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SAPIENZA UNIVERSITÀ DI ROMA

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The 2018 edition of the bi-annual congress of the Italian Society of Applied and Industrial Mathematics (SIMAI) will be held in Rome, hosted by the Faculty of Civil and Industrial Engineering, Sapienza Università di Roma, at ***Chiostro di San Pietro in Vincoli***, *Via Eudossiana 18, Rome,* from July 2 to 6, 2018.

The aim of the conference is to bring together researchers and professionals from academia and industry who are active in the study of mathematical and numerical models as well as their application to industrial and in general real life problems; to stimulate interdisciplinary research in applied mathematics and to foster interactions of the scientific community with industry.

A new (mathematical) look into biology

The Mini-Symposium entitled Attempts of a mathematical uprising for restructuring biomedical sciences is scientifically organized by *Donatella Donatelli* — Dipartimento di Ingegneria, Scienze dell'Informazione e Matematica (DISIM), Università dell'Aquila, Italy (donatella.donatelli@univaq.it), *Corrado Mascia* — Dipartimento di Matematica G. Castelnuovo, Sapienza, Università di Roma, Italy (corrado.mascia@uniroma1.it), *Chiara Simeoni* — Laboratoire de Mathématique J.A. Dieudonné, Université Nice Sophia Antipolis, France (simeoni@unice.fr).

The original idea is based on the observation that the synergy between mathematics and biomedical sciences has reached nowadays a significant maturity, that is well-documented by the countless number of joint collaborations and topics involved, spanning from genome sequencing to organisms description, as a consequence of the high level of heterogeneity inherent in the living world [1, 2, 6].

The purpose of the Mini-Symposium is to provide genuine and critical presentations on different aspects concurring to the discussion, with particular attention to the definition of a rigorous language [4, 3, 5] appropriate for biological phenomena and useful for medical applications. The aim is to give the opportunity for a truly interdisciplinary exchange of the research outcome in the field of systems biology from epistemology to experimental medicine, passing through applied mathematics, biostatistics and scientific computing.
The **SIMAI Mini-Symposium** will be held on *Thursday, July 5th, 2018*, and divided into two sections: a morning session stemming from 10.30 to 13.00, and an afternoon session from 14.30 to 17.00, scheduled as follows:

Section I

Giuseppe Longo — CNRS and École Normale Supérieure, Paris, and Department of Immunology, Tufts University, Boston (keynote).
Historicized invariance and rare events in systems of life, some mathematical challenges.

Alessandro Giuliani — Istituto Superiore di Sanità, Rome.
Sloppy models: why in Biomedical Sciences too much precision is a curse.

Maël Montévil — Institut de Recherche et d'Innovation, Paris
What first principles for mathematical modeling in biology?

Ramon G. Plaza — Instituto de Investigaciones en Matematicas Aplicadas y en Sistemas, Universidad Nacional Autonoma de México, Mexico City
Mathematical modelling of the tumour growth paradox using cancer stem cells.

Licia Romagnoli — Dipartimento di Ingegneria, Scienze dell'Informazione e Matematica (DISIM), Università dell'Aquila
PDE's models for cerebrospinal fluids: a mathematical theory.

Section II

Philip K. Maini — Wolfson Centre for Mathematical Biology, Mathematical Institute, Oxford (keynote)
Mathematical modelling of angiogenesis.

Simona Dinicola — Dipartimento di Medicina Sperimentale (DMS), Sapienza, Università di Roma
EMT-MET as paradigmatic cases for mathematical modelling in biology.

Morena La Monaca — Project consulting srl, Roma
Data Science
Data Mining for Biomedical Sciences.

Pierfrancesco Moschetta — Dipartimento di Matematica G. Castelnuovo, Sapienza Università di Roma
Fathoming the Gatenby-Gawlinski model.

Donato Pera — Dipartimento di Ingegneria, Scienze dell'Informazione e Matematica (DISIM), Universita' dell'Aquila, L'Aquila
On the efficient numerical simulation of heterogenous anisotropic diffusion models of tumor invasion using GPUs.

The group of speakers involves more experienced scientists as well as young researchers, joining together applied mathematicians, experimental biologists, and technologists of private enterprises, with the aim of promoting favorable further interactions.

The MiniSymposium also intend to celebrate the ESMTB-EMS Year of Mathematical Biology 2018
http://euro-math-soc.eu/yearmathematical-biology-2018
An upcoming Special Issue of *Organisms* is going to be dedicated to the proceedings of the Mini-Symposium.

https://ocs.simai.eu/index.php/SIMAIcongress/SIMAI2018

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