

Workshop on  
**Understanding Complexity  
in Life Sciences**

**PROMOTERS**

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**ORGANIZATIONAL COORDINATOR**

**Andrea Pensotti**

(FAST - Campus Bio-Medico University, Rome, IT)

**LOCATION**

**University of Milano Bicocca**

Room U4-08 "Luisella Sironi", Building U4, Piazza della  
Scienza 4, Milano.

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## Conference aims and scope

High Throughput Technologies and computational sciences are more and more present in biological research. This model, which is both sustained by scientific results and by industrial interests, is leading science towards a crossroad: will life sciences succeed in understanding complex biological functions by using only technology, Big Data and artificial intelligence? Or do we need to develop new theoretical frameworks and mathematical models to drive experiments and data interpretation? Or, more likely, do we have to integrate the two approaches?

This workshop aims to draw the main scenarios we are facing and analyse the concrete case of the Organ-on-Chip model.

## Organ on Chip model

The need for a more effective biological experimental setup to study inter-level regulatory processes is pushing both biomedical sciences and technology toward new goals. In particular, the merging of cell biology, nanotechnology and microengineering techniques has fostered the development of advanced 3D in vitro models such as organoids and organ-on-chip for recapitulating in vitro the physiological and pathological dynamics of tissues and organs, and even functional interactions among different organs (bodies-on-chip).

These technologies also allow to better analyse metabolic and regulatory circuits, overcoming traditional limits of one or two-dimensional analysis. They finally open new scenarios for personalized medicine and drug discovery. This breakthrough will be particularly effective for cancer, autoimmune and neurodegenerative diseases research.

How can we assess the reliability and promises of these new technologies and their potential contribution in the understanding of biological phenomena in a complex and uncertain scenario?

## Impact

This workshop will help scientists, medical doctors, investors and policy makers to assess the effectiveness of this new research approach, which are needed in order to rationalise investments in human resources and funding. This event will be equally useful for professional people involved in communication and dissemination processes of the new technological advancement in biomedical research.

Nowadays we are witnessing huge investments in research (Human Genome Project is just an example), but also we have to face disappointing results: the "war on cancer" is still not won after many decades and the research on neurodegenerative diseases is still in the dark. In this scenario the promise of computational sciences represent a clear light, but before betting all our efforts on this path in terms of Big Data and Artificial Intelligence it is wiser recalling the basic aims of science: deductive and inductive approaches, experimental guidance and search for basic laws which govern each process.

## Call for participation

The organisation will dedicate an entire session to short talks.

Abstract submission deadline: January 20th 2019

Please submit your abstract to this address:

[Info@saluteuropa.org](mailto:Info@saluteuropa.org)

Each abstract should report name, affiliation, email, title and no more than 200 words.

The organisation will select the abstracts for short talks. The others will be presented as posters.

## Registration

Registration fee: **80 euros**

On site registration will be allowed but authors submitting abstracts have to report before **January 20th 2019**

## Preliminary Program

February 14<sup>th</sup> 2019

**Session 1 9:00-10:15**

### Biological complexity: Setting the stage

9:00 - 9:15 **Welcome Addresses**

**Prof. Cristina Mesa** (Rector of the University of Milano - Bicocca IT)

9:15 - 9:45 **Titolo**

**Marta Bertolaso** (Professor of Philosophy of Science, FAST - Campus Bio-Medico, University of Rome, IT)

9:45 - 10:15 **Titolo**

**Silvio Garattini** (President of Mario Negri Institute, Milan, IT)

10:15 - 10:45 **Coffee break**

**Session 2 10:45-12:45**

### Approaching complexity in science

10:45 - 11:15 **Titolo**

**Enzo Marinari** (Professor of Theoretical Physics, Sapienza University, Rome, IT)

11:15 - 11:45 **Titolo**

**Jasmin Fisher** (not confirmed - Principal researcher at Microsoft's Cambridge Research Lab, UK)

11:45 - 12:15 **From Computational Genomics to Systems Metabolomics to understand Biological Complexity**

**Lilia Alberghina** (Director of SYSBIO Center of Systems biology - University of Milan-Bicocca, Milan, IT)

12:15 - 12:45 **General discussion**

12:45 - 14:00 **Lunch break**

**Session 3 14:00 - 16:45**

### Understanding complex biological processes

14:00 - 14:30 **Titolo**

**Iain Mattaj** (former director of EMBL, Heidelberg, DE, newly appointed director of the Human Tecnopole, Milan, IT)

14:30 - 15:00 **Titolo**

**Hans V. Westerhoff** (Director of Manchester Center for Integrative Systems Biology, UK and professor of Systems Biology, Free University of Amsterdam, NL)

15:00 - 15:30 **Titolo**

**Marco Vanoni** (Professor of Biochemistry, Dept of Biotechnology and Biosciences, University Milan-Bicocca, Milan, IT)

15:30 - 16:00 **General discussion**

16:00 - 16:15 **Coffee break**

16:15 - 16:45 **Titolo**

**Oscar Di Montigny** (Chief Innovation, Sustainability & Value Strategy Manager at Banca Mediolanum, Milan, IT)

**Session 4 16:45 - 18:00**

### Short talks

16:15 - 18:00 **Short talk seminar**

18:00 - 18:30 **Concluding remarks**

February 15<sup>th</sup> 2019

**Session 5 9:00 - 11:30**

### Organ-on-Chip: a new approach to biological complexity

9:00 - 9:30 **Titolo**

**John Wikswa** (Director of Vanderbilt Institute for Integrative Biosystems Research and Education, Nashville, USA)

9:30 - 10:00 **Titolo**

**Silvia Caianiello** (Senior researcher at CNR - ISPF, Naples, IT)

10:00 - 10:20 **Titolo**

**Matteo Moretti** (Head of Cell and Tissue Engineering Lab, IRCCS Galeazzi, Milan, IT)

10:20 - 10:40 **Titolo**

**Luca Businaro** (Senior researcher at CNR - IFN, Rome, IT)

10:40 - 11:00 **Titolo**

**Alberto Rainer** (Professor of Industrial Bioengineering, Campus Bio-Medico University, Rome, IT)

11:00 - 11:30 **Titolo**

**Polona Tratnik** (Senior researcher at Alma Mater Europaea Institutum Studiorum Humanitatis, Ljubljana, SLO)

11:30 - 11:50 **Coffee break**

11:50 - 12:20 **Titolo**

**Adrian Roth** (Head Mechanistic Safety, Pharmaceutical Sciences, Roche, Basel, CH)

12:20 - 12:50 **Titolo**

**Gianluca Oricchio** (CEO Springrowth SGR, USA)

12:50 - 13:20 **Titolo**

**Claudio Giuliano** (CEO Innogestcapital, IT)

13:20 - 13:40 **Concluding remarks**

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