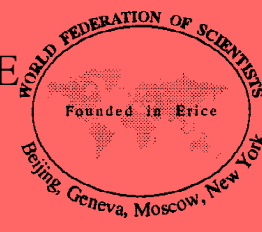


«ETTORE MAJORANA» FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE
TO PAY A PERMANENT TRIBUTE TO GALILEO GALILEI, FOUNDER OF MODERN SCIENCE
AND TO ENRICO FERMI, THE “ITALIAN NAVIGATOR”, FATHER OF THE WEAK FORCES



INTERNATIONAL SCHOOL OF BIOPHYSICS «ANTONIO BORSELLINO»

43rd Course: NANOSCALE BIOPHYSICS: FOCUS ON METHODS AND TECHNIQUES

ERICE–SICILY: 17 – 24 APRIL 2016

Sponsored by the: • Italian Ministry of University and Research • Sicilian Regional Government

PROGRAMME AND LECTURERS

Structure Illumination Microscopy

- S. ABRAHMSSON, The Rockefeller University, New York, NY, US

Non linear and multimodal optical microscopy

- P. BIANCHINI, Istituto Italiano di Tecnologia, Genova, IT

Nanoscale fluorescent biosensors

- R. BIZZARRI, NEST, Istituto Nanoscienze-CNR and Scuola Normale Superiore, Pisa, IT

FRET/FLIM for the nanoscale investigation of protein interactions and molecular environments

- G. BUNT, Georg-August-Universität, Göttingen, DE

Current Developments in Single Molecule Biophysics

- C. BUSTAMANTE, University of California, Berkely, CA, US

Protein-membrane interaction. From model membranes to living cells: new AFM approaches

- C. CANALE, Istituto Italiano di Tecnologia, Genova, IT

Nanobiosensors

- L. CASALIS, Elettra-Sincrotrone, Trieste, IT

Quantitative approaches in advanced single molecule localization techniques

- F. CELLA ZANACCHI, ICFO, The Institute of Photonic Sciences, Barcelona, ES

Optical manipulation for single cell experiments

- D. COJOC, Institute of Materials (IOM-CNR), Area Science Park, Trieste, IT

3D nanostructured surfaces for neuronal network interfaces

- F. DeANGELIS, Istituto Italiano di Tecnologia, Genova, IT

Nanoscale Biophysics

- A. DIASPRO, Istituto Italiano di Tecnologia, Università di Genova, IT

Non-fluorescence based super-resolution microscopy: from liquid lenses to microspheres

- M. DUOCASTELLA, Istituto Italiano di Tecnologia, Genova, IT

Image Scanning microscopy, SOFI, cryo-STORM and Metal-Induce Energy Transfer Imaging

- J. ENDERLEIN, Georg-August-Universität, Göttingen, DE

Molecular flows in cells

- E. GRATTON, University of California, Irvine, CA, US

Optical Nanoscopy

- S.W. HELL, Max-Planck-Institut für Biophysik, Göttingen, DE

Principles and Biological Applications of Localization Microscopy

- S. HESS, University of Maine, Orono, ME, US

Stimulated Emission Based Fluorescence Detection

- F.-J. KAO, National Yang-Ming University, Taipei, TW

Biological applications of super-resolution microscopy

- M. LAKADAMYALI, ICFO, The Institute of Photonic Sciences, Barcelona, ES

Temporal and spatial spectroscopy for nanoscale investigation of subcellular structures

- L. LANZANÒ, Istituto Italiano di Tecnologia, Genova, IT

Fast Super-Resolution Microscopy

- P. SAGGAU, Allen Institute for Brain Science, Seattle, WA, US

Genomic and proteomic characterization of single tumor cells isolated from the peripheral blood

- G. SCOLES, ERC University of Udine, IT

Focusing of light

- C.J.R. SHEPPARD, Istituto Italiano di Tecnologia, Genova, IT

Pushing the envelope in biological imaging

- H. SHROFF, High Resolution Optical Imaging, NIBIB, NIH, Bethesda, MD, US

Nanoplasmonics

- M. STOCKMAN, Center for Nano-Optics, Georgia State University, Atlanta, GA, US

AFM - Mechanical properties of biomaterials and molecular life time interactions

- J. TOCA HERRERA, University Natural Resources and Life Sci., Vienna, AT

RESOLFT Nanoscopy: applications for life science

- I. TESTA, SciLifeLab, KTH Royal Institute of Technology, Stockholm, SE

How to boost your microscope by exploring new dimensions (temporal, spatial, spectral)

- G. VICIDOMINI, Istituto Italiano di Tecnologia, Genova, IT

Principles and basics of FRET/FLIM

- F. WOUTERS, Georg-August-Universität, Göttingen, DE

PURPOSE OF THE COURSE

The objective of this Course is to advance the field of nanoscale biophysics operating at the scale of nanometers to tens of nanometers, through the exchange of information, ideas, and innovative techniques. Nanoscale biophysics focuses on the study of the physical principles governing biological processes occurring on a nanometre scale, typically on an atomic or molecular level. It also encompasses the development of nanotechnologies designed specifically for biophysical investigations. The success and relevance of optical nanoscopy reached a peak with the 2014 Nobel prize for the development of super-resolved fluorescence microscopy. Correlation between methods is a crucial step for dealing with investigations, at the molecular scale, of possible applications not only in medicine and biology, but also in material sciences, cultural heritage and environmental sciences. The understanding of methods and techniques has the great potential of allowing, in the near future, for the design and performance of new exciting experiments in Biophysics. From these considerations we selected “Nanoscale Biophysics: Focus on methods and techniques” as the main theme of the XX Course of the International School of Biophysics “Antonio Borsellino”.

APPLICATIONS

Interested candidates should apply in writing to the Co-Director of the Course

Professor Alberto DIASPRO
Nanoscopy – Istituto Italiano di Tecnologia
Via Morego, 30 – 16163 Genova, Italia
Tel. +39 - 01071781762
e-mail: alberto.diaspro@iit.it

specifying:

- date and place of birth together with present nationality;
- degree and other academic qualifications;
- present position and place of work;
- postal and e-mail addresses.

PLEASE NOTE

Participants must arrive on April 17, not later than 7 pm.

POETIC TOUCH

According to legend, Erice, son of Venus and Neptune, founded a small town on top of a mountain (750 metres above sea level) more than three thousand years ago. The founder of modern history — i.e. the recording of events in a methodic and chronological sequence as they really happened without reference to mythical causes — the great Thucydides (~500 B.C.), writing about events connected with the conquest of Troy (1183 B.C.) said: «After the fall of Troy some Trojans on their escape from the Achaei arrived in Sicily by boat and as they settled near the border with the Sicilians all together they were named Elymi: their towns were Segesta and Erice.» This inspired Virgil to describe the arrival of the Trojan royal family in Erice and the burial of Anchises, by his son Aeneas, on the coast below Erice. Homer (~1000 B.C.), Theocritus (~300 B.C.), Polybius (~200 B.C.), Virgil (~50 B.C.), Horace (~20 B.C.), and others have celebrated this magnificent spot in Sicily in their poems. During seven centuries (XIII-XIX) the town of Erice was under the leadership of a local oligarchy, whose wisdom assured a long period of cultural development and economic prosperity which in turn gave rise to the many churches, monasteries and private palaces which you see today.

In Erice you can admire the Castle of Venus, the Cyclopean Walls (~800 B.C.) and the Gothic Cathedral (~1300 A.D.). Erice is at present a mixture of ancient and medieval architecture. Other masterpieces of ancient civilization are to be found in the neighbourhood: at Motya (Phoenician), Segesta (Elymian), and Selinunte (Greek). On the Aegadian Islands — theatre of the decisive naval battle of the first Punic War (264-241 B.C.) — suggestive neolithic and paleolithic vestiges are still visible: the grottoes of Favignana, the carvings and murals of Levanzo.

Splendid beaches are to be found at San Vito Lo Capo, Scopello, and Cornino, and a wild and rocky coast around Monte Cofano: all at less than one hour's drive from Erice.

More information about the «Ettore Majorana» Foundation and Centre for Scientific Culture can be found on the WWW at the following address:
<http://www.ccsem.infn.it>