**

GAME THEORETICAL MODELLING AND OPTIMIZATION IN EVOLUTION AND ECOLOGY II

Organizers: Mark Broom, Krzysztof Argasinski

14:30–14:55 Christoforos Hadjichrysanthou: *Evolutionary games on graphs*

14:55–15:20 Irina Kareva: *Mixed Strategies, Evolution and the Tragedy of the Commons in Heterogeneous Populations*

15:20–15:45 Chaitanya Gokhale: *Multiplayer evolutionary games: from selection to mutation*

15:45–16:10 Vlastimil Krivan: *On evolutionary stability in some population games*

16:10–16:35 Mark Broom: *Evolution in structured populations: modelling the interactions of individuals and groups*

Tuesday, June 28, 14:30, Room: **AM9**

PLANTS, GROWTH AND TRANSPORT PROCESSES II

Organizers: Andrés Chavarría-Krauser, Mariya Ptashnyk

14:30–15:10 Vitaly Volpert: *Nonlinear dynamics of plant growth*

15:10–15:30 Leah Band: *Modelling hormone-regulated plant root growth*

15:30–15:50 Rosemary Dyson: *The mechanics of plant root growth*

15:50–16:10 Robert Nolet: *Existence of solutions for the diffusive VSC model*

16:10–16:30 Andrés Chavarría-Krauser: *A model of membrane flow and cytosis regulation in growing pollen tubes*

Tuesday, June 28, 14:30, Room: **CP1**

FROM ONE TO MANY: CELL-BASED MODELING OF COLLECTIVE, EMERGENT BEHAVIORS IN BIOLOGY II

Organizer: Yi Jiang

14:30–14:55 Hans G. Othmer: *Multiscale Modeling in Biology – The Mathematical and Computational Challenges*

14:55–15:20 Heiko Enderling: *Emerging tumor morphologies from cancer cell interactions*

15:20–15:45 Holger Perfahl: *Multiscale modelling of vascular tumour growth and angiogenesis*

15:45–16:10 Charles Reichhardt: *Guided Motion of Individual and Collective Swimmers in Funnel Arrays*

16:10–16:35 Yi Jiang: *Bacterial behavioral principles: Learning from Myxobacteria*

Tuesday, June 28, 14:30, Room: **SP1**

STRUCTURE AND DYNAMICS OF BIOCHEMICAL REACTION NETWORKS I
Organizers: Maya Mincheva, Casian Pantea

14:30–14:50 David Swigon: *Decomposition of chemical reaction networks*
14:55–15:15 Gabor Szederkenyi: *Dynamically equivalent reaction networks: a computational point of view*
15:20–15:40 Carsten Conradi: *Multistationarity in mass action networks by linear inequality systems*
15:45–16:05 Gheorghe Craciun: *Persistence and the Global Attractor Conjecture: The Big Picture*
16:10–16:30 Casian Pantea: *Persistence and the Global Attractor Conjecture: Recent Approaches*

Tuesday, June 28, 14:30, Room: **UA1**

VECTOR-BORNE DISEASES
Organizer: Ben Adams

14:30–14:55 Mario Recker: *Evolutionary determinants of antigenic variation in malaria*
14:55–15:20 Erida Gjini: *Optimizing pathogen fitness: the role of the antigenic archive for African Trypanosomes*
15:20–15:45 Daniel Coffield Jr.: *A Model for Chagas Disease with Vector Consumption and Transplacental Transmission*
15:45–16:10 Yves Dumont: *Chikungunya: an unusual vector-borne disease. Overview and new research trends*
16:10–16:35 Ben Adams: *Man bites mosquito: human movement and the urban epidemiology of vector-borne diseases*

Tuesday, June 28, 14:30, Room: **UA2**

MULTISCALE MODELLING OF REACTION KINETICS IN BIOLOGY
Organizer: Simon Cotter

14:30–15:00 Simon Cotter: *A constrained multiscale approach to modelling biochemical systems*
15:00–15:30 Per Lotstedt: *Stochastic simulation of reaction-diffusion processes in living cells on multiple scales*
15:30–16:00 Konstantinos Zygalakis: *Alternative formulations of the Chemical Langevin Equation*
16:00–16:30 Ovidiu Radulescu: *Timescales of stochastic gene expression*

Tuesday, June 28, 14:30, Room: **UA3**

BIOENGINEERING
Chaired by: Yannis Kalaidzidis

14:30–15:00 Andrey Cherstvy: *Protein-DNA interactions: reaching and recognizing the targets*
15:05–15:25 Simone Scacchi: *The anisotropic Bidomain model of electrocardiology: a comparison of coupled and uncoupled parallel preconditioners*
15:25–15:45 Yvonne Stokes: *Improving success rates of assisted reproduction technology by mathematical modelling*
15:45–16:05 Paweł Lachor: *Accuracy indices for assessing performance of different versions of Gillespie Algorithm for stochastic molecular simulations*

Tuesday, June 28, 17:00, Room: **AM1**

ECOSYSTEMS DYNAMICS
Chaired by: Jacek Miękisz

17:00–17:30 Norio Yamamura: *Different Social-ecological Networks in Grassland and Forest Systems:Implication for their sustainable management*
17:35–17:55 María Vela-Pérez: *Geodesic paths in simple graphs for some social insects*
17:55–18:15 Ping Yan: *Global asymptotic stability of solutions of nonautonomous master equations*
18:15–18:35 Catalina Ciric: *Aquatic ecosystem modeling: use of screening sensitivity analysis methods to facilitate the calibration process*
18:35–18:55 Andriamihaja Ramanantoanina: *A density-dependent diffusion model for a two-phase invasion*

Tuesday, June 28, 17:00, Room: **AM2**

POPULATION DYNAMICS
Chaired by: Marek Kimmel

17:00–17:30 Peter Jagers: *Finite Populations Regulated by a Carrying Capacity*
17:35–17:55 Juliana Berbert: *Individual's memory as a parameter to differentiate population distribution patterns*
17:55–18:15 Iwona Mroz: *Adaptation to a given habitat as a factor influencing dynamics and evolution of model populations*
18:15–18:35 Andrew Savory: *Swimming Patterns Of Zoospores*
18:35–18:55 Wayne M. Getz: *A Biomass Flow Approach to Population Models and Food Webs*

Tuesday, June 28, 17:00, Room: **AM3**

Analysis of mathematical models for cancer growth and treatment, Part III

Organizers: Urszula Ledzewicz, Alberto d'Onofrio

17:00–17:20 Arnaud Chauviere: *The Go-or-Grow hypothesis in glioma growth: mathematical modeling and analysis*

17:20–17:40 Chloe Gerin: *When do a low-grade glioma appear ?*

17:40–18:00 Svetlana Bunimovich: *Mathematical model of the mechanism of the activation killer cells after the BCG treatment in bladder cancer*

18:00–18:20 Sébastien Benzekry: *Optimal schedules for therapies in metastatic cancers*

18:20–18:40 Khalid Kassara: *A control approach for ODE cancer models*

18:40–19:00 Urszula Ledzewicz, Alberto d'Onofrio: *Discussion on cancer modeling*

Tuesday, June 28, 17:00, Room: **AM4**

Regulatory Networks

Chaired by: Jarosław Śmieja

17:00–17:30 Lorenzo Sella: *Simulation of signaling and regulatory networks in B. subtilis*

17:35–17:55 Jean-Luc Gouzé: *Qualitative Control of a Bistable Genetic Network*

17:55–18:15 Mochamad Apri: *Identifying the core of biochemical networks: complexity reduction preserving dynamical behavior*

18:15–18:35 Ekaterina Roberts: *Tailored graph ensembles as proxies or null models for real networks*

18:35–18:55 Robert Noble: *Using iterative methods to determine an antigenic switching network in Plasmodium falciparum*

Tuesday, June 28, 17:00, Room: **AM5**

Cancer

Chaired by: Maciej Swat

17:00–17:30 Benjamin Ribba: *Evaluation of the antitumor effect of PCV chemotherapy on diffuse low-grade gliomas with a longitudinal tumor growth inhibition model*

17:35–17:55 Gianluca Ascolani: *Migration processes of interacting cancerous cells: beyond the mean field approximation*

17:55–18:15 Alicia Martinez-Gonzalez: *Hypoxic Migratory Cell Waves around Necrotic Cores in Glioblastomas: A Mathematical Model*

18:15–18:35 Krzysztof Psiuk-Maksymowicz: *Computational study of vascular tumour growth in response to combined therapies*

18:35–18:55 Zuzanna Szymańska: *Mathematical modelling of cancer invasion: distinguishing between the relative importance of cell-cell adhesion and cell-matrix adhesion*

Tuesday, June 28, 17:00, Room: **AM6**

EPIDEMICS
Chaired by: Suzanne Touzeau

17:00–17:30 Hiroshi Nishiura: *Validating early estimation of the transmission potential of pandemic influenza (H1N1-2009): Sample size estimation for post-epidemic seroepidemiological studies*
17:35–17:55 Geoffry Mercer: *Did seasonal influenza vaccination increase the risk of pandemic influenza infection?*
17:55–18:15 Ludek Berec: *Double impact of sterilizing pathogens: added value of increased life expectancy on pest control effectiveness*
18:15–18:35 Roslyn Hickson: *Evaluating control strategies for TB in the Torres Strait Island region*
18:35–18:55 Olesya Melnichenko: *Tuberculosis in Russia: comparison of TB control programmes*

Tuesday, June 28, 17:00, Room: **AM7**

CELLULAR SYSTEMS BIOLOGY
Chaired by: Jörg Galle

17:00–17:30 Zoltan Neufeld: *Integrating multiple signals into cell decisions by a network of protein modification cycles*
17:35–17:55 Daniel Damineli: *Minimal modeling of two-oscillator circadian systems under conflicting environmental cues*
17:55–18:15 Tetsuya Kobayashi: *Noise-Induced Symmetry-Breaking Underlies Reliable and Flexible Cellular Decision-Making*
18:15–18:35 Adam Makuchowski: *Discovering motifs in DNA sequences*
18:35–18:55 Tanny Lai: *Combined experimental and mathematical modeling of circular dorsal ruffles*

Tuesday, June 28, 17:00, Room: **AM8**

MODELING OF IMMUNE RESPONSES AND CALCIUM SIGNALING I
Organizers: Tomasz Lipniacki, Bogdan Kazmierczak, Marek Kimmel

17:00–17:40 Markus Covert: *Heterogeneous cellular responses via noisy paracrine signals*
17:40–18:00 Marta Iwanaszko: *The dependence of expression of NF-κB – dependent genes: Statistics and evolutionary conservation of control sequences in the promoter and in the 3' UTR*
18:00–18:30 Pawel Paszek: *Oscillations and feedback regulation in the NF-κB signalling*
18:30–19:00 Roberto Bertolusso: *IRF3 and NF-kB: transcription factors acting in a coordinated way under double stranded RNA stimulation*

Tuesday, June 28, 17:00, Room: **AM9**

MATHEMATICAL MODELS OF EVOLUTIONARY DYNAMICS OF INFECTIOUS AGENTS
Organizers: Andrea Pugliese, Viggo Andreasen

17:00–17:25 Adam Kucharski: *Strain dynamics and influenza drift*
17:25–17:50 Gabriela Gomes: *Heterogeneity in antibody range is required for the antigenic drift of influenza A viruses*
17:50–18:15 Yael Artzy-Randrup: *Severe First and Mild Later: Temporal Strategies in Pathogen Evolution*
18:15–18:40 Barbara Boldin: *Within-host viral evolution in a heterogeneous environment: insights into the HIV co-receptor switch*
18:40–19:05 Viggo Andreasen: *The final size of an epidemic with two competing strains*

Tuesday, June 28, 17:00, Room: **CP1**

CONNECTING MICROSCALE AND MACROSCALE MODELS OF CELLULAR MIGRATION
Organizers: Ruth Baker, Matthew Simpson

17:00–17:25 Ruth Baker: *Corrected mean-field models for spatially-dependent advection-diffusion-reaction phenomena*
17:25–17:50 Matthew Simpson: *Models of collective cell spreading with variable cell aspect ratio*
17:50–18:15 John Fozard: *Discrete and continuum modelling of growth and signalling in biological tissue*
18:15–18:40 Evgeniy Khain: *Fronts of cells invading a wound: from discrete stochastic approach to continuum description*
18:40–19:05 Alistair Middleton: *From particles to PDEs: continuum approximations to models of cellular migration*

Tuesday, June 28, 17:00, Room: **SP1**

STRUCTURE AND DYNAMICS OF BIOCHEMICAL REACTION NETWORKS II
Organizers: Maya Mincheva, Casian Pantea

17:00–17:20 Santiago Schnell: *A model of threshold behavior reveals rescue mechanisms of bystander proteins in conformational diseases*
17:25–17:45 Murad Banaji: *Monotone dynamics in chemical reaction networks*
17:50–18:10 Grzegorz A Rempala: *Statistical inference for reaction constants in stochastic biochemical networks*
18:15–18:35 Hiroko Kamei: *Classification of networks for their synchronous dynamics*
18:40–19:00 Maya Mincheva: *Oscillations in Biochemical Reaction Networks*

Tuesday, June 28, 17:00, Room: **UA1**

MODELING VIRAL HEPATITIS DYNAMICS IN-VIVO AND IN-VITRO IN THE ERA OF DIRECT ANTI-VIRAL AGENTS I

Organizers: Harel Dahari, Avidan Neumann

17:00–17:40 Avidan U. Neumann: *Deterministic and Stochastic Multi-level Modeling of Hepatitis C Viral Kinetics and Resistance Evolution*

17:40–18:00 Lior Strauss: *Distributed Intra-Cellular Model of Hepatitis C Viral Replication and Resistance Evolution*

18:00–18:20 Jeremie Guedj: *Determinants of the early hepatitis C viral decline after treatment initiation*

18:20–18:40 Eva Herrmann: *PK-PD Models for viral kinetics of combination treatments in viral hepatitis*

18:40–19:00 Robert B. Nachbar: *The use of viral dynamics modeling to optimize the design of a Phase Ib trial, facilitate its analysis, and inform the decision making for the development of directly acting HCV compounds*

Tuesday, June 28, 17:00, Room: **UA2**

MODELS IN SPATIAL ECOLOGY

Organizer: Roberto Kraenkel

17:00–17:40 Roberto Kraenkel: *Diffusion in fragmented landscapes: habitat split*

17:40–18:00 Renato Mendes Coutinho: *aConnectivity and diffusion for Heliconius species in a seasonally dry fragmented habitat*

18:00–18:20 Franciane Azevedo: *The spatial dynamics of the diphenic planthopper*

18:20–18:40 Erin Dauson: *Repopulation of Ambystoma tigrinum in the West Texas playas in the period following Antevs' Altithermal: a mathematical model*

Tuesday, June 28, 17:00, Room: **UA3**

MODELING DYNAMICS OF COMPLEX BIOLOGICAL SYSTEMS

Organizers: Ching-Shan Chou, Richard Gejji

17:00–17:40 German Enciso: *Protein scaffolds can enhance the bistability of multisite phosphorylation systems*

17:40–18:00 Deena Schmidt: *Linking network structure and stochastic dynamics to neural activity patterns involved in sleep-wake regulation*

18:00–18:20 Anna Cai: *Critical roles for intracellular binding proteins in creating a robust retinoic acid morphogen gradient*

18:20–18:40 Richard Gejji: *Macroscopic model of reversing self-propelled bacteria*

18:40–19:00 Paul Hurtado: *In-Host Dynamics of Mycoplasma Infections: Conjunctivitis in Wild Passerine Birds*

Wednesday, June 29, 08:30, Room: **AM1**

EVOLUTIONARY ECOLOGY
Chaired by: Kalle Parvinen

08:30–09:00 Alex Best: *Host resistance and coevolution in spatially structured populations*
09:05–09:25 Alexander Bratus: *Stability and limit behavior of a distributed replicator system*
09:25–09:45 Arseny Karkach: *Adaptive trade-off between reproduction and survival in Mediterranean fruit flies induced by changing dietary conditions*
09:45–10:05 Akiko Satake: *A computational model of plant life cycle: genetic mechanism of local adaptation in flowering time*
10:05–10:25 Tanya Kostova Vassilevska: *A model of intracellular virus replication with implications for virus evolution*

Wednesday, June 29, 08:30, Room: **AM2**

POPULATION DYNAMICS
Chaired by: Peter Jagers

08:30–09:00 Evgeniy Khain: *Role of fluctuations in front propagation: the insect outbreak model*
09:05–09:25 Roumen Anguelov: *Mathematical model of Wood Frog Population*
09:25–09:45 Saliha Hamdous: *Invariant Measure for the Stochastic Models of the Population Dynamics with Spatial Diffusion*
09:45–10:05 Hiromi Seno: *A simple mathematical model for the annual variation of epidemic outbreak with prevention level affected by incidence size in the last season*
10:05–10:25 Glenn Marion: *Modelling the spatial spread of invasive aliens: process-based models and Bayesian inference*

Wednesday, June 29, 08:30, Room: **AM3**

ANALYSIS OF MATHEMATICAL MODELS FOR CANCER GROWTH AND TREATMENT, PART IV
Organizers: Urszula Ledzewicz, Alberto d'Onofrio

08:30–09:10 Antonio Fasano: *Evolution of tumor spheroids: adopting a Bingham scheme for the cell component*
09:10–09:30 Leonid Hanin: *The End of Linear-Quadratic Era in Radiation Biology*
09:30–09:50 Miroslaw Lachowicz: *Macroscopic limits of a model of alignment*
09:50–10:10 Michal Krzeminski: *Markov model of cancer development - survival time prediction*
10:10–10:30 Christian Groh: *Mathematical Model of Doxorubicin Transport within Solid Tumours*

Wednesday, June 29, 08:30, Room: **AM4**

MULTI-SCALE MATHEMATICS OF THE LIVER: FROM INTRACELLULAR SIGNALING TO INTERCELLULAR INTERACTION

Organizers: Anja Voss-Boehme, Andreas Deutsch

08:30–09:10 Lars Ole Schwen: *Constructive Algorithms for Modeling Realistic Vascular Structures*

09:10–09:35 Dirk Drasdo: *Prediction and validation of an order principle to restore tissue architecture in liver regeneration after drug-induced damage: from experiments to modeling and back*

09:35–10:00 Lutz Brusch: *Modelling Endocytosis - from the Molecules to the Liver Cell*

10:00–10:25 Walter de Back: *From hepatocyte polarization to canalicular network formation: a multiscale approach*

Wednesday, June 29, 08:30, Room: **AM5**

CANCER

Chaired by: Andreas Deutsch

08:30–09:00 Daniela Schlueter: *The Role of Cell-Cell and Cell-Matrix Adhesion in Cancer Cell Invasion: A Multiscale Individual-Based Modelling Approach*

09:05–09:25 Maria Barbarossa: *Delay equations for the cell cycle of tumoral cells*

09:25–09:45 Eunjung Kim: *Getting old and misbehaving: Can stromal aging drive melanoma initiation?*

09:45–10:05 Mark Robertson-Tessi: *Metabolism: Integrating cellular and microenvironmental heterogeneity to drive tumor progression*

10:05–10:25 Nino Khatiashvili: *The non-linear mathematical model of growth of tumors of different forms*

Wednesday, June 29, 08:30, Room: **AM6**

EPIDEMICS

Chaired by: Mick Roberts

08:30–09:00 Roberto Saenz: *Quantifying transmission of high- and low-pathogenicity H7N1 avian influenza in turkeys*

09:05–09:25 Ross Davidson: *The impact of social structure on spatially explicit epidemiological models*

09:25–09:45 Thanate Dhirasakdanon: *Coexistence of vertically and horizontally transmitted parasite strains in a simple SI type model*

09:45–10:05 Ekaterina A. Nosova: *Equilibrium in model of HIV dynamics with transitions between risk group*

10:05–10:25 Ait Dads Elhadi: *Existence of Positive Almost Periodic or Ergodic Solutions for Some Neutral Nonlinear Integral Equations arising in epidemiological models*

Wednesday, June 29, 08:30, Room: **AM7**

GENETICS AND GENOMICS
Chaired by: Stanisław Cebrat

08:30–08:50 Veit Schwämmle: *The formation of histone modification domains*
08:55–09:15 Richard Kollár: *Mathematical model of biophysical mechanisms of telomere length maintenance in mitochondrial DNA of C. parapsilosis*
09:15–09:35 Paweł Błażej: *Modeling of prokaryotic genome evolution using coding signal as selection pressure*
09:35–09:55 Katarína Boďová: *Factors determining length distribution of telomeric structures in absence of telomerase*
09:55–10:15 Agnieszka Danek: *Algorithm for Searching for Approximate Tandem Repeats based on the Burrows-Wheeler transform*
10:15–10:35 Łukasz Olczak: *Mathematical model of tandem repeat evolution based on comparisons of Homo sapiens and Homo neanderthalensis genomes*

Wednesday, June 29, 08:30, Room: **AM8**

MATHEMATICAL MODELS IN ECO-EPIDEMIOLOGY I
Organizers: Horst Malchow, Sergei V. Petrovskii, Ezio Venturino

08:30–09:10 Jean-Christophe Poggiale: *A spatially extended trophic chain model with recycling : how spatial structure determines the matter cycle?*
09:10–09:30 Malay Banerjee: *Deterministic Chaos vs. Stochastic Oscillation in an Eco-epidemic Model*
09:30–09:50 Michael Sieber: *Intraguild predation or not? Taking a different perspective on some eco-epidemiological models*
09:50–10:10 Qingguo Zhang: *Cellular automata modeling applied in eco-epidemiology - Simulation of the spatial spread of epidemics with individual contact*
10:10–10:30 Ezio Venturino: *A two-strain ecoepidemic model*

Wednesday, June 29, 08:30, Room: **AM9**

SEMIGROUPS OF OPERATORS IN MATHEMATICAL BIOLOGY I
Organizers: Horst Thieme, Adam Bobrowski

08:30–08:55 Dariusz Wrzosek: *Do the aggregating cells attain a tight packing state?*
08:55–09:20 Anna Marciniak-Czochra: *Structured population models in metric spaces*
09:20–09:45 Piotr Gwiazda: *Split-up algorithm in the metric space for the equations of structured population dynamics*
09:45–10:10 Robert Service: *Finite populations conditioned on non-extinction*
10:10–10:30 Horst Thieme: *Iterative approximation of the spectral radius of a positive operator*

Wednesday, June 29, 08:30, Room: **CP1**

MATHEMATICAL MODELING OF BIOMECHANICAL REGULATION IN BONE TISSUE, PART I

Organizers: Peter Pivonka, Stefan Scheiner, Pascal Buenzli

08:30–09:10 Christian Hellmich: *Bone fibrillogenesis and mineralization: Quantitative analysis and implications for tissue elasticity*

09:10–09:30 Peter Pivonka: *A coupled systems biology-micromechanical model for mechanostat-type regulation of bone remodeling*

09:30–09:50 Bert van Rietbergen: *A theory for load-adaptive bone remodeling at the cellular level*

09:50–10:10 Peter Cummings: *A Computational Model of Bone Resorption Behavior*

10:10–10:30 Adam Moroz: *BMU remodelling simulation using reducer order method*

Wednesday, June 29, 08:30, Room: **CP2**

SPECIATION

Organizer: Tadeas Priklopil

08:30–08:55 Joachim Hermisson: *Dobshansky-Muller incompatibilities in parapatry*

08:55–09:20 Géza Meszéna: *Darwinian speciation on a regulated landscape*

09:20–09:45 Kristan Schneider: *Can dominance prevent the evolution of assortative mating and sympatric speciation?*

09:45–10:10 Stephen Proulx: *Evolutionary responses to migration load: A tall fence or a melting pot?*

10:10–10:30 Tadeas Priklopil: *Magic traits, mate choice and speciation*

Wednesday, June 29, 08:30, Room: **SP1**

MODELING VIRAL HEPATITIS DYNAMICS IN-VIVO AND IN-VITRO IN THE ERA OF DIRECT ANTI-VIRAL AGENTS II

Organizers: Harel Dahari, Avidan Neumann

08:30–09:10 Harel Dahari: *Modeling hepatitis C virus (HCV) RNA kinetics during treatment: in vitro and in vivo*

09:10–09:30 Jun Nakabayashi: *Mathematical models of the intracellular replication and within host evolution of HBV and HCV*

09:30–09:50 Jonathan Forde: *Modeling Early Events in Hepatitis Delta Virus Infection*

09:50–10:10 Narendra Dixit: *Modelling HCV kinetics in vitro yields estimates of the number of E2-CD81 complexes necessary for viral entry into target cells*

10:10–10:30 Piero Colombatto: *Simulating the decline of HCV infected hepatocytes by mathematical modelling allows for individual tailoring of Peg-IFN+RBV therapy and for a better selection of the candidates to the new direct antiviral agents*

Wednesday, June 29, 08:30, Room: **UA1**

BIOINFORMATICS AND SYSTEM BIOLOGY
Chaired by: Jerzy Tiuryn

08:30–09:00 Laura Astola: *Glycosylation Networks in Tomato, Top-down and Bottom-up Inference Combined*
09:05–09:25 Pawel Foszner: *Efficient reannotation system for verifying genomic targets of DNA microarray probes*
09:25–09:45 Bartholomaeus Hirt: *Mathematical investigation into the effects of the anti-cancer compound RHPS4 on cell-cycle dynamics*
09:45–10:05 Scott Fortmann-Roe: *Automatic Classification of Vulture Behavior using Machine Learning Algorithms Applied to Accelerometer Data*
10:05–10:25 William Weens: *Modeling tumor development in liver*

Wednesday, June 29, 08:30, Room: **UA2**

NEUROSCIENCES
Chaired by: Petr Lansky

08:30–09:00 Susanne Ditlevsen: *The stochastic Morris-Lecar neuron model embeds a one-dimensional diffusion and its first-passage-time crossings*
09:05–09:25 Daniel Forger: *The surprising complexity of signal processing in clock neurons*
09:25–09:45 Jan Pyrzowski: *A dynamical model of epilepsy in a plastic neuronal network*
09:45–10:05 Justyna Signerska: *Firing map for integrate-and-fire models with almost periodic stimulus*
10:05–10:25 Kseniya Kravchuk: *Delayed feedback results in non-markovian statistics of neuronal firing*

Wednesday, June 29, 08:30, Room: **UA3**

MATHEMATICAL MODELING AND SIMULATIONS OF ANGIOGENESIS I
Organizers: Xiaoming Zheng, Trachette Jackson, Roeland Merks

08:30–09:10 Rafał Wcisło: *Complex Cellular Automata based on particle dynamics as a framework for modeling solid tumor growth and angiogenesis*
09:10–09:30 Amina Qutub: *Characterizing Endothelial Cell Behavior and Adaptation During Brain Capillary Regeneration by Rule Oriented Modeling*
09:30–09:50 Heiko Rieger: *Blood vessel network remodeling during tumor growth*
09:50–10:10 Florian Milde: *Image Driven Computational Models of Cell Migration*
10:10–10:30 Susan Massey: *Parameter sensitivity investigation of a mathematical model of glioma angiogenesis via Latin hypercube sampling*

Wednesday, June 29, 11:00, Room: **AM1**

EVOLUTIONARY ECOLOGY
Chaired by: Roger Bowers

11:00–11:30 Stephen Cornell: *Space, coexistence, and mutual invasibility*
11:35–11:55 Tea Ammunét: *Modelling the outcome of climate change driven invasion: effects of apparent competition on the resident and invasive forest herbivore population dynamics*
11:55–12:15 Magda Castel: *Temporal heterogeneity in host availability can cause evolutionary branching of plant parasites*
12:15–12:35 Ilmari Karonen: *Evolution of polymorphism on a heterogeneous landscape*
12:35–12:55 Anne Seppänen: *Evolution of Dispersal and Global Climate Change*

Wednesday, June 29, 11:00, Room: **AM2**

POPULATION DYNAMICS
Chaired by: Andreas Bohn

11:00–11:30 Nick Britton: *Interspecific kleptoparasitism*
11:35–11:55 Etsuko Nonaka: *Adaptive advantage of aggregation in a population with Allee effects*
11:55–12:15 Urszula Skwara: *Asymptotic properties of stochastic symbiosis model*
12:15–12:35 Flora Cordoleani: *Development of structure sensitivity analysis methods*
12:35–12:55 Lai Zhang: *Trait diversity promotes to stabilize community dynamics*

Wednesday, June 29, 11:00, Room: **AM3**

ANALYSIS OF MATHEMATICAL MODELS FOR CANCER GROWTH AND TREATMENT, PART V
Organizers: Urszula Ledzewicz, Alberto d'Onofrio

11:00–11:40 Jean Clairambault: *Numerical optimisation of anticancer therapeutics, especially chronotherapeutics, with toxicity constraints*
11:40–12:00 Heinz Schaettler: *Optimal protocols for chemo- and immunotherapy in a mathematical model of tumor-immune interactions*
12:00–12:20 Evans Afenya: *Cancer Modeling: Frameworks, Approaches, and Insights*
12:20–12:40 Andrzej Nowakowski: *Hamilton-Jacobi analysis for cancer treatment*
12:40–13:00 Akisato Kubo: *Existence and asymptotic behaviour of solutions to nonlinear evolution equations arising in mathematical models of tumour growth*

Wednesday, June 29, 11:00, Room: **AM4**

MULTISCALE MATHEMATICS OF LIVER: BRIDGING MOLECULAR SYSTEMS BIOLOGY TO VIRTUAL PHYSIOLOGICAL HUMAN SCALE

Organizers: Dirk Drasdo, Stefan Hoehme

11:00–11:40 Peter Hunter: *Modelling infrastructure for the VPH/Physiome project*

11:40–12:05 Hermann-Georg Holzhuetter: *Mathematical modeling liver metabolism – do we need a multi-scale approach*

12:05–12:30 Stefan Hoehme: *Regeneration after partial hepatectomy: from cell to organ scale*

12:30–12:55 Tim Ricken: *A biphasic Finitee-Element-Model for Sinusoidal Liver Perfusion Remodeling*

Wednesday, June 29, 11:00, Room: **AM5**

CANCER

Chaired by: Andreas Deutsch

11:00–11:30 Carsten Wiuf: *Stochastic modeling of dna sequence data from heterogeneous tumors*

11:35–11:55 Stefan Becker: *A mathematical model of brain tumor and normal tissue responses to radiation therapy*

11:55–12:15 Mikhail Kolev: *Numerical analysis of a model of tumor invasion*

12:15–12:35 Berta Mendoza-Juez: *Mathematical modelling of metabolic symbiosis in tumors*

12:35–12:55 Shabnam MoobedMehdiAbadi: *Lattice Gas Cellular Automata modeling of lineage dynamics and feedback control*

Wednesday, June 29, 11:00, Room: **AM6**

EPIDEMICS

Chaired by: Ludek Berec

11:00–11:30 Max von Kleist: *A Mathematical Modelling Framework to Assess the Impact of Antiviral Strategies on HIV Transmission*

11:35–11:55 Artem Novozhilov: *On the spread of epidemics in a closed heterogeneous population: Stochastic aspects*

11:55–12:15 Megan Selbach-Allen: *An investigation of the epidemic threshold phenomenon in complex networks*

12:15–12:35 Asher Uziel: *Predicting the period in seasonally driven epidemics*

12:35–12:55 Sarunas Repsys: *A brood-parasites dynamics model*

Wednesday, June 29, 11:00, Room: **AM7**

CROWD DYNAMICS: MODELING, ANALYSIS AND SIMULATION, PART I
Organizer: Adrian Muntean

11:00–11:40 Bertrand Maury: *Handling of congestion in crowd motion modeling*
11:40–12:00 Andrea Tosin: *A multiscale look at crowd dynamics by time-evolving measures*
12:00–12:20 Jan Haskovec: *Particle systems and kinetic equations modelling interacting agents in high dimension*
12:20–12:40 Mario Campanella: *Calibrating walker models: variations of parameters due to traffic regimes*
12:40–13:00 Joep Evers: *Modeling the dynamics of a multi-component crowd via a two-scale approach, working in a setting of measure-theory, mixture-theory and thermodynamics*

Wednesday, June 29, 11:00, Room: **AM8**

MATHEMATICAL MODELS IN ECO-EPIDEMIOLOGY II
Organizers: Horst Malchow, Sergei V. Petrovskii, Ezio Venturino

11:00–11:40 Michel Langlais: *Prey abundance, fragmented spatial structures and predator persistence in a predator-prey mathematical model*
11:40–12:00 Narcisa Apreutesei: *Travelling wave solutions for integro-differential equations from population dynamics*
12:00–12:20 Jean Baptiste Burie: *Homogenization of a model of propagation of a fungal disease in a heterogenous crop field*
12:20–12:40 Horst Malchow: *Infection and biocontrol of an invading competitor*
12:40–13:00 Andrew Bate: *Complex dynamics in an eco-epidemiological model*

Wednesday, June 29, 11:00, Room: **AM9**

BIOFLUIDS, SOLUTE TRANSPORT, AND HEMODYNAMICS
Organizers: Anita Layton, S. Randall Thomas

11:00–11:20 Harold Layton: *Countercurrent Multiplication in the Kidney: Is it Real?*
11:25–11:45 Roger Evans: *A computational model of whole kidney oxygen regulation incorporating arterial to venous oxygen shunting*
11:50–12:10 Anita Layton: *Myogenic Response of the Afferent Arteriole*
12:15–12:35 Niels-Henrik Holstein-Rathlou: *of nephrons in vascular networks*
12:40–13:00 S. Randall Thomas: *Towards integrative multiscale models of whole kidney structure and function*

Wednesday, June 29, 11:00, Room: **CP1**

MATHEMATICAL MODELING OF BIOMECHANICAL REGULATION IN BONE TISSUE, PART II

Organizers: Peter Pivonka, Stefan Scheiner, Pascal Buenzli

11:00–11:40 Vaclav Klika: *Tissue adaptation driven by chemo-mechanical coupling with application to bone*

11:40–12:00 Justin Fernandez: *A multiscale bone remodelling framework using the Physiome Project markup languages*

12:00–12:20 Solvey Maldonado: *Mathematical Modeling and Analysis of Force-induced Bone Adaptation*

12:20–12:40 Yoshitaka Kameo: *Mathematical modeling of trabecular bone remodeling induced by osteocytic response to interstitial fluid flow*

12:40–13:00 Hanifeh Khayyeri: *Evolutionary simulation of the emergence of the mechano-regulated endochondral healing process*

Wednesday, June 29, 11:00, Room: **CP2**

EPIDEMICS OF NEGLECTED TROPICAL DISEASES

Organizer: Roberto Kraenkel

11:00–11:40 Lourdes Esteva: *Modelling Chagas' Disease*

11:40–12:10 Claudia Ferreira: *Modelling the dynamics of dengue real epidemics*

12:10–12:40 Roberto Kraenkel: *A model for malaria with ecological components*

Wednesday, June 29, 11:00, Room: **SP1**

B AND T CELL IMMUNE RESPONSES.

Organizer: Yoram Louzoun

11:00–11:40 Yoram Louzoun: *Viruses selectively mutate their CD8+ T cell epitopes – an optimization framework, a novel machine learning methodology and a large scale genetic analysis*

11:40–12:05 Emmanuelle Terry: *Modelling CD8 T-Cell Immune Response*

12:05–12:30 Marek Kochanczyk: *A spatially extended model of B cell receptor cluster signaling*

12:30–12:55 Andrey Shuvaev: *Modeling the T-cells dynamics in lymphopenic conditions*

Wednesday, June 29, 11:00, Room: **UA1**

BIOINFORMATICS AND SYSTEM BIOLOGY
Chaired by: Jerzy Tiuryn

11:00–11:30 Sara Jabbari: *Systems biology of Clostridium acetobutylicum*
11:35–11:55 Anne Arnold: *Comparative model analyis of the Calvin-Benson cycle*
11:55–12:15 Sabrina Kleessen: *Dynamic regulatory on/off minimization infers key regulators of the Calvin cycle under internal temporal perturbations*
12:15–12:35 Michael Sadovsky: *Close order in triplet composition in genomes*
12:35–12:55 Maurício Vieira Kritz: *Biological Information, Biological Interaction and Anticipation*

Wednesday, June 29, 11:00, Room: **UA2**

MODELING PHYSIOLOGICAL SYSTEMS: MODEL VALIDATION AND EXPERIMENTAL DESIGN ISSUES
Organizers: Jerry Batzel, Mette Olufsen

11:00–11:20 Jerry Batzel: *Methods of Sensitivity Identifiability Analysis in Modeling Human Physiological Systems*
11:20–11:40 Mette Olufsen: *Modeling and parameter estimation in cardiovascular dynamics*
11:40–12:00 Mostafa Bachar: *Mathematical modeling of glucose insulin system during hemodialysis using different dialysate glucose concentrations*
12:00–12:20 Franz Kappel: *Parameter selection in multi-output systems*
12:20–12:40 Johnny Ottesen: *Patient specific modeling of the heart as a tool for early diagnoses and treatment planning*
12:40–13:00 Julian King: *Physiological modeling of trace gas exhalation kinetics: a non-invasive window to the body*

Wednesday, June 29, 11:00, Room: **UA3**

MATHEMATICAL MODELING AND SIMULATIONS OF ANGIOGENESIS II
Organizers: Xiaoming Zheng, Trachette Jackson, Roeland Merks

11:00–11:30 Roeland Merks: *Cell-based modeling of angiogenic blood vessel sprouting: cell-ECM interaction and tip-cell selection*
11:30–12:00 Tomas Alarcón: *A flow-coupled phase-field model of tumour-induced angiogenesis*
12:00–12:30 Richard Schugart: *Using mathematical modeling to assess the efficacy of oxygen for problem wounds: Use of hyperbaric or topical oxygen therapies*
12:30–13:00 Florence Hubert: *A model for anti-angiogenic therapy*

Wednesday, June 29, 14:30, Room: **AM1**

EVOLUTIONARY ECOLOGY
Chaired by: Eva Kisdi

14:30–15:00 Atsushi Yamauchi: *Joint evolution of sex ratio and reproductive group size under local mate competition with inbreeding depression*
15:05–15:25 Fátima Drubi Vega: *Do bacteria form spores as a bet-hedging strategy in stochastic environments?*
15:25–15:45 Krzysztof Bartoszek: *Multivariate comparative analysis*
15:45–16:05 Elizabeth Elliott: *Dispersal polymorphism and species' invasions*
16:05–16:25 Jaakko Toivonen: *An adaptive trade-off between seed size and germination time*

Wednesday, June 29, 14:30, Room: **AM2**

POPULATION DYNAMICS
Chaired by: N. F. Britton

14:30–15:00 Luis Chaves: *Non-linear impacts of climatic variability on the density dependent regulation of an insect vector of disease*
15:05–15:25 Christian Winkel: *Mathematical model(s) for the dynamics of (TNF-) Receptor Clustering*
15:25–15:45 Nick Jagiella: *From Data Analysis to Model Parameterization & Prediction of Tumor Growth and Therapy*
15:45–16:05 Jeong-Mi Yoon: *Population Dynamics of Glassy-winged Sharpshooter in Texas Vineyards*
16:05–16:25 Jeremy Thibodeaux: *Optimal Treatment Strategies for Malaria Infection*

Wednesday, June 29, 14:30, Room: **AM3**

POPULATION GENETICS
Chaired by: Adam Bobrowski

14:30–15:00 Manuel Mota: *Conditions for extinction of some lethal alleles of X-linked genes*
15:05–15:25 Thiemo Hustedt: *Moment closure in a Moran model with recombination*
15:25–15:45 Satoshi Takahashi: *From Population Dynamics to Evolution: Oscillation in Lateral Asymmetry of Fish Induces the Evolution of Homozygote Incompatibility*
15:45–16:05 Meike Wittmann: *Genetic effects of introduced species on their native competitors in habitats with different spatial structures*
16:05–16:25 Małgorzata Pułka: *Nonhomogeneous Markov chains and quadratic stochastic processes in biology*

Wednesday, June 29, 14:30, Room: **AM4**

THE DYNAMICS OF INTERACTING CELL SYSTEMS: FROM INTERCELLULAR INTERACTION TO TISSUE-LEVEL TRAITS I

Organizer: Anja Voss-Boehme

14:30–15:10 Jenny Bloomfield: *The effect of nonlocal cellular interactions on pattern formation*

15:10–15:30 Pavel Lushnikov: *Macroscopic model of self-propelled bacteria swarming with regular reversals*

15:30–15:50 Andras Czirok: *Vasculogenesis and collective movement of endothelial cells*

15:50–16:10 Reuben O'Dea: *Multiscale analysis of pattern formation and wave propagation in a discrete cell signalling model*

16:10–16:30 Robert Rovetti: *Periodicity, spatial correlations, and waves in a probabilistic lattice model of the cardiac cell*

Wednesday, June 29, 14:30, Room: **AM5**

EPIDEMIC MODELS: NETWORKS AND STOCHASTICITY I

Organizers: Thomas House, Istvan Kiss

14:30–15:10 Thomas House, Istvan Kiss: *Overview of Networks and Stochasticity in Epidemic Models*

15:10–15:30 David Sirl: *Household epidemic models with variable infection severity*

15:30–15:50 Kieran Sharkey: *Towards understanding the correlations in epidemic dynamics on contact networks via the master equation*

15:50–16:10 Ken Eames: *Measuring and modelling changing social contact patterns*

16:10–16:30 Peter Simon: *Exact and approximate epidemic models on networks*

Wednesday, June 29, 14:30, Room: **AM6**

IMMUNOLOGY

Chaired by: Urszula Foryś

14:30–15:00 Julia Kzhyshkowska: *Perspectives of mathematical modelling for understanding of intracellular signalling and vesicular trafficking in macrophages*

15:05–15:25 Edgar Delgado-Eckert: *A model of host response to a multi-stage pathogen*

15:25–15:45 Marina Dolfin: *A phenomenological approach to the dynamics of clonal expansion and immune competition of T cells*

15:45–16:05 Sebastian Gerdes: *Can Polyclonality prevent the outbreak of leukemia?*

16:05–16:25 Shingo Iwami: *Quantification system of viral dynamics in vitro - the dynamics of SHIV on HSC-F cell line*

Wednesday, June 29, 14:30, Room: **AM7**

CROWD DYNAMICS: MODELING, ANALYSIS AND SIMULATION, PART II
Organizer: Adrian Muntean

14:30–15:10 Andreas Schadschneider: *Modeling of pedestrian dynamics – Cellular automata models*
15:10–15:30 Bertram Düring: *Kinetic modelling of opinion leadership*
15:30–15:50 Armin Seyfried: *Quantitative description of pedestrian dynamics: Experiments and Modeling*
15:50–16:10 Marek Bodnar: *Derivation of macroscopic equations for individual cell-based models*
16:10–16:30 Nikolai Bode: *Social networks and models for collective motion*

Wednesday, June 29, 14:30, Room: **AM8**

MODELING OF IMMUNE RESPONSES AND CALCIUM SIGNALING II
Organizers: Tomasz Lipniacki, Bogdan Kazmierczak, Marek Kimmel

14:30–15:10 James Faeder: *Rule-Based Modeling of Molecular and Cellular Processes*
15:10–15:30 Pawel Kocieniewski: *Dimerization Effects in MAPK Cascade*
15:30–15:50 Tomasz Lipniacki: *A rule-based model for early events in B cell antigen receptor signaling*
15:50–16:10 Joanna Jaruszewicz: *Type of noise defines the most stable attractor in bistable gene expression model*
16:10–16:30 Paweł Żuk: *Stochastic switching in a spatially extended, bistable kinase autoactivation model*

Wednesday, June 29, 14:30, Room: **AM9**

STEM CELLS AND CANCER
Organizers: Anna Marciniak-Czochra, Heiko Enderling

14:30–14:50 John Lowengrub: *Feedback, lineages and cancer*
14:55–15:15 Cristian Tomasetti: *The role of symmetric and asymmetric division of cancer stem cells in developing drug resistance for various types of tumor growth*
15:20–15:40 Thomas Stiehl: *Models of stem cell differentiation in hematopoiesis and leukemia*
15:45–16:05 Hiroshi Haeno: *A progenitor cell origin of myeloid malignancies*
16:10–16:30 Charles Morton: *Tumor Growth Kinetics Modulated by Generational Lifespan of Non-Stem Cancer Cells*

Wednesday, June 29, 14:30, Room: **CP1**

FRACTALS AND COMPLEXITY I
Organizer: Przemyslaw Waliszewski

14:30–15:10 Bruce West: *Origins of Allometric Growth: A Contemporary Perspective*
15:10–15:30 Radu Dobrescu: *Using a mix of cellular automata in tumor margin analysis*
15:30–15:50 Konradin Metze: *Fractality of chromatin*
15:50–16:10 Herbert Jelinek: *Lacunarity analysis and classification of microglia in neuroscience*
16:10–16:30 Przemyslaw Waliszewski: *On dynamics of growth of prostate cancer; Towards the objective fractal system of tumor grading*

Wednesday, June 29, 14:30, Room: **CP2**

HEART RATE DYNAMICS: MODELS AND MEASURES OF COMPLEXITY (PART I)
Organizers: Grzegorz Graff, Beata Graff

14:30–15:10 Jose Amigó: *An overview of permutation entropy*
15:10–15:30 Agnieszka Kaczkowska: *Entropy-based measures of complexity in the assessment of heart rate variability: a theoretical approach*
15:30–15:50 Beata Graff: *Entropy-based measures of complexity in the assessment of heart rate variability: a clinical approach*
15:50–16:10 Jan Gierałtowski: *Generalized multifractal analysis of heart rate variability recordings with a large number of arrhythmia*
16:10–16:30 Danuta Makowiec: *Healthy aging by multifractal analysis of heart interbeat intervals*

Wednesday, June 29, 14:30, Room: **SP1**

MECHANICAL MODELS OF MOVEMENT AND GROWTH OF CELLS AND TISSUES I
Organizer: Magdalena Stolarska

14:30–15:10 Hans G. Othmer: *From Crawlers to Swimmers- Mathematical and Computational Problems in Cell Motility*
15:10–15:30 Guido Vitale: *Cellular Traction as an Optimal Control Problem*
15:30–15:50 Magdalena Stolarska: *A mechanical model of cell motility and cell-substrate interaction*
15:50–16:10 Katarzyna Rejniak: *Forcing the way to metastasis: mechanical interactions between endothelial and circulating tumor cells*
16:10–16:30 Yangjin Kim: *The role of the microenvironment in tumor invasion: a mathematical model*

Wednesday, June 29, 14:30, Room: **UA1**

BIOINFORMATICS AND SYSTEM BIOLOGY
Chaired by: Michael Sadovsky

14:30–15:00 Joerg Galle: *Transcriptional regulation by histone modifications*
15:05–15:25 Ilya Akberdin: *Automatic generation of mathematical models of molecular-genetic systems*
15:25–15:45 Mirela Domijan: *Light and temperature effects on the circadian clock*
15:45–16:05 Samuel Handelman: *GENPHEN: Genotype/Phenotype Association with Reference to Phylogeny*
16:05–16:25 Michał Marczyk: *Discriminative gene selection in low dose radiotherapy microarray data for radiosensitivity profile search*

Wednesday, June 29, 14:30, Room: **UA2**

STOCHASTIC MODELS IN COMPUTATIONAL NEUROSCIENCE I
Organizer: Laura Sacerdote

14:30–15:10 Wulfram Gerstner: *Predicting action potentials and membrane potential of neurons*
15:10–15:30 Roberta Sirovich: *About a modification of the firing time definition in stochastic leaky integrate–and–fire neuron models*
15:30–15:50 Michele Thieullen: *Piecewise Deterministic Markov Processes and detailed neuron models*
15:50–16:10 Priscilla Greenwood: *Continuity across bifurcations of stochastic Morris Lecar output distributions*
16:10–16:30 Shigeru Shinomoto: *A state space method for decoding neuronal spiking signals*

Wednesday, June 29, 14:30, Room: **UA3**

UNDERGRADUATE BIOMATHEMATICS EDUCATION BEYOND BIO 2010 (PART I)
Organizers: Raina Robeva, Timothy Comar, Meghan Burke

14:30–14:50 Holly Gaff: *Agent-based models of interacting populations*
14:50–15:10 Claudia Neuhauser: *Mathematics, Statistics, and Biology: An Integrative Approach*
15:10–15:30 Raina Robeva: *Modeling of the Growth Hormone Network*
15:30–15:50 Winfried Just: *Discrete vs. indiscrete models of network dynamics*
15:50–16:30 Raina Robeva, Meghan Burke: *Discussion: Types of models of biological networks and their role and place in the undergraduate curriculum*

Wednesday, June 29, 17:00, Room: **AM1**

DEVELOPMENTAL BIOLOGY
Chaired by: Sharon Lubkin

17:00–17:30 Michael Watson: *Development of the Murine Retinal Vasculature: Mathematical Modelling and Numerical Simulation*
17:35–17:55 Michael Kücken: *The role of mechanical stress and Merkel cells in the formation of fingerprints*
17:55–18:15 Suruchi Bakshi: *Breaking the symmetry: understanding Centrosomin incorporation in Drosophila centrosomes in order to study asymmetric division of neural stem cells*
18:15–18:35 Heather Hardway: *Dorsal-ventral patterning in sea urchin and Drosophila embryos*
18:35–18:55 Anotida Madzvamuse: *The evolving surface finite element method (ES-FEM) for pattern formation on evolving biological surfaces*

Wednesday, June 29, 17:00, Room: **AM2**

EPIDEMICS / POPULATION DYNAMICS
Chaired by: Wilson C. Ferreira Jr.

17:00–17:30 Suzanne Touzeau: *Estimating scrapie epidemiological parameters: comparison between a population dynamic model and an individual-based model*
17:35–17:55 Ananthi Anandanadesan: *Mathematical modeling of the spatio-temporal dynamics of aphid-paraistoid-plant-virus interactions*
17:55–18:15 Benjamin Franz: *Hybrid modelling of cell migration: coupling individual-based models with partial differential equations*
18:15–18:35 Masahiro Anazawa: *Interspecific competition models derived from competition between individuals*
18:35–18:55 Sebastian Weitz: *A model of self-induced thigmotactism in ants*

Wednesday, June 29, 17:00, Room: **AM3**

POPULATION GENETICS
Chaired by: Reinhard Bürger

17:00–17:30 Sivan Leviyang: *Sampling HIV intrahost genealogies based on a model of acute stage CTL response*
17:35–17:55 Wojciech Bartoszek: *On dynamics of quadratic stochastic processes and their applications in biology*
17:55–18:15 Stephan Fischer: *Unravelling laws of genome evolution with both mathematical and individual-based models*
18:15–18:35 Sandra Kluth: *The stationary distribution of the ancestral types in the Moran model with mutation and selection*
18:35–18:55 Su-Chan Park: *Evolutionary advantage of small populations on complex fitness landscapes*

Wednesday, June 29, 17:00, Room: **AM4**

THE DYNAMICS OF INTERACTING CELL SYSTEMS: FROM INTERCELLULAR INTERACTION TO TISSUE-LEVEL TRAITS II

Organizer: Anja Voss-Boehme

17:00–17:40 Fernando Peruani: *Understanding the spatial organization of bacteria*

17:40–18:00 Anja Voss-Boehme: *Interacting cell system models for cell sorting and collective motion*

18:00–18:20 Christophe Deroulers: *Two examples of influence of cell-cell interactions on populations: migrating cancer cells and magnetic manipulation for tissue engineering*

18:20–18:40 Thomas Zerjatke: *Knowing their neighbours - correlation structures in the development of related stem cells*

18:40–19:00 Jens Malmros: *Stochastic modelling of cell migration*

Wednesday, June 29, 17:00, Room: **AM5**

MODELLING BIOFILMS: FROM GENE REGULATION TO LARGE-SCALE STRUCTURE AND FUNCTION

Organizers: John Ward, Fordyce Davidson

17:00–17:40 Fordyce Davidson: *Cell differentiation in bacterial biofilms*

17:40–18:00 Christina Kuttler: *Modelling approaches for Quorum sensing in Pseudomonas putida and its observation in a biofilm compartment*

18:00–18:20 Judith Perez-Velazquez: *Early stages of biofilm formation of Pseudomona syringae on leaves surfaces*

18:20–18:40 Niels Chr Overgaard: *A new necessary condition for coexistence of species in equilibrium states of the Wanner-Gujer-Kissel biofilm model*

18:40–19:00 Hermann Eberl: *A numerical method for a doubly degenrate diffusion-reaction model describing biofilm processes*

Wednesday, June 29, 17:00, Room: **AM6**

IMMUNOLOGY

Chaired by: Julia Kzhyshkowska

17:00–17:30 Jessica Conway: *Continuous-time branching processes to model viral load in treated HIV+ individuals*

17:35–17:55 Yin Cai: *Spatially-resolved mathematical modeling of T cell antigen recognition*

17:55–18:15 Jose A. Garcia: *A reinforced random walk model for studying the acute inflammatory response*

18:15–18:35 Koichi Saeki: *T cell anergy as a strategy to reduce the risk of autoimmunity*

18:35–18:55 Vladas Skakauskas: *Numerical study of receptor-toxin-antibody interaction problem*

Wednesday, June 29, 17:00, Room: **AM7**

MOVING ORGANISMS: FROM INDIVIDUALS TO POPULATIONS
Organizer: Christina Surulescu

17:00–17:40 Christina Surulescu: *Cell dispersal: some nonparametric and multiscale aproaches*
17:40–18:00 Franziska Matthaeus: *Profits from noise: the example of E. coli motion and chemotaxis*
18:00–18:20 Jan Haskovec: *From individual to collective behaviour of coupled velocity jump processes: a locust example*
18:20–18:40 Danielle Hilhorst: *A nonlinear parabolic-hyperbolic PDE model for contact inhibition of cell-growth*
18:40–19:00 Jan Kelkel: *Integrin mediated Cell Migration: Multiscale Models, Analysis and Numerics*

Wednesday, June 29, 17:00, Room: **AM8**

MODELING OF IMMUNE RESPONSES AND CALCIUM SIGNALING III
Organizers: Tomasz Lipniacki, Bogdan Kazmierczak, Marek Kimmel

17:00–17:40 Geneviève Dupont: *Modelling the spatio-temporal organisation of intracellular calcium signalling : from mechanism to physiology*
17:40–18:00 Alexander Skupin: *How spatial cell properties shape calcium signals*
18:00–18:20 Je-Chiang Tsai: *Traveling Waves in the Buffered FitzHugh-Nagumo Model*
18:20–18:40 Beata Hat: *B cell activation triggered by the formation of the small receptor cluster: a computational study*
18:40–19:00 Piotr Szopa: *Bifurcation phenomena in spatially extended kinase-receptor interaction model*

Wednesday, June 29, 17:00, Room: **AM9**

APPLICATIONS OF NONNEGATIVE RADON MEASURE SPACES WITH METRIC STRUCTURE TO POPULATION DYNAMIC MODELS
Organizers: Piotr Gwiazda, Anna Marciniak-Czochra

17:00–17:40 Jose A. Carrillo: *On some kinetic models of swarming*
17:40–18:00 Piotr Gwiazda: *Mertics on the space of the measures and transport equation*
18:00–18:20 Gael Raoul: *Structured population models for evolution*
18:20–18:40 Agnieszka Ulikowska: *Two-sex, age-structured population model*
18:40–19:00 Grzegorz Jamróz: *Measure-transmission conditions - a powerful tool in modeling bimodal dynamics*

Wednesday, June 29, 17:00, Room: **CP1**

FRACTALS AND COMPLEXITY II
Organizer: Przemyslaw Waliszewski

17:00–17:40 Rasha Abu Eid: *Fractal Geometry in the Assessment of Oral Epithelial Dysplasia Grading System*
17:40–18:00 Helmut Ahammer: *Fractal Dimension of Anal Intraepithelial Neoplasia (AIN)*
18:00–18:20 Nebojsa Milosevic: *Mathematical model of box-counting analysis in the human dentate nucleus during development*
18:20–18:40 Wlodzimierz Klonowski: *Applying Fractal Dimension in Analysis of Biosignals and of Medical Images*
18:40–19:00 Edward Oczeretko: *Fractal analysis in irregular regions of interest*

Wednesday, June 29, 17:00, Room: **CP2**

HEART RATE DYNAMICS: MODELS AND MEASURES OF COMPLEXITY (PART II)
Organizers: Grzegorz Graff, Beata Graff

17:00–17:20 Piotr Podziemski: *Modeling of the human atrium using Lienard equations*
17:20–17:40 Monika Petelczyc: *Correlation in human heart rate variability from a stochastic model*
17:40–18:00 Teodor Buchner: *Oscillations and synchronization in human circulatory system*
18:00–18:20 Jaroslaw Piskorski: *Structure of heart rate asymmetry*
18:20–18:40 Jerzy Ellert: *Heart rate asymmetry and its reflection in HRV complexity measures*
18:40–19:00 Krystyna Ambroch: *Time series models for healthy people and patients with LVSD*

Wednesday, June 29, 17:00, Room: **SP1**

MECHANICAL MODELS OF MOVEMENT AND GROWTH OF CELLS AND TISSUES II
Organizer: Magdalena Stolarska

17:00–17:40 Wolfgang Alt: *Mechanical feedback drives cell polarization, adhesion and migration*
17:40–18:00 Dietmar Ölz: *A model linking the lamellipodial actin cytoskeleton to cell shape and movement*
18:00–18:20 Marco Scianna: *Multiscale model of tumor-derived capillary-like network formation*
18:20–18:40 Paul Macklin: *Mechanistic cell-scale modelling of ductal carcinoma in situ (DCIS): impact of biomechanics in comedonecrosis*
18:40–19:00 Paweł Topa: *The particle-based model of foraminiferal morphogenesis*

Wednesday, June 29, 17:00, Room: **UA1**

BIOINFORMATICS AND SYSTEM BIOLOGY
Chaired by: Michael Sadovsky

17:00–17:30 Jose Nacher: *Data analysis and mathematical modeling of internal duplication process in multi-domain proteins*
17:35–17:55 Krzysztof Świder: *Modeling and Integration of Biological Networks with BiNArr*
17:55–18:15 Michał Zientek: *Improving functional coherence of gene signatures by using Gene Ontology terms*
18:15–18:35 Ulyana Zubairova: *The Cell Growth and Division Can Destroy Stem Cell Niche in a Reaction-Diffusion Model*
18:35–18:55 Julian Arndts: *Transaction costs and structure formation: an economic approach to biological systems*

Wednesday, June 29, 17:00, Room: **UA2**

STATISTICAL METHODS IN COMPUTATIONAL NEUROSCIENCE II
Organizer: Susanne Ditlevsen

17:00–17:40 Sonja Gruen: *Scales of Neuronal Data and the Problem of Interaction*
17:40–18:00 Ryota Kobayashi: *Made-to-Order spiking neuron model for a variety of cortical neurons*
18:00–18:20 Adeline Samson: *Parameter estimation of the stochastic Morris-Lecar model with particle filter methods*
18:20–18:40 Martin Paul Nawrot: *Exploring the Relation of Interval and Count Variability in Neural Spike Trains*
18:40–19:00 Klaus Holst: *A Latent Variable Model for brain serotonin levels as measured by cerebral serotonin transporter and 5-HT2A receptor binding in vivo*

Wednesday, June 29, 17:00, Room: **UA3**

TURING !! TURING?? ON MORPHOGENESIS VIA EXPERIMENTAL AND THEORETICAL APPROACHES.
Organizer: S. Seirin Lee

17:00–17:20 S. Seirin Lee: *Gene Expression Time Delays and Turing Pattern Formation*
17:20–17:40 Tetsuya Nakamura: *The mechanism to establish robust left-right asymmetry*
17:40–18:00 Denis Headon: *Periodic patterning across heterogeneous fields: insights from embryonic feather development*
18:00–18:20 Eamonn Gaffney: *Aspects of Turing's Pattern Formation Mechanism On Growing Domains*
18:20–19:00 Shigeru Kondo: *How experiment and mathematics can cooperate in the study of Turing patterns of real biological systems?*

Thursday, June 30, 11:30, Room: **AM1**

EVOLUTIONARY ECOLOGY
Chaired by: Atsushi Yamauchi

11:30–12:00 Kalle Parvinen: *Joint evolution of dispersal and cooperation in a locally stochastic metapopulation model*
12:05–12:25 Roger Bowers: *Evolutionary behaviour in single-species discrete-time models: the importance of trade-offs, the underlying population dynamics and density dependence*
12:25–12:45 Tuomas Nurmi: *Joint evolution of specialization and dispersal in structured metapopulations*
12:45–13:05 Margarete Utz: *Body Condition Dependent Dispersal in a Heterogeneous Environment*
13:05–13:25 Chelsea Liddell: *Persistence of the Sickle Cell Genome in the Presence of Malaria*

Thursday, June 30, 11:30, Room: **AM2**

POPULATION DYNAMICS
Chaired by: Eva Kisdi

11:30–12:00 Peter Pang: *Mathematical modeling of an ecosystem with three-level trophic interactions*
12:05–12:25 Fabio Chalub: *Discrete and continous models in evolutionary dynamics*
12:25–12:45 Miguel A. Lopez-Marcos: *Numerical analysis of a population model of marine invertebrates with different life stages*
12:45–13:05 Hiroshi Toyoizumi: *The dynamics of social queues*
13:05–13:25 Roberto Rosà: *Modelling the impact of helminth parasite on rock partridge population dynamics*

Thursday, June 30, 11:30, Room: **AM3**

DEVELOPMENTAL BIOLOGY
Chaired by: Anotida Madzvamuse

11:30–12:00 Sascha Dalessi: *Analytical modeling of Dpp wt profile and tkv clones in Drosophila wing imaginal discs*
12:05–12:25 Hiroshi Yoshida: *A condition for regeneration of a cell chain based on Dachsous:Fat heterodimer system*
12:25–12:45 Chadha Chettaoui: *Towards a single-cell-based model of early development in ruminants*
12:45–13:05 Sharon Lubkin: *Mechanical control of spheroid growth: distinct morphogenetic regimes*
13:05–13:25 Victoria Mironova: *The combined mechanisms of the reverse fountain and the reflected flow provide for self-organization and maintenance of the root apical meristem*

Thursday, June 30, 11:30, Room: **AM4**

BRIDGING THE DIVIDE: CANCER MODELS IN CLINICAL PRACTICE
Organizers: Marisa Eisenberg, Harsh Jain

11:30–12:10 Avner Friedman: *Therapeutic approaches to brain cancer*
12:10–12:30 Michael Meyer-Hermann: *Optimised cancer treatment using cell cycle synchronisation with heavy ion irradiation*
12:30–12:50 Marisa Eisenberg: *Modeling Remnant Ablation Protocols in Thyroid Cancer*
12:50–13:10 Harsh Jain: *The Impact of Androgen Ablation on Mutation Acquisition in Prostate Cancer*
13:10–13:30 Holger Perfahl: *Modelling the Spatio-Temporal Distribution of Drugs in Tumours*

Thursday, June 30, 11:30, Room: **AM5**

NEUROSCIENCES
Chaired by: Petr Lansky

11:30–12:00 John Hertz: *Network reconstruction from nonstationary spike trains*
12:05–12:25 Andrzej Bielecki: *Mathematical and numerical modeling of presynaptic phase of fast transport*
12:25–12:45 Anastasia Lavrova: *Dynamical switching between network states in the hippocampal circuit*
12:45–13:05 Laura Sacerdote: *On the Interspike Times of two coupled Neurons*
13:05–13:25 Charles Smith: *Distinguishing the Type of Input Noise in the Fitzhugh-Nagumo Neuronal Model*

Thursday, June 30, 11:30, Room: **AM6**

EPIDEMICS
Chaired by: Geoffry Mercer

11:30–12:00 Ryosuke Nishi: *Chase and Escape in Groups: Vampire Problem*
12:05–12:25 Konstantin Avilov: *Case detection rate: what can be estimated without prevalence surveys?*
12:25–12:45 Luis Fernandez Lopez: *Time-dependent discret, Ising-like model for SIS epidemic systems*
12:45–13:05 Toshikazu Kuniya: *Global stability analysis with a discretization approach for an age-structured SIR epidemic model*
13:05–13:25 Valeriy Perminov: *On the reproduction number in different infectious diseases models*

Thursday, June 30, 11:30, Room: **AM7**

CELLULAR SYSTEMS BIOLOGY
Chaired by: Anita T. Layton

11:30–12:00 Evgenii Volkov: *Dynamics of coupled repressilators: the role of mRNA kinetics and transcription cooperativity*
12:05–12:25 Marcus Tindall: *Genetic Regulation of Cholesterol Biosynthesis*
12:25–12:45 Elisenda Feliu: *Enzyme sharing as a cause of multistationarity in signaling systems*
12:45–13:05 Radek Erban: *Stochastic modelling of reaction-diffusion processes in biology*
13:05–13:25 Milan van Hoek: *Protein Cost and Metabolic Network Structure Underlie Different Modes of Metabolic Efficiency*

Thursday, June 30, 11:30, Room: **AM8**

CELL AND TISSUE BIOPHYSICS
Chaired by: Zbigniew Peradzyński

11:30–12:00 Sara Tiburtius: *A multiscale model of mineralized fibril bundles - a homogenization approach*
12:05–12:25 Vladimir Zubkov: *Hyperosmolarity of the tear film in dry eye syndrom*
12:25–12:45 Jan Fuhrmann: *On a parabolic model for particle alignment*
12:45–13:05 Kyriaki Giorgakoudi: *Mathematical modelling of foot-and-mouth disease virus infection of bovine epithelial cells*
13:05–13:25 Tracy Stepien: *Stretch-dependent proliferation in a one-dimensional elastic continuum model of cell layer migration*

Thursday, June 30, 11:30, Room: **AM9**

EPIDEMIC MODELS: NETWORKS AND STOCHASTICITY II
Organizers: Thomas House, Istvan Kiss

11:30–12:10 Tom Britton: *Dynamic networks in dynamic populations*
12:10–12:30 Alan McKane: *Stochastic amplification in an epidemic model with seasonal forcing*
12:30–12:50 Michael Taylor: *From Markovian to pairwise epidemic models and the performance of moment closure approximations*
12:50–13:10 Adam Kleczkowski: *Controlling epidemic spread by responding to risk: Do it well or not at all*
13:10–13:30 Christel Kamp: *Following epidemic spread: how epidemics travel and trim their network of infectious contacts*

Friday, July 1, 14:30, Room: **AM1**

EVOLUTIONARY ECOLOGY
Chaired by: Tanya Kostova Vassilevska

14:30–15:00 Bernt Wennberg: *Sympatric speciation and its dependence on competition and strength of reinforcement*
15:05–15:25 Dorothy Wallace: *Sexually differentiated death rates in the presence of an efficient mating strategy*
15:25–15:45 Wojciech Borkowski: *Cellular automaton eco-systems – the simple way to simulate macroevolution*
15:45–16:05 Judith Miller: *Beyond mutation surfing: adaptation during invasions*
16:05–16:25 Jacob Scott: *Choose your neighbourhood wisely: the importance of neighbourhood geometry in spatial agent based models of biological systems*

Friday, July 1, 14:30, Room: **AM2**

REGULATORY NETWORKS
Chaired by: John Tyson

14:30–15:00 Daniele Muraro: *A multi-scale analysis of the influence of hormonal cross-talk: cell-fate determination in Arabidopsis thaliana root development*
15:05–15:25 Christian Bodenstein: *Protein activation by calcium oscillations and Jensen's Inequality*
15:25–15:45 Michael Knudsen: *Mathematical Modeling of Phosphorelay Dynamics*
15:45–16:05 Martin Koetzing: *Dynamic Optimization of Nitrogen Assimilation in Chlamydomonas reinhardtii*
16:05–16:25 Daniella Schittler: *Model selection of networks that are robust against kinetic uncertainties*

Friday, July 1, 14:30, Room: **AM3**

POPULATION GENETICS
Chaired by: Manuel Mota

14:30–15:00 Reinhard Bürger: *The effects of linkage and gene flow on local adaptation: A two-locus continent-island model*
15:05–15:25 Ada Akerman: *Local adaptation under diversifying selection: A two-locus migration- selection model*
15:25–15:45 Marina Rafajlovic: *Linkage disequilibrium in populations of variable size*
15:45–16:05 Ute von Wangenheim: *Single-crossover recombination and ancestral recombination trees*
16:05–16:25 Robert Puddicombe: *Development of distinct colonies of genotype in a sympatric model of diploid entities*

Friday, July 1, 14:30, Room: **AM4**

DELAY DIFFERENTIAL EQUATIONS AND APPLICATIONS I
Organizers: Urszula Foryś, Monika Joanna Piotrowska

14:30–15:10 Michael C. Mackey: *Using mathematical modeling to tailor the administration of chemotherapy and G-CSF*
15:10–15:30 Alberto d'Onofrio: *The interplay between delays and bounded noises in immune reaction to tumors*
15:30–15:50 Yukihiko Nakata: *Analysis of a characteristic equation for a Delay Equation from cell population dynamics*
15:50–16:10 Jacek Miekisz: *Delayed protein degradation does not cause oscillations*
16:10–16:30 Philipp Getto: *A differential equation with state-dependent delay from cell population dynamics*

Friday, July 1, 14:30, Room: **AM5**

CELL AND TISSUE BIOPHYSICS / NEUROSCIENCES
Chaired by: Zbigniew J. Grzywna

14:30–15:00 Keng-Hwee Chiam: *Bleb Statics, Dynamics, Adaptation and Directed Cell Migration*
15:05–15:25 Adelle Coster: *Modelling Insulin Action on Glucose Transporters*
15:25–15:45 Alina Toma: *A Nutrient-Guided Chemotaxis-Haptotaxis Approach for Modeling the Invasion of Tumor Cells*
15:45–16:05 Eirini Spanou: *The identification of a neuroelectric system in the time and frequency domain when an alpha stimulation is present*
16:05–16:25 Massimiliano Tamborrino: *Detection of the first-spike latency*

Friday, July 1, 14:30, Room: **AM6**

POPULATION DYNAMICS
Chaired by: Peter Pang

14:30–15:00 Christina Cobbold: *Emerging spatio-temporal patterns in a model of insect invasion*
15:05–15:25 Erwan Hingant: *An on-pathway step explains the kinetic of prion amyloid formation*
15:25–15:45 Jennifer Reynolds: *The role of silica defences in driving vole population cycles*
15:45–16:05 Xuxin Yang: *Permanence of a logistic type impulsive equation with infinite delay*

Friday, July 1, 14:30, Room: **AM7**

DEVELOPMENTAL BIOLOGY
Chaired by: Hiroshi Yoshida

14:30–15:00 Tilmann Glimm: *Pattern formation in reaction-diffusion systems with an external morphogen gradient*
15:05–15:25 Eva Deinum: *Manipulating auxin transport: different strategies leave different signatures*
15:25–15:45 Torbjörn Lundh: *Invariances of cross- and trippel-ratios of human limbs?*
15:45–16:05 Andrey Polezhaev: *Mechanisms of pattern formation in biological systems caused by diffusion instability*
16:05–16:25 Sergey Nikolaev: *Spatial Distributed Genetic Mechanism for Stem Cell Niche Structure Control in the Shoot Apical Meristem*

Friday, July 1, 14:30, Room: **AM8**

CANCER
Chaired by: Carsten Wiuf

14:30–15:00 Ibrahim Cheddadi: *Towards quantitative individual-based and continuum models of tumor multicellular aggregates*
15:05–15:25 Niall Deakin: *Mathematical Modelling of Cancer Growth and Spread: The Role of Enzyme Degradation of Tissue*
15:25–15:45 Andrey Kolobov: *Speed selection in the model of infiltrative tumour growth with account of migration-proliferation dichotomy*
15:45–16:05 Carsten Mente: *Modeling of Tumor Cell Dynamics with Individual-based Lattice-gas Cellular Automata*
16:05–16:25 Joanna Rodriguez Chrobak: *Mathematical model of lymphoma as a failure in maintanance of naïve T cell repertoire*

Friday, July 1, 14:30, Room: **AM9**

ECOLOGY AND EVOLUTION OF INFECTIOUS DISEASES
Organizers: Barbara Boldin, Eva Kisdi

14:30–15:10 Troy Day: *Optimal control of drug resistant pathogens and the mixing versus cycling controversy*
15:10–15:30 Akira Sasaki: *Resistance threshold in spatially explicit epidemic model: Finite size scaling applied to dynamic percolation in epidemic processes with mixed cultivar planting*
15:30–15:50 Andy White: *The evolution of host-parasite range*
15:50–16:10 Samuel Alizon: *Within-host parasite cooperation and the evolution of virulence*
16:10–16:30 Eva Kisdi: *The curse of the pharaoh hypothesis revisited: Evolutionary coexistence of parasite strains*

Saturday, July 2, 08:30, Room: **AM1**

MECHANICS OF THE CYTOSKELETON AND CORTICAL ACTIN AT THE CELLULAR LEVEL

Organizers: Wanda Strychalski, Guillaume Salbreux

08:30–09:10 Guillaume Salbreux: *Role of the polar actin cortex in cytokinesis*

09:10–09:30 Andrew Harris: *Measuring the mechanical properties of cell monolayers*

09:30–09:50 Jean-François Joanny: *Cortical actin and cell instabilities*

09:50–10:10 Sundar Naganathan: *Actin binding proteins govern the range of polarizing cortical flows in C. elegans zygotes*

10:10–10:30 Wanda Strychalski: *Computational explorations of cellular blebbing*

Saturday, July 2, 08:30, Room: **AM2**

EPIDEMICS

Chaired by: Roberto Saenz

08:30–08:50 Aziz Ouhinou: *Epidemiological Models with Prevalence Dependent Endogenous Self-Protection Measure*

08:55–09:15 S.Naser Hashemi: *Modeling Control Strategies for Influenza Epidemic with the Emergence and Evolution of Drug Resistance*

09:15–09:35 Jing-an Cui: *Models of infectious disease control with limit treatment resource*

09:35–09:55 Helen Johnson: *Novel ABC-bayesian emulation hybrid algorithm for complex model calibration: the first waves*

09:55–10:15 Amjad Khan: *Homotopy perturbation method for traveling wave solutions of system of biological reaction-diffusion equations*

10:15–10:35 Ahmed Elaiw: *Global properties of virus dynamics models with multitarget cells and delays*

Saturday, July 2, 08:30, Room: **AM3**

INFORMATION, HUMAN BEHAVIOUR AND INFECTION CONTROL.

Organizers: Piero Manfredi, Alberto d'Onofrio

08:30–09:10 Timothy Reluga: *Mathematical Epidemiology and the Economics of Social Planning*

09:10–09:30 Piero Manfredi: *The impact of vaccinating behaviour on the natural history of immunization programmes*

09:30–09:50 Sebastian Funk: *Modelling the Influence of Human Behaviour on the Spread of Infectious Diseases*

09:50–10:10 Bruno Buonomo: *Nonlinear stability of epidemic models including information-related human behaviour*

Saturday, July 2, 08:30, Room: **AM4**

MULTISCALE MODELING OF BIOLOGICAL SYSTEMS: FROM PHYSICAL TOOLS TO APPLICATIONS IN CANCER MODELING I

Organizers: Arnaud Chauviere, Haralampos Hatzikirou, John Lowengrub

08:30–09:10 Dirk Drasdo: *Multi-scale modeling of cells: concepts and open questions*

09:10–09:30 Vitaly Volpert: *Hybrid models of normal and leukemic hematopoiesis*

09:30–09:50 Yangjin Kim: *The role of the microenvironment in an early development of breast cancer: a hybrid (multiscale) model*

09:50–10:10 Paul Macklin: *An illustration of patient-specific cancer modelling: from microscopic data to macroscopic, quantitative predictions*

10:10–10:30 Luigi Preziosi: *Cell Adhesion and Re-organisation in a Multiphase Model Describing Tumour and Tissue Growth*

Saturday, July 2, 08:30, Room: **AM5**

UNDERGRADUATE BIOMATHEMATICS EDUCATION BEYOND BIO 2010 (PART II)

Organizers: Raina Robeva, Timothy Comar, Meghan Burke

08:30–08:50 Semen Koksal: *Establishing an Undergraduate Program and Major in BioMathematics*

08:50–09:10 Paola Vera-Licona: *Computational Systems Biology: Discrete Models of Gene Regulatory Networks*

09:10–09:30 Hannah Callender: *What My Biology Students Taught Me About Mathematics*

09:30–10:10 Raina Robeva, Meghan Burke: *Discussion: Mathematical biology education materials: types, sources, accessibility, assessment*

Saturday, July 2, 08:30, Room: **AM6**

FLUID-STRUCTURE INTERACTION PROBLEMS IN BIOMECHANICS

Organizer: Sookkyung Lim

08:30–09:10 Eunok Jung: *A heart model in the whole circulatory system*

09:10–09:30 Christina Hamlet: *Excitable tissues in fluids*

09:30–09:50 Karin Leiderman: *A Mathematical Model of Thrombus Formation Under Flow*

09:50–10:10 Sarah Olson: *Coupling biochemistry, mechanics, and hydrodynamics to model sperm motility*

10:10–10:30 Katarzyna A. Rejniak: *Interactions between interstitial fluid and tumor microenvironment in chemotherapy*

Saturday, July 2, 08:30, Room: **AM7**

THE EMERGENCE OF RESISTANCE IN CANCER USING MATHEMATICAL MODELLING
Organizer: David Basanta

08:30–09:10 Alexander Anderson: *Regulating drug resistance: Evolution and the double-bind*
09:10–09:30 Edward Flach: *Cancer drug treatment is unnatural selection*
09:30–09:50 Jasmine Foo: *Modeling diversity in drug-resistant populations using multitype branching processes*
09:50–10:10 Heiko Enderling: *Emergence of radioresistance through selection for cancer stem cells in solid tumors*
10:10–10:30 David Basanta: *Tumour heterogeneity and its role in the emergence of resistance*

Saturday, July 2, 08:30, Room: **AM8**

MODELLING DENGUE FEVER EPIDEMIOLOGY
Organizers: Maíra Aguiar, Bob Kooi, Nico Stollenwerk, Ezio Venturino

08:30–09:10 Maira Aguiar: *Modelling dengue fever epidemiology: complex dynamics and its implication for data analysis*
09:10–09:30 Eduardo Massad: *Why dengue and yellow fever coexist in some areas of the world and not in others?*
09:30–09:50 Helena Sofia Rodrigues: *Simulation of a dengue vaccine*
09:50–10:10 Jose Lourenço: *Determinants of dengue virus phylodynamics*
10:10–10:30 Nico Stollenwerk: *On the origin of the irregularity of DHF epidemics*

Saturday, July 2, 08:30, Room: **AM9**

MODELING OF COLLECTIVE PHENOMENA IN BIOLOGICAL SYSTEMS
Organizer: Danuta Makowiec

08:30–09:10 Marcin Zagorski: *Emergence of sparsity and motifs in gene regulatory networks*
09:10–09:30 Andreas Deutsch: *Analyzing emergent behaviour in interacting cell systems*
09:30–09:50 Pietro Lio: *A combined process algebraic and a stochastic approaches to bone remodeling*
09:50–10:10 Danuta Makowiec: *Discrete modeling of the sinoatrial node automaticity*
10:10–10:30 Zbigniew Struzik: *Measures of heart rate complexity*

Saturday, July 2, 08:30, Room: **CP1**

STATISTICAL ANALYSIS OF BIOLOGICAL SIGNALS I
Organizer: Jacek Leśkow

08:30–09:10 Jaroslaw Harezlak: *Modeling mass spectrometry proteomics data using nonparametric regression methods*
09:10–09:30 Christiana Drake: *Not Missing at Random and Combined Odds Ratios from Mixture Models*
09:30–09:50 Markus Knappitsch: *Dynamic Information and the Meaning of Biological Signs*
09:50–10:10 T. Kozubowski: *Skew Laplace Distributions: Theory and Some Applications in Biology*
10:10–10:30 Boguslaw Obara: *Analysis and Understanding of Fungal Tip Growth*

Saturday, July 2, 08:30, Room: **CP2**

IMMUNOLOGY / MEDICAL PHYSIOLOGY
Chaired by: John Ward

08:30–09:00 Gabriel Dimitriu: *Optimal controls for enhancing natural response of the immune system in obesity-related chronic inflammation*
09:05–09:25 Fernao Vistulo de Abreu: *Self-Nonself discrimination and the role of Costimulation and Anergy*
09:25–09:45 Galina Gramotnev: *Generalised Stress: A unifying model for psychological stress and psychosomatic treatment*
09:45–10:05 Masoomeh Taghipoor: *A New Mathematical Model for combining Transport and Degradation in the Small Intestine*

Saturday, July 2, 08:30, Room: **CP3**

DELAY DIFFERENTIAL EQUATIONS AND APPLICATIONS II
Organizers: Urszula Foryś, Monika Joanna Piotrowska

08:30–09:10 Hassan Hbid: *Delay in Structured Population Models*
09:10–09:30 Samuel Bernard: *Distributed delays stabilize negative feedback loops*
09:30–09:50 Marek Bodnar: *Delay can stabilise: population and love affairs dynamics*
09:50–10:10 Monika Piotrowska: *Gompertz model with time delays*
10:10–10:30 Antoni Leon Dawidowicz: *Mathematical model of bioenergetic process in green plants with delayed argument*

Saturday, July 2, 08:30, Room: **CP4**

CELL MIGRATION DURING DEVELOPMENT: MODELLING AND EXPERIMENT
Organizers: Paul Kulesa, Ruth Baker

08:30–09:10 Paul Kulesa: *Experimental analysis of neural crest migration during development*
09:10–09:30 Louise Dyson: *Models of neural crest cell migration during development*
09:30–09:50 Matthew Simpson: *Modelling cell invasion with proliferation mechanisms motivated by time-lapse data*
09:50–10:10 Michelle Wynn: *A computational model of neural crest chain migration provides mechanistic insight into cellular follow-the-leader behavior*
10:10–10:30 Kevin Painter: *An integrated experimental/theoretical approach to explore cell migration during embryonic development*

Saturday, July 2, 08:30, Room: **SP1**

MODELING OF IMMUNE RESPONSES AND CALCIUM SIGNALING IV
Organizers: Tomasz Lipniacki, Bogdan Kazmierczak, Marek Kimmel

08:30–08:50 Jacek Miekisz: *Simple stochastic models of gene regulation*
08:50–09:10 Paulina Szymanska: *Modeling of self-regulating gene*
09:10–09:30 Jakub Pekalski: *Positive feedback in NF-kappaB signaling*
09:30–09:50 Michał Komorowski: *Quantification of noise in signalling systems - importance of controlled signal degradation*
09:50–10:30 Martin Falcke: *How does single channel behavior cause cellular Ca2+ spiking?*

Saturday, July 2, 11:00, Room: **AM1**

DEVELOPMENTAL BIOLOGY
Chaired by: Tilmann Glimm

11:00–11:30 Yoshihiro Morishita: *Coding design of positional information for robust morphogenesis*
11:35–11:55 Jörn Starruß: *Collective migration in myxobacteria driven by adventurous motility and elongated cell shape*
11:55–12:15 Joanna Szymanowska-Pułka: *Analysis of the Lateral Root Morphology with the Use of the Fast Fourier Transform*
12:15–12:35 Sofia Tapani: *Mathematical modelling of pronuclei migration in the mammalian egg*
12:35–12:55 Lisa Willis: *Biosilica nanoscale pattern formation in diatoms*

Saturday, July 2, 11:00, Room: **AM2**

POPULATION DYNAMICS
Chaired by: Christina Cobbold

11:00–11:30 Max Souza: *Multiscaling Modelling in Evolutionary Dynamics*
11:35–11:55 Atiyo Ghosh: *Quantifying Stochastic Introgression Processes with Hazard Rates*
11:55–12:15 Ryan Chisholm: *A theoretical model linking interspecific variation in density dependence to species abundances*
12:15–12:35 Wes Maciejewski: *Resistance Distance and Relatedness on an Evolutionary Graph*
12:35–12:55 Jonathan Rault: *Equilibria and stability results for some zooplankton size-structured models*

Saturday, July 2, 11:00, Room: **AM3**

INFORMATION, HUMAN BEHAVIOUR AND DISEASE.
Organizers: Piero Manfredi, Alberto d'Onofrio

11:00–11:40 Sara Del Valle: *Effects of Behavioral Changes in Smallpox and Influenza Models*
11:40–12:00 Raffaele Vardavas: *Modeling Adaptive Behavior in Influenza Vaccination Decisions*
12:00–12:20 Romulus Breban: *Health newscasts for increasing influenza vaccination coverage: How much is too much?*
12:20–12:40 Istvan Kiss: *Multiple sources and routes of information transmission: implications for epidemic dynamics*
12:40–13:00 Marco Ajelli: *Risk perception and 2009 H1N1 pandemic influenza spread in Italy*

Saturday, July 2, 11:00, Room: **AM4**

MULTISCALE MODELING OF BIOLOGICAL SYSTEMS: FROM PHYSICAL TOOLS TO APPLICATIONS IN CANCER MODELING II
Organizers: Arnaud Chauviere, Haralampos Hatzikirou, John Lowengrub

11:00–11:40 John Lowengrub: *physical oncology*
11:40–12:00 Cristian Vasile Achim: *Phase field Crystal Model for Liquid Crystals*
12:00–12:20 Isabell Graf: *Homogenization of a reaction-diffusion system modeling carcino- gens inside a human cell*
12:20–12:40 Axel Voigt: *Applications of phase field and phase field crystal models in biological systems*
12:40–13:00 Arnaud Chauviere: *Multiscale modeling of biological systems*

Saturday, July 2, 11:00, Room: **AM5**

CELL AND TISSUE BIOPHYSICS
Chaired by: Keng-Hwee Chiam

11:00–11:30 Z.J. Grzywna: *Role and activity of some chosen voltage-gated K+ and Na+ channels – mathematical description and analyses*
11:35–11:55 Zofia Jones: *Helfrich Energy Model of the Phagocytosis of a Fibre*
11:55–12:15 Jonathan Li: *Effects of Cell Compressibility, Motility and Contact Inhibition on the Growth of Tumor Cell Clusters*
12:15–12:35 Uduak George: *Mathematical and numerical modelling of cell membrane deformations as a consequence of actin dynamics*
12:35–12:55 Robert Bauer: *A queueing theory model for the dynamics of microtubules and microfilaments*

Saturday, July 2, 11:00, Room: **AM6**

REGULATORY NETWORKS
Chaired by: Daniele Muraro

11:00–11:30 Simon van Mourik: *Quantitative modeling of gene expression in Arabidopsis flowers*
11:35–11:55 Elpida Tzafestas: *Modeling hormonally dependent genetic networks*
11:55–12:15 Marcin Zagórski: *Model gene regulatory networks under mutation-selection balance*
12:15–12:35 Ben Fitzpatrick: *Modeling and Estimation of Gene Regulatory Networks and Environmental Stress Response*
12:35–12:55 Anna Ochab-Marcinek: *How stochasticity in gene expression differentiates phenotypes without changing genotypes*

Saturday, July 2, 11:00, Room: **AM7**

CELLULAR SYSTEMS BIOLOGY
Chaired by: John Tyson

11:00–11:30 Attila Csikasz-Nagy: *Cell signaling network unit dynamics*
11:35–11:55 Mehrdad Jafari-Mamaghani: *Employing Statistics in Systems Microscopy*
11:55–12:15 J Krishnan: *Modelling and elucidating design principles underlying attractive and repulsive gradient sensing*
12:15–12:35 Ilya Potapov: *Dynamics of synthetic genetic repressilators with phase-repulsive coupling*
12:35–12:55 Jaroslaw Śmieja: *Coupled sensitivity and frequency analysis of signalling pathways*

Saturday, July 2, 11:00, Room: **AM8**

EPIDEMIOLOGY, ECO-EPIDEMIOLOGY AND EVOLUTION
Organizers: Ezio Venturino, Nico Stollenwerk

11:00–11:40 Ezio Venturino: *On an age- and stage-dependent epidemic model*
11:40–12:00 Caterina Guiot: *Multi-scale modelling of human sleep*
12:00–12:20 Philip Gerrish: *Genomic mutation rates that cause extinction: general evolutionary predictions*
12:20–12:40 Jordi Ripoll: *An epidemic model on computer networks*
12:40–13:00 Nico Stollenwerk: *Chaos and noise in population biology*

Saturday, July 2, 11:00, Room: **AM9**

SEMIGROUPS OF OPERATORS IN MATHEMATICAL BIOLOGY II
Organizers: Horst Thieme, Adam Bobrowski

11:00–11:25 Jozsef Farkas: *Wentzell semigroups in biology*
11:25–11:50 Peter Hinow: *Structured and unstructured continuous models for Wolbachia infections*
11:50–12:15 Miroslaw Lachowicz: *Some Markov Jump Processes in Mathematical Biology*
12:15–12:40 Radosław Bogucki: *Two theorems on singularly perturbed semigroups with applications to some genetic models*
12:40–13:00 Adam Bobrowski: *From a PDE model to an ODE model of dynamics of synaptic depression*

Saturday, July 2, 11:00, Room: **CP1**

STATISTICAL ANALYSIS OF BIOLOGICAL SIGNALS II
Organizer: Jacek Leśkow

11:00–11:40 Aleksander Weron: *Identification of fractional subdiffusive dynamics of mRNA molecules*
11:40–12:00 Elżbieta Gajecka-Mirek: *AR-Sieve Bootstrap Method and Its Application in Biological Time Series*
12:00–12:20 Jacek Leśkow: *Resampling with Applications to Neurophysiological Time Series*
12:20–12:40 Mariola Molenda: *Level crossings in biological time series*
12:40–13:00 A. Panorska: *The joint distribution of the sum and maximum of exponential random variables with applications to biology*

Saturday, July 2, 11:00, Room: **CP2**

MATHEMATICAL MODELLING OF PHYSIOLOGICAL PROCESSES IN PATIENTS ON DIALYSIS

Organizer: Jacek Waniewski

11:00–11:40 Daniel Schneditz: *Physiology-based approach to modeling of dialysis*
11:40–12:00 Joanna Stachowska-Piętka: *Mathematical modeling of peritoneal dialysis*
12:00–12:20 Roman Cherniha: *New exact solutions of mathematical models describing peritoneal transport*
12:20–12:40 Magda Galach: *Modeling of glucose-insulin system in patients on dialysis*
12:40–13:00 Malgorzata Debowska: *Compartmental modeling and adequacy of dialysis*

Saturday, July 2, 11:00, Room: **CP3**

RECENT ADVANCES IN INFECTIOUS DISEASE MODELLING I

Organizers: Robert Smith?, Elissa Schwartz, Stanca Cuipe

11:00–11:40 Elissa Schwartz: *Immune Dynamics of Equine Infectious Anemia Virus*
11:40–12:00 Stanca M Ciupe: *Antibody responses during Hepatitis B viral infection*
12:00–12:20 Jonathan Forde: *Reducing HIV Reservoirs by Induced Activation of Latently Infected Cells*
12:20–12:40 Kasia Pawelek: *Modeling within-host dynamics of influenza virus infection including kinetics of innate and adaptive immune responses*
12:40–13:00 Rachelle Miron: *Impulsive differential equations and their application to disease modelling*

Saturday, July 2, 11:00, Room: **CP4**

COMPUTATIONAL TOXICOLOGY AND PHARMACOLOGY - IN SILICO DRUG ACTIVITY AND SAFETY ASSESSMENT

Organizers: Sebastian Polak, Aleksander Mendyk

11:00–11:40 Wojciech Krzyzanski: *Hematopoietic cell populations as therapeutic targets*
11:40–12:00 Maciej Swat: *Systems Biology driven Pharmacokinetics and Pharmacodynamics*
12:00–12:20 Aleksander Mendyk: *Artificial neural networks for carditoxicity prediction of drugs - practical considerations*
12:20–12:40 Sebastian Polak: *Systems Biology in drug development - cardiotoxicity prediction*
12:40–13:00 Axel Krinner: *Combining two model paradigms: How an agent-based hematopoietic stem cell model couples to an ordinary differential equations model of mature granulopoiesis and chemotherapy*

Saturday, July 2, 11:00, Room: **SP1**

MODELING OF IMMUNE RESPONSES AND CALCIUM SIGNALING V
Organizers: Tomasz Lipniacki, Bogdan Kazmierczak, Marek Kimmel

11:00–11:30 Ruediger Thul: *Calcium alternans in a piecewise linear model of cardiac myocytes*
11:30–11:50 Kevin Thurley: *Hierachic stochastic modelling of intracellular Ca(2+) signals - a new concept based on emergent behaviour of biomolecules*
11:50–12:10 Michal Dyzma: *Three pool model of self sustained calcium oscilations*
12:10–12:40 Zbigniew Peradzyński: *On mechanical effects accompanying and influencing the diffusion of calcium*
12:40–13:00 Bogdan Kaźmierczak: *Buffered calcium waves with mechano-chemical effects*

Saturday, July 2, 14:30, Room: **AM1**

SYSTEMS BIOLOGY OF DEVELOPMENT
Organizers: Walter de Back, Lutz Brusch, Andreas Deutsch

14:30–14:55 Johannes Jaeger: *Reverse-Engineering the Evolutionary and Developmental Dynamics of the Gap Gene Network*
14:55–15:20 Margriet Palm: *Cell elongation and cell adhesion suffice for vascular network formation*
15:20–15:45 Julio Belmonte: *Multi-cell, Multi-scale Models of Vertebrate Somitogenesis*
15:45–16:10 Alvaro Köhn-Luque: *Paracrine vs Autocrine Regulation of Early Vascular Patterning*
16:10–16:30 Osvaldo Chara: *The role of Wnt3 in early Hydra head regeneration*

Saturday, July 2, 14:30, Room: **AM2**

POPULATION DYNAMICS
Chaired by: Dorothy Wallace

14:30–14:55 Isaias Chairez-Hernandez: *Grasshopper population interpolation with Generalized linear models*
15:00–15:25 Joanna Jaroszewska: *Chaotic properties of some partial differential equation with a random delay describing cellular replication*
15:25–15:50 Adriana Bernal Escobar: *Spatial explicit dispersal modeling for the conservation of jaguars in Colombia*
15:50–16:15 Yo-Hey Otake: *Convergence properties of the law of reproduction by the first principle derivation in population dynamics*

Saturday, July 2, 14:30, Room: **AM3**

NOISY CELLS

Organizers: Alexander Skupin, Rudiger Thul

14:30–15:00 Thomas Höfer: *Noisy information processing in the innate immune response*

15:00–15:30 Martin Falcke: *Random but reliable: Properties of spike sequences of IP3-induced Ca2+ signaling*

15:30–16:00 Alexander Skupin: *Modeling the dynamics of enzyme-pathway coevolution*

16:00–16:20 Tilo Schwalger: *How stochastic adaptation currents shape interspike interval statistics of neurons - theory and experiment*

Saturday, July 2, 14:30, Room: **AM4**

REPORTS FROM US - AFRICAN BIOMATHEMATICS INITIATIVE: CONSERVATION BIOLOGY

Organizer: Holly Gaff

14:30–14:50 Holly Gaff: *Overview: Reports from US - African BioMathematics Initiative: Conservation Biology*

14:50–15:10 Robyn Nadolny: *Canine Distemper Virus (CDV): Methods for modeling spillover infections for African Wild Dogs (Lycaon pictus) in a multi-host community*

15:10–15:30 Gina Himes Boor: *Using individual-based movement models to investigate mechanism of emergent herding behavior in African buffalo*

15:30–15:50 Ruscena Wiederholt: *The effects of disturbance, fire, and elephants on savanna woodlands*

15:50–16:10 Stefano Ermon: *A Bio-economic Model For Tropical Forest Harvesting and Habitat Loss*

16:10–16:30 Holly Gaff, Sadie Ryan: *Looking to the future: how to progress to success from the US-Africa Biomathematics Initiative*

Saturday, July 2, 14:30, Room: **AM5**

CANCER

Chaired by: Vitaly Volpert

14:30–15:00 Gülnihal Meral: *Mathematical Modeling and Numerical Simulations for the Influence of Heat Shock Proteins on Tumour Invasion*

15:05–15:25 Maciej Mrugala: *Predicting pseudoprogression in glioblastoma patients: A mathematical and clinical perspective*

15:25–15:45 Arne Traulsen: *Dynamics of blood diseases and the hierarchy of hematopoiesis*

15:45–16:05 Jill Gallaher: *Phenotypic inheritance transforms heterogeneity in tumor growth*

16:05–16:25 Philip Gerlee: *The impact of phenotypic switching on glioma growth*

Saturday, July 2, 14:30, Room: **AM6**

MATHEMATICAL MODELLING OF MACROMOLECULES AND MOLECULAR AGGREGATES

Organizer: Rubem Mondaini

14:30–15:10 Rubem Mondaini: *Global Optimization Analysis of Viral Capsids and Amide Planes*

15:10–15:30 Richard Kerner: *Discrete groups and internal symmetries of icosahedral capsids*

15:30–15:50 Reidun Twarock: *Genome Organisation and Assembly of RNA Viruses: Where Geometry Meets Function*

15:50–16:10 Giuliana Indelicato: *The dynamic behaviour of viral capsids under structural transitions important for infection*

16:10–16:30 Thomas Keef: *Penrose-like tilings as geometric constraints on the structures of protein assemblies*

Saturday, July 2, 14:30, Room: **AM7**

RECENT DEVELOPMENTS IN THE STUDY OF LOTKA-VOLTERRA AND KOLMOGOROV SYSTEMS

Organizer: Stephen Baigent

14:30–15:10 Janusz Mierczynski: *Permanence for Kolmogorov competitive systems of PDEs*

15:10–15:30 Zhanyuan Hou: *Heteroclinic limit cycles in Lotka-Volterra systems*

15:30–15:50 Yasuhiro Takeuchi: *Global stability of Lotka-Volterra equations*

15:50–16:10 Joanna Balbus: *Average conditions for permanence in N-species nonautonomous competitive systems of PDEs*

16:10–16:30 Stephen Baigent: *The curvature of carrying simplices for competitive Lotka-Volterra systems*

Saturday, July 2, 14:30, Room: **AM8**

BRIDGING TIME SCALES IN BIOLOGICAL SCIENCES

Organizers: Konstantin Fackeldey, Susanna Roeblitz, Marcus Weber

14:30–15:10 Konstantin Fackeldey: *Efficient Simulation in Protein Modelling and Non-equilibrium Processes*

15:10–15:35 Volkmar Liebscher: *The Quasi-steady state hypothesis for stochastic models of enzyme kinetics*

15:35–16:00 Iris Antes: *Hierarchical approaches for the investigation of biomolecular recognition*

16:00–16:25 Susanna Röblitz: *Rare events in chemical reaction systems*

Saturday, July 2, 14:30, Room: **AM9**

RECENT ADVANCES IN INFECTIOUS DISEASE MODELLING II
Organizers: Robert Smith?, Elissa Schwartz, Stanca Cuipe

14:30–15:10 Robert Smith?: *The impact of media coverage on the transmission dynamics of human influenza*

15:10–15:30 Axel Bonacic Marinovic: *Timeliness of intervention in epidemic outbreaks*

15:30–15:50 Romulus Breban: *The nationwide incidence of hepatitis C in Egypt: Toward realistic estimates*

15:50–16:10 Bernhard Konrad: *Stochastic model-based predictions on post-exposure prophylaxis strategies for prevention of HIV infection*

16:10–16:30 Raluca Eftimie: *Using viruses to eliminate tumours: the role of multi-stability and multi-instability phenomena*

Poster session — Friday, July 1th, 20:00.

1. **Masakazu Akiyama**, Atsushi Tero, Ryo Kobayashi: *A Mathematical Model of Cleavage.*

2. **Daniel Arbelaez Alvarado**, Juan Manuel Cordovez Alvarez: *A mathematical model for assessing the spraying as a vector control strategy for Chagas disease in Colombia.*

3. **Takeshi Asakawa**, Satoshi Koinuma, Koh-hei Masumoto, Mamoru Nagano, Yasufumi Shigeyoshi: *Mathematical model of the mammalian circadian center as a many-body system of the limit cycle oscillators.*

4. **Irem Atac**, Prof. Dr. Serdal Pamuk: *On The Stability of the Steady-State Solutions of Cell Equations in a Tumor Growth Model.*

5. **Archana Bajpai**, F. Vaggi, F. Jordan, A. Csikasz-Nagy: *Computational analysis of the cell growth regulatory network of fission yeast cells.*

6. **Annabelle Ballesta**: *A Combined Experimental and Mathematical Approach for Molecular-based Personalization of Irinotecan Circadian Delivery.*

7. **Jörg Bandura**, Prof. Wolfgang Alt: *Cell migration inspired design of crawling robots.*

8. **David Basanta**: *The role of genetic and environmental insults in glioblastoma carcinogenesis.*

9. **Anja Bethge**: *Are metastases from metastases clinically relevant? A novel computer model helps understanding the metastatic progression.*

10. **Sebastian Binder**, Arndt Telschow, Michael Meyer-Hermann: *Intra-host dissemination dynamics of Borrelia sp. during Lyme disease.*

11. **Martin Bock**, Wolfgang Alt: *On shape and force – from single to interactive cell motion.*

12. **Ansgar Bohmann**, Angela Stevens: *Modeling Viral Spread on Tissue or Cell Culture Level.*

13. **Dimitra Bon**, Eva Herrmann: *PK-PD Models for viral kinetics in patients with HCV.*

14. **Marta Borowska**, Edward Oczeretko: *Synchronization in coupled nonlinear dynamical systems.*

15. **Evert Bosdriesz**, Jan Berkhout, Frank Bruggeman, Douwe Molenaar, Bas Teusink: *The cost and benefit of enzyme expression.*

16. **Víctor F. Breña–Medina**, Alan R. Champneys: *Wave-pinning Mathematical Model of Plant Root Hair Initiation.*

17. **Lutz Brusch**, Elan Gin, Elly M. Tanaka: *A model for cyst lumen expansion and size regulation via fluid secretion.*

18. **K. Buszko**, K. Stefański: *Transient chaos measurements using finite-time Lyapunov exponents in model of population dynamics.*

19. **James Clarke**, Dr. K.A. Jane White, Dr. Katy Turner: *Control of Chlamydia from a public health viewpoint.*

20. **Andres Cortes**, Fredy Monserrate, Santiago Madrián, Matthew W. Blair: *The Utility of Thornthwaite and Hamon Models for Potential Evotranspiration and Drought Index Calculation: the Case of Wild Common Bean.*

21. **H. Croisier**, R. Thul, S. Coombes, I.P. Hall, B.S. Brook: *A mathematical model of calcium dynamics in airway smooth muscle cells including store-operated calcium entry.*

22. Mai Jaffar, **Fordyce A. Davidson**: *Hyphal tip morphogenesis.*

23. **Jaber Dehghany**, Michael Meyer-Hermann: *Computer modeling of insulin secretory granules' dynamics in pancreatic betacell.*

24. Aurelio **de los Reyes V**, Attila Becskei: *Analysis of Feedback in GAL Signalling Cascade.*

25. **Bernd-Simon Dengel**, Holger Perfahl, Matthias Reuss: *3D image reconstruction of biological tissues.*

26. **Edgar Díaz Herrera**: *Turing Theory in an Epidemiological Model.*

27. **Gaelle Diserens**, Gregory Vuillaume, Thomas Mueller, Marja Talikka, Yiming Cheng, Julia Hoeng, Frank Tobin: *Modeling Early Initiation Processes in Smoking-Induced Lung Adenocarcinomas.*

28. **Wen Duan**, Kiho Lee, Allan E. Herbison, James Sneyd: *Mathematical modelling of adult GnRH neurons in the mouse brain.*

29. **Jorge Duarte**, Nuno Martins, Josep Sardanyés: *Chaos and crises in a model for cooperative hunting.*

30. **Claire Dufourd**, Yves Dumont: *Spatio-temporal modeling of Aedes albopictus dispersal in Réunion Island. Application to the release of Sterile Insects.*

31. **Thomas A. Dunton**, James M. Osborne, David J. Gavaghan, Mark S.P. Sansom: *A discrete simulation of protein movement and protein-protein interactions in a biological membrane.*

32. **Federico Elias Wolff**, Anders Eriksson, Bernhard Mehlig: *Models for extinction in metapopulations.*

33. **Fadoua El Moustaid**, Dr. Aziz Ouhinou, Dr. Lafras Uys: *Mathematical modeling of bacterial attachment to surfaces: Biofilm initiation.*

34. **Przemyslaw Gagat**, Paweł Mackiewicz, Andrzej Bodyl: *Evolution of protein targeting via endomembrane system to primary plastids.*

35. **Diana Garcia Lopez**, Sam Brown, Ben Quigley, Alan McKane: *Specialist-v-generalist host-parasite interactions: influence on the stochastic dynamics of bacteria-phage infection.*

36. **Eva Gehrmann**, Barbara Drossel: *Boolean versus continuous dynamics on simple two-gene modules.*

37. **Wojciech Goch**, Wojciech Bal: *The range of fluctuations of number of zinc ions depends on the ligand binding reaction rate constant and the initial concentration.*

38. **Meltem Gölgeli**, Burkhard A. Hense, Christina Kuttler, Johannes Müller: *A stochastic modelling approache for bacterial cell-cell communication.*

39. **Didier Gonze**: *Modeling circadian clocks as coupled damped oscillators.*

40. **Fabio Grizzi**, Irene Guaraldo: *Fractal Geometry: a helpful way for looking cancer complexity.*

41. **Dorota Herman**, Christopher M. Thomas, Dov J. Stekel: *Evolutionary optimization of negative and co-operative autoregulation in RK2 plasmids.*

42. **Ana Hernandez**, Rodrigo Huerta Quintanilla: *Body mass variation in a two-dimensional regular network.*

43. **Nadine Hohmann**, Anja Voß-Böhme, Andreas Deutsch: *Mechanisms for liver size regulation.*

44. **William Holmes**: *Symmetry Breaking and Cellular Polarization in Motile Cells.*

45. **Satomi Iino**, Masanori Kohda, Satoshi Takahashi, Masanori Kohda, Satoshi Takahashi: *Model of coexistence of fish by mating territory.*

46. **Jędrzej Jabłoński**: *Size-structured population model with discontinuous growth rate.*

47. **Harsh Jain**, Helen Byrne, Nicanor Moldovan: *Mathematical Validation of a Novel Implantable Oxygen Sensor.*

48. **Roman Jaksik**, Michał Marczyk, Joanna Polańska: *MicroImage as a tool for microarray image artifacts correction.*

49. **Winfried Just**, Benjamin Elbert, Mason Korb, Bismark Oduro, Todd R. Young: *Boolean dynamics vs. ODE dynamics.*

50. **Atsushi Kamimura**, Tetsuya J. Kobayashi: *Tradeoff of Information Transmission and Decoding with Intracellular Kinetics.*

51. **Joanna Kawka**: *Modeling of Beta-catenin signaling in Medulloblastoma.*

52. **Toshiya Kazama**, Takuya Okuno, Kentaro Ito, Toshiyuki Nakagaki, Ryo Kobayashi: *A mathematical model for the mode transition of locomotion in Amoeba proteus.*

53. **David Kelly**, Karoline Wiesner, Mark Dillilngham, Andrew Hudson: *Methods to model (and quantify the complexity of) bio-molecular conformational dynamics.*

54. **Harald Kempf**, Michael Meyer-Hermann: *Optimising chemo- and radiotherapeutic treatment protocols using synergy and tumour synchronisation.*

55. Afifa Iftikhar, Mudassar Imran, **Adnan Khan**: *A Stochastic Model for Calcium Regulation in Spines.*

56. **Agnieszka Kitlas**, Edward Oczeretko, Tadeusz Laudański: *Analysis of the uterine contractility: wavelet cross-correlation function and wavelet coherence measure.*

57. **Ryusuke Kon**: *Permanence induced by life-cycle resonances.*

58. **Lubomir Kostal**, Petr Lansky, Ondrej Pokora: *Entropy and Fisher information based measures of statistical dispersion.*

59. **Pawel Krupinski**, Marcus Heisler, Olivier Hamant, Magalie Uyttewaal, Arezki Boudaoud, Carolyn Ohno, Henrik Jonsson, Jan Traas, Elliot Meyerowitz: *Interplay of mechanical and biochemical signals in plant morphogenesis.*
Pawel Krupinski, Vijay Chickarmane, Carsten Peterson: *Molecular and mechanical interactions in early mammalian embryo.*

60. **Peter Kühl**: *Stochastic time-time interactions in biocatalytic and signalling systems.*

61. **Christoph Landsberg**, Sascha Heinemann, Thomas Hanke: *Modeling the dynamics of osteoblast-monocyte cocultures on calcium-modulating biomaterials.*

62. **Petr Lansky**, Zbynek Pawlas: *Multiple neuronal spike trains observed in a short-time window.*

63. **A. Lapin**, M. Reuss: *Stirred Bioreactor Heating: Temperature Experience of a Single Organism.*

64. **Chang Hyeong Lee**: *Recent Methods for Computations of Reaction Networks.*

65. **Junggul Lee**, Eunok Jung, Do-Wan Kim: *An open tank system of valveless pumping.*

66. **Nam-Kyung Lee**: *Relaxation of End-Grafted DNA Chains.*

67. **Felix Lenk**, Th. Bley, J. Steingroewer: *A structured growth model for hairy roots of beetroot (Beta vulgaris).*

68. **Anne-Cécile Lesart**, Boudewijn van der Sanden, François Esteve, Angélique Stephanou: *A Computational Model of Vascular Tumour Growth as Observed by Intravital Microscopy through a Dorsal Skinfold Chamber on the Mouse.*

69. **Bartosz Lisowski**, Michał Świątek, Michał Żabicki, Ewa Gudowska-Nowak: *Molecular Motor-Cargo systems: Modeling energetics of the kinesin with different approaches.*

70. **Horacio Lopez-Menendez**, Manuel Doblare, Jose Felix Rodriguez: *The role of fluctuation theorems in biological adhesion.*

71. **Kavitha Louis**, A. Marlewski, A. Muniyappan, S. Zdravković, D. Gopi: *Energy localization and shape changing solitons in microtubules.*

72. **Jamie Luo**, Matthew Turner: *Functionality and Speciation in Boolean Networks.*

73. **Dorota Mackiewicz**, Paulo Murilo Castro de Oliveira, Suzana Moss de Oliveira, Stanisław Cebrat: *Distribution of recombination hotspots in human genome – the comparison of computer simulations and real data.*

74. **Paweł Mackiewicz**, Zuzanna Drulis-Kawa, Ewa Maciaszczyk-Dziubinska, Andrew M. Kropinski: *Clustering and genomic analysis of phages from Podoviridae family.*

75. **Carsten Magnus**, Roland R Regoes: *Restricted Occupancy Models for Human Immunodeficiency Virus Neutralization by Antibodies.*

76. **Marcin Małogrosz**: *Models of morphogen transport.*

77. **Jessica B. McGillen**: *Mathematical Modelling of Cancer Ecology.*

78. **Harriet Mills**, Caroline Colijn, Ayalvadi Ganesh: *Pathogen spread on coupled networks: effect of host and network properties on transmission thresholds.*

79. **Patricia Mostardinha**, Fernão Vistulo de Abreu: *Modelling Homeostatic Responses.*

80. **Kalina Mrozek**, Petra Lutter, Karsten Niehaus: *Modelling calcium transients in plant pathogen defence reactions.*

81. **Sreeharish Muppirisetty**, Federico Vaggi, Yari Ciribilli, Alberto Inga, Attila Csikasz-Nagy: *Analysis of p53 transactivation on different Response Elements.*

82. **Bakhyt Nedorezova**, L.V. Nedorezov: *Analysis of pine lopper population dynamics with discrete mathematical models.*

83. **Jost Neigenfind**, Zoran Nikoloski: *Structural Sources of Robustness in Biochemical Reaction Networks Using a Simplified Analytical Method.*

84. **L Noiret**, S Baigent, R Jalan, SR Thomas: *Renal ammonia handling in cirrhosis.*

85. **Katherine Novoselova**, Victoria Mironova, Nadezda Omelyanchuk, Vitaly Likhoshvai: *Modelling auxin transport in root provascular tissues.*

86. **Eryll Ogg**, Rachel Norman, Nick Taylor: *Modelling Aquatic Viral Dynamics.*

87. **Katarzyna Oleś**, Adam Kleczkowski, Ewa Gudowska - Nowak: *Understanding disease control: influence of epidemiological and economic factors.*

88. **Ryosuke Omori**, Ben Adams: *The effect of disrupting seasonality to dynamics of epidemics: the case of KHV.*

89. **Nooshin Omranian**, Bernd Mueller–Roeber, Zoran Nikoloski: *PageRank-based identification of signaling crosstalk from transcriptomics data in Arabidopsis thaliana.*

90. **Natsuki Orita**, Fugo Takasu: *Individual-based modeling of spatial population dynamics.*

91. **Marcin Pacholczyk**, Marek Kimmel: *Analysis of protein - small molecule interactions using probilistic approach.*

92. **Laurence Palk**: *A mathematical model of fluid secretion and calcium dynamics in the salivary gland.*

93. **Jeong-Man Park**, Mark Ancliff: *Spin coherent state representation of the Crow-Kimura and Eigen models of quasispecies theory.*

94. **Aleksandra Pfeifer**, Małgorzata Oczko-Wojciechowska, Michał Świerniak, Michał Jarząb, Barbara Jarząb: *Sources of variability in the gene expression profile of follicular thyroid tumours: SVD analysis of microarray data.*

95. **Ondrej Pokora**, Petr Lansky: *Estimation of individual firing frequencies from superposed spike train.*

96. **Zdeněk Pospíšil**, Eva Janoušová, Tomáš Pavlík, Jiří Mayer, Marek Trněný: *Disease-free survival - (non-)parametric estimation.*

97. **Jens Przybilla**, Markus Löffler, Jörg Galle: *Towards a whole-tissue model of the intestine.*

98. **Piotr Przymus**, Krzysztof Rykaczewski: *Recurrence plot analysis of time series derived from observations of Dreissena polymorpha.*

99. **Nomenjanahary Alexia Raharinirina**, Dr. Aziz Ouhinou, Dr. Lafras Uys: *Flagellar dependence of the directional persistence for bacterial run and tumble chemotaxis.*

100. **Rachel Rider**, Andy Hoyle, Rachel Norman: *Optimal Control of Disease in Multihost Systems.*

101. **Elina Roto**: *Unravelling the transmission dynamics of streptococcus pneumoniae with approximate bayesian computation.*

102. **Peter Rowat**, Priscilla Greenwood: *Identification and continuity of the distributions of burst-length and inter-spike-intervals in the stochastic Morris-Lecar neuron.*

103. Piotr Przymus, **Krzysztof Rykaczewski**: *Extraction and detection of freshwater mussels behaviours, using wavelets and kernel methods.*

104. **Yara Elena Sanchez Corrales**, Stan Maree, Veronica Grieneisen: *LC-Elliptical Fourier Analysis for quantitative Pavement Cell shape analysis.*

105. **Sascha Schäuble**, Ines Heiland, S. Schuster, Olga Voytsekh, Maria Mittag: *New developments in the diurnal changes of nitrogen metabolism in Chlamydomonas reinhardtii.*

106. **Christoph Schmal**, Dorothee Staiger, Peter Reimann: *The network of the RNA-binding protein AtGRP7, a component of a molecular slave oscillator in Arabidopsis thaliana.*

107. **Christine Schmeitz**, Michael Meyer-Hermann: *Modeling approach to T cell electrophysiology.*

108. **Anna Schulze**, Luca Simeoni, Thomas Hoefer: *Modeling of T-Cell Signaling: Anergy versus Proliferation.*

109. **Nikolaos Sfakianakis**, Dietmar Oelz, Christian Schmeiser: *A Finite Element simulation of the lamellipodial actin cytoskeleton.*

110. **Nazgol Shahbandi**, Mohammad Kohandel: *Interaction of Brain Cancer Stem Cells and Tumour Microenvironment: A Computational Study.*

111. **Ryan Sharp**, Frank van den Bosch: *Pathogen emergence under temporal heterogeneity.*

112. **Eunha Shim**, Steven M. Albert, John Grefenstette, Donald S. Burke: *Impact of vaccine refusal on vaccine-preventable disease outbreaks.*

113. **Weronika Sikora-Wohlfeld**, Andreas Beyer: *Identification of protein complexes maintaining Oct4 expression in mouse ES cells.*

114. **Oksana Sorokina**: *Rule based modelling the molecular signalling pathways in synapse.*

115. **Michał Startek**, Anna Gambin, Dariusz Grzebelus: *Modelling the proliferation of transposons in the presence of environmental stress.*

116. **Beatriz Stransky**, Lucas Amaral da Silva, Luana Regina Affonso, Luiz Rozante, Fabiana Santana: *Modelling population dynamics of human epithelial cell lines: the differential expression of c-erbB2 oncogene and breast tumour development.*

117. **Sebastian Student**, Anna Cichońska, Magdalena Skonieczna, Joanna Rzeszowska-Wolny: *Microarray gene expression studies and real time RT-PCR validation for the DNA damage and repair pathway.*

118. **Lisa Sundqvist**: *Measures of generation time – problems and clarifications.*

119. **Takenori Takada**: *Derivation of yearly transition matrix of land-use dynamics and its applications.*

120. **Daisuke Takahashi**, Åke Brännström, Rupert Mazzucco, Atsushi Yamauchi, Ulf Dieckmann: *Meta-stable states and macro-evolutionary transitions in an eco-evolutionary food-web model.*

121. **Atsushi Tero**, Toshiyuki Nakagaki, Ryo Kobayashi: *Modeling of the Adaptive Network of True Slime Mold.*

122. **C. Tokarski**, A. Schroeter, S. Schuster: *Interaction of opportunistic pathogenic fungi and human phagocytes: A multi-agent-based modeling approach.*

123. **Nadine Töpfer**, Zoran Nikoloski: *Time-resolved integration of Flux Balance Analysis, Elementary Flux Modes, and transcriptomics data for characterization of the temporal metabolic response to temperature stress in S. cerevisiae.*

124. Z. Burda, J. Kornelsen, M.A. Nowak, U. Sboto-Frankenstein, B. Tomanek, **J. Tyburczyk**: *Random Matrix approach to fMRI data.*

125. Michelle D. Leach, **Katarzyna Tyc**, Rebecca S. Shapiro, Leah E. Cowen, Edda Klipp, Alistair J.P. Brown: *Modelling the regulation of thermal adaptation by Hsf1 and Hsp90 in Candida albicans, a major fungal pathogen of humans.*

126. **Georg R. Walther**, Verônica A. Grieneisen, Athanasius F. M. Marée, Leah Edelstein-Keshet: *Cell Polarization by Wave-Pinning: Conditions, Stochastic Behaviour, and Relevance to Plant Development.*

127. **Xiaojing Wang**, Guohua Song, Junqing Li: *Stability Analysis of a Kind of Three-Species Food System with Time Delay.*

128. **Agata Wawrzkiewicz**, K Pawelek, P Borys, Z J Grzywna: *The random walk and Langevin approaches to diffusive model of the BKCa ion channel kinetics.*

129. **Sergiusz Wesolowski**, Piotr Kraj: *Improving statistical models for discovering cell type specific genes.*

130. **Kathleen Wilkie**, Philip Hahnfeldt: *Modelling Immunomodulation of Tumor Growth.*

131. **Annelene Wittenfeld**, Martin Bock, Wolfgang Alt: *Surfactant dynamics in lung alveoli.*

132. **Tomasz Wojdyla**, Marek Kimmel, Adam Bobrowski: *Computational Model of Genetic Demographic Networks.*

133. **Carina Wollnik**, Wolfgang Alt: *Qualitative analysis of lamella and cell body shape during cell migration.*

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ECMTB 2011 SCHEDULE

		Tuesday, June 28.	Wednesday, June 29.	Thursday, June 30.	Friday, July 1.	Saturday, July 2.
Monday, June 27.	08:30 – 09:00	Registration	Mini-symposia and Section Lectures	Michael C. Reed	Uri Alon	Mini-symposia and Section Lectures
	09:00 – 09:30	Opening				
	09:30 – 10:15	Peter Swain		Marek Kimmel	Julie Theriot	
	10:15 – 11:00	Coffee break	Coffee break	Hiroki Ueda	Rob Phillips	Coffee break
	11:00 – 13:00	Mini-symposia and Section Lectures	Mini-symposia and Section Lectures	Coffee break	Coffee break	Mini-symposia and Section Lectures
				Mini-symposia and Section Lectures	John Tyson	
					W. B. Lindquist I. D. Chase	
	13:00 – 14:30	Lunch	Lunch	Lunch	Lunch	Lunch
14:30 – 19:00 Introductory Lectures at the Campus of the 600th Aniversary	14:30 – 16:30	Mini-symposia and Section Lectures	Mini-symposia and Section Lectures	Excursion and Conference Dinner	Mini-symposia and Section Lectures	Mini-symposia and Section Lectures
	16:30 – 17:00	Coffee break	Coffee break		Coffee break	Coffee break
	17:00 – 19:00	Mini-symposia and Section Lectures	Mini-symposia and Section Lectures		Thomas Maiwald	Sylvie Méléard
					Tina Toni	Closing
					Barbara Boldin	
17:00–21:00 Registration	20:00 – 22:00		SMB and ESMTB General Assemblies		Poster Session	