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

INTERNATIONAL SCHOOL OF BIOLOGICAL MAGNETIC RESONANCE

16th Course: *FRONTIERS IN BIOPHYSICS AND STRUCTURAL BIOLOGY*

ERICE-SICILY: 1 – 8 AUGUST 2018

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

PROGRAMME AND LECTURERS

Opening Remarks and Perspectives
• J. PUGLISI, Stanford University School of Medicine, Stanford, CA, US

Principles of Diffraction I
Principles of Diffraction II
• A. MACPHERSON, University of California, Irvine, CA, US

Protein NMR spectroscopy
Combining methods to solve complex structures in viruses
• A. GRONENBORN, University of Pittsburgh, Pittsburgh, PA, US

Challenges of Protein Structure Determination
Membrane Protein Biogenesis
• B. CLEMONS, California Institute of Technology, Pasadena, CA, US

Why you should not do NMR these days
Why you should do NMR these days
• P. SELENKO, Forschungsinstitut fur Molekulare Pharmakologie, Berlin, DE

NMR at the Magic Angle: Atomic-level Insights in Intact Cells and Assemblies
Surprises and new chemistry in looking at old systems in new ways
• L. CEGELSKI, Stanford University, Stanford, CA, US

The power of collaboration: Combining ensemble and single-molecule methods with simulations to study the folding and misfolding of multidomain proteins
What is the importance of disorder in biology? You need kinetics to understand mechanism, you can't just make it up
• J. CLARKE, Wolfson College, University of Cambridge, Cambridge, UK

The Cell is a Bag of RNA
Revisiting Luria-Delbruck in the Genome Age
• S. QUAKE, Stanford University, Stanford, CA, US

Molecular mechanism of CRISPR-Cas and structure-guided development of genome- editing tools towards medical applications
Structure basis for membrane channels
• O. NUREKI, The University of Tokyo, Tokyo, JP

The beauty of the invisible - the secret life of cells Combined use of high-resolution imaging (x-ray/cryoEM) with single molecule optical fluorescence microscopy with single molecule sensitivity) to figure out molecular mechanisms of clathrin coated vesicle formation
Cellular imaging from molecules to embryos: Use of 3D-live lattice light sheet microscope with and without adaptive optics to image cells and tissues in their native environment with sub cellular resolution
• T. KIRCHHAUSEN, Harvard Medical School/PCMM, Boston, MA, US

The dos and donuts of single particle cryo-EM
From blobs to pharmacology: cryo-EM insights into G protein coupled receptor activation and signaling
• G. SKINIOTIS, Stanford University School of Medicine Stanford, CA, US

Imaging HIV infection and prevention, from macro to micro
A new interface between innate and adaptive immunity: the mysterious interactions of mucins and antibodies
• T. HOPE, Feinberg School of Medicine Northwestern University, Chicago, IL, US

NMR and Dynamics
• M. DELEPIERRE, Institut Pasteur, URA 2185 CNRS, Paris, FR

PURPOSE OF THE COURSE

Our School is held annually and brings together the world's best biophysicists and structural biologist to discuss the key approaches and issues in modern biology.

APPLICATIONS

Persons wishing to attend the Course should apply writing to:

Professor Joseph D. PUGLISI
Department of Structural Biology & Stanford Magnetic Resonance Laboratory, Stanford University School of Medicine
Stanford, CA, USA
E-mail: *puglisi@stanford.edu*

PLEASE NOTE

Participants are expected to arrive in Erice on August 1, no later than 5 p.m.

More information about the other activities of the "ETTORE MAJORANA" FOUNDATION AND CENTRE FOR SCIENTIFIC CULTURE can be found on the WWW at the following address:
http://www.ccsem.infn.it

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 Sicanians 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 Anchise, by his son Enea, 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.

J.D. PUGLISI – E. VIANI PUGLISI
DIRECTORS OF THE COURSE

J.D. PUGLISI
DIRECTOR OF THE SCHOOL

A. ZICHICHI
PRESIDENT EMFCSC