

PROGRAM

Barcelona, CRG, June 9-14, 2013

Sunday – Day 1: *“Basic Mathematical Concepts & Introduction to MatLab” (Optional)*

Hosts: James Sharpe & Johannes Jäger

Teachers: Kai Dierkes, Andreea Munteanu & Pauli Rämö

When	What	Topic	Where
11:00am – 01:00pm	LECTURE Lunch	Linear algebra	Marie Curie Inner square
02:00pm – 04:00pm	LECTURE Break	Ordinary differential equations	Marie Curie Inner square
04:30pm – 6:30pm	LECTURE & PRACTICAL	Introduction to Matlab	Marie Curie
TBA	SOCIAL EVENT	Welcome’s dinner	Sotavento

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Monday – Day 2: “Dynamical systems theory, networks”

Host: Johannes Jäger

Teacher: Nicolas Buchler

Assistants: Jennifer Semple & Berta Verd Fernandez

When	What	Topic	Where
09:00am – 09:30am	WELCOME		Marie Curie
09:30am – 10:15am	LECTURE 1	The physical basis of gene regulation	Marie Curie
	Break		Inner square
10:30am – 11:30am	LECTURE 2	Genetic networks	Marie Curie
11:30am – 12:30pm	PRACTICAL 1	Dynamical systems and bifurcation analysis I	Marie Curie
01:00pm – 02:00pm	Lunch		PRBB Canteen
02:00pm – 03:30pm	PRACTICAL 2	Dynamical systems and bifurcation analysis II	Marie Curie
	Break		Inner square
04:00pm – 05:00pm	LECTURE 3	Promoter logic functions, network motifs	Marie Curie
05:00pm – 05:30pm	DISCUSSION		Marie Curie
	Break		
06:00pm	PUBLIC LECTURE	Nicolas Buchler: “Uncovering and building novel oscillators in budding yeast”	Charles Darwin

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Tuesday – Day 3: “Stochastic systems”

Host: James Sharpe

Teacher: Jordi Garcia Ojalvo

Assistant: Marco Musy & Alba Jimenez Asins

When	What	Topic	Where
09:00am – 10:00am	LECTURE 4	Noise in biochemical reactions	Marie Curie
	Break		Inner square
10:15am – 11:15am	LECTURE 5	Continuous description of stochastic processes	Marie Curie
	Break		
11:30pm – 12:30pm	PRACTICAL 3	Simulating the chemical Langevin equation	Marie Curie
01:00pm – 02:00pm	Lunch		PRBB Canteen
02:00pm – 03:00pm	LECTURE 6	Discrete stochastic simulations	Marie Curie
	Break		Inner square
03:30pm – 05:00pm	PRACTICAL 4	Controlling noise in stochastic simulations	Marie Curie
05:00pm – 05:30pm	DISCUSSION		Marie Curie
	Break		Inner square
06:00pm	PUBLIC LECTURE	Jordi Garcia Ojalvo: “Correlated fluctuations in embryonic-stem-cell pluripotency”	Charles Darwin

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Wednesday – Day 4: “Multivariate and multidimensional data analysis”

Host: Matthieu Louis

Teacher: Fernando Amat

Assistants: Anton Crombach & Kai Dierkes

When	What	Topic	Where
09:00am – 10:00am	LECTURE 7	Multivariate analysis and dimensionality reduction techniques	Marie Curie
	Break		Inner square
10:15am – 11:15am	PRACTICAL 5	Dimensionality Reduction Techniques	Marie Curie
	Break		
11:30pm – 12:30pm	LECTURE 8	Unsupervised pattern recognition methods	Marie Curie
01:00pm – 02:00pm	Lunch		PRBB Canteen
02:00pm – 02:45pm	PUBLIC LECTURE	James Sharpe & Jens Selige: title TBA	Charles Darwin
	Break		Inner square
03:00pm – 04:00pm	PRACTICAL 6	Hierarchical Clustering in Microarrays	Marie Curie
04:00pm – 5:00pm	LECTURE 9	Supervised pattern recognition methods	Marie Curie
	Break		
05:15pm – 06:15pm	PRACTICAL 7	Supervised Learning Techniques	Marie Curie
06:30pm – 7:00pm	DISCUSSION		Marie Curie

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Thursday – Day 5: “Parameter inference, reverse engineering”

Host: Johannes Jäger

Teacher: Theodore Perkins

Assistants: Rob Jelier & Anton Crombach

When	What	Topic	Where
09:00am – 10:00am	LECTURE 10	Inference of static network models	Marie Curie
	Break		Inner square
10:15am – 11:15am	PRACTICAL 8	Static network inference for the gap gene network of <i>Drosophila</i>	Marie Curie
	Break		
11:30pm – 12:30pm	LECTURE 11	Inference of dynamic network models	Marie Curie
01:00pm – 02:00pm	Lunch		PRBB Canteen
02:00pm – 03:30pm	PRACTICAL 9	Dynamic network inference for the gap gene network of <i>Drosophila</i>	Marie Curie
	Break		Inner square
04:00pm – 05:00pm	LECTURE 12	Inference of stochastic network models	Marie Curie
05:00pm – 05:30pm	DISCUSSION		Marie Curie
	Break		
06:00pm	PUBLIC LECTURE	Dagmar Iber: “From networks to pattern formation - Computational models of development”	Charles Darwin

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Friday – Day 6: “Modelling tissue morphogenesis and signaling”

Host: James Sharpe

Teacher: Dagmar Iber

Assistants: Kai Dierkes & Marco Musy

When	What	Topic	Where
09:00am – 10:00am	LECTURE 13	Reaction-diffusion models on static and growing domains	Marie Curie
	Break		Inner square
10:15am – 11:15am	PRACTICAL 10	Simulating reaction-diffusion type partial differential equations in MATLAB on static and growing domains	Marie Curie
	Break		
11:30pm – 12:30pm	LECTURE 14	Modelling tissue morphogenesis	Marie Curie
01:00pm – 02:00pm	Lunch		PRBB Canteen
02:00pm – 03:30pm	PRACTICAL 11	Simulating reaction-diffusion type partial differential equations in COMSOL on deforming domains	Marie Curie
	Break		Inner square
04:00pm – 05:00pm	LECTURE 15	Patterning dynamics on growing domains	Marie Curie
05:00pm – 05:30pm	DISCUSSION		Marie Curie
06:00pm	SOCIAL EVENT	Goodbye drink	5 th floor Terrace

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