

Structural Biology and Biophysics are at the core of Integrative Biology, because they are the basis to truly understand biological processes at a molecular level. Furthermore, Structural Biology and Biophysics are mandatory in any attempt to successfully engineer molecular devices of Biomedical and Biotechnological interest. This is why these closely related disciplines are the focus of the 4th Edition of the UIMP-CSIC Summer School of Integrative Molecular and Cellular Biology. A team of active scientists, from world-class masters to youngsters at the beginning of their independent careers, have been brought together to guide the attendees across the frontiers of Structural Biology and Biophysics: the integration of X-ray crystallography and electron microscopy to solve large macromolecular complexes and machines, the use of Nuclear Magnetic Resonance to assess macromolecular dynamics and the biophysical approaches to characterize macromolecular interactions in quantitative terms. The School, which will include both lectures and practical sessions, is oriented to last year undergraduates, MSc or PhD students in any discipline related to Biosciences (e.g.: Biology, Biochemistry, Biotechnology, Pharmacy, Medicine), or in other sciences with a Biology-oriented flavour (Chemistry, Physics, Maths, Engineering).

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INFORMACIÓN GENERAL

→ Hasta el 16 de junio de 2017

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Horario

de 9:00 a 14:00 h
de 15:30 a 18:00 h (excepto viernes)

PLAZOS

→ Plazo de solicitud de becas

Hasta el día 17 de mayo, para los cursos que comienzan antes del 7 de julio de 2017

Hasta el día 12 de junio, para los cursos que comienzan a partir del día 10 de julio de 2017

→ A partir del 19 de junio de 2017

Santander

Palacio de la Magdalena
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Tel. 942 29 88 00 / 942 29 88 10
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Horario

de 9:00 a 14:00 h
de 15:30 a 18:00 h (excepto viernes)

UIMP

Universidad Internacional
Menéndez Pelayo

Santander 2017

**IV ESCUELA DE BIOLOGÍA MOLECULAR
Y CELULAR INTEGRATIVA**

**Frontiers in Structural
Biochemistry**

**Rafael Giraldo
Germán Rivas**

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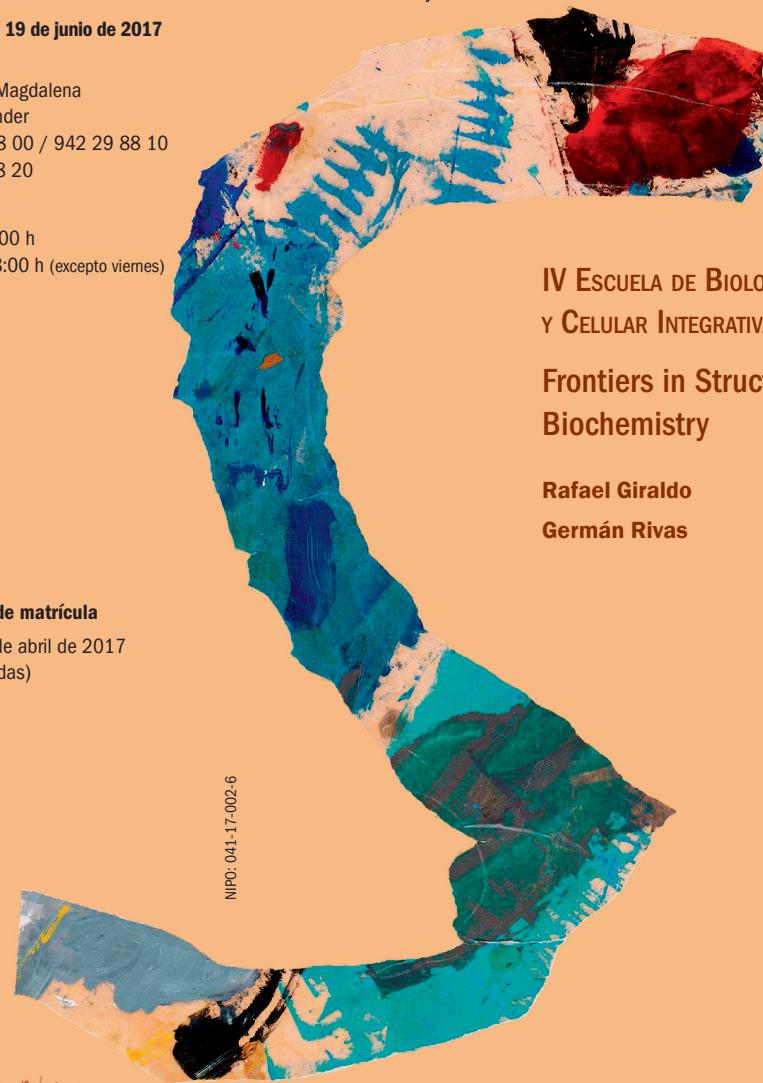
Colaboración



Fundación
General CSIC

→ Code 63EM | Fare: C | ECTS: 1

NIP0: 041-17-002-6



Santander

Del 28 de agosto
al 1 de septiembre de 2017

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IV ESCUELA DE BIOLÓGIA MOLECULAR Y CELULAR INTEGRATIVA Frontiers in Structural Biochemistry

Dirección

Rafael Giraldo

Germán Rivas

Profesores de Investigación

Centro de Investigaciones Biológicas (CIB)

Consejo Superior de Investigaciones Científicas (CSIC)

Del 28 de agosto al 1 de septiembre de 2017

Lunes 28 de agosto

10:00 h | OPENING CEREMONY

Presentation of the Research School

Germán Rivas

Rafael Giraldo

X-RAYS AND ELECTRONS FOCUSED TOGETHER

10:30 h | OPENING LECTURE

A personal account on the evolution of Structural Biology by following the ribosome trail

Venkatraman Ramakrishnan

MRC-LMB, Cambridge, UK

Nobel Laureate-Chemistry 2009

President of The Royal Society

11:30 h | Principles of X-ray diffraction and cryo-Electron Microscopy

Armando Albert

IQFR-CSIC

12:45 h | X-ray and cryo-EM studies on protein and nucleic-acid remodeling by ATP-dependent molecular machines

Ernesto Arias-Palomo

CIB-CSIC

15:30 h | The students present their scientific interests and discuss with V. Ramakishnan on how they fit within the framework of Structural Biology

Germán Rivas

Rafael Giraldo

Martes 29 de agosto

X-RAYS AND ELECTRONS FOCUSED TOGETHER (II)

10:00 h | RNA polymerases under the light of X-rays and electrons

Carlos Fernández Tornero

CIB-CSIC

11:00 h | X-rays, EM and the structure of the bacterial cytoskeleton

Marian Oliva

CIB-CSIC

12:15 h | X-rays and EM in solving the structures of membrane proteins

Iñaki Aréchaga

IBBTEC-UCAN-CSIC

WORKSHOP (I)

16:00 h | Group of students 1

Hands on the growth of protein crystals and on electron microscopy

Gabriel Moncalián

IBBTEC-UCAN-CSIC

Iñaki Aréchaga

17:00 h | Group of students 2

Building and assessing 3D-models of biological macromolecules

Elena Cabezón

IBBTEC-UCAN-CSIC

Armando Albert

Miércoles 30 de agosto

NMR AND THE DYNAMICS OF BIOLOGICAL MACROMOLECULES

10:00 h | A primer to Nuclear Magnetic Resonance

José Manuel Pérez-Cañadillas

IQFR-CSIC

11:00 h | NMR at the limits: the structures of aggregation-prone proteins

Douglas Laurents

IQFR-CSIC

12:15 h | NMR in the study of protein-nucleic acids interactions

José Manuel Pérez-Cañadillas

WORKSHOP (II)

16:00 h | Group of students 1

Building and assessing 3D-models of biological macromolecules

Elena Cabezón

Armando Albert

17:00 h | Group of students 2

Hands on the growth of protein crystals and on electron microscopy

Gabriel Moncalián

Iñaki Aréchaga

Jueves 31 de agosto

INTEGRATED BIOPHYSICAL APPROACHES TO PROTEIN STRUCTURE AND FUNCTION (I)

10:00 h | Biophysical tools to study the stability and interactions of biological macromolecules

Douglas Laurents

11:00 h | Fluorescence spectroscopy in the analysis of molecular interactions

Silvia Zorrilla

CIB-CSIC

12:15 h | Structural approaches to study protein-ligand binding

Lourdes Infantes

IQFR-CSIC

WORKSHOP (III)

16:00 h | Biomolecular interactions-tutorial on Binding analysis

Begoña Monterroso

CIB-CSIC

Silvia Zorrilla

WORKSHOP (IV)

17:00 h | Use of structural data bases in ligand modelling in proteins

Lourdes Infantes

Viernes 1 de septiembre

INTEGRATED BIOPHYSICAL APPROACHES TO PROTEIN STRUCTURE AND FUNCTION (II)

10:00 h | CLOSING LECTURE

Bottom-up reconstitution of bacterial division

Petra Schwille

Director, MPI of Biochemistry, Martinsried, Germany

11:00 h | SUMMING-UP AND OPEN DISCUSSION

Students and lecturers debate about the impact of the structural and biophysical analyses on Biology

Germán Rivas

Rafael Giraldo

12:15 h | CLOSING CEREMONY