



«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 CRYSTALLOGRAPHY

42nd Course: STRUCTURE AND FUNCTION FROM MACROMOLECULAR CRYSTALLOGRAPHY: ORGANISATION IN SPACE AND TIME

ERICE-SICILY: 3 – 13 JUNE 2010

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

PROGRAMME AND LECTURERS

Evolving methods
Robotics for protein expression, purification, structure determination and imaging
CryoEM, single particle analysis and tomography
Computer modelling for individual molecules, assemblies and cells
RNA and DNA replication and synthesis
Progress in structural genomics
NMR
Multicomponent machines involved in protein biosynthesis and processing
Membrane proteins, pores and transporters
Transient multiprotein systems involving growth factor receptors
Signal transducing assemblies
Nucleic acid-protein complexes
Amyloid structure
Viruses and virulence factors

- N. BAN, ETH Zurich, CH
- R. BARFORD, Institute of Cancer Research, London, UK
- W. BAUMEISTER, MPI for Biochemistry, Martinsried, DE
- E. CONTI, MPI for Biochemistry, Martinsried, DE
- P. CRAMER, University of Munich, DE
- D. EISENBERG, UCLA, CA, US
- E. GHERARDI, MRC, Cambridge, UK

- J. HADJU, University of Uppsala, SE
- K. HOLMES, EMBL, Heidelberg, DE
- A. HOROWITZ, Weizmann Institute, Rehovot, IL
- C. HUNTE, University of Leeds, UK
- L. N. JOHNSON, University of Oxford, UK
- Y. JONES, University of Oxford, UK
- W. KUHLBRANDT, MPI for Biophysics, Frankfurt, DE
- J. KURIYAN, University of California at Berkeley, CA, US
- E. M. MANDELKOV, EMBL, Hamburg, DE
- J. MORAIS-CABRAL, University of Porto, PT
- M. G. ROSSMANN, Purdue University, West Lafayette, IN, US
- T. RICHMOND, ETH Zurich, CH
- H. SAIBIL, Birkbeck College, London, UK
- E. SAUER-ERIKSSON, University of Umea, SE
- T. STEITZ, Yale University, New Haven, CT, US
- R. STROUD, UCSF, CA, US
- D. STUART, University of Oxford, UK
- D. SVERGUN, EMBL Hamburg, DE
- M. VENDRUSCOLO, University of Cambridge, UK
- N. VERDAGUER, University of Barcelona, ES
- W. WEIS, University of California at Stanford, CA, US
- A. YONATH, Weizmann Institute, Rehovot, IL

Workshop leaders: Terese Bergfors, Uppsala, SE; Richard Bickerton, Dundee, UK; Dima Chirgadze, Cambridge, UK; Warren DeLano, San Francisco, CA, US; Paul Emsley, Oxford, UK; Eran Hodis, Rehovot, IL; John Irwin, San Francisco, CA, US; Garib Murshudov, York, UK; Anastassis Perrakis, Amsterdam NL; Carsten Sachse, Cambridge, UK; Joel Sussman, Rehovot, IL; Maya Topf, London, UK; Clemens Vonrhein, Cambridge, UK.

PURPOSE OF THE COURSE

The objective of this meeting is to introduce students to the use of advanced techniques for the study of structures of macromolecular assemblies involving protein, DNA, RNA and polysaccharide. Such assemblies regulate spatial and temporal organisation in cells and organisms. The course will focus on the structures and dynamics of membrane channels and receptor systems, cell signalling, DNA replication, protein synthesis, motile systems and viruses. These systems mediate many of the processes that lead to human disease.

There will be discussion of multi-component complex assembly and disassembly, macromolecular systems that drive protein movement, adaptors and templates that lead to cellular co-localisation, allostery and conformational changes over time, and the macromolecular interactions that mediate these regulatory systems. The course will review the techniques used to study protein assemblies and their dynamics, including X-ray diffraction and scattering, electron cryo-electron microscopy, electro spray mass spectrometry, NMR, protein docking and molecular dynamics.

APPLICATIONS

Interested candidates should register by 30 November 2009 using the format available at the URL <http://erice2010.azuleon.org> or write to the Executive Secretary of the International School of Crystallography:

- Professor Paola Spadon
International School of Crystallography
Dipartimento di Scienze Chimiche
Via Marzolo, 1 - 35131 PADOVA, Italy
Tel +39.049.8275275
Fax +39.049.8275239
e-mail: paola.spadon@unipd.it

specifying:

- full name(s), age, gender, citizenship;
- postal address, phone, fax, electronic mail;
- present academic position and scientific interests;
- the title or abstract of a scientific contribution to the poster session(s) which might be included in the programme.

Young researchers please add a list of no more than five scientific publications and a letter of recommendation from the group leader or a senior scientist, where the amount of support, if needed, is justified. In order to reflect the multi-disciplinary nature of the Course, attendance will be encouraged on the basis of the scientific discipline, publication record and the correspondence between the current research of the applying scientists and the listed topics.

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 International School of Crystallography can be found on the WWW at the following address:
<http://www.crystalerice.org>

PLEASE NOTE

Participants must arrive in Erice on June 3, 2010, not later than 8 p.m.

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>