

International School on Biological Crystallization

The 'Laboratorio de Estudios Cristalográficos' is pleased to announce the
7th International School on Biological Crystallization (ISBC2019)
Granada, May 26th to 31th, 2019

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 or EM.**

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

ISBC2019 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, MMS, 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
- ▣ Membrane Protein Crystallization: Lipid cubic phase, bicelles and detergents
- ▣ Crystallization of Macromolecular Complexes
- ▣ Characterization by electron microscopy (EM)

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 2019 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
- 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 Oslo, Norway
- Naoko Mizuno**, Max Planck Institute, Germany
- Sergio Martínez**, University of Granada, Spain
- Ivana Kuta Smatanova**, Univ. of South Bohemia, Czech Republic
- Nadine Candoni**, 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
- José Manuel Martín-García**, Arizona State University, USA
- Lata Govada**, Imperial Collague, London, UK.
- Jose D. Ng**, University of Alabama in Huntsville, USA
- Katsuo Tsukamoto**, Osaka University, Japan
- Monica Budayova-Spano**, Université Grenoble Alpes, France
- Crissy Tarver**, University of Alabama in Huntsville, USA
- Pavlna Řezáčová**, University of Prague, Czech Republic
- Abel Moreno**, Univ. Autónoma de México, México
- Thomas Peat**, CSIRO, Australia



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Granada (SPAIN), May 26th – 31st, 2019

LABORATORIO DE ESTUDIOS CRISTALOGRAFICOS, IACT (CSIC – UGR)

Sunday, May 26th WELCOME

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

Monday, May 27th 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 – 11:15 Nucleation of Macromolecular Crystals J.M. García-Ruiz
11:15 – 12:00 Preparation of protein samples for crystallization experiments P. Řezáčová
12:00 – 12:45 From protein solution to crystals: Nature and formation of protein crystals B. Rupp
12:45 – 13:30 Crystal Growth Kinetics and Mechanisms F. Otálora
13:30 – 15:00 Lunch
15:00 – 15:45 Hofmeister ion series and the protein phase diagram: consequences for solubilization and crystallization J. Mesters
15:45 – 16:30 Protein Crystallization by capillary Counter-diffusion technique J.A. Gavira
16:30 – 17:15 Rationalizing high throughput, is that possible? J. Newman
17:15 – 18:00 What's this in my drop? Interpreting crystallization results T. Bergfors
18:00 – 18:30 Coffee break
18:30 – 19:30 Poster Session

Tuesday, May 28th TINY & LARGE CRYSTALS, MEMBRANE PROTEINS, COMPLEXES, SAXS, EM...

- 09:00 – 09:30 Seeds of success: An overview of the Microseed Matrix Screening technique M. Marsh
09:30 – 10:00 Microfluidics in action: crystallization and crystallography in microchips C. Sauter
10:00 – 10:30 A guide to choosing your method for crystallization L. Govada
10:30 – 11:00 Coffee Break
11:00 – 12:00 Femtosecond Crystallography, 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 *Helicobacter pylori* Acid Acclimation: The Evil Duo of a pH-Gated Urea Channel and a Cytoplasmic Urease H. Luecke
13:30 – 15:00 Lunch
15:00 – 15:45 Crystallization of Protein-Nucleic Acid Complexes C. Biertümpfel
15:45 – 16:30 Manipulation of Tiny Crystals for Serial Crystallography J.M. Martin-G.
16:30 – 17:15 How to grow high-quality protein crystals in batch method using electromagnetic fields A. Moreno
17:15 – 18:00 How to grow protein crystals for neutron diffraction J.D. Ng
18:00 – 18:15 Coffee break
18:15 – 19:15 Poster Session

Wednesday, May 29st TINY & LARGE CRYSTALS, MEMBRANE PROTEINS, COMPLEXES, SAXS, EM...

09:00 – 09:30	Differences in crystallization of various haloalkane dehalogenases	I.K. Smatanova
09:30 – 10:00	Optimisation of Crystal Growth for Neutron MX	M. Budayova-Spano
10:00 – 10:30	The use of Microfluidics for Fundamental Studies	N. Candoni
10:30 – 11:00	Coffee Break	
11:00 – 11:45	Analysing, scoring and optimizing <i>in vitro</i> and <i>in vivo</i> Crystallization Conditions for XFEL and serial Diffraction Data Collection	C. Betzel
11:45 – 12:30	Novel Developments in Structural Biology	G. Calero
12:30 – 13:30	Small Angle Solution Scattering as a complementary technique in structural biology studies	E. Snell
13:30 – 15:00	Lunch	
15:00 – 15:45	Visualization of macromolecular complexes under cryo-EM	N. Mizuno
15:45 – 16:30	Putting things into protein crystals	T. Peat
16:30 – 17:15	The Surface Morphology of Space Grown Crystals	K. Tsukamoto
17:15 – 18:00	The Symmetry of the Alhambra	J.M. García-Ruíz
18:00 – 18:15	Coffee break	
18:15 – 19:15	Poster Session	

22:00**NIGHT VISIT TO THE ALHAMBRA****Thursday, May 30th DEMONSTRATION FAIR**

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

20:00**DINNER/FIESTA FLAMENCA****Friday, May 31st CLOSING LECTURES & STUDENTS PRESENTATIONS**

09:15 – 10:15	Round Table on convergent techniques: Diffraction, XFEL, Micro-ED, SAS, NMR, Cryo-EM and the Future of Protein Crystallization
10:15 – 11:00	Round Table on Publishing your results with the Journals Editors
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 and if selected to present it during last day with your new friends!!!