

**2<sup>nd</sup> International Workshop on Systems Biology**  
**Maynooth, Ireland, August 17-20, 2008**

**Programme**

**Sunday, August 17<sup>th</sup>**

17.00-18.30                      **Welcome Reception**  
Pugin Hall, St. Patrick's House, NUIM South Campus

**Monday, August 18<sup>th</sup>**

Morning Session                      Chair: Dr. Eric Bullinger  
Lecture Theatre CS2, Callan Building, NUIM North Campus

8:30-9.00                              Registration & Tea/Coffee

9.00-9.10                              **Welcome**  
Prof. Peter Wellstead  
*Hamilton Institute, Ireland*

9.10-9.30                              **Opening Address**  
Prof. Frank Gannon  
*Director General, Science Foundation Ireland*

9.30-10.30                              **“Developments in Computational Physiology”**  
Prof. Peter Hunter  
*Auckland Bioengineering Institute, New Zealand*

10.30-11.00                              Tea/Coffee

11.00-11.45                              **“Probing transcription factor kinetics at the level of  
single molecules”**  
Dr. Johan Elf  
*Uppsala University, Sweden*

11.45-12.00                              Break



12.00-12.45 **“Towards detecting targets in static and dynamic biochemical networks”**

Prof. Edda Klipp

*MPI for Molecular Genetics, Berlin, Germany*

12.45-14.00 Buffet Lunch

Afternoon Session Chair: Dr. Dimitris Kalamatianos

Lecture Theatre CS2, Callan Building, NUIM North Campus

14.00-14.45 **“Structure ranking and System Identification for non-linear biochemical process models: inferring the structure of the ERK pathway via Bayes factors”**

Prof. Mark Girolami

*University of Glasgow, UK*

14.45-15.30 Break

15.30-17.00 **Poster Session I & Reception**

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## Tuesday, August 19<sup>th</sup>

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Morning Session Chair: Dr. Wilhelm Huisinga

Lecture Theatre CS2, Callan Building, NUIM North Campus

9.00-9.30 Tea/Coffee

9.30-10.30 **“Spatial and temporal information encoding by the NF- $\kappa$ B system”**

Prof. Mike White

*University of Liverpool, UK*

10.30-11.00 Tea/Coffee

11.00-11.45 **“Physiologically based pharmacokinetic modelling: A mechanistic approach in drug discovery support”**

Dr. Andreas Reichel

*Bayer Schering Pharma, Germany*

11.45-12.00 Break



12.00-12.45                   **“I-O stability and persistence analysis of open chemical reaction networks”**

Dr. David Angeli

*Imperial College London, UK*

12.45-14.00                   Buffet Lunch

Afternoon Session           Chair: Dr. Oliver Mason

Lecture Theatre CS2, Callan Building, NUIM North Campus

14.00-15.15                   **Breakout Session**

15.15-15.30                   Break

15.30-17.00                   **Poster Session II & Reception**

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**Wednesday, August 20<sup>th</sup>**

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Morning Session           Chair: Dr. Mark Verwoerd

Lecture Theatre CS2, Callan Building, NUIM North Campus

9.00-9.30                   Tea/Coffee

9.30-10.30                   **“Modeling circadian rhythms : From molecular mechanism to physiological disorders”**

Prof. Albert Goldbeter

*Université Libre de Bruxelles, Belgium*

10.30-11.00                   Tea/Coffee

11.00-11.45                   **“Synchronicity in nature's networks: Unrevealing the design and inspiration for engineering”**

Prof. Frank Doyle

*University of California Santa Barbara, USA*

11.45-12.00                   Break

12.00-12.45                   **“Motor-driven cellular oscillations”**

Prof. Frank Jülicher

*MPI for Physics of Complex Systems, Dresden, Germany*

12.45-13.00                   **Closing Remarks**

## Posters

Poster Session I – Monday Aug 18 <sup>th</sup> 15.30-17.00		
ID	Title	Authors
I-01	Phylogeography of <i>Androctonus australis</i> (Scorpiones: Buthiae) in Tunisia: relation to venom toxicity	A.B. Othmen & K. Said
I-02	Uncertainty Propagation for ODE Models	A.Y. Weiße & W. Huisinga
I-03	Threshold properties of Interferon-gamma stimulated Jak2-Stat1 signaling in pancreatic stellate cells: From experimental data to mathematical models	A. Karger, K. Rateitschak, B. Fitzner, O. Wolkenhauer & R. Jaster
I-04	Ultradian and circadian rhythms and their mathematical modeling	M. Lara-Aparicio, C. Barriga-Montoya & B. Fuentes-Pardo
I-05	The impact of receptor-mediated endocytosis on the clearance of therapeutic proteins	B.-F. Krippendorff & W. Huisinga
I-06	Understanding the Dynamic Signal Decoding Properties of the TNF $\alpha$ -NF- $\kappa$ B Pathway	C.A. Horton, D.E. Nelson, L. Ashall, P. Paszek & M.R.H. White
I-07	Detection of Multistationarity by Subnetwork Analysis	C. Conradi & D. Flockerzi
I-08	What can we infer from gene expression data?	C. F. Higham, R. Khanin & V. Vyshemirsky
I-09	Mathematical Modelling of Lipoproteins Metabolism: A PDE model to study the enzymatic pathways involved in the formation of small dense LDL	B. O'Malley, M. Tindall, J. King & C. Pichardo
I-10	Next generation agent modelling: refining an agent model of epithelial cells in culture	D. Walker, N. Georgopoulos & J. Southgate
I-11	Exploiting biology specific properties for the estimation of kinetic parameters	D. Fey & E. Bullinger
I-12	Analysing the sloppiness of ERK pathway models: Implications for model identifiability	D. Ketley & M. Girolami
I-13	Reduction of complexity of HIV compartmental models using dimensional analysis	E. McGuinness
I-14	Characterizing the mechanism of action of KVGAAKR peptide through a dose-matrix response approach	F. Lombardi, N. Moran & D. Shields
I-15	A power-law model to describe the aggregation of Beta-Amyloid and its transport across the Blood-Brain barrier based on quantitative data from Alzheimer mouse models	F. Winter, M. Krohn, C. Lange, O. Wolkenhauer, K. Rateitschak & J. Pahnke
I-16	Using Machine learning and statistical learning techniques to infer protein-protein interaction networks	F. Browne, H. Wang, H. Zhang & F. Azuaje



I-17	Reaction-diffusion models yield functional and mechanistic insight into the spatiotemporal signaling dynamics during apoptosis	M. Rehm, H. Huber, S. Anguissola, C. Hellwig & J. Prehn
I-18	Optimal stepwise experimental design for pairwise functional interaction studies	F. Casey, G. Cagney, N. Krogan & D. Shields
I-19	Optimal Metabolic regulation by temporal variation of enzyme activities: a control theoretic approach	D. Oyarzún, B. Ingalls & D. Kalamatianos
	<b>Poster Session II – Tuesday August 19<sup>th</sup> 15.30-17.00</b>	
<b>ID</b>	<b>Title</b>	<b>Authors</b>
II-01	A new global optimization tool for parameter estimation in systems biology	J.A. Egea, H. Schmidtz & J.R. Banga
II-02	I $\kappa$ B mediated regulation of NF $\kappa$ B p65 translocation is signal dependent	K. Sillitoe, D.G. Spiller & M.R.H. White
II-03	Collective processes control the period of vertebrate segmentation	L. Herrgen, L. Morelli, S. Ares, C. Schroeter, F. Jülicher & A.C. Oates
II-04	Complex dynamic control of the NF $\kappa$ B signalling system	L. Ashall, D.E. Nelson, C.A. Horton, P. Paszek, S. Ryan, V. See, D.G. Spiller & M.R.H. White
II-05	Dynamic modelling of Parkinson's disease development	P.-O. Poliquin, M. Cloutier & P. Wellstead
II-06	DBS in Parkinson disease: the desynchronisation hypothesis	M.R. García, M. Verwoerd & P. Wellstead
II-07	TNF $\alpha$ induced Apoptotic and Anti-apoptotic Signalling: A Systems Biology Approach combining Dynamic and Quantitative Experiments with Mathematical Modelling	M. Schliemann, S. Borchers, P. Scheurich, E. Bullinger
II-08	Modeling, control and robustness of the protein synthesis process in eukaryotic cells	N.S. Bar & S. Skogestad
II-09	Combinatorial gene regulation across species: co-regulatory associations, hierarchy of regulation and evolutionary dynamics	N. Bhardwaj & M. Gerstein
II-10	Automated live cell image segmentation for on-line high-content screening	P. Paul, D. Kalamatianos, H. Dübmann, H. Huber
II-11	Dynamic design principles of two-component genetic oscillators and switches	R. Guantes
II-12	NF $\kappa$ B Pathway: A Model of IKK Activation and Inactivation	S. Pilari & W. Huisinga
II-13	Signalling dynamics of NF $\kappa$ B family members	S. Ryan, J.R. Johnson, D. G. Spiller & M.R.H. White
II-14	Model Discrimination of Biochemical Reaction Networks Based on Nondeterministic Hypergraphs	S. Borchers, P. Rumschinski, S. Bosio & R. Findeisen



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II-15	Global sensitivity analysis of uncertain biochemical reaction networks	S. Waldherr, J. Hasenauer & F. Allgöwer
II-16	Study of spatial signaling cascades of interacting proteins using a model of reaction-diffusion equations	J. Muñoz-García, Z. Neufeld & B. Kholodenko
II-17	Towards single molecule imaging by using peptide-capped gold nanoparticles	V. Sée, P. Free, P. Nativio, D.G. Spiller, Y. Cesbron, M.R.H. White, I. Prior, M. Brust, D.G. Fernig & R. Lévy
II-18	Integrative modelling of brain energy metabolism	M. Cloutier, F. Bolger, J. Lowry & P. Wellstead