



Monday, April 6th

19:15 Welcome aperitif and buffet

Opening Session (chair: D. Kahn)

La Parrachée

20:30 **Hans Westerhoff**
Is Life computable? What remains to be discovered

Tuesday, April 7th

Multi-scale & whole-cell models (chair: H. de Jong)

La Parrachée

08:30 **Edda Klipp**
Mathematical modeling of cellular stress response

10:00 Coffee break

10:30 **Vincent Danos**
Whole-cell models and implicit regulation

12:15 Lunch
Early afternoon free

15:30 Tea break

Parallel blackboard teaching and hands-on sessions

Le Râteau

16:00 **Hugues Berry & François Nédélec**
Modeling gene expression: stochasticity and spatial dynamics

17:30 **Gregory Batt**
Modeling, fitting and controlling biological systems: the toggle switch example

Parallel blackboard teaching and hands-on sessions

L'Echelle

16:00 **Hidde de Jong**
Towards integrated models of cellular processes: metabolism, gene expression, signaling

17:30 **Denis Thieffry**
Qualitative dynamical modeling of cellular networks

19:00 Dinner

Selected short talks (chair: E. Klipp)

La Parrachée

20:00 **Erika Kuchen**
MYCN-dependent heterogeneity in cell cycle entry in neuroblastoma

20:20 **Nils Giordano**
Understanding regulatory strategies for dynamical resource allocation in microorganisms

20:40 **Adrien Henry**
Kinetic modeling for engineering Escherichia coli's metabolism

Poster session 1

21:00-22:00 **Even numbers** presenters

Wednesday, April 8th

Spatial dynamics & morphogenesis (chair: H. Berry)

La Parrachée

- 08:30 **François Nédélec**
Physical Models of Cytoskeletal Processes
- 10:00 Coffee break
- 10:30 **Christophe Godin**
Phyllotaxis: the amazing emergent patterning property of an organ-to-organ interaction
- 12:15 Lunch
Early afternoon free
- 15:30 Tea break

Parallel blackboard teaching and hands-on sessions

Le Râteau

- 16:00 **Hugues Berry & François Nédélec**
Modeling gene expression: stochasticity and spatial dynamics
- 17:30 **Gregory Batt**
Modeling, fitting and controlling biological systems: the toggle switch example

Parallel blackboard teaching and hands-on sessions

L'Echelle

- 16:00 **Hidde de Jong**
Towards integrated models of cellular processes: metabolism, gene expression, signaling
- 17:30 **Denis Thieffry**
Qualitative dynamical modeling of cellular networks
- 19:00 Dinner

Selected short talks (chair: C. Godin)

La Parrachée

- 20:00 **Hélène Bouvrais**
*Astral microtubules displaying two different dynamical behaviours may perform different functions during the division of *C. elegans* one-cell embryo*
- 20:20 **Etienne Couturier**
*A model of the growth of *S. pombe* combining both shell mechanics and protein localization profiles*
- 20:40 **Florent Chuffart**
Functional Genetic Diversity of the Yeast Galactose Network

Poster session 2

- 21:00-22:00 **Odd numbers** presenters

Thursday, April 9th

Dynamical systems & inverse problems (chair: D. Thieffry)

La Parrachée

- 08:30 **Jordi Garcia-Ojalvo**
Pulsatile regulation of cellular behavior
- 10:00 Coffee break
- 10:30 **Simona Cocco**
Inference of Networks from biological data: applications to neurobiology and genomics
- 12:15 Lunch
Early afternoon free
- 15:30 Tea break

Parallel blackboard teaching and hands-on sessions

Le Râteau

- 16:00 **Hugues Berry & François Nédélec**
Modeling gene expression: stochasticity and spatial dynamics
- 17:30 **Gregory Batt**
Modeling, fitting and controlling biological systems: the toggle switch example

Parallel blackboard teaching and hands-on sessions

L'Echelle

- 16:00 **Hidde de Jong**
Towards integrated models of cellular processes: metabolism, gene expression, signaling
- 17:30 **Denis Thieffry**
Qualitative dynamical modeling of cellular networks
- 19:00 Dinner

Selected short talks (chair: O. Gandrillon)

La Parrachée

- 20:00 **Marçal Gabalda-Sagarra**
State-dependent information processing in gene regulatory networks
- 20:20 **Jeremy Revell**
Understanding cell fate decisions through stochastic modelling
- 20:40 **Vincent Picard**
Asymptotic Analysis of Gillespie Algorithm under Steady-State Assumption

Poster session 3

21:00-22:00

Friday, April 10th

Control theory & stochastic modeling (chair: G. Batt)

La Parrachée

- 08:30 **Mustafa Khammash**
Real-time control of living cells in a noisy environment
- 10:00 Coffee break
- 10:30 **Nacho Molina**
Model-based analysis of time series in Biology: stochastic gene expression as a case study
- 12:15 Lunch
Early afternoon free
- 15:30 Tea break

Closing session (chair: D. Kahn)

La Parrachée

- 16:00 **Thomas Höfer**
Stem cell dynamics by numbers: Hematopoiesis and immunity
- 17:30 **John Tyson**
What Can Mathematical Modeling Teach Us About Cell Cycle Regulation?
- 19:00 Course closure
- 20 :00 Gala Course Dinner
- 21:00 Closing course party