



«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

## 8th Course: BIOPHYSICS AND THE CHALLENGES OF EMERGING THREATS

A NATO Advanced Study Institute

ERICE-SICILY: 19 – 30 JUNE 2007

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*  
*Use of NMR data to calculate structures*  
*Viral pathogens*  
*Bacterial pathogens*  
*Antivirals*  
*Ribosome structure*  
*Translational mechanism and antibiotics*  
*New technologies to study proteins*  
*Computational biology*  
*Principles of Catalysis*  
*Solid state NMR*  
*Peptides as drugs*  
*Membrane proteins as drug targets*  
*Single-molecule methods*  
*Novel pathogen detection*  
*Structure-based drug design in biotechnology*  
*New approaches to study metalloenzymes*  
*NMR studies of pathogenic proteins*  
*Coupling genomics and structural studies*  
*Discovery and biophysics*  
*Developing novel*

#### 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. ARSENIYEV, Russian Academy of Sciences, Russia
- W. EATON, NIDDK, National Institutes of Health, USA
- R. EFREMOV, Russian Academy of Sciences, Russia
- A. GRONENBORN, University of Pittsburgh, Pittsburgh, USA
- A. HELENIUS, Institute of Biochemistry, ETH, Zurich, Switzerland
- S. KLIMASAUSKAS, Institute of Biotechnology, Vilnius, Lithuania
- W. LIPSCOMB, Harvard University, USA
- M. LEVITT, Stanford University, USA
- T. MARLOVITS, Institute of Molecular Biotechnology GmbH, Austria
- T. MIYAMURA, National Institutes of Infectious Disease, Japan
- A. PASTORE, National Institute for Medical Research, UK
- D. PATEL, Memorial Sloan Kettering Cancer Institute, USA
- J. PUGLISI, Stanford University, USA
- G. ROSSI, University of Parma, Italy
- I. SAGI, Weizmann Institute of Science, Israel
- B. SYKES, University of Alberta, Canada
- J.M. THOMAS, University of Cambridge, UK
- G. WAGNER, Harvard University, USA
- A. YONATH, Weizmann Institute, Israel

#### PURPOSE OF THE COURSE

This Course will provide an overview of biophysical and structural methods in biology. It will present technologies related to pathogen detection and treatment using these methods. Furthermore, it will teach basic principles and demonstrate concrete examples, encouraging technology growth and transfer to partner countries.

#### 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](mailto:Puglisi@Stanford.Edu)  
Tel ++1.650.7239151 - Fax ++1.650.7238464  
e-mail: [Manolia@Stanford.Edu](mailto:Manolia@Stanford.Edu)

specifying:

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

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 19, 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>