

## **BARCELONA IN THE SPOTLIGHT OF SYSTEMS BIOLOGY**

- **From 16<sup>th</sup> to 20<sup>th</sup> September, Barcelona hosts the 17<sup>th</sup> International Conference on Systems Biology, which will gather together around 700 researchers from 40 different countries.**
- **The event is organised by the International Society for Systems Biology (ISSB) and the scientific organisers are Luis Serrano and James Sharpe from the Centre for Genomic Regulation (CRG), and Jordi García-Ojalvo from the University Pompeu Fabra (UPF).**
- **This edition of the ISCB presents an exciting program ranging from fundamentals of complex biology to applications of the field. By hosting this event Barcelona consolidates its position as an internationally important hub for systems biology research.**

Barcelona (Spain) will host the 17<sup>th</sup> edition of the International Conference on Systems Biology. From 16<sup>th</sup> to 20<sup>th</sup> September, biologists, physicists, engineers, and computer scientists, among others, will gather together to share and discuss the latest results in this emerging field of research. The opening ceremony, to be held on Friday 16<sup>th</sup>, will be attended by the Minister of Business and Knowledge from the Catalan Government Mr. Jordi Baiget.

The life sciences are going through some very important transformations. In addition to the much-discussed power of precision editing and control at the genetic level, another revolution is slowly taking hold: the ability to study the integrated complexity of biological systems, rather than just the individual components. Living systems can be seen as deeply connected networks of interacting parts – many thousands of different genes, proteins, cells – all collaborating together to create sophisticated living creatures such as ourselves. Systems biology explicitly seeks to understand these multiple levels of interaction. It has been enabled through two main categories of technical development: Firstly, the high-throughput data-gathering technologies, sometimes called “omics”, which allow the states of complete systems to be captured in a single experiment. And secondly, computational modeling – both the power of computers and the improvements in algorithms are finally allowing researchers to model and simulate realistically complex biology.

Systems biology is thus a broad field characterized by an interdisciplinary nature. To integrate new technology, quantitative measurements, and computer modeling with intriguing biological questions, requires bringing experts together from different fields – experts who traditionally speak very different languages: engineers, mathematicians, computer scientists, physicists, and of course biologists. In general, the field aims to go beyond the common “reductionist” descriptions of biology by focusing on the interactions and feedbacks within molecular circuits and networks, thereby aiming for a deeper, more holistic, understanding of complex biological processes. How does a stem cell know

when to differentiate? And into which cell type? How does the immune system distinguish self from non-self? Why is cancerous growth so difficult to target? How does tissue regeneration work? The answers to these questions do not lie in a couple of key genes, but rather in how the network of many different genes interact in dynamical fashion over time.

“While the discipline of systems biology is already coming of age and pervades all areas of biology, there is still the need for a common forum in which the researchers working in this transversal field get together periodically,” explains UPF professor Jordi García-Ojalvo. “Bringing the meeting to Barcelona is an exciting opportunity for the strong local biomedical and biotechnological community to showcase our research and interact with the global network of researchers working in this field,” he adds.

“We are bringing exciting speakers from around the world to interact with the global and local systems biology communities,” confirms ICREA research professor at CRG and ICSB 2016 co-organiser James Sharpe. “We will showcase not only fundamental questions in complex biology but also applications of systems biology in cancer, personalized medicine and synthetic biology. It’s a unique event involving outstanding scientists discussing the frontier of the field and debating on the future of this exciting and fast-evolving area,” he concludes.

The program includes sessions on a variety of topics, irrespective of the model system (from prokaryotes to eukaryotes, and from molecules to cells to organs). Two highlights of the conference are **biomedical applications** (with sessions on cancer, immunology, stem cells, and personalised medicine) and **synthetic biology** (with a dedicated parallel session and a plenary discussion around the topic of bio-hacking the planet). Also, this edition is searching for the common aspects of systems biology and **systems neuroscience**, with a dedicated session that includes two invited speakers, and a special plenary speaker, all of which are key figures in the field of systems neuroscience.

## **NOTES TO THE EDITORS**

### **International Conference on Systems Biology 2016 (ICSB 2016)**

- Website: <http://www.icsb2016barcelona.org>
- Invited speakers: <http://www.icsb2016barcelona.org/scientific-information/confirmed-speakers/>
- Program: [http://www.icsb2016barcelona.org/scientific-information/provisional\\_program/](http://www.icsb2016barcelona.org/scientific-information/provisional_program/)

### **Organiser:**

- International Society for Systems Biology: <http://www.issb.org/>

### **Scientific organising committee:**

- James Sharpe, Centre for Genomic Regulation (CRG): [www.crg.eu/james\\_sharpe](http://www.crg.eu/james_sharpe)
- Luis Serrano, Centre for Genomic Regulation (CRG): [www.crg.eu/luis\\_serrano](http://www.crg.eu/luis_serrano)
- Jordi García Ojalvo, Universitat Pompeu Fabra (UPF): <http://dsb.upf.edu>

### **Keynote Speaker**

Please, find [here](#) the complete list of speakers at the ICSB 2016. You will find below a short description of a keynote speaker that may be of your interest for interviews:

- **DENNIS NOBLE**

Denis Noble is Professor at Oxford University. He created the first biophysically detailed model of heart rhythm, and is widely regarded as one of the founders of multi-scale systems biology. He is author of the best-seller *The Music of Life* (OUP 2006) and of a forthcoming book *Dance to the Tune of Life*, to be published by CUP.

<https://www.dpag.ox.ac.uk/team/denis-noble>

Download Dennis Noble complete CV [here](#).

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