



«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 BIOLOGICAL MAGNETIC RESONANCE

9th Course: BIOPHYSICS AND STRUCTURE TO COUNTER THREATS AND CHALLENGES

ERICE-SICILY: 22 JUNE – 2 JULY 2009

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

TOPICS AND LECTURERS

SPECIFIC TOPICS:

Principles of NMR spectroscopy
Principles of X-ray diffraction
Nucleic acid chemistry
Molecular dynamics and other computational approaches
Dynamics in NMR
Viral pathogens
Bacterial pathogens
Viral entry mechanism
NMR structures of pathogenic proteins
Ribosome structure
Translational mechanism and antibiotics
New technologies to study proteins
Computational biology
Principles of catalysis
Solid state NMR
Membrane proteins as drug targets
Peptides as drugs
Membrane proteins as drug targets
DNA modifications and disease
Single-molecule methods
Single-molecule nucleic acid detection and sequencing
Novel pathogen detection
Structure-based drug design in biotechnology
NMR and physical studies of pathogen proteins
Coupling genomics and structural studies
Discovery and biophysics
Developing novel technologies
Developing and implementing novel discoveries

TUTORIALS:

Pathogenesis of bioterror agents
Computational biology and experiment
Technology and the environment
Spectroscopic approaches
Roundtable and tutorial on genome-wide approaches and biophysics
Student-lecturer discussion on future perspectives
Student presentations including a poster session

- A. ARSENIIEV, Russian Academy of Sciences, RU
- M. DELEPIERRE, Institute Pasteur, FR
- R. EFREMOV, Russian Academy of Sciences, RU
- A. GRASLUND, Stockholm University, SE
- A. GRONENBORN, University of Pittsburgh, US
- A. HELENIUS, Institute of Biochemistry, ETH, CH
- S. KLIMASAUSKAS, Institute of Biotechnology, Vilnius, LT
- M. LEVITT, Stanford University, US
- W. LIPSCOMB, Harvard University, US
- P. LUKAVSKY, MRC, Laboratory for Molecular Biology, UK
- T. MARLOVITS, Institute of Molecular Biotechnology GmbH, AT
- A. McPHERSON, University of California, Irvine, US
- H. OSCHKINAT, Berlin Institute of Molecular Pharmacology, GE
- J. PUGLISI, Stanford University, US
- G.L. ROSSI, University of Parma, IT
- A. SHIVANYUK, National University of Kiev, UA
- J. WILLIAMSON, The Scripps Research Institute, US
- A. YONATH, Weizmann Institute, IL

PURPOSE OF THE COURSE

This course will provide an overview of physical and structural methods in biology and will present technologies related to pathogen detection and treatment using these methods. Both, basic principles and concrete examples will be presented in a long course format.

APPLICATIONS

Persons wishing to attend the Course should apply in writing to:

- Professor Joseph D. PUGLISI
Director, Stanford Magnetic Resonance Laboratory (SMRL)
Department of Structural Biology
Stanford University School of Medicine
D105a Sherman Fairchild Science Building
STANFORD, CA 94305-5126, USA
Tel ++1.650.4984397 – e-mail: Puglisi@Stanford.Edu
Tel ++1.650.7239151 – Fax ++1.650.7238464
e-mail: Manolia@Stanford.Edu

specifying:

- full name, address, age, nationality;
- academic qualification, present position and affiliation;
- specific interest in the Course.

Students should include a short C.V. in addition to a letter of recommendation from the head of their research group or from a senior scientist active in the field.

- PLEASE NOTE
Participants should arrive in Erice on June 22, not later than 5 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 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.

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>