

**1st BCAM Workshop on Nonlinear dynamics in Biological Systems  
PROGRAM**

**Thursday 19 June**

8:30-9:15 Registration  
9:15-9:30 Nonlinear Dynamics in Biological Systems

**Session1: RNA/DNA/Evolution**

*Chair: Michael Stich*

9:30-10:15 **Jordi Garcia-Ojalvo**, Universitat Pompeu Fabra  
*Pulsatile regulation in genetic circuits*

10:15-10:45 **Alex Cheong**, University College Dublin / Aston University  
*Species-differential regulation of cyclooxygenase 2 by a NFκB-dependent logic AND gate*

10:45-11:15 Coffee Break and discussion

11:15-11:45 **Ramon Xulvi-Brunet**, NECSI  
*Quantitative characterization of RNA fitness landscapes*

11:45-12:15 **Bendikt Obermayer**, MDC-Berlin  
*Inference of evolutionary correlations and the microRNA regulatory network*

12:15-12:45 **Jacobo Aguirre**, Centro de Astrobiología CSIC-INTA  
*Tipping points in the genetic composition of populations induced by environmental stochasticity*

12:45-14:15 Lunch

**Session 2: Heart dynamics**

*Chair: Jorge Carballido*

14:15-15:00 **Flavio Fenton**, Georgia Institute of Technology  
*Pattern formations as a mechanism for arrhythmias in the heart*

15:00-15:30 **Jean Bragard**, Universidad de Navarra  
*Influence of the temperature in the RDGC model*

15:30-16:00 Coffee Break and discussion

16:00-16:30 **Blas Echebarria**, Universitat Politècnica de Catalunya  
*Mechanisms underlying electro-mechanical cardiac alternans*

16:30-17:00 **Luca Gerardo-Giorda**, BCAM  
*Computational aspects and challenges in the spatial propagation of cardiac action potentials*

17:00-17:30 **Oriol Pont**, Inria Bordeaux  
*Characterizing arrhythmic complexity based on singularity analysis of electrocardiographic maps*

17:30-17:50 **Andrea Welsh**, Georgia Institute of Technology  
*Coupling induced synchronization of Mexican jumping beans*

## Friday 20 June

### **Session3: Cell dynamics**

*Chair: Carsten Beta*

- 9:00-9:45 **Robert Endres**, Imperial College  
*Stereotypical behavior of amoeba during chemotaxis*
- 9:45-10:15 **Martin Falcke**, Max Delbrück Center for Molecular Medicine  
*Excitability in the morphodynamics of motil cells*
- 10:15-10:45 Coffee Break and discussion
- 10:45-11:15 **David G. Míguez**, Universidad Autónoma de Madrid  
*Smad2 and Smad3 cooperate and antagonize simultaneously in vertebrate neurogenesis*
- 11:15-11:45 **Clara Prats Soler**, Universitat Politècnica de Catalunya  
*Maxent as an inevitable force in cell differentiation*
- 11:45-12:45 **Young researchers presentations and poster session**
- 12:45- 14:15 Lunch

### **Session 4: Protein dynamics**

*Chair: Bruno Escribano*

- 14:15-15:00 **Sergio Alonso**, Physikalisch-Technische Bundesanstalt  
*Pattern formation at cellular membranes by phosphorylation and dephosphorylation of proteins*
- 15:00-15:30 **Celia Blanco**, Centro de Astrobiología (CSIC-INTA)  
*Homochiral oligopeptides by amplification: interpretation of experimental data with a copolymerization model*
- 15:30-16:00 Coffee Break and discussion
- 16:00-16:30 **Josep Lluís Gelpí**, University of Barcelona & Barcelona Supercomputing Center  
*Molecular Dynamics Simulations. Going high-throughput*
- 16:30-17:00 **Elena Formoso**, ETH, Zürich  
*Pulling back the curtain on the Adenylate Kinase functional mechanism*
- 17:00-17:30 **Jon I. Mujika**, UPV/EHU, Donostia  
*Molecular Dynamics simulations: an useful tool to investigate the metal release mechanism from serum transferrin protein*