

# ACCADEMIA DELLE SCIENZE DELL'ISTITUTO DI BOLOGNA



First International Workshop of  
Computational Biomathematics  
at the University of Bologna

and

Third International Workshop of  
Morphofunctional Studies  
at the University of Parma

on

**Mathematical and  
biomedical modelling  
in regenerative medicine  
of endocrine organs**

**Wednesday, October 21<sup>st</sup>, 2009**

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## This event is under the patronage of:

University of Bologna  
Faculty of Engineering  
Faculty of Mathematical, Physical and Natural Sciences  
Faculty of Medicine  
Research Center of Applied Mathematics (CIRAM)  
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Italian Society of Anatomy and Histology (SIAI)  
Italian Society of Histochemistry (SII)  
Italian Society of Endocrinology (SIE)  
Italian Association of the Thyroid (AIT)

## Invited Academic Authorities:

**Francesco Antonio Manzoli**, President Academy of Sciences  
of Bologna and Scientific Director IRCCS "Rizzoli", Bologna

**Lorenzo Donatiello**, Dean Faculty of Mathematical, Physical  
and Natural Sciences, Bologna

**Pier Paolo Diotallevi**, Dean Faculty of Engineering, Bologna

**Sergio Stefoni**, Dean Faculty of Medicine, Bologna

**Loris Borghi**, Dean Faculty of Medicine, Parma

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## President of the Workshop

**Fiorella Sgallari**

*Director of CIRAM, University of Bologna, Italy*

## Lecturers

**Francesco Beltrame**

*University of Genoa, National Research Council, Rome, Italy*

**Roberto Di Lauro**

*University of Naples, Stazione Zoologica "A. Dohrn", Biogem,  
Naples, Italy*

**Andrea Gatto**

*University of Modena and Reggio Emilia, Italy*

**Antonella Guidazzoli**

*CINECA, Bologna, Italy*

**Julie Huxely-Jones**

*GlaxoSmithKline Research, UK*

**Luca Iuliano**

*Politecnico di Turin, Italy*

**Giovanni Mazzotti**

*University of Bologna, Italy*

**Aldo Pinchera**

*University of Pisa, Italy*

**Maria Stella Scandola**

*University of Bologna, Italy*

**Giulia Spaletta**

*University of Bologna, Italy*

**Xue-Cheng Tai**

*University of Bergen, Bergen Center of Integrated Petroleum  
Research, Oslo Center of Mathematics for Application, Norway*

**Anna Tampieri**

*National Research Council, Faenza, Italy*

**Roberto Toni**

*University of Parma, Italy, Tufts University, Boston, USA*

**Stefano Vella**

*Istituto Superiore di Sanità, Rome, Italy*

**Anthony Yezzi**

*School of Electrical and Computer Engineering, GeorgiaTech,  
Atlanta, USA*

**9.30 – 9.55 Opening address:  
The President  
of the Academy of Sciences**  
F.A. Manzoli

**9.55 -10.00 Introduction**  
F. Sgallari

**10.00 – 11.30 Mathematical - engineering  
modelling**

*Chair:* Ilio Galligani, *Academy of Sciences, Bologna, Italy*  
Anthony YeZZi, *GeorgiaTech, USA*

**X-C. Tai**  
Fast segmentation methods for medical applications

**G. Spaletta**  
Deterministic and stochastic approaches to biomedical reconstruction: applications to the thyroid morphology

**L. Iuliano - A. Gatto**  
Additive layer manufacturing: twenty years of development

**11.30 - 13.00 Biomedical modelling**

*Chair:* Lucio Cocco, *Department of Human Anatomy, University of Bologna, Italy*  
Julie Huxley-Jones, *GlaxoSmithKline Research, UK*

**A. Pinchera**  
A clinical perspective in regenerative medicine of endocrine glands

**R. Di Lauro**  
Molecular basis of thyroid development

**R. Toni**  
The principle of the organomorphic bioreactor for regenerative medicine of endocrine organs

**13.00 - 14.30 Lunch**

**14.30-16.30 Biomaterials, extracellular matrix  
and biomedical applications**

*Chair:* Francesco Beltrame, *University of Genoa and CNR, Italy*  
Nadir M. Maraldi, *IRCCS Rizzoli and CNR, Department of Human Anatomy, University of Bologna, Italy*

**M.S. Scandola**  
Bioresorbable polymeric biomaterials

**A. Tampieri**  
Nanotechnologies serving scaffold design

**J. Huxley-Jones**  
Drug discovery in the extracellular matrix

**G. Mazzotti**  
Artificial scaffolds in regenerative medicine

**16.30 - 17.30 Rendering and visualization**

*Chair:* Giulia Spaletta, *Department of Mathematics, University of Bologna, Italy*  
Xue-Cheng Tai, *University of Bergen, Norway*

**A. YeZZi**  
Geometric active contours and surfaces for medical image segmentation

**A. Guidazzoli**  
Scientific visualization and immersive graphics for complex biological structures: the Tenchini project at the University of Parma

**17.30-18.00 Round Table:  
Perspectives for a European Consortium on  
Regenerative Medicine of Endocrine Organs**

**F. Beltrame, A. Pinchera, F. Sgallari, S. Vella**



**The myth of Ulysses  
frescoes by Pellegrino Tibaldi at the  
Academy of Sciences of Bologna (1550- 51)**

