

International School on Biological Crystallization

The 'Laboratorio de Estudios Cristalográficos' is pleased to announce the
6th International School on Biological Crystallization (ISBC2017)
Granada, May 29th to June 2nd, 2017

The aim of the School is to introduce all participants into the fundamental knowledge about the behaviour of crystallizing solutions and their applications to the field of **biological crystallization**, including **large crystals for neutron diffraction and tiny crystals for XFEL**.

One day will be fully devoted to case studies on the crystallization of **membrane proteins, viruses, large macromolecular complexes, and biomineralization**.

ISBC2017 is intended for postgraduate/postdoctoral students and research scientists from industrial and academic backgrounds

This School is sponsored by the IUCr and the GE3C



International School on Biological Crystallization

School Topics

- ▣ Nucleation: Classical and non-classical approaches
- ▣ Crystal growth kinetics and mechanisms
- ▣ Properties of macromolecular solutions (DLS/SAXS)
- ▣ Screening: The search for crystallization conditions
- ▣ Crystallization techniques: Batch, Vapour and Counter Diffusion, How do they work?
- ▣ Crystallization and diffusion transport: gels, microfluidics and microgravity
- ▣ Crystallization of large crystals for Neutron diffraction
- ▣ *In vivo* crystallization of tiny crystals for XFEL
- ▣ Serial Crystallography
- ▣ Polymorphism in protein crystals
- ▣ Robotics and crystallization
- ▣ Case studies in Membrane Protein Crystallization
- ▣ Lipid cubic phase, bicelles and detergents
- ▣ Crystallization of Macromolecular Complexes
- ▣ Characterization by electron microscopy (EM)
- ▣ *In vitro* and *in vivo* studies of Biomineralization processes

Demonstration Fair

Practical training will be organised in our innovative and lively format.

A number of stands will simultaneously offer short practical sessions carried by specialists at scheduled times.

Arrange your own Practical Training!

ISBC 2017 is supported by the
International Union of Crystallography

Invited Speakers

(This list is provisional, check the updated list on our webpage)

- Bernhard Rupp**, k. k. Hofkristallamt, USA
- Terese Bergfors**, Uppsala University, Sweden
- Janet Newman**, CSIRO, Australia
- Allan D'Arcy**, Actelion Pharmaceuticals, Switzerland
- Martin Caffrey**, Trinity College Dublin, Ireland
- Petra Fromme**, Arizona State University, USA
- Juan Manuel García-Ruiz**, IACT, CSIC-UGR, Spain
- Jeroen Mesters**, University of Lübeck, Germany
- Marc Pusey**, iXpressGenes, Huntsville, USA
- Howard Einspahr**, IUCr Journal Commission, USA
- José A. Gavira**, IACT, CSIC-UGR, Spain
- Hudel Luecke**, University of California, USA
- Naoko Mizuno**, Max Planck Institute, Germany
- Sergio Martínez**, University of Granada, Spain
- Ivana Kuta Smatanova**, Univ. of South Bohemia, Czech Republic
- Stephane Veesler**, CINam-Marseille, France (tbc)
- Claude Sauter**, IBMC, CNRS, France
- Christian Betzel**, University of Hamburg, Germany
- Fermin Otálora**, IACT, CSIC-UGR, Spain
- Guillermo Calero**, University of Pittsburg, USA
- Christian Biertümpfel**, Max Planck Institute, Germany
- Edward H. Snell**, Hauptman-Woodward I., Buffalo, USA
- May Marsh**, SLS at Paul Scherrer Institut, Swiss
- Jose Manuel Martín-García**, Arizona State University, USA
- Giuseppe Falini**, University of Bologna, Italy
- Karim Benzerara**, Université Pierre et Marie Curie, France
- Helmut Cölfen**, University of Konstanz, Germany
- Monica Budayova-Spano**, Université Grenoble Alpes, France
- Yves Nys**, URA, INRA, France
- Pavĺina Řežáčová**, University of Prague, Czech Republic



International School on Biological Crystallization

Granada (SPAIN), May 28th – June 2nd, 2017

LABORATORIO DE ESTUDIOS CRISTALOGRAFICOS, IACT (CSIC – UGR)

Sunday, May 28th WELCOME

- 18:00 – 20:00 Registration
20:00 Welcome Cocktail at *Gran Hotel Luna de Granada*

Monday, May 29th FROM SOLUTION TO PROTEIN CRYSTALS

- 08:00 – 09:00 Registration
09:00 – 09:15 Overview of the School J.A.G. & J.M.G-R
09:15 – 10:00 Protein Purification Strategies Intended for Crystallization S. Martínez-R
10:00 – 10:30 Coffee Break
10:30 – 11:30 From protein solution to crystals: Nature and formation of protein crystals B. Rupp
11:30 – 12:15 Nucleation of Macromolecular Crystals J.M. Garcia-Ruiz
12:15 – 13:00 Crystal Growth Kinetics and Mechanisms F. Otalora
13:00 – 13:30 *In Situ* Dynamic Light Scattering C. Betzel
13:30 – 15:00 Lunch
15:00 – 15:45 Standard Crystallization Techniques: How do they work? J. Mesters
15:45 – 16:30 Protein Crystallization by capillary Counter-diffusion technique J.A. Gavira
16:30 – 17:15 Interpretation of the Crystallization Drop Results T. Bergfors
17:15 – 18:00 And Now Do It in High Throughput J. Newman
18:00 – 18:30 Coffee break
18:30 – 19:30 Poster Session

Tuesday, May 30th TINY CRYSTALS, COMPLEXES AND MEMBRANE PROTEINS

- 09:00 – 09:30 Seeds of Success: An Overview of the Microseed Matrix Screening Technique M. Marsh
09:30 – 10:00 Crystallization and Crystallography in Microfluidic Chips C. Sauter
10:00 – 10:30 Publishing Your Crystallization Results H. Einspahr
10:30 – 11:00 Coffee Break
11:00 – 12:00 Small Is Beautiful: Femtosecond Crystallography Opens a New Era in Structural Biology P. Fromme
12:00 – 12:45 Crystallization of Membrane Proteins in Lipid Mesophases M. Caffrey
12:45 – 13:30 Structure, function, and inhibitors of the acid-gated *H. pylori* urea channel, an essential component for acid survival and chronic infection H. Luecke
13:30 – 15:00 Lunch
15:00 – 15:45 Visualization of macromolecular complexes under cryo-EM N. Mizumo
15:45 – 16:30 Crystallization of Protein-Nucleic Acid Complexes C. Biertümfel
16:30 – 17:15 Manipulation of Tiny Crystals for Serial Crystallography J.M. Martin-G.
17:15 – 18:00 Non-classical crystallization of organic and biological molecules and macromolecules H. Cölfen
17:30 – 18:00 Coffee break
18:00 – 19:00 Poster Session

22:00 NIGHT VISIT TO THE ALHAMBRA (GROUP 1)

Wednesday, May 31st LARGE CRYSTALS, SAXS, TEM, NEW APPROACHES & BIOMINERALISATION

09:00 – 09:45	Maximizing Crystallization Screening Results	M. Pusey
09:45 – 10:30	Optimisation of Crystal Growth for neutron Macromolecular Crystallography	M. Budayova-Spano
10:30 – 11:00	Coffee Break	
11:00 – 11:45	Novel Developments in Structural Biology	G. Calero
11:45 – 12:30	<i>In vivo</i> crystallization for XFEL	C. Betzel
12:30 – 13:15	Small Angle Solution Scattering as a complementary technique in structural biology studies	E. Snell
13:15 – 13:45	Handling of protein crystals	J.A. Gavira
13:45 – 15:00	Lunch	
15:00 – 15:45	Different approaches to study and control protein nucleation, growth and phase transitions	S. Veessler
15:45 – 16:30	Bio- and bioinspired mineralization	H. Cölfen
16:30 – 17:15	Corals: calcification process and response to ocean acidification	G. Falini
17:15 – 18:00	Biological and molecular control of calcium carbonate deposition during eggshell mineralization	R. Navarro & M. Hincke
18:00 – 18:15	Coffee break	
18:15 – 19:15	Poster Session	
22:00	NIGHT VISIT TO THE ALHAMBRA (GROUP 2)	

Thursday, June 1 DEMONSTRATION FAIR

09:00 – 10:30	Practical Demonstration “a la carte”
10:30 – 11:00	Coffee Break
11:00 – 13:30	Practical Demonstration “a la carte”
13:30 – 15:00	Lunch
15:00 – 16:30	Practical Demonstration “a la carte”
16:30 – 17:00	Coffee break
17:00 – 17:45	Practical Demonstration “a la carte”

20:00 DINNER/FIESTA FLAMENCA**Friday, June 2 CLOSING LECTURES & STUDENTS PRESENTATIONS**

09:15 – 10:00	Rational and successful strategies to establish robust crystallization systems for drug discovery	A. D'Arcy
10:00 – 11:00	The Formation of Eggs Shell	Y. Nys
11:00 – 11:30	Coffee Break	
11:30 – 12:30	Oral Presentation of finalist posters	
12:30 – 13:30	Poster Prizes and Closing of the School	
13:30 – 15:00	Lunch	

Come to Granada and enjoy learning about

***Protein Crystallization* including Large Crystals, Tiny Crystals, Complexes and Membrane Proteins.**

More than 20 live practical demonstrations on crystal growth techniques! Get the most out of it within a friendly atmosphere by interacting with other students and 25 outstanding lecturers.

Take the opportunity to present and discuss your work during last day with your new friends!!!