

FINAL PROGRAMME

Mathematical Methods in Systems Biology (MMSB),
15th - 18th June 2015, University College Dublin,
Ireland

Monday, June 15th

9.00 – 9.30	Registration
9.30 – 10.00	Welcome and address: Desmond Fitzgerald , Principal of the UCD <i>College of Health Sciences</i>
10.00 – 11.00	Plenary talk: Walter Kolch , Director, UCD Conway Institute and <i>Systems Biology Ireland</i> . Protein interaction switches coordinate Raf-1 and MST2/Hippo signalling
11.00 – 11.30	Coffee Break
11.30 - 1.00	Session 1: Cancer modelling I (Chair Philip Maini) Thomas Hillen , University of Alberta, Canada. Mathematical modelling with fully anisotropic diffusion Krzysztof Fujarewicz , Silesian University of Technology, Poland. Optimization of spatio-temporal irradiation for mathematical models of tumour growth Jana Gevertz , College of New Jersey, US. Limiting Acquired Anti-Cancer Drug Resistance in a Hybrid Spatial Model of Tumor Growth
1.00 – 2.15	Lunch Break
2.15 - 3.45	Session 2: Neuroscience and medical imaging (Chair Urszula Ledzewicz) Barak Pearlmutter , Maynooth University, Ireland. Critical Dynamics in the Brain: Normal Function and Pathology Dominique Duncan , UC Davis, US. Diffusion Maps in Detecting Alzheimer's Disease Franck Assous , Ariel University, Israel. The TRAC Method to Remove Artifacts in Medical Imaging
3.45 – 4.15	Coffee Break

4.15 - 6.15	<p>Session 3: Cellular dynamics I (Chair Andrzej Swerniak)</p> <p>Boris Kholodenko, Systems Biology Ireland, UCD. Systems Biology Approaches to Personalised Medicine</p> <p>Leili Shahriyari, Ohio State University, US. Wound healing process in the cancer therapies</p> <p>Kelsey Gasior, North Carolina State University, US. An Interdisciplinary Approach to Developing a Multiscale Model of the Epithelial Mesenchymal Transition</p> <p>Jaroslav Smieja, Silesian Institute of Technology, Poland. Sensitivity of signaling pathway dynamics to plasmid transfection and its consequences.</p>
6.30 – 8.30	Welcome Reception at the UCD Student Club followed by the dinner

Tuesday, June 16th

9.15 – 9.30	Registration
9.30 – 10.30	<p>Plenary talk: Philip Maini, Director of the Wolfson Centre for Mathematical Biology, Oxford University, UK. Case Studies in Modelling Cell Movement</p>
10.30 – 11.15	<p>Special Presentation: John O’Leary, Trinity College Dublin, Ireland. Cancer Lifetime Genome Project</p>
11.15 - 12.30	<p>Coffee Break & Poster Session (Coordinator Marius Ghergu)</p> <p>Avril Hegarty, University of Limerick, Ireland. A Comparison of two Bayesian spatial models for geographical analysis of cancer incidence in Ireland</p> <p>Anel Nurtay, Centre for Research in Mathematics, Barcelona, Spain. Mathematical modelling of biological evolution and appearance of species</p> <p>Erica Rutter, Arizona State University, US. A Model for Dendritic Cell Vaccine with Intermittent Androgen Deprivation Therapy for Late-Stage Prostate Cancer</p> <p>Cara Martin, Trinity College Dublin, Ireland. Systems biology approaches to cervical pre-cancer diagnostics</p> <p>Christoph Sadee, UCD. Modeling the effect of thermotherapy on the inner layers of bladder</p> <p>Elena Nikonova, Systems Biology Ireland. Spatially distributed RhoGTPase interactions coordinate cell migration</p>

	<p>Guillaume Lefebvre, INRIA, France. Spatial modelling of tumour drug resistance: the case of GIST liver metastases</p> <p>Krzysztof Psiuk-Maksymowicz, Silesian Institute of Technology, Poland. A computational study of tumour induced angiogenesis in 3D</p> <p>Lela Dorel, Beit Berl Academic College, Israel. Transient dynamics in Glucose-Insulin regulatory system based on High-Order Sliding Mode technique</p> <p>Lee Curtin, University of Nottingham, UK. Modelling Chemotherapy Drug Release from a Novel Polymer Drug Delivery System</p> <p>Andreas Buttenschoen University of Alberta, Canada. Macrophage-Cancer Cell Interactions drive Tumor Invasion Types</p>
12.30 – 2.00	Lunch
2.00 - 3.30	<p>Session 4: Cancer treatment I (Chair Thomas Hillen)</p> <p>Urszula Ledzewicz, Southern Illinois University, US. Modeling Drug Resistance and Optimizing Cancer Chemotherapy</p> <p>Sebastien Benzekry, INRIA, France. Combined <i>in vivo</i> and <i>in silico</i> quantitative modeling of post-surgery metastatic development</p> <p>Amanda Swan, University of Alberta, Canada. An anisotropic diffusion model for glioma spread</p>
3.30 – 4.00	Coffee Break
4.00 - 6.00	<p>Session 5: Cellular dynamics II (Chair Heinz Schaettler)</p> <p>Lan Nguyen, Systems Biology Ireland, UCD. DYVIPAC: an integrated analysis and visualisation framework to probe multi-dimensional biological networks.</p> <p>Beata Jackowska-Zduniak, Warsaw University of Life Sciences, Poland. Mathematical model of the av nodal double response tachycardia and double-fire pathology</p> <p>Lina Meinecke, University of Uppsala, Sweden. Multiscale diffusion simulations in systems biology</p> <p>Marius Ghergu, UCD. A qualitative study of Gierer-Meinhardt arising in morphogenesis</p>
6.00 -7.00	Dinner

Wednesday, June 17th

9.15 – 9.30	Registration
9.30 – 10.30	Plenary talk: Adrian Raftery , <i>University of Washington, US</i> . Fast Bayesian inference for gene regulatory networks using ScanBMA
10.30 - 11.00	Coffee Break
11.00 – 12.30	<p>Session 6: Medical data analysis and modelling (<i>Chair Lan Nguyen</i>)</p> <p>Dana Mackey, <i>Dublin Institute of Technology, Ireland</i>. Modelling random antibody adsorption and immunoassay activity</p> <p>Tuoi T.N. Vo, <i>University of Limerick, Ireland</i>. Modelling chemistry and biology after implantation of a drug-eluting stent: Drug transport and cell proliferation</p> <p>Aine Byrne, <i>University of Nottingham, UK</i>. Next generation neural mass models: rate and coherence</p>
12.30 – 2.00	Lunch
2.00 - 3.30	<p>Session 7: Epidemiology and disease modelling (<i>Chair Adrian Raftery</i>)</p> <p>Andrew Fowler, <i>University of Limerick, Ireland</i>. The dynamics of <i>Ascaris lumbricoides</i> infections</p> <p>Etienne Baratchart, <i>INRIA, France</i>. Modeling of in vivo experiments of metastatic initiation and tumor-tumor spatial interactions</p> <p>Joanna Wares, <i>University of Richmond, US</i>. A Model of Transmission of Antibiotic Resistant Bacteria in a Dialysis Unit</p>
3.30 – 4.00	Coffee Break
4.00 - 6.00	<p>Session 8: Cancer modelling and treatment II (<i>Chair Dirk Fey</i>)</p> <p>Heinz Schaettler, <i>Washington University, US</i>. Dynamic Properties of a Minimally Parameterized Mathematical Model for Low-Dose Chemotherapy</p> <p>Andrzej Swerniak, <i>Silesian University of Technology, Poland</i>. The Role and Use of Mixed Spatial Evolutionary Games</p> <p>Monika Piotrowska, <i>University of Warsaw, Poland</i>. Using High Fidelity Numerical Simulation and GA to Discover Better Radiotherapy Schemes to Treat Cancer</p> <p>Peter Kim, <i>University of Sydney, Australia</i>. Cancer-immune dynamics of oncolytic virotherapy and dendritic cell vaccines</p>
7.00 - 10.00	Special Workshop Dinner and Traditional Music and Dancing Show at Irish Party House, bus leaves UCD bus station at 6.30, sharp

Thursday, June 18th

9.15 – 9.30	Registration
9.30 – 10.15	Q&A Session: Sharon O’Toole , <i>Trinity College, Dublin, Ireland</i> , Ovarian Cancer: Open Challenges
10.15 – 10.45	Coffee Break
10.45 – 11.45	Plenary talk: Martin Steinhoff , <i>Director of the UCD Charles Institute of Dermatology, Ireland</i> . Neuro-immune Communication and Signaling in Skin Inflammation: a translational approach
11.45 -12.30	Closing remarks, best poster award ceremony and presentations
12.30 - 2.00	Lunch
3.00 - 6.00	Dublin Walking Tour, bus leaves UCD bus station at 2.30