

## PROGRAMME DRAFT

# Mathematical Methods in Systems Biology (MMSB), 15<sup>th</sup> - 18<sup>th</sup> June 2015, University College Dublin, Ireland

Monday, June 15<sup>th</sup>

9.00 – 9.30	Registration
9.30 – 10.00	<b>Welcome and address:</b> <i>Orla Feely, University College Dublin Vice-President for Research</i>
10.00 – 11.00	<b>Plenary talk:</b> <i>Walter Kolch, Director, UCD Conway Institute and Systems Biology Ireland.</i> <a href="#">Protein interaction switches coordinate Raf-1 and MST2/Hippo signalling</a>
11.00 – 11.30	Coffee Break
11.30 - 1.00	<b>Session 1: Cancer modelling I</b> ( <i>Chair Philip Maini</i> ) <i>Thomas Hillen, University of Alberta, Canada.</i> <a href="#">Mathematical modelling with fully anisotropic diffusion</a> <i>Krzysztof Fijarewicz, Silesian University of Technology, Poland.</i> <a href="#">Optimization of spatio-temporal irradiation for mathematical models of tumour growth</a> <i>Jana Gevertz, College of New Jersey, US.</i> <a href="#">Limiting Acquired Anti-Cancer Drug Resistance in a Hybrid Spatial Model of Tumor Growth</a>
1.00 – 2.30	Lunch Break

2.30 - 4.00	<p><b>Session 2: Neuroscience</b> (Chair Urszula Ledzewicz)</p> <p><b>Barak Pearlmutter</b>, Maynooth University, Ireland. <a href="#">Critical Dynamics in the Brain: Normal Function and Pathology</a></p> <p><b>Dominique Duncan</b>, UC Davis, US. <a href="#">Diffusion Maps in Detecting Alzheimer's Disease</a></p> <p><b>Aine Byrne</b>, University of Nottingham, UK. <a href="#">Next generation neural mass models: rate and coherence</a></p>
4.00 – 4.30	Coffee Break
4.30 - 6.30	<p><b>Session 3: Cellular dynamics I</b> (Chair Boris Kholodenko)</p> <p><b>Lan Nguyen</b>, Systems Biology Ireland, UCD. <a href="#">DYVIPAC: an integrated analysis and visualisation framework to probe multi- dimensional biological networks.</a></p> <p><b>Leili Shahriyari</b>, Ohio State University, US. <a href="#">Wound healing process in the cancer therapies</a></p> <p><b>Kelsey Gasiior</b>, North Carolina State University, US. <a href="#">An Interdisciplinary Approach to Developing a Multiscale Model of the Epithelial Mesenchymal Transition</a></p> <p><b>Jaroslav Smieja</b>, Silesian Institute of Technology, Poland. <a href="#">Sensitivity of signaling pathway dynamics to plasmid transfection and its consequences.</a></p>
6.30 – 8.30	Welcome Reception at the UCD Student Club followed by the dinner

## Tuesday, June 16<sup>th</sup>

9.15 – 9.30	Registration
9.30 – 10.30	<p><b>Plenary talk: Philip Maini</b>, Director of the Wolfson Centre for Mathematical Biology, Oxford University, UK. <a href="#">Case Studies in Modelling Cell Movement</a></p>
10.30 – 11.15	<p><b>Special Presentation: John O'Leary</b>, Trinity College Dublin, Ireland. <a href="#">Cancer Lifetime Genome Project</a></p>

11.15 - 12.30	<p><b>Coffee Break &amp; Poster Session</b> (Coordinator Marius Ghergu)</p> <p><b>Avril Hegarty</b>, University of Limerick, Ireland. <a href="#">A Comparison of two Bayesian spatial models for geographical analysis of cancer incidence in Ireland</a></p> <p><b>Anel Nurtay</b>, Centre for Research in Mathematics, Barcelona, Spain. <a href="#">Mathematical modelling of biological evolution and appearance of species</a></p> <p><b>Erica Rutter</b>, Arizona State University, US. <a href="#">A Model for Dendritic Cell Vaccine with Intermittent Androgen Deprivation Therapy for Late-Stage Prostate Cancer</a></p> <p><b>Cara Martin</b>, Trinity College Dublin, Ireland. <a href="#">Systems biology approaches to cervical pre-cancer diagnostics</a></p> <p><b>Christoph Sadee</b>, UCD. <a href="#">Modeling the effect of thermotherapy on the inner layers of bladder</a></p> <p><b>Elena Nikonova</b>, Systems Biology Ireland. <a href="#">Spatially distributed RhoGTPase interactions coordinate cell migration</a></p> <p><b>Guillaume Lefebvre</b>, INRIA, France. <a href="#">Spatial modelling of tumour drug resistance: the case of GIST liver metastases</a></p> <p><b>Hessam Hessami</b>, University of Grenoble, France. <a href="#">A Study of Socio-Environmental Factors Impact on Epidemiological Processes</a></p> <p><b>Krzysztof Psiuk-Maksymowicz</b>, Silesian Institute of Technology, Poland. <a href="#">A computational study of tumour induced angiogenesis in 3D</a></p> <p><b>Lela Dorel</b>, Holon Institute of Technology, Israel. <a href="#">Transient dynamics in Glucose-Insulin regulatory system based on High-Order Sliding Mode technique</a></p> <p><b>Lee Curtin</b>, University of Nottingham, UK. <a href="#">Modelling Chemotherapy Drug Release from a Novel Polymer Drug Delivery System</a></p> <p><b>Andreas Buttenschoen</b> University of Alberta, Canada. <a href="#">Macrophage-Cancer Cell Interactions drive Tumor Invasion Types</a></p>
12.30 – 2.00	Lunch
2.00 - 3.30	<p><b>Session 4: Cancer treatment I</b> (Chair Thomas Hillen)</p> <p><b>Urszula Ledzewicz</b>, Southern Illinois University, US. <a href="#">Modeling Drug Resistance and Optimizing Cancer Chemotherapy</a></p> <p><b>Sebastien Benzekry</b>, INRIA, France. <a href="#">Combined <i>in vivo</i> and <i>in silico</i> quantitative modeling of post-surgery metastatic development</a></p> <p><b>Amanda Swan</b>, University of Alberta, Canada. <a href="#">An anisotropic diffusion model for glioma spread</a></p>

3.30 – 4.00	Coffee Break
4.00 -6.00	<p><b>Session 5: Cellular dynamics II</b> (Chair Heinz Schaetler)</p> <p><b>Boris Kholodenko</b>, Systems Biology Ireland, UCD. <a href="#">Dynamics of Protein Kinase Signaling</a></p> <p><b>Beata Jackowska-Zduniak</b>, Warsaw University of Life Sciences, Poland. <a href="#">Mathematical model of the av nodal double response tachycardia and double-fire pathology</a></p> <p><b>Lina Meinecke</b>, University of Uppsala, Sweden. <a href="#">Multiscale diffusion simulations in systems biology</a></p> <p><b>Marius Ghergu</b>, UCD. <a href="#">A qualitative study of Gierer-Meinhardt arising in morphogenesis</a></p>
6.00 -7.00	Dinner

## Wednesday, June 17<sup>th</sup>

9.15 – 9.30	Registration
9.30 – 10.30	<p><b>Plenary talk: Adrian Raftery</b>, University of Washington, US. <a href="#">Fast Bayesian inference for gene regulatory networks using ScanBMA</a></p>
10.30 - 11.00	Coffee Break
11.00 – 1.00	<p><b>Session 6: Diagnostics and treatment modelling</b> (Chair Lan Nguyen)</p> <p><b>Andrew Parnell</b>, UCD. <a href="#">Bayesian Additive Regression Trees using Bayesian Model Averaging: application to proteomics data</a></p> <p><b>Dana Mackey</b>, Dublin Institute of Technology, Ireland. <a href="#">Modelling random antibody adsorption and immunoassay activity</a></p> <p><b>Tuoi T.N. Vo</b>, University of Limerick, Ireland. <a href="#">Modelling chemistry and biology after implantation of a drug-eluting stent: Drug transport and cell proliferation</a></p> <p><b>Franck Assous</b>, Ariel University, Israel. <a href="#">The TRAC Method to Remove Artifacts in Medical Imaging</a></p>
1.00 – 2.30	Lunch

2.30 - 4.00	<p><b>Session 7: Epidemiology and disease modelling</b> (Chair Adrian Raftery)  <b>Andrew Fowler</b>, University of Limerick, Ireland. <a href="#">The dynamics of Ascaris lumbricoides infections</a></p> <p><b>Etienne Baratchart</b>, INRIA, France. <a href="#">Modeling of in vivo experiments of metastatic initiation and tumor-tumor spatial interactions</a></p> <p><b>Joanna Wares</b>, University of Richmond, US. <a href="#">A Model of Transmission of Antibiotic Resistant Bacteria in a Dialysis Unit</a></p>
4.00 – 4.30	Coffee Break
4.30 - 6.30	<p><b>Session 8: Cancer modelling and treatment II</b> (Chair Dirk Fey)  <b>Heinz Schaettler</b>, Washington University, US. <a href="#">Dynamic Properties of a Minimally Parameterized Mathematical Model for Low-Dose Chemotherapy</a></p> <p><b>Andrzej Swerniak</b>, Silesian Institute of Technology, Poland. <a href="#">The Role and Use of Mixed Spatial Evolutionary Games</a></p> <p><b>Monika Piotrowska</b>, University of Warsaw, Poland. <a href="#">Using High Fidelity Numerical Simulation and GA to Discover Better Radiotherapy Schemes to Treat Cancer</a></p> <p><b>Peter Kim</b>, University of Sydney, Australia. <a href="#">Cancer-immune dynamics of oncolytic virotherapy and dendritic cell vaccines</a></p>
7.00 - 9.30	Special Workshop Dinner and Traditional Music and Dancing Show at Irish Party House

## Thursday, June 18<sup>th</sup>

9.15 – 9.30	Registration
9.30 – 10.15	<p><b>Q&amp;A Session: Sharon O’Toole</b>, Trinity College, Dublin, Ireland, <a href="#">Ovarian Cancer: Open Challenges</a></p>
10.15 – 10.45	Coffee Break
10.45 – 11.45	<p><b>Plenary talk: Martin Steinhoff</b>, Director of the UCD Charles Institute of Dermatology, Ireland. <a href="#">Neuro-immune Communication and Signaling in Skin Inflammation: a translational approach</a></p>

11.45 -12.30	Closing remarks, best poster award ceremony and presentations
12.30 - 2.00	Lunch
2.30 - 6.00	Dublin Walking Tour