



BIOINFORMATICS SEMINAR

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This Looks Weird!: Size Homeostasis during Anomalous Bacterial Growth

Cell size is a major trait that determines the cellular physiology and is regulated by the coordination of growth and division. Besides recent advances, the mechanisms underlying that coordination to achieve cell size homeostasis are still not well understood. In particular, while most of the efforts have focused on understanding how fluctuations around the typical cell size are shaped to achieve size homeostasis, there is a gap of knowledge about the contribution of cell growth/division at a larger length scale and when those processes are disrupted. In this talk I will introduce some of our recent contributions to this topic from a Systems Biology viewpoint that combines theoretical approaches, simulations, and experiments

BIOGRAPHY

Dr. Buceta graduated in Physics (M.Sc. Fundamental Physics). In addition, he has a M.Sc. degree as Computer Analyst. During his Ph.D. thesis (Physics: 'Fluctuations in Spatially Extended Systems'), he researched on pattern formation, molecular motors, interfacial dynamics, and phase transitions. Within that period, he performed research stays in different institutions such as the Institute for Scientific Interchange (Italy) and the University of Limburgs (Belgium). Afterwards, he moved to the University of California San Diego (UCSD), Dept. of Chem. and Biochem. and the Institute for Nonlinear Science, where he joined Prof. Lindenberg's group and worked on pattern formation, population dynamics, disease spreading, granular matter, stochastic processes, and tumor growth. Later on, he was granted by La Jolla Interfaces in Science (LJIS)/Centre for Theoretical Biological Physics programme (Burroughs Wellcome Fund) to conduct research on 'Pattern Formation and Left-Right Symmetry Breaking in Embryo Development' at Salk Institute for Biological Studies/UCSD. In November 2004 he moved to the Barcelona Science Park (PCB) as a "Ramón y Cajal" (RyC) research fellow (P.I. of TheSiMBioSys Group). In 2014, he accepted a position as Associate Professor at Lehigh University (Dept. Chemical and Biomolecular Engineering) within the Bioengineering Program. His research is focused on System Biology and Biophysical approaches to a number of problems of the biological realm, in particular Biomechanics, collective cell behavior and 2D active matter.

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